AIP

AERONAUTICAL INFORMATION PUBLICATION

UNITED STATES OF AMERICA

(TWENTY−FIRST EDITION DATED 10 MARCH 2011)

AMENDMENT 2

9 February 2012

CONSULT NOTAM FOR LATEST INFORMATION

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

AIP Amendment 2

Page Control Chart

9 February 2012

REMOVE PAGES	DATED	INSERT PAGES	DATED
GEN 0.4−1 through GEN 0.4−3	25 AUG 11	GEN 0.4−1 through GEN 0.4−3	9 FEB 12
GEN 1.2−1 through GEN 1.2−3	10 MAR 11	GEN 1.2−1 through GEN 1.2−3	9 FEB 12
GEN 1.2−4	25 AUG 11	GEN 1.2−4	25 AUG 11
GEN 1.2−5 and GEN 1.2−6	10 MAR 11	GEN 1.2−5 and GEN 1.2−6	9 FEB 12
GEN 1.3−1	10 MAR 11	GEN 1.3−1	10 MAR 11
GEN 1.3−2	10 MAR 11	GEN 1.3−2	9 FEB 12
GEN 1.4−1	10 MAR 11	GEN 1.4−1	9 FEB 12
GEN 1.4−2	10 MAR 11	GEN 1.4−2	10 MAR 11
GEN 1.7−1 through GEN 1.7−107	25 AUG 11	GEN 1.7−1 through GEN 1.7−96	9 FEB 12
GEN 2.2−5	10 MAR 11	GEN 2.2−5	9 FEB 12
GEN 3.1−3 through GEN 3.1−5	10 MAR 11	GEN 3.1−3 through GEN 3.1−5	9 FEB 12
GEN 3.3−1	10 MAR 11	GEN 3.3−1	10 MAR 11
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GEN 3.3−13	10 MAR 11	GEN 3.3−13	10 MAR 11
GEN 3.3−14	10 MAR 11	GEN 3.3−14	9 FEB 12
GEN 3.4−3	10 MAR 11	GEN 3.4−3	10 MAR 11
GEN 3.4−4 and GEN 3.4−5	10 MAR 11	GEN 3.4−4 and GEN 3.4−5	9 FEB 12
GEN 3.4−6	10 MAR 11	GEN 3.4−6	10 MAR 11
GEN 3.4−7	10 MAR 11	GEN 3.4−7	9 FEB 12
GEN 3.4−8	10 MAR 11	GEN 3.4−8	10 MAR 11
GEN 3.4−9 and 3.4−10	10 MAR 11	GEN 3.4−9 and 3.4−10	9 FEB 12
GEN 3.4−15	10 MAR 11	GEN 3.4−15	9 FEB 12
GEN 3.4−16	10 MAR 11	GEN 3.4−16	10 MAR 11
GEN 3.4−17	10 MAR 11	GEN 3.4−17	9 FEB 12
GEN 3.4−18	10 MAR 11	GEN 3.4−18	10 MAR 11
GEN 3.4−21	10 MAR 11	GEN 3.4−21	10 MAR 11
GEN 3.4−22	10 MAR 11	GEN 3.4−22	9 FEB 12
GEN 3.5−1	10 MAR 11	GEN 3.5−1	10 MAR 11
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GEN 3.5−7	10 MAR 11	GEN 3.5−7	9 FEB 12
GEN 3.5−8	10 MAR 11	GEN 3.5−8	10 MAR 11
GEN 3.5−9 and 3.5−10	10 MAR 11	GEN 3.5−9 and 3.5−10	9 FEB 12
GEN 3.5−17	10 MAR 11	GEN 3.5−17	10 MAR 11
GEN 3.5−18	25 AUG 11	GEN 3.5−18	9 FEB 12

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GEN 3.5−21	10 MAR 11	GEN 3.5−21	10 MAR 11
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GEN 3.5−35 and GEN 3.5−36	10 MAR 11	GEN 3.5−35 and GEN 3.5−36	9 FEB 12
GEN 3.5−39	10 MAR 11	GEN 3.5−39	9 FEB 12
GEN 3.5−40 and GEN 3.5−41	10 MAR 11	GEN 3.5−40 and GEN 3.5−41	10 MAR 11
GEN 3.5−42 through GEN 3.5−85	10 MAR 11	GEN 3.5−42 through GEN 3.5−86	9 FEB 12
ENR 0.4−1 through ENR 0.4−3	25 AUG 11	ENR 0.4−1 through ENR 0.4−3	9 FEB 12
ENR 1.1−15	10 MAR 11	ENR 1.1−15	9 FEB 12
ENR 1.1−16	10 MAR 11	ENR 1.1−16	10 MAR 11
ENR 1.1−21	10 MAR 11	ENR 1.1−21	9 FEB 12
ENR 1.1−22	10 MAR 11	ENR 1.1−22	10 MAR 11
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ENR 1.1−28	10 MAR 11	ENR 1.1−28	10 MAR 11
ENR 1.1−29	25 AUG 11	ENR 1.1−29	25 AUG 11
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ENR 1.1−43 through ENR 1.1−52	10 MAR 11	ENR 1.1−43 through ENR 1.1−52	9 FEB 12
ENR 1.1−57	10 MAR 11	ENR 1.1−57	10 MAR 11
ENR 1.1−58 and ENR 1.1−59	10 MAR 11	ENR 1.1−58 and ENR 1.1−59	9 FEB 12
ENR 1.1−60	10 MAR 11	ENR 1.1−60	10 MAR 11
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ENR 1.1−74	10 MAR 11	ENR 1.1−74	9 FEB 12
ENR 1.1−77	10 MAR 11	ENR 1.1−77	10 MAR 11
ENR 1.1−78 and ENR 1.1−79	10 MAR 11	ENR 1.1−78 and ENR 1.1−79	9 FEB 12
ENR 1.1−80	10 MAR 11	ENR 1.1−80	10 MAR 11
ENR 1.1−81	10 MAR 11	ENR 1.1−81 through ENR 1.1−85	9 FEB 12
ENR 1.4−5	10 MAR 11	ENR 1.4−5	9 FEB 12
ENR 1.4−6	10 MAR 11	ENR 1.4−6	10 MAR 11
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ENR 1.5−19	10 MAR 11	ENR 1.5−19	9 FEB 12
ENR 1.5−20	10 MAR 11	ENR 1.5−20	10 MAR 11
ENR 1.5−37	10 MAR 11	ENR 1.5−37	10 MAR 11
ENR 1.5−38	10 MAR 11	ENR 1.5−38	9 FEB 12
ENR 1.5−47	10 MAR 11	ENR 1.5−47	9 FEB 12
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ENR 1.5−56 and ENR 1.5−57	10 MAR 11	ENR 1.5−56 and ENR 1.5−57	10 MAR 11
ENR 1.5−58	10 MAR 11	ENR 1.5−58	9 FEB 12
ENR 1.5−73	10 MAR 11	ENR 1.5−73	9 FEB 12
ENR 1.5−74	10 MAR 11	ENR 1.5−74	10 MAR 11
ENR 1.7−1 and ENR 1.7−2	10 MAR 11	ENR 1.7−1 and ENR 1.7−2	9 FEB 12
ENR 1.10−3	10 MAR 11	ENR 1.10−3	9 FEB 12
ENR 1.10−4 and ENR 1.10−5	25 AUG 11	ENR 1.10−4 and ENR 1.10−5	25 AUG 11
ENR 1.10−6	25 AUG 11	ENR 1.10−6	9 FEB 12
ENR 1.10−13	10 MAR 11	ENR 1.10−13	10 MAR 11
ENR 1.10−14	10 MAR 11	ENR 1.10−14	9 FEB 12
ENR 1.10−17	10 MAR 11	ENR 1.10−17	10 MAR 11
ENR 1.10−18 and ENR 1.10−19	10 MAR 11	ENR 1.10−18 and ENR 1.10−19	9 FEB 12
ENR 1.10−20	10 MAR 11	ENR 1.10−20	10 MAR 11
ENR 1.12−1	10 MAR 11	ENR 1.12−1	9 FEB 12
ENR 1.12−2	10 MAR 11	ENR 1.12−2	10 MAR 11
ENR 1.16−1 and ENR 1.16−2	10 MAR 11	ENR 1.16−1 and ENR 1.16−2	9 FEB 12
ENR 1.17−1	10 MAR 11	ENR 1.17−1	9 FEB 12
ENR 3.5−3 and ENR 3.5−4	10 MAR 11	ENR 3.5−3 and ENR 3.5−4	9 FEB 12
ENR 4.1−3	10 MAR 11	ENR 4.1−3	9 FEB 12
ENR 4.1−4	10 MAR 11	ENR 4.1−4	10 MAR 11
ENR 4.1−25	10 MAR 11	ENR 4.1−25	9 FEB 12
ENR 4.1−26	10 MAR 11	ENR 4.1−26	10 MAR 11
ENR 4.1−41 and ENR 4.1−42	10 MAR 11	ENR 4.1−41 and ENR 4.1−42	9 FEB 12
ENR 5.1−3	10 MAR 11	ENR 5.1−3	10 MAR 11
ENR 5.1−4	10 MAR 11	ENR 5.1−4	9 FEB 12
ENR 5.2−1	10 MAR 11	ENR 5.2−1	9 FEB 12
ENR 5.2−2	25 AUG 11	ENR 5.2−2	9 FEB 12
ENR 5.7−3	10 MAR 11	ENR 5.7−3	9 FEB 12
ENR 5.7−4 and ENR 5.7−5	10 MAR 11	ENR 5.7−4 and ENR 5.7−5	10 MAR 11
ENR 5.7−6	10 MAR 11	ENR 5.7−6	9 FEB 12
ENR 6.2−1 and ENR 6.2−2	10 MAR 11	ENR 6.2−1 and ENR 6.2−2	9 FEB 12
AD 0.4−1 through AD 0.4−4	25 AUG 11	AD 0.4−1 through AD 0.4−4	9 FEB 12
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AD 1.1−9	10 MAR 11	AD 1.1−9	10 MAR 11
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AD 1.1−19	25 AUG 11	AD 1.1−19	9 FEB 12
AD 1.1−20 through AD 1.1−27	10 MAR 11	AD 1.1−20 through AD 1.1−27	9 FEB 12
AD 1.1−28	25 AUG 11	AD 1.1−28	9 FEB 12
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A−1	10 MAR 11	A−1	9 FEB 12
Appendix 1 through 372		Appendix 1 through 358	

NOTE−
*The Twenty−first edition of this publication was released with a footer that reads "Twentieth Edition." For all intents and purposes, the material published herein, and the Amendments that follow, comprise the **Twenty−first** edition. For consistency and to avoid further confusion, the [footers on the] Amendments within this edition will **not** be adjusted. Therefore, please refer to the header of each page to determine the effective date.*

GEN 0.4 Checklist of Pages

PAGE	DATE
3.5−72	9 FEB 12
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GEN 4	
4.1−1	10 MAR 11
4.2−1	10 MAR 11

GEN 0.5 List of Hand Amendments to the AIP − Not applicable

GEN 1.2 Entry, Transit, and Departure of Aircraft

1. General

1.1 All flights into or over the territories of the U.S. and landing in such territories must be carried out in accordance with the regulations of the U.S. regarding civil aviation.

1.2 Aircraft landing in or departing from the territories of the U.S. must first land at, or finally depart from, an international airport (see AD 2) except as may be otherwise noted in this section.

1.3 All aircraft entering the U.S. must land at a designated international airport of entry unless prior approval to land at a landing rights or other airport has been obtained from U.S. Customs. The terms "international airport of entry" refers to any airport designated by the Secretary of the Treasury or the Commissioner of Customs as a port of entry for civil aircraft arriving in the U.S. from any place outside thereof and for cargo carried on such aircraft. (Note: Frequently the word "international" is included in the name of an airport for other than Customs purposes, in which case it has no special Customs meaning.) The term "landing rights airport" refers to an airport of entry at which permission to land must be granted by the appropriate Customs officer with acknowledgement of the Immigration and Naturalization Service, the Public Health Service, and the Animal and Plant Health Inspection Service of the Department of Agriculture. Such landing rights are required before an aircraft may land at an airport which has not been designated for Customs purposes as an international airport of entry. In the case of scheduled aircraft, such permission must be obtained from the Service/Area Director of Customs of the Port (see GEN 1.1, paragraph 4.) where the first landing will occur. In all other cases, including private aircraft, landing permission may be obtained from the Port Director of Customs (see GEN 1.1, paragraph 4.) or the Customs officer in charge of the port of entry or Customs station nearest the intended place of landing. All persons entering the U.S. must be inspected for U.S. Customs, Immigration, and Public Health purposes.

1.4 Subject to the observance of the applicable rules, conditions, and limitations of the Federal Aviation Regulations and the Department of Transportation (DOT)/Office of the Secretary of Transportation (OST), Office of International Aviation, as described below, foreign civil aircraft registered and manufactured in any foreign country which is a member of the International Civil Aviation Organization (ICAO) may be navigated in the U.S. Foreign civil aircraft manufactured in a country which at the time of manufacture was not a member of ICAO may be navigated in the U.S. if the country has notified ICAO that the aircraft meets the standards described in the Chicago Convention or if a notice has been filed with the DOT/OST, Office of International Aviation, through diplomatic channels, that the aircraft meets the standards described in the Chicago Convention.

1.5 Aircraft registered under the laws of foreign countries, not members of the ICAO, may be navigated in U.S. territory only when authorized by the DOT/OST, Office of International Aviation.

1.6 All foreign civil aircraft operated to, from, or within the U.S. must carry on board effective certificates of registration and air worthiness issued by the country of registry. Also, each member of the flight crew must carry a valid airman certificate or license authorizing that member to perform their assigned functions in the aircraft.

1.7 Transportation of firearms by aircraft passengers. Regulations of the Alcohol, Tobacco and Firearms Division of the Internal Revenue Service make it unlawful for any person knowingly to deliver or cause to be delivered to any common or contract carrier for transportation or shipment in interstate or foreign commerce, to persons other than licensed importers, licensed manufacturers, licensed dealers, or licensed collectors, any package or other container in which there is any firearm or ammunition without written notice to the carrier that such firearm or ammunition is being transported or shipped; except that any passenger who owns or legally possesses a firearm or ammunition being transported aboard any common or contract carrier for movement with the passenger in interstate or foreign commerce may deliver said firearm or ammunition into the custody of the pilot, captain, conductor or operator of such common or contract carrier for the duration of the trip.

1.8 Miscellaneous Information

1.8.1 Commercial air transport operators in the U.S. must adhere to Annex 6 − Operation of Aircraft with the proviso that aircraft which have no operators' local representative available to them will be required to carry a fixed fuel reserve of not less than 45 minutes at the approved fuel consumption rate plus a variable reserve equivalent to 15% of the fuel required from departure to destination and to an alternate if an alternate is required; or where the reserve calculated in accordance with the above exceeds two hours at the approved fuel consumption rate − two hours reserve fuel.

2. Scheduled Common Carriage Flights

2.1 General

2.1.1 Generally, when an operator of an aircraft advertises its transportation services to the general public or particular classes or segments of the public for compensation or hire, it is a common carrier. In turn, the transportation service the operator performs is considered to be in common carriage. The scheduled flights into, from and landing in the territory of the U.S. for purposes of loading or unloading passengers, cargo and mail (revenue flights), must first obtain from the U.S. DOT/OST, Office of International Aviation (X−40), a foreign air carrier permit. Applications for common carrier authority must be filed with X−40. If X−40, with the President's approval, determines that the carrier is fit, willing, and able to perform the service it proposes and that the service is in the public interest, X−40 must issue the carrier a foreign air carrier permit, subject to the disapproval of the President of the U.S.

2.1.2 The scheduled flights in transit across the territory of the U.S. or landing for reasons other than for the purpose of loading and unloading of passengers, cargo or mail (nonrevenue flights), which are registered in a State which is a party to the International Air Services Transit Agreement, must submit a notice of transit to X−40. The notice of transit must be submitted at least 15 days prior to the flight and must include:

2.1.2.1 Name, country of organization and nationality (including the nationality of all ownership interests) of the operator;

2.1.2.2 Name of the country in which the aircraft to be used in the service is registered;

2.1.2.3 A full description of the proposed operations including the type of operations (passenger, property, mail, or combination), date of commencement, duration and frequency of flights, and routing (including each terminal and intermediate point that will be served);

2.1.2.4 Copies of advertising of the flights, if advertised in the U.S.

2.1.3 If the notice is timely filed, the flights may be operated in the absence of a contrary notification from X−40.

2.1.4 Scheduled flights in transit across the territory of the U.S. or landing for reasons other than for the purpose of loading and unloading of passengers, cargo or mail (nonrevenue flights), which are registered in a State which is not a party to the International Air Services Transit Agreement, must obtain prior permission from X−40 at least 15 days prior to the flight. All permission requests must include the same information as requested in paragraph 2.1.2 (See also paragraph 1.5). The carrier may not transit U.S. territory unless and until it receives a foreign aircraft permit to do so from X−40.

2.1.5 The permission to transit U.S. territory as described above also includes the right to make stops in the U.S. for technical purposes (for example, refueling and servicing of the aircraft) as long as the stopover does not exceed 24 hours. Stopovers which do exceed 24 hours are permitted only in those cases where a transfer of passengers, property or mail to another aircraft is necessary for the safety of the aircraft, passengers, property, or crew. Stopovers for the pleasure or convenience of passengers are not included in the transit authority.

2.2 Documentary Requirements for Clearance of Aircraft

2.2.1 The undermentioned documents must be submitted to U.S. authorities for clearance on entry and departure of aircraft. All documents listed below must follow the ICAO standard format as set forth in the relevant appendixes to Annex 9, and are acceptable only when furnished in English.

2.2.2 Aircraft Documents Required (Arrival and Departure)

TBL GEN 1.2−1

Required by	General Declaration	*Passenger Manifest	Cargo Manifest
Customs Agriculture	1	0	1
Plant and Quarantine	1	0	1
Immigrations	1	0	1
Public Health	1	0	0
Total	4	0	3
*See paragraph 2.4 in GEN 1.3			

2.3 Public Health Measures Applied to Aircraft

2.3.1 At airports without Public Health Service Quarantine staff, the Customs, Immigration, or Agriculture Officer present will represent the Public Health Service.

2.3.2 No public health measures are required to be carried out with respect to aircraft entering U.S. territory except that disinfection of an aircraft may be required if it has left a foreign area that is infected with insect−borne communicable disease and the aircraft is suspected of harboring insects of public health importance. Disinfection is defined as: "The operation in which measures are taken to kill the insect vectors of human disease present in carriers and containers."

2.3.3 Disinfection must be the responsibility of the air carrier and must be subject to monitoring by the Director of the Public Health Service.

2.3.4 Disinfection of the aircraft must be accomplished immediately after landing and blocking. The cargo compartment must be disinfected before the mail, baggage, and other cargo are discharged and the rest of the aircraft must be disinfected after passengers and crew deplane.

2.3.5 Disinfection must be performed with an approved insecticide in accordance with the manufacturer's instructions. The current list of approved insecticides and sources may be obtained from the Division of Quarantine, Center for Prevention Services, Centers for Disease Control, Atlanta, GA 30333.

2.3.6 All food and potable water taken on board an aircraft at any airport and intended for human consumption thereon must be obtained from sources approved in accordance with Title 21, Code of Federal Regulations, Parts 1240 and 1250.

2.3.7 Aircraft inbound or outbound on an international flight must not discharge over the U.S. any excrement or waste water or other polluting materials. Arriving aircraft must discharge such matter only at servicing areas approved under regulations cited in paragraph 2.3.6 above.

2.3.8 Aircraft on an international voyage, which are in traffic between U.S. airports, must be subject to inspection when there occurs on board, among passengers or crew, any death, or any ill person, or when illness is suspected to be caused by insanitary conditions.

3. Nonscheduled, Noncommon Carriage Flights

3.1 General

3.1.1 Nonscheduled, noncommon carriage flights are transportation services for remuneration or hire that are not offered to the general public.

3.1.2 Nonscheduled flights in transit across the territory of the U.S. or landing for reasons other than the purposes of loading and unloading passengers, cargo or mail (nonrevenue flights) which are registered in a State which is a member of the International Civil Aviation Organization (ICAO) may do so without the necessity of obtaining prior permission, provided passengers are not permitted to leave the airport during stopover or provided that each stopover does not exceed 24 hours. Stopovers which do exceed 24 hours are permitted only in those cases where a transfer of passengers, property or mail to another aircraft is necessary for the safety of the aircraft, passengers, property, or crew. Stopovers for the pleasure or convenience of passengers are not included in the transit authority.

3.1.3 Nonscheduled flights landing in the territory of the U.S. for reasons of loading or unloading passengers, cargo or mail (revenue flights), must obtain prior permission from the DOT/OST, Office of International Aviation (X−40), at least 15 days prior to the flight. All permission requests must include:

3.1.3.1 Name and address of applicant.

3.1.3.2 Aircraft make, model, and registration or identification marks.

3.1.3.3 Country in which the aircraft is registered.

3.1.3.4 Name and address of registered owner of aircraft.

3.1.3.5 Type of flight(s) (passenger, cargo, or agricultural or industrial operation).

3.1.3.6 Purpose of flight(s).

3.1.3.7 Date of the flight(s).

3.1.3.8 Routing of the flight(s).

3.1.3.9 Number of flights.

3.1.3.10 Name of charterer.

3.1.3.11 Charter price.

3.1.4 Applications should be made on DOT/OST, Office of International Aviation Form 4509; however, if time does not permit, applications by telegram will be accepted as long as they include the information described above. Telegraphic applications must include a prepaid voucher sufficient to allow a sixty word reply. The permit must be carried aboard the aircraft during flight over U.S. territory.

3.2 The following commercial air operations require preflight authorization from X−40:

3.2.1 Agricultural and industrial operations which include, but are not limited to, such services as crop dusting, pest control, pipeline patrols, mapping, surveying, banner towing, or skywriting.

3.2.2 Occasional and infrequent planeload charter flights carrying persons or property to and/or from the U.S. The number of these flights that may be performed is limited to six in any calendar year. Foreign civil aircraft are not permitted to transport persons or property or mail for compensation or hire between points wholly within the U.S.

3.2.3 Continuing cargo operations for one or more contractors. Applicants may be authorized to serve up to 10 different contractors in a 12−month period; however, authorization may be granted only if it is clear that the service is not in common carriage and the carrier and contractor enter into a contract which provides for (a) continuing cargo operations for a period of at least 6 months; (b) an absolute or minimum number of flights or volume of cargo to be transported; and (c) a guarantee by the contractor to the carrier to pay for the minimum number of flights to be performed or volume of cargo to be transported whether or not he/she uses the capacity. Continuing cargo operations wholly within the U.S. cannot be authorized.

3.2.4 Persons wishing to operate foreign civil aircraft from, to, or within the U.S. other than as described in this Section may request permission to perform those services by filing an application with X−40. The application should include the information described above in this section. Permission to perform these services may be granted if X−40 finds that the service is consistent with applicable law and is in the interest of the public of the U.S.

3.2.5 Nonscheduled flights in transit across the territory of the U.S. or landing with or without purposes of loading and unloading passengers, cargo or mail (revenue or nonrevenue flights) which are registered in a State which is not a member of the International Civil Aviation Organization (ICAO) must obtain prior permission from X−40 at least 15 days prior to the flight. All permission requests must include the same information as requested in paragraph 3.1.3. (See also paragraph 1.5).

3.3 Documentary Requirements for Clearance of Aircraft

3.3.1 Same requirements as for scheduled flights; in addition, Customs Form 178 must be filled out for all private aircraft arrivals.

4. Private Flights

4.1 Procedures

4.1.1 Private aircraft that operate to, from, within, or transit territorial airspace of the United States must meet special security requirements in effect through Special Notices pursuant to 14 CFR Section 99.7, Special Security Instructions.

REFERENCE−
FAA Notices to Airmen (NOTAMS), Special Notices, at (http://www.faa.gov/pilots/flt_plan/notams/).
International Flight Information Manual for U.S. Prohibitions, Restrictions, and Notices, at (http://www.faa.gov/air_traffic/publications/ifim/).

4.1.2 If an operator intends to carry out a private flight in transit across the territory of the U.S. with intermediate landing, the operator must provide advance notice of arrival to U.S. Customs officials at or nearest the first intended landing. Custom officials, upon notification, will notify the necessary Immigration, Public Health, and Agriculture officials. Advance notice must be received in sufficient time to enable the officials designated to inspect the aircraft to reach the place of landing before the arrival of the aircraft. At least one hour advance notice is required for this purpose during regular business hours. More advance notice may be required during other times (see Aerodrome Section).

4.1.3 Notification of arrival must include:

4.1.3.1 Type of aircraft and registration number.

4.1.3.2 Name of aircraft commander.

4.1.3.3 Number of alien passengers.

4.1.3.4 Number of U.S. citizen passengers.

4.1.3.5 Place of last foreign departure.

4.1.3.6 Estimated time and location of crossing U.S. border/coastline.

4.1.3.7 Name of intended U.S. airport of first landing (designated airport).

4.1.3.8 Estimated time of arrival.

4.1.4 Private aircraft arriving from Canada or Mexico may request that advance notice of arrival to Customs officers be included in the flight plan to be transmitted to a Federal Aviation Administration (FAA) facility which is filed in those countries if destined to an airport in the U.S. where flight notification advise Customs (ADCUS) Service is available. An ADCUS message in the remarks section of the plan consists of the word ADCUS followed by the pilots name and the number of persons on board (POB) with a notation of the number of non−U.S. citizens (i.e.; ADCUS John Doe 5 POB 2 NON). This notification may be provided through FAA; however, this entails the relaying of information and is not as timely or reliable as direct communication. It is recommended that if possible, pilots attempt to communicate directly with Customs by telephone or other means to insure that an officer will be available at the time requested. It is the ultimate responsibility of the pilot to insure Customs is properly notified, and the failure to do so may subject the pilot to penalty action. At those airports where ADCUS service is available, the FAA will forward the ADCUS information to the Customs official on duty. At a landing rights airport such notices will then be treated as an application for permission to land. A flight plan notice must be filed sufficiently before the estimated time of arrival of the flight to permit Customs to make a determination as to whether or not to grant the requested landing rights.

4.1.5 Aircraft may use the following method of notifying Customs when departing from a country or remote area where a pre−departure flight plan cannot be filed or an advise Customs (ADCUS) message cannot be included in a pre−departure flight plan: Call the nearest en route domestic or international FAA flight service station as soon as it is estimated that radio communications can be established and file a VFR or DVFR flight plan and include as the last item the ADCUS information. The station with which such a flight plan is filed will forward it to the appropriate FAA station who will notify the Customs office responsible for the destination airport.

4.1.6 If the pilot fails to include "advise Customs" in the radioed flight plan, it will be assumed that the pilot has made other arrangements, and FAA will not advise Customs.

4.1.7 FAA assumes no responsibility for any delays in advising Customs if the flight plan is given to FAA too late for delivery to Customs before arrival of the aircraft. *It is still the pilot's responsibility to give timely notice even though a flight plan is given to FAA*. FAA cannot relay an "advise Customs" flight plan if the pilot indicates a destination airport where flight service notice to Customs is NOT available. When dependable facilities for giving timely notice of arrival are not available, a landing must be made at a place where the necessary facilities do exist before coming into any area from any place outside the U.S.

4.1.8 All private aircraft arriving in the U.S. via (a) the U.S./Mexican border or the Pacific Coast from a foreign place in the Western Hemisphere south of 33 degrees north latitude or (b) the Gulf of Mexico and Atlantic Coasts from a foreign place in the Western Hemisphere south of 30 degrees north latitude, from any place in Mexico, or from the U.S. Virgin Islands, must furnish a notice of intended arrival to the Customs service at the *nearest* designated airport, listed in paragraph 6., to the point of first border or coastline crossing. They must land at this airport for inspection, unless they have an overflight exemption, see paragraph 4.5. Landing rights must be obtained from Customs to land at designated airports that are *not* also approved as international airports. The requirement to furnish an advance notice of intended arrival must not apply to private aircraft departing from Puerto Rico and conducting their flights under instrument flight rules (IFR) until crossing the U.S. coastline or proceeding north of 30 degrees north latitude prior to crossing the coastline. The notice must be furnished at least one hour before crossing the U.S. coastline or border. The notice may be furnished directly to Customs by telephone, radio, or other means, or may be furnished by means of an ADCUS message in the flight plan through the FAA to Customs. The FAA will accept these notices up to 23 hours in advance.

4.1.9 A one−hour advance notice of coastline or border penetration (but not landing) is required of private aircraft arriving in the continental U.S. from Puerto Rico that are *not* conducting their flight on an IFR flight plan and those private aircraft that have flown beyond the inner boundary of the Air Defense Identification Zone (ADIZ) south of 30 degrees north latitude on the Atlantic Coast, beyond the inner boundary of the Gulf Coast ADIZ, south of the U.S./Mexican border, or beyond the inner boundary of the Pacific Coast ADIZ south of 33 degrees north latitude *which have not landed in a foreign place*. This notice requirement may be satisfied by either filing a flight plan with the FAA and placing ADCUS in the remarks section of the flight plan or by contacting Customs directly at least one hour prior to the inbound crossing of the U.S. border or coastline.

4.2 Notice to Customs

4.2.1 The notice to Customs required by paragraph 4.1.9 of this section must include the following:

4.2.1.1 Aircraft registration number.

4.2.1.2 Name of aircraft commander.

4.2.1.3 Number of U.S. citizen passengers.

4.2.1.4 Number of alien passengers.

4.2.1.5 Place of last departure.

4.2.1.6 Estimated time and location of crossing U.S. border/coastline.

4.2.1.7 Name of U.S. airport of first landing (one of the designated airports listed in paragraph 6 of this section, unless an exemption has been granted in accordance with paragraph 4.5 of this section).

4.2.1.8 Estimated time of arrival.

4.3 Landing Requirement

4.3.1 Private aircraft that are coming from a foreign place are required to furnish a notice of intended arrival in compliance with paragraphs 4.1.9 and 4.2 of this section and must land for Customs processing at the nearest designated airport to the border or coastline crossing point as listed in paragraph 6 of this section, unless exempted from this requirement in accordance with paragraph 4.5 of this section. In addition to the requirements of this paragraph, private aircraft commanders must comply with all other landing and notice of arrival requirements. This landing requirement must not apply to private aircraft that have not landed in a foreign place or are arriving directly from Puerto Rico.

4.4 Private Aircraft Defined

4.4.1 For the purpose of this section, "private aircraft" means any civil aircraft not being used to transport persons or property for compensation or hire. The term "person transported for compensation or hire" means a person who would not be transported unless there was some payment or other consideration, including monetary or services rendered, by or for the person and who is not connected with the operation of the aircraft or its navigation, ownership, or business. An aircraft will be presumed to not be carrying persons or merchandise for hire, and thus will be a private aircraft for Customs purposes, when the aircraft is transporting only the aircraft owner's employees, invited guests, or the aircraft owner's own property. This presumption may be overcome by evidence that the employees, "guests," or property are being transported for compensation or other consideration. If an aircraft is used by a group of individuals, one of whom is the pilot making the flight for his/her own convenience, and all persons aboard the aircraft including the pilot contribute equally toward payment of the expense of operating the aircraft owned or rented by them, the aircraft would be considered private.

4.5 Exemption from the Landing Requirement

4.5.1 The owner or aircraft commander of a private aircraft required to furnish a notice of intended arrival in compliance with paragraph 4.1.9 of this section may request an exemption from the landing requirement specified in paragraph 4.3 of this section. If approved, the applicant is bound to comply with all other requirements, including operating at or above 12,500 feet mean sea level, providing advance notice of penetration to U.S. Customs at least one hour in advance of crossing the border or coastline, furnishing advance notice of arrival at the first intended airport of landing, etc. The request should be addressed to the Port Director of U.S. Customs having jurisdiction over the airport to be utilized most

GEN 1.3 Entry, Transit, and Departure of Passengers and Crew

1. Customs Requirements

1.1 Incoming passengers are required to complete a customs declaration. All baggage or articles belonging to the disembarking passengers are subject to customs inspection. Permission of the Customs officer is required prior to discharging any merchandise or baggage not previously cleared by Customs or prior to permitting passengers or persons employed on the aircraft not cleared by Customs to depart unless such removal or departure is necessary for the purpose of safety or the preservation of life or property. In case of an emergency or forced landing, Customs, Immigration, Public Health, and Agriculture officials must be notified immediately.

1.2 No departure formalities are required upon departure for embarking passengers.

1.3 Any aircraft departing from the U.S. on a business or pleasure flight to unauthorized destinations (see GEN 1.4, paragraphs 3.3 and 3.4) or aircraft carrying passengers or merchandise for hire, or which will take on board or discharge passengers anywhere outside the U.S., is required to obtain clearance at the customs port of entry at or nearest the last place of take−off from the U.S.

1.4 A private aircraft departing from the U.S. on a business or pleasure flight to an authorized destination, is not required to present a departure manifest or have a U.S. Customs clearance of any type, although modified, military−type, privately owned aircraft are subject to certain restrictions (seeGEN 1.4, paragraph 5.8) under the regulations of the Office of Munitions Control of the Department of State.

2. Immigration Requirements

2.1 Aircraft operators are required to present all persons for U.S. immigration inspection. Aliens must comply with all provisions of current immigration laws and regulations. Aliens who are lawfully domiciled residents of the U.S., must, with certain exceptions not generally applicable here, present their valid alien registration cards (Form I−151) issued by the Immigration Office. U.S. citizens must be able to satisfy inspectors of their citizenship and should, therefore, carry with them sufficient identification.

2.2 Valid passports and visas are required for all alien passengers arriving and departing on the same or through flights or transferring to another flight at the same or a nearby airport. The visa requirement may be exempted for passengers in direct transit with a layover period of up to eight hours who are passengers on scheduled air carriers which are signatory to a previously approved transit agreement with the Immigration and Naturalization Service.

2.3 An alien passenger entering the U.S. for the purpose of immigration must hold a valid passport and an immigration visa, the latter being issued at U.S. Consulates abroad. Temporary visitors must be in possession of a valid passport and visa.

2.4 Flight crew members must be in possession of a valid passport and visa regardless of length of stay unless the crew members are exempted through previous agreement. (See paragraph 2.2.)

2.5 Arrival and Departure Manifests

2.5.1 Neither arrival nor departure manifests containing information on all passengers are required in the U.S. However, the U.S. Immigration and Naturalization Service does require the completion and submission to immigration officials, of an arrival/departure card for each nonresident alien entering the U.S., regardless of length of stay.

2.6 Arriving Flights

2.6.1 The captain or agent of every aircraft (other than private) arriving in the U.S. from a foreign place or from an outlying possession of the U.S. is responsible for and must ensure that an arrival/departure card (Form I−94) is prepared by each nonresident alien passenger and is presented to the immigration officer at the port of arrival. The I−94 card, however, is not required for the citizens of Canada and the French islands of St. Piere and Migueion, near Newfoundland. In addition, an arrival/departure card is not required for an arriving, direct transit passenger at a U.S. port from which the passenger will depart directly to a foreign place or an outlying possession of the U.S. on the same flight, provided that a listing which includes the number of such direct transit passengers is provided or that the number of such passengers are noted on the U.S. Customs Service Form 7507 or on the International Civil Aviation Organization's General Declaration and such passengers remain, during ground time, in a separate area under the direction and control of the Customs Service.

2.6.2 Captains of private aircraft not engaged in the carriage of persons or cargo for hire (nonrevenue flights) are not required to present arrival−departure cards (Form I−94). This, however, does not relieve a nonresident alien passenger from the responsibility of completing and submitting a Form I−94 to immigration officials when required. Most alien passengers must execute and present Form I−94 (revised March 1, 1986). Prior editions may not be used. Form I−94 must be completed by all persons except U.S. citizens, returning resident aliens, aliens with immigrant visas, and Canadians visiting or in transit. Mexican nationals in possession of Immigration Form I−86 or Form I−586 are exempt from Form I−94 reporting requirements when their itinerary is limited to California, Arizona, New Mexico, or Texas and will not exceed 72 hours in duration. This exemption does not apply when travel will exceed 25 miles from the international border between Mexico and the U.S. Travel to Nevada by Mexican nationals is exempted for periods of less than 30 days. Mexican nationals proceeding to destinations more than 25 miles from the border in these states will have to obtain a visitor's permit I−444 when arriving in the U.S. Mexican nationals presenting official or diplomatic passports and destined to the U.S. for purposes other than permanent assignment are exempted from Form I−94 reporting requirements.

2.6.3 Completion of the arrival−departure cards (Form I−94) must be as follows:

2.6.3.1 Alien passengers on temporary visit in the U.S. must complete all items of Form I−94 in duplicate, one copy of which is attached to the passport for surrender to immigration officials upon departure.

2.6.3.2 Alien passengers in direct transit, when required to complete Form I−94, are to insert the symbol TRWOV on the line headed "Passenger Boarded At" and need not complete items 3, 8, and 9. Form I−94 is to be completed in single copy only.

2.6.3.3 When the Form I−94 is required by individuals entering the U.S. by private aircraft it should indicate PRIVATE in block #7−Airline and Flight Number. They do not need to complete block #9−City Where You Boarded. All other items on the form are self−explanatory and should be completed prior to actual arrival in the U.S.

2.6.4 When inspection of an arriving passenger is deferred at the request of the air carrier to another port of debarkation, the required forms relating to any such passenger must be returned, together with a Form I−92, when the Form I−94 procedure is used, for presentation by the captain, master, or agent at the port where inspection is to be conducted.

2.7 Departing Flights

2.7.1 The captain or agent of every aircraft (other than private) departing from the U.S. for a foreign place or an outlying possession of the U.S. is responsible for and must ensure that all alien passengers on board (except for citizens of Canada and the French islands of St. Piere and Migueion, near Newfoundland), surrender to the immigration officer at the port of departure, prior to departure, the passport copy of the arrival/departure card (Form I−94) which was completed upon arrival in the U.S. Aircraft departing on regularly scheduled flights from the U.S., however, may collect the cards and defer their presentation, along with either the Bureau of Customs Form 7507 or the ICAO General Declaration, containing the listing of alien direct transit passengers for whom the arrival/departure card was not prepared upon arrival.

2.7.2 Private aircraft owners are responsible for the proper completion and submission of Form I−94 for all crew and passengers affected by the reporting requirement. Departure documents should be annotated on the reverse of the document to indicate Port of Departure and Date of Departure. Following Carrier, print the word PRIVATE. In the space provided for Flight Number/Ship Name, print the aircraft's tail number. Departure documents should be submitted to a U.S. Immigration or U.S. Customs inspector at the time of departure from the U.S. or mailed to the Appalachian Computer Service address in London, KY. Aircraft owners are responsible for the submission of all I−94 Departure Records upon departure to a foreign destination.

GEN 1.4 Entry, Transit, and Departure of Cargo

1. Requirements Concerning Cargo and Other Articles

1.1 Customs entry and clearance of cargo and unaccompanied baggage destined for points within U.S. territory must be completed at the first international airport of entry.

1.2 Transshipment of cargo and other articles must be dealt with at the first international airport of entry according to related regulations. All aircraft entering the U.S. or arriving any place in the U.S. from any other place in the U.S. carrying residue foreign cargo must not depart from the place of landing without receiving permission from the Customs officer.

2. Agricultural Quarantine Requirements

2.1 The U.S. Department of Agriculture, Plant Protection and Quarantine Division (PPQ), has strict requirements regarding the entry, handling and disposition of garbage and galley refuse on all flights arriving from any foreign country, except Canada (7 CFR Parts 94 and 330). A list of sanitary international airports approved by PPQ can be secured from any PPQ office at major airports (see Aerodrome Section).

2.2 Meat, meat products, milk, live birds, poultry, or other domestic farm animals can only enter the U.S. under certain conditions from certain countries under the regulations of the PPQ.

2.3 No insects or other plant pests must knowingly be transported into the U.S. If the pilot of any aircraft has reason to believe any flying or crawling insects are aboard his/her aircraft, such information should be relayed to the nearest PPQ office or inspector when landing.

2.4 Permits are required to bring most fruits, vegetables, plants, seeds, etc., into the U.S. from foreign countries. A guide to restricted or prohibited products can be secured from any PPQ office.

2.5 Dogs, cats, monkeys, psittacine birds (parrot family), turtles, shipments of disease organisms and vectors, and dead bodies are subject to entry restrictions prescribed in the Foreign Quarantine Regulations of the Public Health Service (42 CFR Part 71, Subject J).

3. Exportation of Aircraft, Cargo, and Other Articles

3.1 All U.S. and foreign registered aircraft departing the U.S. for a foreign destination on a temporary sojourn must have export authorization. The two types of export authorization are a license exception (AVS) and a license. Detailed information on both the license exception and the license can be obtained from:

The U. S. Department of Commerce
Bureau of Export Administration
Exporter Counseling Division
Washington, DC 20230
Telephone: (202) 482−4811
Facsimile: (202) 482−3617

3.2 A license exception (AVS) is an authorization to export the aircraft if certain criteria are satisfied. This exception does not require an application nor will there be an issuance of a license document prior to the flight.

REFERENCE−
15 CFR Section 740.15

3.3 License exception AVS authorizes an operating civil aircraft of foreign registry that has been in the U.S. on a temporary sojourn to depart from the U.S. under its own power for any destination, provided that:

3.3.1 No sale or transfer of operational control of the aircraft to nationals of Cuba, Iran, Iraq, Libya, North Korea, Sudan, or Syria has occurred while in the U.S.

3.3.2 The aircraft is not departing for the purpose of sale or transfer of operational control to nationals of Cuba, Iran, Iraq, Libya, North Korea, Sudan, or Syria; and

3.3.3 It does not carry from the U.S. any item for which an export license is required and has not been granted by the U.S. Government.

3.4 License exception AVS authorizes a civil aircraft of U.S. registry operating under an Air Carrier Operating Certificate, Commercial Operating Certificate, or Air Taxi Operating Certificate issued by the Federal Aviation Administration or conducting flights under operating specifications approved by the Federal Aviation Administration pursuant to 14 CFR Part 129 of the regulations of the Federal Aviation Administration, may depart from the U.S. under its own power for any destination provided that:

3.4.1 The aircraft does not depart for the purpose of sale, lease or other disposition of operational control of the aircraft or its equipment, parts, accessories, or components to a foreign country or any national thereof.

3.4.2 The aircraft's U.S. registration will not be changed while abroad.

3.4.3 The aircraft is not to be used in any foreign military activity while abroad; and

3.4.4 The aircraft does not carry from the U.S. any item for which a license is required and has not been granted by the U.S. Government.

3.5 License exception AVS authorizes any other operating civil aircraft of U.S. registry to depart from the U.S. under its own power for any destination, except to Cuba, Iran, Iraq, Sudan, Syria, Libya, and North Korea (flights to these destinations require a license), provided that:

3.5.1 The aircraft does not depart for the purpose of sale, lease or other disposition of operational control of the aircraft, or its equipment, parts, accessories, or components to a foreign country or national thereof.

3.5.2 The aircraft's U.S. registration will not be changed while abroad.

3.5.3 The aircraft is not to be used in any foreign military activity while abroad.

3.5.4 The aircraft does not carry from the U.S. any item for which an export license is required and has not been granted by the U.S. Government; and

3.5.5 The aircraft will be operated while abroad by a U.S. licensed pilot, except that during domestic flights within a foreign country, the aircraft may be operated by a pilot currently licensed by that foreign country.

3.6 A license authorizes the departure of the aircraft within the special limitations set forth in the license document. It is issued only on the basis of a formal application requesting the issuance of a license prior to the flight.

3.7 Once it has been determined that an export license is required, an application for the license should be submitted to the Bureau of Export Administration, U.S. Department of Commerce. An application consists of Form BXA−748P (multipurpose application). This form and information on the application process can be obtained free of charge from either the U.S. Department of Commerce in Washington or any of its District Offices. (See paragraph 4.)

3.8 Applications for validated licenses by non−U.S. citizens require that the applicant appoint an agent subject to U.S. jurisdiction to act in his/her behalf. If an emergency situation necessitates the expedition of the application process, contact the Counseling Division Staff of the Bureau of Export Administration (telephone 202−482−4811) or any Department of Commerce District Office for assistance.

GEN 1.7 Differences From ICAO Standards, Recommended Practices and Procedures

NOTE−
See GEN 1.6 for the availability of Title 14 of the U.S. Code of Federal Regulations Parts 1−199.

ANNEX 1 − PERSONNEL LICENSING	
Chapter 1	**Definitions and General Rules Concerning Licences**
Chapter 1 Reference 1.2.5.2.2	U.S. commercial pilots engaging in single-crew commercial air transport operations carrying passengers have a 12-month validity on their medical assessments regardless of age.
Chapter 1 Reference 1.2.5.2.3	U.S. commercial pilots have a 12-month validity on their medical assessments regardless of age.
Chapter 2	**Licences and Ratings for Pilots**
Chapter 2 Reference 2.2.3	U.S. student pilots must meet the requirements of an FAA Third-Class medical certificate which are equivalent to ICAO Class 2 with exceptions specified in Chapter 6 under 6.4.2.6; 6.4.2.6.1; 6.4.2.6.2; 6.4.2.9.1; 6.4.3.2 (b); 6.4.3.2.1 (c); 6.4.3.2.3; 6.4.3.4; and 6.4.3.4.1
Chapter 2 Reference 2.3.1.4	U.S. private pilots must meet the requirements of an FAA Third-Class medical certificate which are equivalent to ICAO Class 2 with exceptions specified in Chapter 6 under 6.4.2.6; 6.4.2.6.1; 6.4.2.6.2; 6.4.2.9.1; 6.4.3.2 (b); 6.4.3.2.1 (c); 6.4.3.2.3; 6.4.3.4; and 6.4.3.4.1
Chapter 2 Reference 2.4.1.4	U.S. commercial pilots must meet the requirements of an FAA Second-Class medical certificate which are equivalent to ICAO Class 1 with exceptions specified in Chapter 6 under 6.3.2.6.2; 6.3.2.9.2; 6.3.3.2 (b); 6.3.3.2.1 (c); 6.3.3.4; 6.3.3.4.1; 6.3.4.1.1.; 6.3.4.1.2
Chapter 2 Reference 2.6.1.1.	The United States minimum age is 23.
Chapter 2 Reference 2.6.1.4	U.S. airline transport pilots must meet the requirements of an FAA First-Class medical certificate which are equivalent to ICAO Class 1 with exceptions specified in Chapter 6 under 6.3.2.6.2; 6.3.2.9.2; 6.3.3.2 (b); 6.3.3.2.1 (c); 6.3.3.4; 6.3.3.4.1; 6.3.4.1.1; and 6.3.4.1.2
Chapter 3	**Licences for Flight Crew Members other than Licences for Pilots**
Chapter 3 Reference 3.2.1.5	U.S. flight navigators must meet the requirements of an FAA Second-Class medical certificate which are equivalent to ICAO Class 1 with exceptions specified in Chapter 6 under 6.3.2.6.2; 6.3.2.9.2; 6.3.3.2 (b); 6.3.3.2.1 (c); 6.3.3.4; 6.3.3.4.1; 6.3.4.1.1; and 6.3.4.1.2.
Chapter 3 Reference 3.3.1.5	U.S. flight engineers must meet the requirements of an FAA Second-Class medical certificate which are equivalent to ICAO Class 1 with exceptions specified in Chapter 6 under 6.3.2.6.2; 6.3.2.9.2; 6.3.3.2 (b); 6.3.3.2.1 (c); 6.3.3.4; 6.3.3.4.1; 6.3.4.1.1.; 6.3.4.1.2
Chapter 6	**Medical Provisions for Licencing**
Chapter 6 Reference 6.3.3.2 (b)	A specific requirement that a [spare] set of suitable correcting spectacles be kept readily available when exercising the privileges of the license is not established.
Chapter 6 Reference 6.3.3.2.1 (c)	A specific requirement that a set of suitable correcting spectacles be kept readily available when exercising the privileges of the license [with contact lenses] is not established.
Chapter 6 Reference 6.4.3.2 (b)	A specific requirement that a [spare] set of suitable correcting spectacles be kept readily available when exercising the privileges of the license is not established
Chapter 6 Reference 6.4.3.2.1 (c)	A specific requirement that a set of suitable correcting spectacles be kept readily available when exercising the privileges of the license [with contact lenses] is not established.

Chapter 6 Reference 6.5.3.2 (b)	A specific requirement that a [spare] set of suitable correcting spectacles be kept readily available when exercising the privileges of the license is not established
Chapter 6 Reference 6.5.3.2.1 (c)	A specific requirement that a set of suitable correcting spectacles be kept readily available when exercising the privileges of the license [with contact lenses] is not established.

ANNEX 2 − RULES OF THE AIR	
Chapter 1	**Definitions**
Advisory Airspace	Advisory service available in terminal areas and Class C outer area
Aerodrome control tower	In the U.S., an “aerodrome control facility” is referred to as a “tower” or “airport traffic control tower”; “aerodrome control” is referred to as “airport traffic control service.”
Aerodrome Traffic Zone	There are no more Control Zones (Airport Traffic Zones) or Airport Traffic Areas (ATA). In the 7110.65, PCG, Controlled Airspace covers the defined dimensions of airspace. Class D was formerly the ATA (normally a 5NM radius around the airport). The old Control Zones were extensions of the ATA to encompass (ILS) Approach Paths.
Airborne collision avoidance	The U.S. uses “traffic alert collision avoidance system (TCAS).” TCAS is an airborne collision avoidance system based on radar beacon signals and operates independent of ground−based equipment. TCAS−I generates traffic advisories only. TCAS−II generates traffic advisories and resolution (collision avoidance) advisories in the vertical plane.
Airborne Collision Avoidance System (ACAS)	The U.S. uses “traffic alert collision avoidance system (TCAS).” TCAS is an airborne collision avoidance system based on radar beacon signals and operates independent of ground−based equipment. TCAS−I generates traffic advisories only. TCAS−II generates traffic advisories and resolution (collision avoidance) advisories in the vertical plane.
Air−ground Control Radio Station	FAA Pilot Controller Glossary, as amended by GENOT 5/55 (10/4/05) defines (in part) Flight Service Station (FSS) as ”air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information and receive and process IFR flight plans,...provide enroute flight advisory service (Flight Watch), (and) issue airport advisories.” In the FAA, Flight Service Stations perform most air traffic air−to−ground radio functions other than the separation of aircraft.
Air−taxiing	The U.S. uses “hover taxi” for this maneuver above 100 feet above ground level (AGL) and “air taxi” below 100 feet AGL.
Area control service	The U.S. does not use the term “area control service” to indicate controlled flight in controlled areas.
Area control centre	The U.S. equivalent facility for an Area Control Centre (ACC) is an Air Route Traffic Control Center (ARTCC).
ATS route	In U.S. domestic airspace, the term “ATS route” is not used. Routes in the U.S. include VOR airways, jet routes, substitute routes, and off−airway routes. The U.S. also uses instrument departure procedures (DPs) and standard terminal arrivals (STARs).
Controlled airspace	The U.S. terms for controlled airspace have different parameters than for ICAO.
Current Flight Plan	FAA Pilot Controller Glossary (PCG) defines flight plan as “specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility.” The Pilot Controller Glossary makes a specific distinction between current flight plan and filed flight plans, defining filed flight plans as “filed...without any subsequent changes or clearances.” Therefore, the PCG definition of flight plan includes changes brought about by clearances or amendments
Danger area	The term “danger area” is not used within the U.S. or any of its possessions or territories.
Estimated off−block time	The U.S. uses the term “estimated departure time” for domestic operations.
Flight information centre	The U.S. does not operate flight information centers (FICs). In the U.S., the services provided by FICs are performed by air traffic control (ATC) facilities, flight service stations (FSSs), and rescue coordination centers (RCCs).
Ground Visibility	The U.S. defines Ground Visibility as: Prevailing horizontal visibility near the earth’s surface as reported by the United States National Weather Service or an accredited observer.

Instrument meteorological conditions	The U.S. air traffic service units use the phrase “IFR conditions.”
Level	The U.S. uses “altitude” or “flight level” rather than “level” and “cruising altitude” rather than “cruising level.’’ The term “level” is not used to mean “height,” “altitude,” or “flight level.” The U.S. only uses flight level at FL 180 and above
Movement area	In the U.S., the term “movement area” means “the runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing, hover taxiing, air−taxiing, take−off and landing of aircraft, exclusive of loading ramps and parking areas. At those airport/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.” The U.S. does not use an all−inclusive term to denote the movement area plus loading ramps and parking areas of an airport, nor does the U.S. use the term “maneuvering area’’ in any related context.
Repetitive flight plan (RPL)	The U.S. uses the term “stored flight plan” for domestic operations.
Terminal control area	In the U.S., “terminal control area” has been replaced by “Class B airspace/area.” Standard IFR services are provided to IFR aircraft operating in Class B airspace. Class B airspace CFR 14 part 71.41, exceeds TCA with more restrictive airman’s qualifications and aircraft certifications.
Total estimated elapsed time	The U.S. uses “estimated time en route” for domestic operations.
Traffic Avoidance Advice	The U.S. uses the term Traffic Advisory
Transition altitude	In U.S. domestic airspace, “transition altitude,” “layer” and “level” are not used; however, in the U.S., flight levels begin at FL 180 where the reference datum of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings. QNH and QFE altimeter settings are not provided in domestic U.S. airspace.
Visibility	The U.S. defines Visibility as: The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visibility is reported as statute miles, hundreds of feet, or meters. The U.S. identifies the following classes of visibility: Flight Visibility, Ground Visibility, Prevailing Visibility, Runway Visibility Value, and Runway Visual Range.
Visual meteorological conditions	The U.S. air traffic service units use the phrase “VFR conditions.”
Chapter 2	**Applicability of the Rules of the Air**
2.2	See difference under “Movement area.”
2.5	Except in an emergency, no pilot of a civil aircraft may allow a person who appears to be intoxicated or who demonstrates by manner or physical indications that the individual is under the influence of drugs (except a medical patient under proper care) to be carried in that aircraft.
Chapter 3	**General Rules**
3.1.8	In addition, aircraft must not be flown in formation flight when passengers are carried for hire.
3.2 Note	See difference under “Movement area.”
3.2.2.6.1	See difference under “Movement area.”
3.2.3.2 d)	The U.S. national regulations do not require aircraft on the movement area of an airport, whose engines are running, to display lights which indicate that fact from sunset to sunrise.

3.2.5	Unless otherwise authorized or required by ATC, no person may operate an aircraft within a Class B, C, or D surface area except for the purpose of landing at, or taking off from, an airport within that area. In addition, in the case of a helicopter approaching to land, avoid the flow of fixed−wing aircraft. In addition, no person may, within a Class B, C, or D surface area operate an aircraft to, from, or on an airport having a control tower operated by the U.S. unless two−way radio communications are maintained between that aircraft and the control tower.
3.3.1.2	In the U.S., ATC flight plans are not required for VFR flight in Class C, D, or E airspace.
3.3.1.2.1 d)	Requirements pertaining to filing flight plans for flights operating across U.S. borders and for identification purposes are described in 14 CFR Part 9l (Section 91.84) and Part 99.
3.3.1.2.2	The U.S. requires that domestic flight plans be submitted at least 30 minutes before departure. For international flights, the U.S. recommends that they be transmitted so that they are received by ATC authorities in each Flight Information Region (FIR) to be entered, at least 2 hours prior to entry, unless otherwise provided in that State's requirements.
3.6.1	Air traffic control clearances are not needed for VFR flight in U.S. Class C, D, or E airspace.
3.6.2.4	When meteorological conditions fall below the minimum specified for en route VFR flights, the pilot of the aircraft must not continue his/her flight in such conditions, except in emergency, beyond the extent necessary to return to his/her departure point or to the nearest suitable landing point.

3.6.5.2 (Communication Failure)	Two−way Radio Communications Failure a. It is virtually impossible to provide regulations and procedures applicable to all possible situations associated with two−way radio communications failure. During two−way radio communications failure, when confronted by a situation not covered in the regulation, pilots are expected to exercise good judgment in whatever action they elect to take. Should the situation so dictate they should not be reluctant to use the emergency action contained in 14 CFR Section 91.3(b) b. Whether two−way communications failure constitutes an emergency depends on the circumstances, and in any event, it is a determination made by the pilot. 14 CFR Section 91.3(b) authorizes a pilot to deviate from any rule in Subparts A and B to the extent required to meet an emergency. c. In the event of two−way radio communications failure, ATC service will be provided on the basis that the pilot is operating in accordance with 14 CFR Section 91.185. A pilot experiencing two−way communications failure should (unless emergency authority is exercised) comply with 14 CFR Section 91.185 quoted below 1. General. Unless otherwise authorized by ATC, each pilot who has two−way radio communications failure when operating under IFR must comply with the rules of this section.
3.6.5.2.2	In the event of two−way communications failure in the U.S., ATC service is predicated on pilot compliance with the provisions of 14 CFR Part 91 (Section 91.185). If the failure occurs in IMC, or if VFR cannot be complied with, each pilot is to continue the flight according to the following: Route a) By the route assigned in the last ATC clearance received; b) If being radar vectored, by the direct route from the point of failure to the fix, route, or airway specified in the vector clearance; c) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or d) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan. Altitude − At the **HIGHEST** of the following altitudes or flight levels **FOR THE ROUTE SEGMENT BEING FLOWN:** a) The altitude or flight level assigned in the last ATC clearance received; b) The minimum altitude/flight level as prescribed for IFR operations; or c) The altitude or flight level ATC has advised may be expected in a further clearance. IFR conditions − If the failure occurs in IFR conditions, or if subparagraph 2 above cannot be complied with, each pilot must continue the flight according to the following: (a) Route. (1) By the route assigned in the last ATC clearance received; (2) If being radar vectored, by the direct route from the point of radio failure to the fix, route, or airway specified in the vector clearance; (3) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or (4) In the absence of an assigned route of a route that ATC has advised may be expected in a further clearance by the route filed in the flight plan. (b) Altitude. At the HIGHEST of the following altitudes or flight levels FOR THE ROUTE SEGMENT BEING FLOWN: (1) The altitude or flight level assigned in the last ATC clearance received; (2) The minimum altitude (converted, if appropriate) to minimum flight level as prescribed in 14 CFR Section 91.121(c) for IFR operations; or (3) The altitude or flight level ATC has advised may be expected in a further clearance.

Basic VFR Weather Minimums

Airspace	Flight Visibility	Distance from Clouds
Class A	Not Applicable	Not Applicable
Class B	3 statute miles	Clear of Clouds
Class C	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
Class D	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
Class E Less than 10,000 feet MSL	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
At or above 10,000 feet MSL	5 statute miles	1,000 feet below 1,000 feet above 1 statute mile horizontal
Class G 1,200 feet or less above the surface (regardless of MSL altitude).		
Day, except as provided in Section 91.155(b)	1 statute mile	Clear of clouds
Night, except as provided in Section 91.155(b)	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
More than 1,200 feet above the surface but less than 10,000 feet MSL.		
Day	1 statute mile	500 feet below 1,000 feet above 2,000 feet horizontal
Night	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
More than 1,200 feet above the surface and at or above 10,000 feet MSL.	5 statute miles	1,000 feet below 1,000 feet above 1 statute mile horizontal

Chapter 4	**Visual Flight Rules**
4.1 and Table 4−1	There is no Class F airspace in the U.S. Basic VFR weather minimums are listed in the table above.
4.1 a)	Except as otherwise authorized by the appropriate air traffic control unit for special VFR flights within Class B, C, D, or E surface areas, no person may operate an aircraft under VFR when the flight visibility is less, or at a distance from clouds that is less than that prescribed for the corresponding altitude and class of airspace in the table above.
4.1 b)	**Class G Airspace**: Notwithstanding the provisions of paragraph a) of this section, the following operations may be conducted in Class G airspace below 1,200 feet above the surface: 1) **Helicopter**. A helicopter may be operated clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstruction in time to avoid collision. 2) **Airplane**. When the visibility is less than 3 statute miles but not less than 1 statute mile during night hours, an airplane may be operated clear of clouds if operated in an airport traffic pattern within one−half mile of the runway.

4.1 c)	Except as provided in 4.2, no person may operate an aircraft under VFR within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport when the ceiling is less than 1,000 feet.
4.1 d)	Except as provided in 4.2, no person may take−off or land an aircraft, or enter the traffic pattern area of an airport under VFR, within the lateral boundaries of the surface area of Class B, Class C, Class D, or Class E airspace designed for an airport: 1) unless ground visibility at that airport is at least 3 statute miles; or 2) if ground visibility is not reported at that airport, unless flight visibility during landing or takeoff, or while operating in the traffic pattern is at least 3 statute miles.
4.2	In the U.S., no person may operate an aircraft beneath the ceiling under VFR within the lateral boundaries of controlled airspace designated to the surface for an airport when the ceiling is less than 1,000 feet. No person may take−off or land an aircraft (other than a helicopter) under special VFR (SVFR) unless ground visibility is at least 1 statute mile or if ground visibility is not reported, unless flight visibility is at least 1 statute mile. The U.S. restricts the ceiling to 1,000 ft. and ground visibility of 3 miles and greater.
4.2 a)	When an appropriate ATC clearance has been received, the special weather minimums in this section apply to the operation of an aircraft in a Class B, C, D, or E surface area under VFR. 1) No person may operate an aircraft in a Class B, C, D, or E surface area under VFR except clear of clouds; 2) No person may operate an aircraft (other than a helicopter) in a Class B, C, D or E surface area under VFR unless flight visibility is at least 1 statute mile; 3) No person may take−off or land an aircraft (other than a helicopter) at any airport in a Class B, C, D or E surface area under VFR: a) unless ground visibility at that airport is at least 1 statute mile; or b) if ground visibility is not reported at that airport, unless flight visibility during landing or take−off is at least 1 statute mile.
4.3	The U.S. does not prohibit VFR flight between sunset and sunrise.
4.4	In the U.S., VFR flight is not permitted within Class A airspace designated in 14 CFR Part 71 unless otherwise authorized by ATC. In the U.S., an ATC clearance is needed for VFR flight only in Class B airspace area. The U.S. limits VFR flights up to FL 180.
4.5	The U.S. limits VFR flights up to FL 180.
4.6	In addition, anywhere, an altitude allowing, if a power unit fails, an emergency landing without due hazard to persons or property on the surface.
4.7	In addition, grid tracks are not used to determine cruising altitudes in polar areas. True tracks are used to determine cruising levels above FL 230 in the area north of Alaska bounded by the true North Pole to 72°00′00″N, 141°00′00″W; to 72°00′00″N, 158°00′00″W; to 68°00′00″N, 168°58′23″W; to point of beginning. The U.S. has named this area the Anchorage Arctic CTA/FIR for national reference purposes.
4.8	In U.S. Class C and D airspace/areas, an ATC clearance is not required for VFR flights.
Chapter 5	**Instrument Flight Rules**
5.1.2	In the U.S., minimum altitudes for IFR flights are 2,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown in mountainous terrain and 1,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown in non−mountainous terrain.
5.2.2	See difference under paragraph 4.7.
5.3.1	See difference under paragraph 4.7.

Further differences which exist by virtue of the fact that the Annex contains no comparable standards for the U.S. national regulations.	1) The regulations covering the selection and use of alternate airports in respect to ceiling and visibility minima, require that: Unless otherwise authorized by the FAA Administrator, no person may include an alternate airport in an IFR flight plan unless current weather forecasts indicate that, at the estimated time of arrival at the alternate airport, the ceiling and visibility at that airport will be at or above the alternate airport weather minima.
	2) Operation under IFR in Class A, B, C, D, or E airspace malfunction reports: a) The pilot−in−command of each aircraft operated in Class A, B, C, D or E airspace under IFR must report as soon as practical to ATC any malfunctions of navigational, approach, or communication equipment occurring in flight. b) In each report the pilot−in−command must include: 1) aircraft identification. 2) equipment affected. 3) degree to which the capability of the pilot to operate under IFR in the ATC system is impaired; and 4) nature and extent of assistance desired from ATC.
	3) When an aircraft has been cleared to maintain ‘‘VFR conditions on top,’’ the pilot is responsible to fly at an appropriate VFR altitude, comply with VFR visibility and distance from cloud criteria, and to be vigilant so as to see and avoid other aircraft.
	4) Aircraft speed: a) Unless otherwise authorized by the FAA Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 kt (288 m.p.h.). b) Unless otherwise authorized or required by ATC, no person may operate an aircraft within Class B, C, or D surface area at an indicated airspeed of more than 200 kt (230 m.p.h.). This paragraph 4b) does not apply to operations within Class B airspace. Such operations must comply with paragraph 4a) of this section. c) No person may operate an aircraft in the airspace underlying Class B airspace, or in a VFR corridor designated through Class B airspace, at an indicated airspeed of more than 200 kt (230 m.p.h.). d) If the minimum safe airspeed for any operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

	5) Operating rules and pilot and equipment requirements for flight in Class B airspace. a) Operating rules. No person may operate an aircraft within Class B airspace except in compliance with the following rules: 1) No person may operate an aircraft within Class B airspace unless that person has received an appropriate authorization from ATC prior to operation of that aircraft in that area. 2) Unless otherwise authorized by ATC, each person operating a large turbine engine−powered airplane to or from a primary airport must operate at or above the designated floors while within the lateral limits of the Class B airspace. 3) Any person conducting pilot training operations at an airport within Class B airspace must comply with any procedures established by ATC for such operations in Class B airspace. b) Pilot requirements. No person may take off or land a civil aircraft at an airport within Class B airspace or operate a civil aircraft within Class B airspace unless: 1) The pilot−in−command holds at least a private pilot certificate; or 2) The aircraft is operated by a student pilot who has met the requirements (14 CFR Part 61 (Section 61.95)). c) Communications and navigation requirements. Unless otherwise authorized by ATC, no person may operate an aircraft within Class B airspace unless that aircraft is equipped with: 1) For **IFR** operations, an operable VOR or TACAN receiver, and 2) For **all** operations, an operable two−way radio capable of communications with ATC on appropriate frequencies for that Class B airspace. d) Transponder requirements. No person may operate an aircraft in Class B airspace unless the aircraft is equipped with the applicable operating transponder and automatic altitude reporting equipment.
	6) Operating rules and pilot and equipment requirements for operating in Class C airspace. a) General. For the purpose of this section, the primary airport is the airport designated in 14 CFR Part 71, for which the Class C airspace is designated. A satellite airport is any other airport within the Class C airspace. b) Deviations. An operator may deviate from any provisions of this section under the provisions of an ATC authorization issued by the ATC facility giving jurisdiction of the Class C airspace. ATC may authorize a deviation on a continuing basis or for an individual flight, as appropriate. c) Arrivals and overflights. No person may operate an aircraft in Class C airspace unless two−way radio communication is established with the ATC facility having jurisdiction over the Class C airspace prior to entering that area and is thereafter maintained with the ATC facility having jurisdiction over the Class C airspace while within that area. d) Departures. No person may operate an aircraft within Class C airspace except as follows: 1) From the primary airport or satellite airport with an operating control tower, unless two−way radio communication is established and maintained with the control tower, and thereafter as instructed by ATC while operating in the Class C airspace. 2) From a satellite airport without an operating control tower, unless two−way radio communication is established as soon as practical after departing and thereafter maintained with the ATC facility having jurisdiction over the Class C airspace. e) Traffic patterns. No person may take off or land an aircraft at a satellite airport within Class C airspace except in compliance with FAA arrival and departure traffic patterns. f) Equipment requirements. Unless otherwise authorized by the ATC facility having jurisdiction over the Class C airspace, no person may operate an aircraft within Class C airspace unless that aircraft is equipped with the applicable equipment specified in 14 CFR Part 91 (Section 91.215).

	7) Except for persons operating gliders below the floor of Class A airspace, no person may operate an aircraft in Class B, C, D, or E airspace of the 48 contiguous States and the District of Columbia above 10,000 feet MSL, excluding that airspace at and below 2,500 feet AGL, unless that aircraft is equipped with an operable radar beacon transponder having at least a Mode 3/A 4096−code capability, replying to Mode 3/A interrogation with the code specified by ATC, and automatic altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by transmitting pressure altitude information in 100−foot increments.
	8) Compliance with ATC clearances and instructions: a) When an ATC clearance has been obtained, no pilot−in−command may deviate from that clearance, except in an emergency, unless an amended clearance is obtained. A pilot−in−command may cancel an IFR flight plan if that pilot is operating in VFR weather conditions outside of Class A airspace. If a pilot is uncertain of the meaning of an ATC clearance, the pilot must immediately request clarification from ATC. b) Except in an emergency, no person may operate an aircraft contrary to an ATC instruction in an area in which ATC is exercised. c) Each pilot−in−command who, in an emergency, deviates from an ATC clearance or instruction must notify ATC of that deviation as soon as possible. d) Each pilot−in−command who is given priority by ATC in an emergency must submit a detailed report of that emergency within 48 hours to the manager of that ATC facility, if requested by ATC. e) Unless otherwise authorized by ATC, no person operating an aircraft may operate that aircraft according to any clearance or instruction that has been issued to the pilot of another aircraft for radar ATC purposes.
Appendix 1	**Signals**
4.1.1	The flashing white signal to aircraft in flight, meaning ‘‘land at this aerodrome and proceed to apron’’ is not used in the United States. In addition, the alternating red and green signal to aircraft on the ground or in flight means exercise extreme caution.

PANS − RAC − DOC 4444	
There are several substantive differences between the U.S. procedures and those of ICAO, in addition to some minor variations in detail which are not considered significant. These differences are the result of initiatives and/or refinements which the U.S. has effected in the interest of improving the safety and efficiency of air traffic services.	
Part I	**Definitions**
Airborne collision avoidance system	The U.S. uses traffic alert and collision avoidance system (TCAS).
AIRMET information	In the U.S., AIRMET stands for Airman's Meteorological Information which is in−flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMETs concern weather of less severity than that covered by SIGMETs or convective SIGMETs. AIRMETs cover moderate icing, moderate turbulence, sustained winds of 30 kt or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement.
Air−report	The U.S. does not normally use the term "air−report.'' Pilot weather reports (PIREPs), position, and operational reports are used. PIREPs include reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, and other conditions pertinent to flight safety. They may include information on ceilings, visibility, thunderstorms, icing of light degree or greater, wind shear and its effect on airspeed, or volcanic ash clouds, but do not usually include air temperature.
Air−taxiing	In the U.S., the term "hover taxi" is sometimes used to indicate the ICAO term "air−taxiing." Additionally, in the U.S., air taxi is used to indicate certain commercial aircraft operations. For those operations, usually a special call sign is used, or the prefix "Tango" is added to the aircraft call sign.
ALERFA	The U.S. does not use the code words ALERFA, DETRESFA, and INCERFA to designate an alert phase, a distress phase, or an uncertainty phase in domestic airspace. The U.S. uses information request (INREQ) and alert notice (ALNOT) in domestic airspace.
Area control service	The U.S. does not use the term "area control service" to indicate controlled flight in controlled areas.
ATS route	In U.S. domestic airspace, the term "ATS route" is not used. Routes in the U.S. include VOR airways, jet routes, substitute routes, off−airway routes, RNAV routes and colored airways. The U.S. also uses instrument departure procedures (DPs), and standard terminal arrivals (STARs).
Automatic dependent surveillance (ADS)	The U.S. has not yet published ATS procedures for the use of Automatic Dependent Surveillance (ADS).
Control zone	The U.S. uses "surface area" in place of the ICAO term "control zone." Surface area is defined as the airspace contained by the lateral boundary of the Class B, C, D or E airspace designated for an airport that begins at the surface and extends upward.
Controlled airspace	The U.S. uses the following definition of controlled airspace found in 14 CFR Section 1.1: "Controlled airspace means an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification."
Cruising level	The U.S. uses the term "cruising altitude."
Decision altitude	Approach with vertical guidance (VNAV).
DETRESFA	See ALERFA.
Flight information centre	In the U.S., the services provided by flight information centers (FICs) are conducted by air traffic control (ATC) facilities, flight service stations (FSSs), and rescue coordination centers (RCCs).

Glide path	The U.S. uses "glideslope" rather than "glide path" although the terms are sometimes interchangeable. For the U.S., a glideslope provides vertical guidance for aircraft during approach and landing.
Holding point	The U.S. uses "holding fix" rather than "holding point."
Holding procedure	In the U.S., a hold procedure is also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
INCERFA	See ALERFA.
Level	The U.S. uses "altitude" or "flight level" rather than "level."
Movement area	In the U.S., the "movement area" is equivalent to the ICAO "maneuvering area" which does not include parking areas.
Pilot−in−Command	Designated by operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.
Slush	In the U.S., "slush" is not used as a weather phenomena.
Standard instrument arrival (STAR)	The U.S. uses the acronym STAR to define a standard terminal arrival.
Standard instrument departure (SID)	The U.S. uses the term departure procedure (DP) in lieu of SID.
Stopway	The U.S. does not define a stopway as a rectangular area.
Taxi−holding position	In the U.S., "line up and wait" means taxi onto the departure runway in take−off position and hold while the ICAO "taxi−holding position" or "taxi−holding point" is a designated position that provides adequate clearance from a runway.
Terminal control area	In the U.S., the term "terminal control area" has been replaced by "Class B airspace." Standard IFR services should be provided to IFR aircraft operating in Class B airspace.
Track	The U.S. uses the term "course" instead of "track."
Transition altitude, transition layer, and transition level	In U.S. domestic airspace, transition altitude, layer, and level are not used. U.S. flight levels begin at FL 180 where a barometric altimeter setting of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings.
Visibility	Definitions are different.
Visual approach	In the U.S., aircrews may execute visual approaches when the pilot has either the airport or the preceding aircraft in sight and is instructed to follow it.
Part IV	**General Provisions**
3.2.1.1	Transfer of control points vary depending on numerous factors.
3.2.1.3	Transfer of control varies.
3.3.1a	The U.S. does not "release" aircraft. Handoff is used.
4.1	In the U.S., flight information and alerting services are provided by ATC facilities, FSSs, and RCCs.
5.7.5.1	The flight crew must read back to the air traffic controller safety−related parts of ATC clearances.
6.1.5	Mach speeds at or above 7,600 Meters (FL 250).
6.3.6	Only minor speed reductions of 20 knots should be used on intermediate or final approach.
6.3.7	Speed control after 7KM (4NM) should not be applied.
8, 8.4	The U.S. uses a flight plan format different from the ICAO model discussed in Appendix 2. The U.S. ATS facilities will transmit ICAO repetitive flight plans (RPLs) even though a different format is used for stored flight plans.

9.3	ATS units are not required to advise a pilot who has canceled an IFR flight plan that IMC conditions are likely to be encountered along the route of flight; however, if a pilot informs a controller of a desire to change from IFR to VFR, the controller will request that the pilot contact the appropriate FSS.
10.2.2	Standard IFR services should be provided to IFR aircraft operating in Class B airspace. U.S. Class B airspace includes a speed restriction of 250 kt indicated airspeed or less.
10.2.3	U.S. ATS controllers do not normally include clearance for transonic acceleration in their ATC clearances.
12.1.1, 12.1.1.1, 12.2	In U.S. domestic airspace, transition altitude, layer, and level are not used. U.S. flight levels begin at FL 180 where a barometric altimeter setting of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings. QNH and QFE altimeter settings are not provided in domestic U.S. airspace.
13.1	In the U.S., the word “heavy” is used in all communications with or about heavy jet aircraft in the terminal environment. In the en route environment, “heavy” is used in all communications with or about heavy jet aircraft with a terminal facility, when the en route center is providing approach control service, when the separation from a following aircraft may become less than five miles by approved procedure, and when issuing traffic advisories.
13.4.1	Flight Progress Strips must be retained for at least 30 days.
14.3, 14.4	The U.S. has not yet published ATS procedures for the use of Automatic Dependent Surveillance (ADS).
15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 16	The U.S. does not normally use the term “air−report.” Pilot weather reports (PIREPs), position, and operational reports are used. PIREPs include reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, and other conditions pertinent to flight safety. They may include information on ceilings, visibility, thunderstorms, icing of light degree or greater, wind shear and its effect on airspeed, or volcanic ash clouds, but do not usually include air temperature.
18	The U.S. has procedures for a duplicate aircraft identification watch and notification to airline operators but does not publish national procedures for on−the−spot temporary changes to aircraft call signs in accordance with ICAO guidelines.
19	The U.S. uses traffic alert and collision avoidance system (TCAS). U.S. controllers are not to issue control instructions that are contrary to the TCAS resolution advisory (RA) procedure that a crew member advises is being executed.
Part V	**Separation Methods and Minima**
	Remark: The U.S. does not use the term “area control service” to indicate controlled flight in controlled areas.
1.1	In U.S. airspace, only conflict resolution (not separation) is provided between IFR and VFR operations. Separation is provided between IFR and Special VFR (SVFR) aircraft only within the lateral boundaries of Class B, C, D, or E control zones (the U.S. term is surface areas) below 10,000 feet MSL.
3.4.1	U.S. rules allow assignment of altitude to second aircraft after first aircraft has been issued climb/descent and is observed or reports leaving that altitude.
5.2	Whenever the other aircraft concerned are within 5 minutes flying time of the holding area.
8	The U.S. uses the term “course” instead of “track.” “Reciprocal” courses are sometimes referred to as “opposite” courses. The wording of the definitions for U.S. *same*, *crossing*, or *opposite/reciprocal* courses differs from the ICAO worded definitions, but the intent appears to be the same.
8.2.1.1, 8.3.1.1.1	The U.S. uses 22 kt instead of 20 kt and 44 kt instead of 40 kt.
8.4.1	The U.S. does not conduct direct pilot−controller high frequency (HF) communications. The U.S. is establishing direct pilot−controller data link communications where HF is currently being used.

14.1	In U.S. Class A and B airspace, separation is provided for all aircraft. In U.S. Class C airspace, separation is provided between IFR and SVFR aircraft; conflict resolution is provided between IFR and VFR operations.
17.3	In the U.S., if the communications failure occurs in IFR conditions, or if VFR cannot be complied with, each pilot must continue the flight according to the following requirements: <u>Route</u> a) By the route assigned in the last ATC clearance received; b) If being radar vectored, by the direct route from the point of failure to the fix, route, or airway specified in the vector clearance; c) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or d) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan. <u>Altitude</u> − At the highest of the following altitudes or flight levels for the route segment being flown: a) The altitude or flight level assigned in the last ATC clearance received; b) The minimum altitude as prescribed in 14 CFR Part 91 (Section 91.121(c)) for IFR operations; or c) The altitude or flight level ATC has advised may be expected in a further clearance.
Part VI	**Separation in the Vicinity of Aerodromes**
5.7.1	Arriving aircraft − delay of 10 minutes or more.
5.8.1	Onward clearance time.
7.3.1.2	Parallel approaches, separate radar controllers
7.3.2.9	PAOAS Criteria.
7.3.2.9	45 degree track.
7.3.2.10	Both controllers are advised when visual separation is applied.
7.3.5.3	SRA
9	In the U.S., aircrews may execute visual approaches when the pilot has either the airport or the preceding aircraft in sight and is instructed to follow it. A contact approach is one wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport by visual reference in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.
15	Except where a "runway use" program is in effect, in the U.S. the runway used will be the one most nearly aligned with the wind when 5 kt or more, or the "calm wind" runway when less than 5 kt unless use of another runway will be operationally advantageous or is requested by a pilot.
Part VII	**Aerodrome Control Service**
2.2	When neither communications nor radar contact can be established for 30 minutes (or prior, if appropriate), U.S. controllers will consider an aircraft overdue and will initiate overdue aircraft procedures including reporting to the ARTCC or FSS.
5.3.1.1.2	Taxi clearance.
6.1.2	In the U.S., airport lighting is not used for en route navigation.
8.4.3	Takeoff clearance must include the designator of the runway.
9.3.1	Landing clearance must include the designator of the runway.
10.3	In the U.S., "line up and wait" means taxi onto the departure runway in takeoff position and hold while the ICAO "taxi−holding position" or "taxi−holding point" is a designated position that provides adequate clearance from a runway.

10.5, 10.5.1	In the U.S., the term “hover taxi” is sometimes used to indicate the ICAO term “air−taxiing.” In the U.S., air−taxiing is the preferred method for helicopter movements on airports provided ground operations/conditions permit.
11.2.1	In the U.S., for movements of other than aircraft traffic (i.e., vehicles, equipment, and personnel), steady green means cleared to cross, proceed, go; flashing green is not applicable; flashing white means return to starting point on airport; and alternating red and green means a general warning signal to exercise extreme caution.
11.2.2	U.S. controllers do not normally flash runway or taxiway lights.
15.1, 15.2	In the U.S., landing clearance to a succeeding aircraft in a landing sequence need not be withheld if the controller observes the positions of the aircraft and determines that prescribed runway separation will exist when the aircraft crosses the landing threshold. Controllers issue traffic information to the succeeding aircraft if it has not previously been reported.
16	ICAO aircraft wake turbulence categories (heavy, medium, light) and FAA weight classes (heavy, large, small) differ. Also, for landing aircraft, wake turbulence separation is defined differently. The U.S. makes special provisions for any aircraft landing behind a B−757 (4 miles for a large aircraft behind or 5 miles for a small aircraft behind).
17	Special VFR operations may be conducted in the U.S. under the following weather minimums and requirements below 10,000 feet MSL within the airspace contained by the upward extension of the lateral boundaries of the controlled airspace designated to the surface for an airport. These minimums and requirements are found in 14 CFR Section 91.157. Special VFR operations may only be conducted: (1) With an ATC clearance; (2) Clear of clouds; (3) Except for helicopters, when flight visibility is at least 1 statute mile; and (4) Except for helicopters, between sunrise and sunset (or in Alaska, when the sun is 6 degrees or more below the horizon) unless: (i) The person being granted the ATC clearance meets the applicable requirements for instrument flight; and (ii) The aircraft is equipped as required in 14 CFR Sec. 91.205(d). No person may take off or land an aircraft (other than a helicopter) under special VFR: (1) Unless ground visibility is at least 1 statute mile; or (2) If ground visibility is not reported, unless flight visibility is at least 1 statute mile.
Part VIII	**Radar Services**
6.5.2	The U.S. has not implemented cold temperature corrections to the radar minimum vectoring altitude chart.
7.4.4.1	See Part VII, Aerodrome Control Service, 16.
7.6	U.S. ATS units do not accept aircraft speeds in metric terms nor do they use the term “minimum clean speed.” The U.S. does use phrases such as “maintain maximum forward speed” or “maintain slowest practical speed.”
9.3.5, 9.3.6	The U.S. normally uses “glideslope” rather than “glide path” although they are sometimes interchangeable. For the U.S., a glideslope provides vertical guidance for aircraft during approach and landing.
Part IX	**Flight Information and Alerting Service**
1.3.2	See Part IV, General Provision, 15.1.
1.3.7	The U.S. does not have special procedures for the transmission of information to supersonic aircraft.
1.4.1, 1.4.2, 1.4.3	Class F airspace is not used in the U.S. Traffic advisories are provided in Class C airspace and, workload permitting, in Class D, Class E, and Class G airspace.
2.1.2, 2.1.3, 2.2.1	The U.S. does not use “operations normal” or “QRU” messages. U.S. controllers are not normally familiar with the term “uncertainty phase.”

Part X	Co−ordination
3.2.10	See Part IV, General Provision, 14.3.
3.3.1.1, 3.3.2.1	Except for a VFR aircraft practicing an instrument approach, an IFR approach clearance in the U.S. automatically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. No additional coordination is normally needed between the approach and en route controllers. Once an aircraft commences a missed approach, it may be radar vectored.
Part XI	**Air Traffic Services Messages**
1.3	The existing U.S. ATS automation system does not process logical acknowledgment messages (LAMs).
4.2.2.2.1	See Part IV, General Provision, 8.
4.2.3.1, 4.2.3.6, 4.2.4, 4.2.5.1, 4.2.5.4	See 1.3, above.
4.2.5.5	See Part IV, General Provision, 15.1.
4.3.1.2.1	In the U.S., traffic information messages include the position of the traffic (aircraft concerned).
4.3.2.2.1, 4.3.2.3.5	U.S. controllers do not use the term “CAVOK.” However, the ceiling/sky condition, visibility, and obstructions to vision may be omitted if the ceiling is above 5,000 feet and the visibility is more than 5 miles.
4.3.2.2.1, 4.3.2.3.2, 4.3.2.3.3	U.S. controllers do not give wind speed, visibility, or RVR/RVV values in metric terms. RVR values are given in 100− or 200−foot increments while RVV values are given in $^1/_4$−mile increments.
4.3.2.3.1	In the U.S., the criteria for a variable wind is wind speed greater than 6 kt and direction varies by 60 degrees or more. If the wind is $\geq$1 kt but $\leq$6 kt, the wind direction may be replaced by “VRB” followed by the speed or reported as observed. “VRB” would be spoken as “wind variable at <speed>.”
4.3.2.3.3.1	RVR values between 400m and 800m in increments of 50m.
4.3.2.3.4.1	For weather phenomena, the U.S. uses “ice crystals” instead of “diamond dust” and does not use the term “dust devils.”
4.3.2.3.4.2	Additionally, the U.S. uses “supercooled” (or freezing) and “partial” as descriptors for weather phenomena.
4.3.2.3.5	In the U.S., CLR is used at automated stations for SKC when no clouds below 12,000 feet are reported. SCT indicates cloud coverage between 3−4 oktas; FEW indicates cloud coverage >0 but $\leq$2 oktas.
4.3.2.3.5.1	Abbreviation NSC.
4.3.2.3.6	In the U.S., since the Celsius scale is not as finely graduated as the Fahrenheit scale, the hourly temperature and dew point to the nearest tenth of a degree will be encoded in the additive data section of METAR remarks.
4.3.2.3.7	In the U.S., an “A” precedes the altimeter which is given in inches of mercury.
Part XII	**Phraseologies**
2.3	In the U.S., “proceed” or “hold” may be used for aircraft or equipment/vehicle/personnel operations, while “taxi” and “cleared” should only be used as appropriate for aircraft instructions.
2.4 2.7	In the U.S., conditional clearances are not usually issued. However, traffic that may affect the clearance is usually issued to the aircraft with the clearance. Restricted clearances may also be issued.
2.5, 2.6, 2.7, 2.8	In the U.S., pilots may acknowledge some clearances, instructions, or other information by using “wilco,” “roger,” “affirmative,” or other words or remarks. If the pilot reads back information, the controller should ensure the readback is correct or make corrections as appropriate.
2.8, 3.1.1 3.1.2	The U.S. uses “altitude” or “flight level” rather than “level”; and “cruising altitude” rather than “cruising level.” The term “level” is not used to mean “height,” “altitude,” or “flight level” in the U.S. The U.S. sometimes uses “altitude” to mean “altitude” or “flight level.”

3.1.1, 3.1.2	U.S. ATS units do not normally accept aircraft speeds or altitudes in metric terms nor do they use the term “minimum clean speed.” The U.S. does not use the term “level” in lieu of “flight level” or “altitude.” The U.S. also uses the phrases “maintain the highest/lowest practical speed” and “increase or reduce to a specified speed or by a specified number of knots.”
3.1.2	See Part IX, Flight Information and Alerting Service, 1.3.7. Also, the term “step climb” is not used in the U.S. The word “immediately” is used only when expeditious compliance is required to avoid an imminent situation. Instead of “maintain own separation and VMC ‘from,’ ‘above,’ or ‘below’ . . . ,” U.S. controllers say “maintain visual separation ‘from’ that traffic.” For TCAS resolution advisories in the U.S., pilots would advise “clear of conflict, returning to . . . .”
3.1.2a,ii	To and maintain block (level) to (level).
3.1.4	See Part IV, General Provision, 18.
3.1.6	See Part XI, ATS Messages, 4.3.2.2.1.
3.1.6	See Part IV, General Provision, 12.1.
3.1.6 Note 2	“Midpoint” and “rollout” may be omitted.
3.1.9i	Temperature issued with Braking Action.
3.2.1	The U.S. uses the phraseology “rest of route remains unchanged.”
3.3.1	Instead of “track,” U.S. controllers would advise pilots to “fly a (degree) bearing/azimuth from/to (fix) until (time)” or “until reaching (fix or altitude),” and if required, “before proceeding on course.”
3.4.7	See Part IV, General Provision, 12.1.
3.4.8	See Part VII, Aerodrome Control Service, 10.3. Also, U.S. controllers do not use the term “backtrack.”
3.4.11	The U.S. does not have additional phraseology to stop a take−off after an aircraft has commenced take−off roll.
3.4.13	See 3.3.1, above.
3.4.14	See Part IV, General Provision, 12.1.
3.4.16	The U.S. does not use the term “low pass” for a clearance.
4.1.1	U.S. controllers do not use the phrases “identified” or “not identified [position]” to replace “radar contact [position].”
4.1.3	U.S. controllers do not say “closing [slowly (or quickly)] [from the left (or from the right)]” nor “heading is good” nor “rate of descent is good” nor do they give “(number) meters left (or right) of course or too high or too low.” In case of elevation failure, U.S. controllers advise “no glidepath information available . . . .” instead of “elevation element unserviceable . . . .”
4.1.5	The U.S. does not use the phraseology “Start and stop all turns on the command ‘now’.”
4.1.5c	Start and stop all turns on the command “NOW.”
4.1.6	See 3.1.1, above.
4.1.10	U.S. controllers say “radar service terminated” not “radar control terminated.” U.S. controllers do not say “will shortly lose identification” or “identification lost.”
4.1.11	The U.S. does not use the same phraseology for secondary radar failures. The U.S. does use (name of facility) beacon interrogator inoperative/malfunctioning. Primary radar failure is covered where secondary radar service is still available with the note that traffic advisories available on radar transponder aircraft only.
4.2.1	U.S. controllers would use “airport” rather than “field.”
4.2.2	In the U.S., pilots are not told “you will intercept (radio aid or track) (distance) from (significant point or touchdown).” Neither are pilots informed “closing from left (or right) [report established]” nor “this turn will take you through (aid) [reason]” nor “taking you through (aid) [reason].” Also, see 3.1.1, above.
4.2.3	U.S. ATS units use “course” rather than “track.”

4.2.3	The U.S. uses the phraseology for a traffic alert in lieu of the phrase “to avoid traffic”; however, the sense of urgency is the same as the word “immediately” is used by both PANS ATM and FAA.
4.2.4.1	U.S. controllers say “this will be a P−A−R/surveillance approach to runway (number) or airport/runway (number) or airport/heliport.” U.S. controllers do not say “approach completed . . . .” U.S. controllers say “your missed approach procedure is (missed approach procedure)” and, if needed, “execute missed approach.”
4.2.4.2	For PAR approaches, U.S. controllers say “begin descent” and for surveillance approaches, U.S. controllers say “descend to your minimum descent altitude.”
4.2.4.4	The wheels down check is only done by U.S. military ATS units; the phraseology is “check wheels down” for military tower controllers and “wheels should be down” for military ATS radar units.
4.2.4.5	Although U.S. controllers say “go around,” they do not say “continue visually or go around.” In that case, they would say “if runway, approach/runway lights, not in sight, execute missed approach” or “if not visual, (advise you) execute missed approach.” Also, see 4.2.4.1, above.
4.2.5.1	See 4.2.4.1, above.
4.2.5.3	See Part VIII, Radar Services, 9.3.5 and 4.1.3, above.
4.2.5.4	See 4.1.3 and 4.2.4.2, above.
4.2.5.7	See 4.2.4.1, above.
4.2.5.8	See 4.2.4.5, above.
4.3.3	When a transponder appears inoperative or malfunctioning, U.S. controllers would instruct “ . . . reset transponder, squawk” or “ . . . your transponder appears inoperative/malfunctioning, reset, squawk . . . .”
4.3.6, 4.3.8	U.S. controllers do not say “squawk Charlie.” U.S. controllers may ask a pilot to “ident” or “squawk standby” or “squawk low/normal” or “squawk MAYDAY on 7700” or “squawk altitude.”
4.3.9	For aircraft above FL 180, U.S. controllers would say, “confirm using two niner niner two as your altimeter setting, verify altitude” or “stop altitude squawk” “stop altitude squawk; altitude differs by (number) feet.” U.S. controllers would not say “stop squawk Charlie.”
4.3.10	See 4.3.6, above.
4.3.11, 4.3.12	See 4.3.9, above.
4.3.13	U.S. controllers would say “verify at (altitude)” and/or “verify assigned altitude.”
6.1.1	U.S. controllers would issue MEA/MVA/MOCA/MIA instead of QNH.
Part XIV	**Procedures Related to Emergenices, Communication Failure and Contingencies**
3	The U.S. has organized this material from the perspective of the controller. ICAO has outlined information the pilot can expect to provide.
4.3	The U.S. uses 2,000 feet above the highest obstacle and for separation from other aircraft, 1,000 feet above or 2,000 feet below and 5 miles. This includes VFR aircraft.
6.1	The U.S. does not have a section pertaining to emergency separation.
6.3	As previously covered in past differences, the U.S. uses TCAS. U.S. orders speak to controller actions when advised of an aircraft responding to a resolution alert (RA).
Appendix 1	**Instructions for Air−reporting by Voice Communications**
AIREP Form of Air−report	See Part IV, General Provision, 15.1.

Appendix 2	**Flight Plan**
	See Part IV, General Provision, 8.
2.2 (Item 15)	U.S. ATS units do not accept cruising speeds nor filed altitudes/flight levels in metric terms. The U.S. accepts filed Mach Number expressed as M followed by 3 figures.
2.2 (Item 18)	The U.S. requires filed FIR boundary designators and accumulated estimated elapsed times to such points or FIR boundaries in the sequence and form as prescribed in 2.2, Item 18 of Doc 4444, Appendix 2.
Appendix 3	**ATS Messages**
1.1.1	See Part XI, ATS Messages, 1.3.
1.6.2	See Part XII, Phraseologies, 2.8.
1.8.1 (Field Type 3), (Field Type 15), and (Field Type 18).	See Part XI, ATS Messages. 1.3. See Appendix 2, Flight Plan, 2.2 (Item 15) and 2.2 (Item 18).
2.1, 2.4.5, 2.5	See Part XI, ATS Messages 1.3.
Attachment B	**This section now appears in the Air Traffic Services Planning Manual (Doc 9426).**
3.2 (Item 15)	See Appendix 2, Flight Plan, 2.2 (Item 15).
3.2 (Item 18)	See Appendix 2, Flight Plan, 2.2 (Item 18).

ANNEX 3 − METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION	
PART I (Core SARPs)	
Chapter 2	**General Provisions**
2.1.5	The United States has its own standards on the qualifications and training of meteorological personnel providing service for international air navigation.
2.2	The United States has not instituted an ISO 9000 series of quality assurance standards for meteorological services. This difference is applicable to other subsequent paragraphs in 2.2.
2.3.3	There are no provisions to notify the meteorological office of flight schedules, delays, or cancellation of flights.
Chapter 3	**World Area Forecast System and Meteorological Offices**
3.4.2 g)	United States MWO's do not supply information received concerning the accidental release of radioactive material into the atmosphere to associated ACC/FIC.
Chapter 4	**Meteorological Observations and Reports**
4.3.2 a)	The United States does not issue local routine reports or local special reports. This difference is applicable to subsequent paragraphs that relate to the provision of local routine and special reports in Annex 3.
4.5.1 d)	This field is also used to denote a correction to the METAR/SPECI by "COR". This difference is also applicable to Table A3−2, METAR and SPECI.
4.6.2.1	The United States reports visibility in statute miles. This is also applicable to Table A3−5, Ranges and resolution for numerical elements included in METAR and SPECI. This difference is also applicable to Table A3−2, METAR and SPECI.
4.6.3.3	RVR values in the METAR/SPECI code forms are reported in feet (FT). This is also applicable to Table A3−5, Ranges and resolution for numerical elements included in METAR and SPECI. This difference is also applicable to Table A3−2, METAR and SPECI.
4.6.3.4	U.S. practice is to report only the touchdown zone in the METAR. This difference is also applicable to Table A3−2, METAR and SPECI.
4.6.7	The United States provides atmospheric pressure in inches of mercury. This is also applicable to Table A3−5, Ranges and resolution for numerical elements included in METAR and SPECI.
Chapter 5	**Aircraft observations and reports**
5.5	Urgent Pilot Reports (UUA) are used in lieu of Special Aircraft observations, to include Hail (GR, GS), Low Level Wind Shear (within 2000ft of surface), severe icing, severe extreme turbulence, tornado, funnel cloud or water spout (FC), and volcanic eruption and/or volcanic ash. In addition, Route Pilot Reports and UAA identify the location of the weather phenomenon by NAVAIDS.
Chapter 6	**Forecasts**
6.3	Landing forecasts are provided by the TAF.
6.3.3	The United States does not provide trend forecasts as part of the METAR or SPECI. This difference is also applicable to Table A3−2, METAR and SPECI. This difference is also applicable to App 4 Sec 2 that defines 'Criteria Related to Trend Forecasts'.
6.4	Takeoff forecasts are provided by the TAF. This difference is also applicable to App 4 Sec 3, 'Criteria Related to Forecasts for Take−Off'.

6.5	The United States provides an Area Forecast (FA) in place of a GAMET. AIRMETs are issued every 6 hours on a scheduled basis. The FA and AIRMET are valid from the surface to FL450. The FA and AIRMET formats differ from Table A5−4 and Table 6−1. Specifically, the FA are issued three times a day in the United States, with the exception of Alaska and Hawaii where they are issued four times a day. They are valid for a 12−hour period beginning 1 hour after issuance and have an 18−hour outlook. This is also applicable to Part 1: 7.2, Part II, Appendix 5: 4, Part II, Appendix 6:2.1, and Part II, Appendix 8: 4.1.2 (use of templates.)
Chapter 7	**SIGMET and AIRMET Information, Aerodrome Warnings and Wind Shear Warnings**
7.2.3	United States practice is to issue an AIRMET every six hours on a scheduled basis. The United States is developing capabilities to issue an AIRMET on a scheduled basis every 3 hours, which would exceed the SARP standard that an AIRMET is not to be issued more than every 4 hours.
7.4.1	The United States does not provide wind shear warnings. The United States believes wind shear alerts are timelier to flight crews in landing and takeoff than wind shear warnings and thus provide a greater level of safety. In addition, the information is duplicative in nature in that wind shear warnings could be delayed while wind shear alerts are provided via automated systems that allow for immediate data link to flight crews through ATS systems. This difference is also applicable to App 6: 6.2.
Chapter 9	**Service for operators and flight crew members**
9.2.3 & 9.2.4	United States meteorological offices have no means to communicate directly to flight crews if there is a divergence in the forecast from what is provided in the flight document folder.
9.3.3	United States meteorological offices have no means to provide updates to flight document folders or to contact the operator.
PART II	**APPENDICES and ATTACHMENTS**
APPENDIX 3	**Technical specifications related to meteorological observations and reports**
2.2	The United States does not use the term CAVOK in meteorological reports. This difference is also applicable to Table A3−2, METAR and SPECI.
2.3.1 c)	The U.S. does not prepare SPECI for changes in air temperature.
2.3.2 a)	U.S. practices require SPECI for wind shift when wind direction changes by 45 degrees or more in less than 15 minutes and the wind speed is 10 knots or more throughout the wind shift.
2.3.2 b)	U.S. practices do not require SPECI for increases of mean surface wind speed.
2.3.2 c)	U.S. practices require SPECI for squall, where squall is defined as a strong wind characterized by a sudden onset in which the wind speed increases at least 16 knots and is sustained at least 22 knots or more for at least one minute.
2.3.2d)	U.S. practices do not require SPECI for wind direction changes based on local criteria.
2.3.2f)	SPECI are not prepared for the equivalents in feet of 150, 350, or 600 meters. United States military stations may not report a SPECI based on RVR.
2.3.2 g/h)	Practices do not require SPECI for the onset, cessation, or change in intensity of: − freezing fog. − moderate or heavy precipitation (including showers thereof). − low drifting dust, sand or snow. − blowing dust, sand or snow (including snowstorm). − duststorm. − sandstorm.

2.3.2 i) and j)	The United States provides a SPECI when a layer of clouds or obscurations aloft is present below 1000 ft and no layer aloft was reported below 1000 ft in the preceding report. A SPECI is also reported when the ceiling decreases or increases at these markers: 3000, 1500, 1000, 500ft or lowest published instrument approach procedures. SPECI is made when the ceiling (rounded off to reportable values) forms or dissipates below, decreases to less than, or if below, increases to equal or exceed: 3,000 feet, 1,500 feet, 1,000 feet, 500 feet or lowest standard instrument approach procedure minimum published in the National Ocean Survey (NOS) *U.S. Terminal Procedures.* If none published, then 200 feet.
4.1.1.2	The United States does not provide wind representatives for specific runways but does provide a wind representative for the airport.
4.1.3.1 b)	The United States provides a 2−minute average wind observation for the METAR/SPECI.
4.1.5.2b)	The wind direction may be considered variable if, during the 2−min evaluation period, the wind speed is 6 KT or less. Also, the wind direction must be considered variable if, during the 2−min evaluation period, it varies by 60 deg or more when the wind speed is greater than 6 KT.
4.1.5.2c)	United States practices define wind gust as rapid fluctuations in wind speed with a variation of 10 knots or more between peaks and lulls. Wind speed data for the most recent 10 minutes is examined and a gust, the maximum instantaneous wind speed during that 10−minute period, is reported if the definition above is met during that period.
4.2.4.4	The United States does not report the lowest visibility in lieu of prevailing visibility. The United States always reports prevailing visibility and does not report lowest visibility if the lowest visibility is different from prevailing visibility
4.2.4.5	The United States does not use “NDV”, no direction variations can be given for visibility. This difference is also applicable to Table A3−2, METAR and SPECI
4.3.6.1	The United States reports RVR in increments of 100 feet up to 1,000 feet, increments of 200 feet from 1,000 feet to 3,000 feet, and increments of 500 feet above 3,000 feet to 6,000 feet.
4.3.6.5b), 4.3.6.6	The United States reports RVR for a single designated runway in the METAR/SPECI. RVR tendency is not reported. This difference is also applicable to Table A3−2, METAR and SPECI.
4.4	The following weather elements are augmented manually at designated automated stations observation sites: FC, TS, GR, GS, and VA. At selected airports, additional present weather elements may be provided. With the exception of volcanic ash, present weather is reported when prevailing visibility is less than 7 statute miles or considered operationally significant. Volcanic ash is always reported when observed.
4.4.2.6	The practice with respect to the proximity indicator VC is between 5 to 10 statute miles from the point of observation with the exception of precipitation for which the VC indicates >0 to 10 statute miles from the point of observation.
4.5.4	The United States reports only up to 3 layers at automated sites and up to 6 layers at manual sites. Cloud layer amounts are a summation of layers at or below a given level, utilizing cumulative cloud amount. In addition, at automated sites, which are unstaffed, cloud layers above 12,000 ft are not reported. At staffed automated sites, clouds above 12,000 ft may be augmented. CAVOK and NSC are not used. In addition, the United States does not use “///” when cloud type can not be observed; “NCD” when no clouds are detected; or “//////” for CB or TCU when not detected by automated observing systems. In the United States the symbol “///”, when used in the cloud section of the METAR, refers to a mountain station where the layer is below the station level. This difference is also applicable to Table A3−2, METAR and SPECI.
4.8	The United States has a Remarks Section that provides similar information. This difference is also applicable to Table A3−2, METAR and SPECI.

4.8.1.4	Wind shear is not included in the METAR/SPECI code form in the U.S remarks. This difference is also applicable to Table A3−2, METAR and SPECI.
4.8.1.5	Sea−surface temperature, the state of the sea and state of the runway are not provided in the METAR/SPECI code form in the U.S. remarks. This difference is also applicable to Table A3−2, METAR and SPECI.
APPENDIX 4	**Technical specifications related to aircraft observations and reports**
3.1.4	The United States MWOs do not issue special air reports.
APPENDIX 5	**Technical specifications related to forecasts**
1.2.2	Forecast visibility increments used consist of 1/4 mile from 0 (zero) to 1 mile, 1/2 mile from 1 to 2 miles, and 1 mile above 2 miles. Note: miles are statute miles.
1.2.3	Practices require forecast of non−convective low−level wind shear within 2,000 feet of the ground in the Optional Group. The forecast consists of WS (wind shear); heights of the wind shear in hundreds of feet; and wind speed and direction above the wind shear height, using METAR and TAF coding regulations.
1.2.4	The United States does not use CAVOK and NSC in the TAF. This difference is also applicable to Table A5−1, Template for TAF. The non−application of the use of NSC also applies to App 5. 1.3.1 i)
1.3.1 e)	Change groups and amendment criteria below 1/2 statute mile (800 meters) are not used. This difference is also applicable to Table A5−1, Template for TAF.
1.3.1 j)	The 100−foot (30 meter) change group and amendment criterion is not used. This difference is also applicable to Table A5−1, Template for TAF.
1.3.2	The United States does not use the change indicator “BECMG”. This difference is also applicable to Table A5−1, Template for TAF and to other subsequent sections including 1.3.3 and 1.3.4 where BECMG is referenced.
1.4	The United States does not use “PROB 40” in the TAF. “PROB 30” will not be used in the first nine (9) hours of every TAF’s valid period, including amendments. This difference is also applicable to Table A5−1, Template for TAF. Note also that Military TAFs do not use the “PROB” groups.
4.1 i)	Practice is not to include thunderstorms information in Area Forecasts. See difference filed for Part I 6.6 that the United States does not provide the GAMET but does provide an Area Forecast.
4.3	U.S. practices do require reporting of ISOL, OCNL or FREQ in accordance with the guidance on the use of the terms given in App 6. The United States reports “isolated” (ISOL) when the phenomena affect an area less than approximately 3,000 square miles or are widely separated in time, and widespread (WDSPR) to mean more than 50 percent of the area.
APPENDIX 6	**Technical specifications related to SIGMET and AIRMET information, aerodrome warnings and wind shear warnings and alerts**
1.1.3	SIGMET messages in the CONUS use VORs in place of lat/long and do not reference FIRs. SIGMETs are issued by alphanumeric series, e.g., Kilo 1, 2, 3 etc. In the conterminous U.S., convective SIGMETs are issued in lieu of SIGMETS for convection. They are issued as hourly bulletins for the East, Central, and Western United States and thus they do not indicate the FIR. Connective SIGMETs have an outlook section. This difference is also applicable to Table A6−1, Template for SIGMET and AIRMET messages.
1.1.4	Convective SIGMETs for the conterminous U.S. are issued with the non−standard WMO Header designator ”WST” and use a lower criteria. Practices are to issue a SIGMET for mountain wave only when accompanied by severe turbulence. In addition, the U.S. does not issue a SIGMET for radioactive clouds. This difference is also applicable to Table A6−1, Template for SIGMET and AIRMET messages.

2.1.2, 2.1.3	AIRMETs in the conterminous U.S. are issued as bulletins for the East, West, and Central U.S. in conjunction with area forecast turbulence, icing, and ceiling and visibility, and thus do not comply with template for FIR or series numbering format. This difference is also applicable to Table A6−1, Template for SIGMET and AIRMET messages.
2.1.4	AIRMET in the conterminous U.S. on a routine schedule for icing, turbulence, sustained surface winds, ceiling/visibility and convection. Practices do not include use of ISOL, OCNL or FRQ. This difference is also applicable to Table A6−1, Template for SIGMET and AIRMET messages. The U.S. does not include cloud amount or type in AIRMET.
4.2.1	U.S. practices do require reporting of ISOL, OCNL or FREQ in accordance with the guidance on the use of the terms given in App 6. The United States reports “isolated” (ISOL) when the phenomena affect an area less than approximately 3,000 square miles or are widely separated in time, and widespread (WDSPR) to mean more than 50 percent of the area.
5.1, 5.1.3	The United States does provide for tsunamis in the aerodrome warning. The U.S. issues airport warning messages similar to the ICAO format (Table A6−2, Template for aerodrome warnings) only at selected airports based on a bilateral agreement between the airport authority and the NWS Forecast Office.

ANNEX 4 − AERONAUTICAL CHARTS	
Chapter 1	**Definitions**
Air taxiway	The U.S. does not depict defined surfaces for air−taxiing of helicopters.
Danger area	The term “danger area” will not be used in reference to areas within the U.S. or in any of its possessions or territories.
Final approach and take−off area (FATO)	The U.S. does not depict final approach and take−off areas (FATOs).
Helicopter stand	The U.S. does not use this term.
Prohibited area Restricted area	The U.S. will employ the terms “prohibited area” and “restricted area” substantially in accordance with the definitions established and, additionally, will use the following terms: “Alert area.” Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. “Controlled firing area.” Airspace wherein activities are conducted under conditions so controlled as to eliminate the hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground. “Warning area.” Airspace which may contain hazards to nonparticipating aircraft in international airspace. “Maneuvering area.” This term is not used by the U.S. “Military operations area (MOA).” An MOA is an airspace assignment of defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. “Movement area.” Movement area is defined by the U.S. as the runways, taxiways, and other areas of an airport which are utilized for taxiing, take−off, and landing of aircraft, exclusive of loading ramp and parking areas.
Touchdown and lift−off area (TLOF)	The U.S. does not use this term.
Chapter 1.1	**Definitions**
Aerodrome reference point	Airport Reference Point is the approximate geometric center of all usable runway surfaces.
Airway	Airways are Class E airspace.
Area Minimum Altitude	Off Route Obstruction Clearance Altitude (OROCA) used.
Arrival Routes	Arrival routes are also identified on Standard Terminal Arrival (STAR).
Clearway	Obstacle and terrain may not extend above specified limits in a Clearway.
Displaced Threshold	Displaced threshold is located at other than the designated beginning of the runway.
Final Approach	Final approach begins at the final approach fix or point and extends to the airport or the point where a circle−to−land maneuver or a missed approach is executed.
Flight Level	Flight level is related to a reference datum of 29.92 inches of mercury.
Glide Path	Glideslope is used instead of glide path.
Helicopter Stand	Helipad is used vice helicopter stand.
Instrument Approach Procedure	Instrument approach procedure begins at the initial approach point vice defined arrival route.

Intermediate Approach Segment	Intermediate approach segment is that segment between the intermediate fix or point and the final approach fix.
Minimum obstacle clearance altitude (MOCA)	MOCA also assures acceptable navigational signal coverage within 22 NM of a VOR.
Minimum sector altitude	Minimum Sector Altitude is centered on the navigation facility upon which the procedure is predicated.
Missed approach point	Missed approach point based on acquiring the required visual reference.
Missed approach procedure	Missed approach procedure is conducted when the approach cannot be completed to a landing.
Movement Area	Movement area also includes areas used by helicopters in taxiing. It does not include loading ramps or parking areas.
Obstacle	Obstacles may include terrain and objects of natural growth.
Obstacle clearance altitude (OCA) or Obstacle clearance height (OCH)	Decision Altitude and Decision Height used vice Obstacle Clearance Altitude and Obstacle Clearance Height.
Obstacle free zone	Obstacle Free Zone also includes airspace above runway surface.
Precision approach procedure	MLS also included as a Precision approach procedure.
Procedure turn	Procedure turn is used only on intermediate approach segment or final approach course.
Prohibited area	Permission of the using agency is required before using Prohibited airspace.
Terminal arrival altitude (TAA)	Terminal Arrival Areas defined by the extension of the IAF legs and the intermediate segment course.
Touchdown zone	Touchdown zone is the first 3000 feet of the runway beginning at the threshold.
Track	Track is the actual flight path of the aircraft over the surface of the earth.
Vectoring	Vectoring based on use of radar.
Visual approach procedure	Visual approach procedure is conducted on an IFR flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport.
Chapter 1.2	**Applicability**
1.2.2	Charts vary in their conformance to ICAO Standards.
1.2.2.1	Charts vary in their conformance to ICAO Recommended Practices.
Chapter 2	**General Specifications**
2.1	The titles of charts produced by the U.S. are not those provided for in Annex 4.
2.1.7	Charts are True North oriented except as indicated.
2.1.8	Sheet size of charts varies dependent on chart type.

2.2.1	The marginal note layouts, in some cases, differ from those set forth in Appendices 1, 5, and 6.
2.3.1	Marginal note layouts vary by chart type
2.4	Symbols do not universally conform to Appendix 2.
2.4.1	Visibility distances are expressed in statute miles and fractions thereof.
2.4.4	Conversion scale (meters/feet) is not shown on Radio Navigation Charts.
2.5.4	Linear dimensions are expressed in feet.
2.5.7	Conversion scales are not universally used.
2.6.2	Some charts have no linear scale.
2.9.2	Abbreviations used are from FAA Order 7340.1, not ICAO Doc 8400.
2.11	Color schemes differ by chart series.
2.12.2	Hypsometric tints differ by chart series.
2.12.3.1	Unreliable spot elevations are shown with an “x” preceding the value.
2.14.1	Vertical limits of airspace are not shown.
2.18.3.1	Julian Calendar is also used.
Chapter 3	**Aerodrome Obstacle Chart − ICAO Type A (Operating Limitations)**
3.1	The U.S. produces an Airport Obstruction Chart which covers the basic requirements called for by Aerodrome Obstruction Chart − ICAO Type A.
3.2.1	Availability of chart is not dependent on provision of other charts.
3.2.2	Notification is not made when chart is not required.
3.3.2	Linear dimensions are expressed in feet.
3.6	Country name is not used.
3.8.1.3	Obstacles shown only in relation to FAR 77
3.8.3.1	Only total pavement distance is shown
Chapter 4	**Aerodrome Obstacle Chart − ICAO Type B**
4.1	The U.S. produces an Airport Obstruction Chart which covers the basic requirements called for by Aerodrome Obstruction Chart − ICAO Type B.
4.2.1	Availability of chart is not dependent on provision of other charts
4.3.2	Linear dimensions are shown in feet.
4.6	Country name is not used
Chapter 5	**Aerodrome Obstacle Chart − ICAO Type C**
5.8.1	The navigation grid on U.S. Aircraft Position Chart 3097 comprises lines parallel to 54° West Meridian and the navigation grid on U.S. Aircraft Position Chart 3096 comprises lines parallel to 92° West Meridian. These changes to the ICAO Standard were made to provide navigation grid lines vertical to a great circle projection base.
Chapter 6	**Precision Approach Terrain Chart − ICAO**
6.9.1.1	Only outbound magnetic bearings from VOR facilities and inbound magnetic bearings to low/medium frequency radio navigation facilities are shown.

Chapter 7	**En Route Chart − ICAO**
7.1	Simplified versions are not included in the AIP.
7.6.2	Off Route Obstruction Clearance Altitude (OROCA) is shown.
7.9.3.1.1	Coordinates are shown in degrees, minutes and hundredths of minutes. DME antenna elevation is not shown. Vertical limits of airspace are shown in tabulated data form. RNP type designation is not shown. Coordinates of significant points are not shown. Bearings are shown to the nearest degree and distances to the nearest mile. Logon address is not shown.
7.9.3.1.1 1) and 5)	The U.S. depicts geographic positions in degrees and minutes to the hundredth of a degree.
Chapter 8	**Area Chart − ICAO**
8.1	Area charts produced only where the amount of detail required results in congestion of information on an IFR Enroute Low Altitude chart.
8.3.1	Departure and Arrival routes are not shown.
8.9.1	Only airports shown are those with hard surface runways of 3000 feet or longer and/or with an Instrument Approach Procedure.
8.9.3	Off Route Obstruction Clearance Altitude (OROCA) is shown.
8.9.3.1.1 1) and 6)	The U.S. depicts geographic positions in degrees and minutes to the hundredth of a degree.
8.9.4.1.1	Coordinates are shown in degrees, minutes and hundredths of minutes. DME antenna elevation is not shown. Vertical limits of airspace are shown in tabulated data form. Terminal routings are not shown. Coordinates of significant points are not shown. Bearings are shown to the nearest degree and distances to the nearest mile. Minimum vectoring altitudes are not shown. Logon address is not shown.
Chapter 9	**Standard Departure Chart − Instrument (SID) − ICAO**
9.2	Charts are provided only when a procedure has been established.
9.3.1	Charts covering continental U.S. between latitudes 24° and 52° North are based on standard parallels at 33° and 45° and between latitudes 52° and 72° North on standard parallels at 55° and 65°.
9.3.2	Charts are not generally drawn to scale.
9.3.3	Scale bar is not shown.
9.4.1	The U.S. uses a sheet numbering system which differs from the index in Appendix 7.
9.4.2	Parallels and meridians are not shown.
9.4.3	Graduation marks are not shown.
9.5	Procedure route is identified in accordance with FAA Order 8260.46
9.6.1	Culture and topography are not shown.
9.6.2	Relief is not shown.
9.8.3.2*	The elevation of the highest point on any sheet is not always cleared of hypsometric tinting.
9.9.1.2	Secondary airports are shown only when designated.
9.9.2	Danger areas are not shown. Vertical limits are not shown.
9.9.3.1	Minimum Sector Altitude is not shown.
9.9.3.1.1 2d) and 3)	The U.S. depicts geographic positions in degrees and minutes to the hundredth of a degree.
9.9.3.2	Area minimum altitudes are not shown.

9.9.4.1.1	Coordinates for NAVAIDs and Significant Points are shown in degrees, minutes and hundredths of minutes. Bearings are shown to the nearest degree and distances to the nearest mile. DME antenna elevation is not shown. Obstacles are depicted textually with position and height, and without regard for penetration of OIS. Minimum vectoring altitudes are not shown.
9.10.1	Heliports are not shown.
Chapter 10	**Standard Arrival Chart − Instrument (STAR) − ICAO**
10.2	Charts are provided only when a procedure has been established.
10.3.2	Charts are not generally drawn to scale.
10.3.3	Scale bar is not shown.
10.4.2	Parallels and meridians are not shown.
10.4.3	Graduation marks are not shown.
10.5	Procedure route is identified in accordance with FAA Order 7100.9
10.6.1	Culture and topography are not shown.
10.6.2	Relief is not shown.
10.8.3.2*	The elevation of the highest point on any sheet is not always cleared of hypsometric tinting.
10.9.1.1	Airports are shown by symbol vice pattern.
10.9.1.2	Secondary airports are shown only when designated.
10.9.2	Danger areas are not shown. Vertical limits are not shown.
10.9.3.1	Minimum Sector Altitude is not shown.
10.9.3.1.1 2d) and 3)	The U.S. depicts geographic positions in degrees and minutes to the hundredth of a degree.
10.9.3.2	Area minimum altitudes are not shown.
10.9.4.1.1	Bearings are shown to the nearest degree and distances to the nearest mile. Coordinates for NAVAIDs and Significant Points are shown in degrees, minutes and hundredths of minutes. DME antenna elevation is not shown. Minimum vectoring altitudes are not shown.
Chapter 11	**Instrument Approach Chart − ICAO**
11.3.3	Scale is not shown.
11.3.3.1	Distance circle is centered on NAVAID used for final approach segment, except when location of the airport, radio aid to navigation and/or procedure pattern necessitates that the ring be centered on other facilities or geographical points for better portrayal of the instrument approach procedure.
11.3.3.2	Distance between components and between last component and runway shown.
11.4	Sheet size is 8.25 inches by 5.375 inches
11.5.2	Graduation marks are not shown.
11.7.1	Culture information is not shown. Topographic information is not named. Hydrographic features are shaded.
11.7.2	Terrain charting criteria does not include approach gradient steeper than optimal due to terrain.
11.7.3	Terrain is not charted if Std 11.7.2 is not met.
11.8.1	Magnetic variation is shown only in areas of compass instability and on charts North of 67 degrees of latitude.
11.9.3	Grid meridian is not shown.
11.10.1.1	Abandoned airports are not shown
11.10.2.2	Obstacles that are the determining factor for an OCA/OCH are not necessarily shown.
11.10.2.7	Obstacle free zones are not shown.
11.10.3	Vertical limits are not shown.

11.10.4.3	The U.S. does not depict geographic position of the final approach fix. Geographic coordinates are not shown.
11.10.5	Terminal arrival areas are shown vice terminal arrival altitude.
11.10.6.1	Arrowed, dashed line is shown vice arrowed, dotted line. Times required for the procedure are not shown. Magnetic bearings to the airport from the final approach NAVAID are not shown. Circling prohibitions are indicated by textual note vice graphic boundaries.
11.10.6.2	Distance to airport from final approach NAVAID is not shown.
11.10.6.3	Arrows are not shown on procedure track line except to indicate heading changes. Missed approach segment is shown by arrowed, dashed line. Arrowed, dashed line is used for other segments vice arrowed, dotted line. Times required for the procedure are not shown. Intermediate approach fix/point is not shown where no course reversal is authorized. Distance between components is shown vice a distance scale.
11.10.6.4	Parentheses are not shown.
11.10.6.5	Ground profile and shaded altitude blocks are not shown.
11.10.7.1	Procedure landing minima are shown vice aerodrome operating minima.
11.10.7.2	Decision Altitude/Height (DA/H) shown vice OCA/H.
11.10.8.2	Altitude/height table is not shown.
11.10.8.3	Altitude/height table is not shown.
11.10.8.4	Rate of descent table is not shown.
11.10.8.5	Descent gradient is not shown. Parentheses are not shown
11.10.8.6	Reference datum height is not shown. Descent angle shown to the nearest hundredth of a degree.
11.10.8.8	Cautionary note is dependent on multiple criteria.
11.10.9	Geographical coordinates are not shown. Fix formation bearings shown to the nearest degree. Mileages are shown to the nearest mile. Descent angles are not shown.
Chapter 12	**Visual Approach Chart − ICAO**
12.1	Charts provide visual arrival routes and altitudes.
12.2	Chart provided only when visual approach procedure has been established.
12.2.1	Stopways are not indicated.
12.3.3	Charts are shown at scale of 1:250,000
12.4	Sheet size is 8.25 inches by 5.375 inches.
12.5.2	Graduation marks are not shown
12.5.5.2.1	The datum (MSL) is stated in the Instrument Approach Chart legend, not on the chart.
12.6.2	Runway threshold elevations are not shown.
12.7.1.1	Place names are not shown.
12.8	Magnetic variation is shown only in areas of compass instability and on charts North of 67 degrees of latitude.
12.9.3	Grid meridian is not shown.
12.10.1.1	Abandoned airports are not shown
12.10.1.2	Airport elevation is not shown
12.10.2.3	Height of obstacle above Mean Sea Level is shown.
12.10.2.3.1	Parentheses are not shown.
12.10.3	Danger areas are not shown. Vertical limits are not shown.
12.10.4	Control zones and Traffic zones are not shown. Vertical limits are not shown.

12.10.5.3	VASI, MEHT, and angle of displacement are not shown.
Chapter 13	**Aerodrome/Heliport Chart − ICAO**
13.1	Airport Diagrams are developed for complex runway and taxiway layouts and to provide information for updating computer based navigation systems. Helicopter movement is supported only with the location of helipads.
13.3.1	Scale varies to allow depiction of one whole degree of latitude and longitude.
13.3.2	Latitude and longitude graticules are shown vice linear scale.
13.6.1	Latitude and longitude graticules are shown vice geographical coordinates. Elevations for runway ends, parking areas, and the airport are shown. Clearways are not shown. Parking areas and ramps are shown with their designations and without details. Taxiways and identification only are shown. Standard taxi routes are not shown. Boundaries of air traffic service are not shown. RNR observation sites are not shown. Approach and runway lighting are not shown. VASI systems are not shown. VOR checkpoint and frequency are not shown. Logon address is not shown.
13.6.1.d Surface type for heliports.	The U.S. does not show "type of surface for heliports."
13.6.2 Elevated helidecks, etc.	The U.S. does not show "surface level, elevated, or helidecks." Helicopter pads only are shown. Touchdown and liftoff areas are not shown. Final approach and takeoff areas are not shown. Safety areas are not shown. Clearways are not shown. Visual aids are not shown. Declared distances are not shown.
Chapter 14	**Aerodrome Ground Movement Chart − ICAO**
14.6.1 c)	The U.S. does not depict geographic positions of aircraft stands.
14.6.1 f)	The U.S. does not depict taxiway centerline points.
Chapter 16	**World Aeronautical Chart – ICAO 1:1 000 000**
16.3.1	Linear scales are shown in the following order: nautical miles, statute miles, kilometers.
16.4.3	Charts are folded in eleven vertical panels and one horizontal fold.
16.4.4	Sheet lines are shown on Title Panel chart index.
16.4.5	ICAO has not been notified of chart sheet lines.
16.5.1	Standard parallels are for each 8 degrees and are shown 1 degree and 20 minutes in from the Northern and Southern edges of the chart. Charts are not produced above 80 degrees latitude.
16.5.2	Distance between parallels is 1 degree. Above 56 degrees North, latitude graduation marks are shown only on every even degree of longitude. Distance between longitude meridians is 1 degree. Above 64 degrees North, meridian graduation marks are shown every 5 minutes.
16.5.3.1	Lengths of interval marks are as follow: 1 minute − .045 inches; 5 minutes − .065 inches; 10 minutes − .10 inches on both sides.
16.6	Chart numbering is indicated on Title Panel chart index.
16.7.2.1	Railroads are not shown within outlined populated areas.
16.7.2.2	Tunnels, if possible, are shown wherever they exist.
16.7.3.1	Roads are shown for radar and visual value and for distinct configurations that provide visual checkpoint value.
16.7.3.2	Roads are not shown within outlined populated areas.
16.7.9.2	Coordinates shown to the nearest minute.
16.7.9.3	Halo effect only shown for elevation value.
16.7.10.1	Notes will read 'Relief data incomplete' or 'Limits of reliable relief information.'
16.7.10.2	Unreliable spot elevations are shown with an 'x' preceding the value.
16.7.12.1	Wooded areas are not shown.

16.7.13	Date of topographic information is not shown.
16.8.2	Date of isogonic information is shown in the chart legend.
16.9.2.1	Only airports published in the National Flight Data Digest are charted. They may be omitted if in congested areas or if airports with better facilities are nearby.
16.9.2.2	Other than hard surface runways are shown by symbol.
16.9.3.1	Obstacles greater than 200 feet are shown. Obstacles 200 feet or less may be shown.
16.9.4	Alert Areas, Military Operating Areas and Warning Areas are also shown.
16.9.5.1	Class D airspace and Class E (surface) airspace are not shown.
16.9.6	NAVAIDs without voice capability are shown with their frequency underlined.
16.9.7.1	Only aeronautical ground lights that operate continuously are shown.
16.9.9.2	Only marine lights that operate year round, with a range of at least 10 NM, and are omnidirectional are shown.
Chapter 17	**Aeronautical Chart – ICAO 1:500 000**
17.3.1	Linear scales are shown in the following order: nautical miles, statute miles, kilometers.
17.4.3	Charts are folded in eleven vertical panels and one horizontal fold.
17.4.4	Relationship of chart to WAC series is not shown.
17.5.4.1	The 10 minute interval mark is .10 inches on both sides of the graticule line.
17.6.1.1	Relationship of chart to WAC series is not shown.
17.7.2.2	Tunnels, if possible, are shown wherever they exist. Prominent tunnels are shown pictorially.
17.7.3.1	Roads are shown for radar and visual value and for distinct configurations that provide visual checkpoint value.
17.7.3.2	Roads are not shown within outlined populated areas. Dual lane highways are shown within large scale insets.
17.7.9.2	Coordinates are shown to the nearest minute.
17.7.9.3	Halo effect is only shown for elevation value.
17.7.10.1	Notes will read ‘Relief data incomplete’ or ‘Limits of reliable relief information.’
17.7.10.2	Unreliable spot elevations are shown with an ‘x’ preceding the value.
17.7.12.1	Wooded areas are not shown.
17.7.13	Date of topographic information is not shown.
17.8.2	Date of isogonic information is shown in the chart legend.
17.9.2.1	Only airports published in the National Flight Data Digest are charted. They may be omitted if in congested areas or if airports with better facilities are nearby.
17.9.2.2	Other than hard surface runways are shown by symbol.
17.9.2.3	Only abandoned airports with at least a 3000 feet hard surface runway and with landmark value are shown.
17.9.3.1	Obstacles greater than 200 feet are shown. Obstacles 200 feet or less may be shown.
17.9.4	Alert Areas, Military Operations Areas, and Warning Areas are also shown.
17.9.6	NAVAIDs without voice capability are shown with their frequency underlined.
17.9.7.1	Only aeronautical ground lights that operate continuously are shown.
17.9.7.2	Only marine lights that operate year round, with a range of at least 10 NM, and are omnidirectional are shown.

Appendix 2	**ICAO Chart Symbols**
No. 21	Tidal flats are shown in brown stipple over the blue open water tint.
No. 45	Rocks awash are shown by a six−armed symbol as adopted by the International Hydrographic Bureau.
No. 54, 61	Spaces between sides of bridge and road or railroad symbols are filled solid.
No. 70	Oil or gas fields are shown with an oil well derrick symbol.
No. 77	Ruins are shown by a solid square, properly annotated.
No. 94	The runway surface indicator (letter H) and the lighting indicator (letter L) are not normally used on high altitude Radio Navigation Charts. Only those airports with a minimum of 5,000 feet hard−surfaced runways are shown. The letter H is not used on low altitude Radio Navigation Charts. All airports depicted have hard−surfaced runways, excepting that where the letter ‘‘S’’ follows the runway length, the runway surface is soft. On Visual Navigation Charts of the 1:500 000 scale, a miniature runway layout depiction indicates airports with hard−surfaced runways at least 1,500 feet long.
No. 110	Aerodrome traffic zones are termed ‘‘SURFACE AREAS’’ in U.S. usage. These are all of standard dimensions. Limits are not shown, but airports at which SURFACE AREAS have been established are indicated by a color−coded airport symbol.
No. 113	Limits of advisory areas are shown on Radio Navigation Charts with a crenellated line. This depiction is indicated in the legend as the border of an Air Route Traffic Control Center (ARTCC).
No. 116	The nomenclature ‘‘non−compulsory” is used instead of ‘‘on request’’ for appropriate position reporting points.
No. 127	Isogonic lines are shown on Radio Navigation Charts only as short sections of continuous lines extending inward from the neat lines.
*Indicates ICAO Recommended Practice.	

ANNEX 5 − UNITS OF MEASUREMENT TO BE USED IN AIR−GROUND COMMUNICATIONS
General Statement: Most of the individual SI quantities and measurement units listed in the Annex are not commonly used in routine international air operations. Although most U.S. national standards and practices do not specifically utilize the SI units, the SI units of measurement are acceptable and not prohibited from use by U.S. regulations. Under the present operational practices, these differences are not significant and are identified in U.S. Aeronautical Information and Technical Publications. In accordance with Article 38 of the Convention, the U.S. wishes to file the enclosed Notice of Differences to Annex 5, Fourth Edition, as amended by Amendment 13. Only those differences recognized as necessary for the safety or regularity of international air navigation and required for day−to−day operations in U.S. airspace are listed separately in this notification. In addition, we do not support the establishment of dates for planning purpose for termination of the use of bar, knot, nautical mile, and foot. (Chapter 4, Table 4−1) Until sufficient operational analysis identifies and resolves the safety issues, the establishment of termination dates for use of the bar, knot, nautical mile, and foot is unacceptable.
Reference: Table 3−4, Chapter 3, Annex 5, Fourth Edition, as Amended by Amendment 13.

Chapter 3	**Standard application of units of measurement**		
3.2.2 Table 3−3 Table 3−4	Table 3−4 Ref 1.12, runway length and Ref 1.13 runway visual range, unit of measure is in feet. Table 3−4 Ref 1.16, visibility unit of measure is statute miles (SM). Table 3−4 Ref 3.2, altimeter setting, unit of measure is reported as inches of mercury. Table 3−4, Ref 3.3, atmospheric pressure, unit of measure is in inches of mercury.		
Chapter 3.3 (Table 3−4)			
Ref. No.	**Quantity**	**Unit (SI)**	**Differences as of 5 January 1988**
1.4	distance (short)	meter	foot
1.12	runway length	meter	foot
1.13	runway visual range	meter	foot
1.15	time	hour and minute, the day of 24 hours beginning at midnight UTC	Time may be given in local time
1.16	visibility	kilometer	statute mile and fraction
2.12	mass (weight)	kilogram	pound (lb)
3.2	altimeter setting	hectopascal	inches of mercury
6.7	temperature	°C	C° except Fahrenheit used for surface air and dew point temperature
10.1	absorbed dose	Gy	rd
10.2	absorbed dose rate	Gy/s	rd/s
10.4	dose equivalent	Sv	rem
10.5	radiation exposure	C/kg	R
10.6	exposure rate	C/kg·s	R/s
All non−SI alternative units listed in this table will continue to be utilized where permitted. (1.1, 1.3, 1.5, 1.7, 4.1, 4.7, 4.15, 4.16)			
Attachment B	**Guidance on the application of System of Units (SI)**		
5.4.2	Specifications differ from Attachment B, Style and usage, Para 5.4 Numbers. Comma is not acceptable as a decimal marker. Comma is used to separate digits in groups of three.		

ANNEX 6 − OPERATION OF AIRCRAFT	
Part I	
Chapter 3	**General**
3.3.1.2.1 a)	That operator will need to have a specific approval to be further than 60 minutes to an en-route alternate aerodrome (calculated at in ISA conditions…). Delete "at" in the sentence.
3.2.4	The guidance discusses how the maximum diversion time should not exceed the time limited system. The United States agrees with this guidance, however, the Annex language allows for diversions in excess of the time limited system.
Chapter 4	**Flight Operations**
4.3.4.1.2	The FAA treats takeoff alternates differently. Take off alternate: for airplanes with 3 or more engines SP/59/4.1 states that the take-off alternate aerodrome must be located within the following flight time distance from the aerodrome of departure: two hours of flight time at an all-engine operating cruising speed, determined from the aircraft operating manual, calculated in ISA and still-air conditions using the actual take-off mass. FAR 121.617 states 2 hours at normal cruising speed with one engine inoperative.
4.3.4.3	The FAA treats "separate runways" differently.
4.3.4.3.1	a) 2) states that for a flight to be conducted in accordance with the instrument flight rules, at least one destination alternate aerodrome must be selected and specified in the operational and ATS flight plans, unless:…separate runways are usable at the estimated time of use of the destination aerodromes with at least one runway have an operational instrument approach procedure; Note 1.- Separate runways are two or more runways at the same aerodrome configured such if one runway is closed, operations to the other runway(s) can be conducted.
4.3.4.3.2	The FAA does not allow for dispatch to an airport if airport ETA is forecast below minimums, even if two alternates are listed.
4.3.4.4	The FAA does not currently require a Safety Risk Assessment.
4.3.5.2	Requires destination airport to be at or above landing minima, which conflicts with 4.3.4.3.2 U.S. regulations have no such conflict.
4.3.6.3	The ICAO document uses "contingency fuel" and contingency fuel is defined in the proposed text, but not in the definition section. The FAA believes the term "contingency fuel" should be defined in the definition section. d) 3) SP 59.4.1 states that destination alternate fuel is defined as "3) where a flight is operated without a destination alternate aerodrome, the amount of fuel required to enable the aeroplane to fly for 15 minutes at holding speed at 450 m (1,500 ft) above destination aerodrome elevation in standard conditions." FAR 121.645 require fuel for 10% of the time from origin to destination which may or may not be the same as holding for 15 minutes at 1500 feet; the FAA does not require 15 minutes of holding fuel if there is no listed alternate.
4.3.6.6	The FAA does not currently require a Safety Risk Assessment.
4.3.7.1	An operator must establish policies and procedures, approved by the State of the Operator, to ensure that in-flight fuel checks and fuel management are performed.
4.3.7.2	The pilot-in-command must continually ensure that the amount of usable fuel remaining on board is not less than the fuel required to proceed to an aerodrome where a safe landing can be made with the planned final reserve fuel remaining upon landing.
4.3.7.2.1	The pilot-in-command must request delay information from ATC when unanticipated circumstances may result in landing at the destination aerodrome with less than the final reserve fuel plus any fuel required proceeding to an alternate aerodrome or the fuel required to operate to an isolated aerodrome.

4.3.7.2.2	The pilot-in-command must advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome, the pilot calculates that any change to the existing clearance to that aerodrome may result in landing with less than planned final reserve fuel. Note 1.—The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance may result in landing with less than planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.
4.3.7.2.3	The pilot-in-command must declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the calculated usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel. Note 1.—The planned final reserve fuel refers to the value calculated in 4.3.6.3 e) 1) or 2) and is the minimum amount of fuel required upon landing at any aerodrome. Note 2.—The words, “MAYDAY FUEL” describe the nature of the distress conditions as required in Annex 10, Volume II, 5.3.2.1, b) 3. Note 3.—Guidance on procedures for in-flight fuel management are contained in the Fuel Planning Manual (Doc xxxx) The proposed section 4.7.2.3 does not require that airplanes with more than two turbine engines be certified to extended diversion time operations (EDTO) requirements, as is required for airplanes with two turbine engines. In the United States, amendment number 121-329 (72 FR 1808) to Title 14, Code of Federal Regulations (14 CFR) part 121 extended most requirements previously applicable only to 14 CFR part 121 two-engine airplanes to 14 CFR part 121 passenger-carrying three- and four-engine airplane operations for airplanes manufactured on or after February 17, 2015 (reference 14 CFR 121.162). Omission of these EDTO requirements for airplanes with more than two turbine engines from the ICAO standard will result in a significant difference from FAA regulations.
4.7.2.2	Under the proposed standard, the maximum diversion time be set by the State of the Operator. The U.S. has set time limits. The problem with having a bunch of different time limits is that some will be very conservative, some will be very liberal. The safety margins will be different.

4.7.3.2	a) requires when approving the appropriate maximum diversion time for an operator, the State of the Operator must ensure that “for all aeroplanes: the most limiting EDTO significant system time limitation, if any, indicated in the Aeroplane Flight Manual (directly or by reference) and relevant to that particular operation is not exceeded.” However, section 4.7.2.3.1 states “Notwithstanding the provisions in 4.7.2.3 a); the State of the Operator may, based on the results of a **specific safety risk assessment** conducted by the operator which demonstrates how an **equivalent level of safety** will be maintained, approve operations beyond the time limits of the most time limited system.” A note at the end of this section states that guidance for the specific safety risk assessment is contained in Attachment D of the document. This provision would allow operations beyond the certified limits by effectively allowing an operational exemption from the requirement to plan routes to stay within the time-limited systems capabilities defined in the airplane flight manual. This provision could result in a much degraded level of safety. 14 CFR 121.633(a) states “For [Extended Operations (ETOPS)] up to and including 180 minutes, no person may list an airport as an ETOPS Alternate Airport in a dispatch or flight release if the time needed to fly to that airport (at the one-engine inoperative cruise speed under standard conditions in still air) would exceed the approved time for the airplane’s most limiting ETOPS Significant System (including the airplane’s most limiting fire suppression system time for those cargo and baggage compartments required by regulation to have fire-suppression systems) minus 15 minutes.” For ETOPS beyond 180 minutes, 14 CFR 121.633(b) has additional requirements. There is no provision within 14 CFR part 121 for planning a route that would exceed the airplane’s most limiting system’s time capability. The ICAO proposal will result in a significant difference from FAA regulations. Regarding the criteria that the standard would require to be included in the specific safety risk assessment and the guidance provided in Attachment D, we have the following comments: a. Such an assessment may be beyond the technical capabilities of an operator to perform because of the need for detailed analysis of reliability data that only the manufacturer has the expertise and knowledge to conduct. b. The guidance provided in Attachment D is not specific enough to ensure that an adequate safety risk assessment would be conducted.

4.7.3.2 (continued)	c. Paragraph 3.1.2.4 c) of Attachment D (page B-19) says the reliability of each time limited system refers to quantifiable standards of design, testing and monitoring that ensure the reliability of each particular EDTO significant time-limited system. The FAA position is that the relevant safety criteria must be that one would not need to use the time-limited system during the period of the flight where the airplane would be beyond the system's time capability. For example, a Class C cargo compartment fire suppression system is the most common ETDO significant time-limited system. Having the need to suppress a fire beyond the time capability of the fire suppression system would be a potentially catastrophic event. Any proposal to operate beyond the time capability of the cargo fire suppression system would need to include an analysis or process to ensure that the cargo fire suppression system would *never* be needed during that time. For example, such a proposal would include an operational requirement that no materials that could burn are permitted in any compartment for which the cargo fire suppression system does not have sufficient capability for the route being flown. Therefore, the reliability of the system is not relevant under such circumstances.
4.7.2.3.1	The ICAO document allows for diversion times that exceed the time limits of the most time-limited system if a specific safety risk assessment is made. 14 CFR 121.633 goes the other direction. 121.633 take the most-time limited system and subtract 15 minutes. The U.S. philosophy differs significantly from the ICAO proposal.
Chapter 9	**Aeroplane flight crew**
9.5	A specific requirement that a spare set of suitable correcting spectacles be kept readily available when exercising the privilege of the license is not established.
PART II	
Section II	**General Aviation Operations**
2.4.2.3	b) not be a type listed in Annex A, Group II of the Montreal Protocol on Substances That Deplete the Ozone Layer, 8th Edition, 2009. Note: The United States only requires that the type of extinguishing agent used for hand fire extinguishers "be appropriate to the kinds of fire likely to occur where that agent is to be used." The United States only require the use of a built-in fire extinguisher for each lavatory disposal receptacle for Transport Category Airplanes.
PART III	
Section IV	
4.1.3.2	b) not be of type listed in Annex A, Group II of the Montreal Protocol on Substances That Deplete the Ozone Layer, 8th Edition, 2009 Note: The United States only requires that the type of extinguishing agent used for hand fire extinguishers "be appropriate to the kinds of fire likely to occur where that agent is to be used" and for use in a lavatory disposal receptacle "be capable of extinguishing flames emanating from any burning of fluids or other combustible materials in the area protected."
4.2.2.1	b) not be of type listed in Annex A, Group II of the Montreal Protocol on Substances That Deplete the Ozone Layer, 8th Edition, 2009 Note: The United States only requires that the type of extinguishing agent used for hand fire extinguishers "be appropriate to the kinds of fire likely to occur where that agent is to be used" and for use in a lavatory disposal receptacle "be capable of extinguishing flames emanating from any burning of fluids or other combustible materials in the area protected."

ANNEX 7 − AIRCRAFT NATIONALITY AND REGISTRATION MARKS	
3.3.1 and 4.2.1	The marks on wing surfaces are not required.
3.2.5 and Section 8	Identification plates are not required on unmanned, free balloons.
4.2.2	The minimum height of marks on small (12,500 lb or less), fixed−wing aircraft is 3 inches when none of the following exceeds 180 knots true airspeed: (1) design cruising speed; (2) maximum operating limit speed; (3) maximum structural cruising speed; and (4) if none of the foregoing speeds have been determined for the aircraft, the speed shown to be the maximum cruising speed of the aircraft.
Section 6	A centralized registry of unmanned free balloons is not maintained. Operators are required to furnish the nearest ATC facility with a prelaunch notice containing information on the date, time, and location of release, and the type of balloon. This information is not maintained for any specified period of time.

ANNEX 8 − AIRWORTHINESS OF AIRCRAFT	
PART II Procedures for Certification and Continued Airworthiness	
Chapter 4	**Continued Airworthiness of Aircraft**
4.2.3 (d)	This provision requires the State of Registry to address mandatory continuing airworthiness information from the State of Design. The U.S. does not generally issue Airworthiness Directives for non−type certificated aircraft. This includes foreign aircraft that are U.S.−registered, but operate under experimental rather than standard airworthiness certificates.
PART III Aeroplanes	
Part IIIA	
Chapter 4	**Design and Construction**
4.1.6 (b), 4.1.6 (g), 4.1.6 (h), 4.1.6 (i)	The United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.
Chapter 8	**Instruments and Equipment**
8.4.1	ICAO requires that airplanes operating on the movement area of an airport must have airplane lights of such intensity, color, fields of coverage and other characteristics to furnish personnel on the ground with as much time as possible for interpretation and for subsequent maneuver necessary to avoid a collision. The FAA has no such requirement.
8.4.2 (b)	This provision addresses the lights' affect on outside observers in reference to “harmful dazzle.” The U.S. regulations do not address the affect of aircraft lights on outside observers. However, visibility to other pilots and the lights' affect on the flight crew is addressed.
Chapter 9	**Operating Limitations and Information**
9.3.5	The United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.
Chapter 11	**Security**
11.2, 11.3, 11.4	With the exception of the door required by 11.3, the United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.
Part IIIB	**Large Aeroplane Certification**
D.2 (b)	The United States does not have a specific requirement for physical separation of systems. However, physical separation is considered in the means of compliance to various regulations such as 25.1309, 25.901(c) and 25.903(d). The FAA has begun to work in an effort to amend U.S. regulations with the purpose of eventually meeting the intent of these provisions.
D.2 (f)	The provision requires lavatory fire protection systems (detection and suppression) for all airplanes covered by Part IIIB. U.S. regulations only require lavatory fire protection systems for airplanes with 20 or more passengers.

D.2 (g)	Paragraph D.2.g.1 of the ICAO standard requires a fire suppression system for each cargo compartment accessible to a crewmember in a passenger−carrying airplane. U.S. requirements permit manual fire fighting in an accessible cargo compartment by a crewmember or members for an all−passenger−carrying airplane or a passenger−cargo combination carrying airplane. Additionally, the FAA does not have specific requirements to consider the effects of explosions or incendiary devices.
D.2 (h)	The United States does have provisions to protect against possible instances of cabin depressurization. However, the FAA does not have specific requirements to consider the effects of explosions or incendiary devices.
D.2 (i)	The United States does not have similar requirements and has begun work in an effort to amend the U.S. regulations to explicitly address the effects of explosions or incendiary devices.
D.5.	While there are no specific electrical bonding requirements in the FARs, U.S. regulations address lightning and system requirements. The FARs do not address the protection of those persons coming into contact with an airplane on the ground or in the water.
F.4.1	ICAO requires that airplanes operating on the movement area of an airport must have airplane lights of such intensity, color, fields of coverage and other characteristics to furnish personnel on the ground with as much time as possible for interpretation and for subsequent maneuver necessary to avoid a collision. The U.S. has no such requirement.
F.4.2 (b)	This provision addresses the lights' affect on outside observers in reference to “harmful dazzle.” The U.S. regulations do not address the affect of aircraft lights on outside observers. However, visibility to other pilots and the lights' affect on the flight crew is addressed.
F.5.	U.S. regulations do not address electromagnetic interference from external sources. High Intensity Radiated Fields (HIRF) are addressed by Special Conditions but only for flight critical systems, not flight essential systems.
G.3.5.	The United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.
K.2, K.3.1, K.3.2, K.4	With respect to K.1 and K.3, the United States does not have any specific requirements. With respect to K.2 the FAA has no current requirements with respect to the flight crew compartment bulkhead. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.
PART IV Helicopters	
Part IVA	
Chapter 2	**Flight**
2.2.3.1, 2.2.3.1.1 − 2.2.3.1.4	These provisions address take-off performance data for all classes of helicopters and require that this performance data include the take-off distance required. However, the United States has adopted the requirements only for Category A helicopters.
Chapter 6	**Rotor and Power Transmissions Systems and Powerplant Installation**

6.7	This provision requires that there be a means for restarting a helicopter's engine at altitudes up to a declared maximum altitude. In some cases the FAA does not require demonstration of engine restart capability. Since there is a different level of certitude for transport and normal category helicopters in the United States, the engine restart capability is only required for Category A and B helicopters (14 CFR Part 29) and Category A normal helicopters (14 CFR Part 27).
Chapter 7	**Instruments and Equipment**
7.4.2	This provision addresses the need to switch off or reduce the intensity of the flashing lights. The United States has minimum acceptable intensities that are prescribed for navigation lights and anti-collision lights. No reduction below these levels is possible.
7.4.2 (b)	This provision addresses the lights' affect on outside observers in reference to "harmful dazzle." The U.S. regulations do not address the affect of aircraft lights on outside observers. However, visibility to other pilots and the lights' affect on the flight crew is addressed.
PART V Lighting and Marking	
I.5 (e)	The United States does not have a requirement similar to I.5(e). 14 CFR part 23 does not address the impact of fuel spillage on emergency lighting systems.
PART VII Propellers	
Sub−Part B	**Design and Construction**
B.2	U.S. Regulations do not require a failure analysis.
Sub−Part C	**Test and Inspections**
C.2 (c)	U.S. Regulations do not contain bird impact or lightning strike requirements.

ANNEX 9 − FACILITATION	
*The list of differences include Guam, Puerto Rico, and the U.S. Virgin Islands. The status of implementation of Annex 9 in Guam with respect to public health quarantine is not covered in the list of differences.	
Chapter 2	**Entry and Departure of Aircraft**
2.3	Written crew baggage declaration is required in certain circumstances, and a special Embarkation/Disembarkation Card is required for most alien crew members.
2.4	A General Declaration for all inbound and for outbound flights with commercial cargo are required. However, the General Declaration outbound flights with commercial cargo shall not be required if the declaratory statement is made on the air cargo manifest. No declaration is required for outbound flights without commercial cargo if Customs clearance is obtained by telephone.
Remarks	19 CFR 122
2.4.1	Each crew member must be listed showing surname, given name, and middle initial.
2.4.4	The signing or stamping of the General Declaration protects the carrier by serving as proof of clearance.
2.5	The crew list is required by statute.
2.7	There is a statutory requirement for the Cargo Manifest.
2.8	In order to combat illicit drug smuggling, the U.S. requires the additional following information: the shipper's and the consignee's name and address, the type of air waybills, weight, and number of house air waybills. The manifest submitted in electronic form may become legally acceptable in the future. However, until the compliance rate for the automated manifest is acceptable, the U.S. must be able to require the written form of the manifest.
Remarks	19 CFR 122.48
2.9	Nature of goods information is required.
2.10	Stores list required in all cases but may be recorded on General Declaration in lieu of a separate list.
2.17	A cargo manifest is required except for merchandise, baggage and stores arriving from and departing for a foreign country on the same through flight. "All articles on board which must be licensed by the Secretary of State must be listed on the cargo manifest." "Company mail must be listed on the cargo manifest."
2.18	Traveling general declaration and manifest, crew purchases and stores list as well as a permit to proceed are required under various conditions when aircraft arrive in the U.S. from a foreign area with cargo shown on the manifest to be traveling to other airports in the U.S. or to foreign areas.
2.21	There is a statutory requirement that such changes can only be made prior to or at the time of formal entry of the aircraft.
2.25	The U.S. does not support the use of insecticides in aircraft with passengers present. Pesticides registered for such use should not be inhaled. In effect, the passenger safety issue has precluded the use of such insecticides in the presence of passengers since 1979.
2.35	Advance notice is required of the number of citizens and aliens on board (non−scheduled flights only).
2.40	A copy of the contract for remuneration or hire is required to be a part of the application in the case of non−common carrier operations.
2.41	Single inspection is accorded certain aircraft not by size of aircraft but rather by type of operation. Loads (cargo) of an agricultural nature require inspection by a plant or animal quarantine inspector.
2.41c	Fees are charged for services provided in connection with the arrival of private aircraft (nonscheduled aircraft).
Chapter 3	**Entry and Departure of Persons and Their Baggage**
3.3	Medical reports are required in some cases.

Remarks	8 CFR 212.7 and INA 234
3.4	Documents such as visas with certain security devices serve as identity documents.
3.4.1	The U.S. has not standardized the personal identification data included in all national passports to conform with the recommendation in Doc 9303.
3.5.6	U.S. passport fees exceed the cost of the operation.
3.5.7	U.S. allows separate passports for minor dependents under the age of 16 entering the U.S. with a parent or legal guardian.
3.7	The U.S. has a pilot program that allows nationals of certain countries which meet certain criteria to seek admission to the U.S. without a visa for up to 90 days as a visitor for pleasure or business.
Remarks	22 CFR 41.112(d) INA 212(d)(4), INA 238, 8 CFR 214.2(c) INA 217
	The law permits visa waivers for aliens from contiguous countries and adjacent islands or in emergency cases. Visas are also waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.
3.8	The U.S. charges a fee for visas.
3.8.3	Duration of stay is determined at port of entry.
Remarks	INA 217
3.8.4	A visitor to the U.S. cannot enter without documentation.
Remarks	INA 212(a) (26)
3.8.5	Under U.S. law, the duration of stay is determined by the Immigration Authorities at the port of entry and thus cannot be shown on the visa at the time of issuance.
3.10	Embarkation/Disembarkation Card does not conform to Appendix 4 in some particulars.
3.10.1	The operator is responsible for passengers' presentation of completed embarkation/disembarkation cards.
Remarks	8 CFR 299.3
3.10.2	Embarkation/Disembarkation cards may be purchased from the U.S. Government, Superintendent of Documents.
Remarks	8 CFR 299.3
3.14.2	The U.S. fully supports the electronic Advance Passenger Information (API) systems. However, the WCO/IATA Guideline is too restrictive and does not conform to the advancements in the PAXLIST EDIFACT international standard.
3.15	U.S. Federal Inspection Services' officials see individuals more than once.
3.16	Written baggage declarations by crew members are required in some instances.
3.17.1	The U.S. uses a multiple channel system rather than the dual channel clearance system.
3.23, 3.23.1	Statute requires a valid visa and passport of all foreign crew members.
3.24, 3.24.1, 3.25, 3.25.1, 3.25.2, 3.25.3	Crew members, except those eligible under Visa Waiver Pilot Program guidelines, are required to have valid passports and valid visas to enter the U.S.
Remarks	INA 212(a) (26), INA 252 and 253, 8 CFR 214.1(a), 8 CFR 252.1(c)
3.26, 3.27, 3.28, 3.29	Passports and visas are required for crew and non−U.S. nationals to enter the U.S.
3.33	Does not apply to landing card.
3.35	Law requires that the alien must be returned to the place whence he/she came. Interpretation of this provision requires that he/she be returned to the place where he/she began his/her journey and not only to the point where he/she boarded the last−used carrier.
3.35.1	Law requires that certain aliens be deported from the U.S. at the expense of the transportation line which brought them to the U.S.
3.36	Statute provides for a fine if a passenger is not in possession of proper documents.

3.39.3	NOTE: The U.S. considers security for individuals in airline custody to be the carrier's responsibility.
3.40.2	Annex 9 recommends that fines and penalties be mitigated if an alien with a document deficiency is eventually admitted to the country of destination.
3.43	Operator can be held responsible for some detention costs.
Chapter 4	**Entry and Departure of Cargo and Other Articles**
4.20	The Goods Declaration as defined by the Kyoto Convention serves as the fundamental Customs document rather than the commercial invoice.
4.40	Aircraft equipment and parts, certified for use in civil aircraft, may be entered duty−free by any nation entitled to most−favored nation tariff treatment. Security equipment and parts, unless certified for use in the aircraft, are not included.
4.41	Customs currently penalizes the exporting carrier for late filing of Shipper's Export Declarations (SEDs) and inaccuracies on bills of lading with respect to the SEDs.
4.42	Regulations require entry of such items, most of which are dutiable by law.
4.44	Certain items in this category are dutiable by law.
4.48	Carriers are required to submit new documentation to explain the circumstances under which cargo manifest is not unladen. No penalty is imposed if the carrier properly reports this condition.
4.50	The procedures for adding, deleting, or correcting manifest items require filing a separate document.
4.55	The U.S. requires a transportation in−bond entry or a special manifest bonded movement for this type of movement.
Chapter 5	**Traffic Passing Through the Territory of a Contracting State**
5.1	Such traffic must be inspected at airports where passengers are required to disembark from the aircraft and no suitable sterile area is available.
5.2	Passports and visas are waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.
5.3	Such traffic must be inspected at airports where no suitable sterile area is available.
5.4	Passports and visas are waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.
5.4.1	Passengers will not be required to obtain and present visas if they will be departing from the U.S. within 8 hours of arrival or on the first flight thereafter departing for their destination.
5.8	Examination of transit traffic is required by law. Transit passengers without visas are allowed one stopover between the port of arrival and their foreign destination.
5.9	Passports and visas are required generally for transit passengers who are remaining in the U.S. beyond 8 hours or beyond the first available flight to their foreign destinations.
Chapter 6	**International Airports − Facilities and Services for Traffic**
6.3.1	Procedures involving scheduling committees raise a number of anti−trust problems under U.S. law.
6.33	Sterile physical facilities must be provided, and in−transit passengers within those areas must be subject to immigration inspection at any time.
Remarks	OI 214.2(c)
6.34	The U.S. inspects crew and passengers in transit.
6.36	The U.S. inspects crew and passengers in transit.

6.56	Operators of aircraft are statutorily required to pay overtime charges for federal inspections conducted outside normal scheduled hours of operation. This requirement places aircraft operators in a less favorable position than operators of highway vehicles and ferries who are statutorily exempt from such charges.
Chapter 8	**Other Facilitation Provisions**
8.1	Separate bonds are required.
8.3.2	Visas are issued by the Department of State and are not issued at ports of entry.

ANNEX 10 − AERONAUTICAL TELECOMMUNICATIONS	
ANNEX 10 − VOLUME 1 − RADIO NAVIGATION AIDS	
PART I	
Chapter 3	**Specifications for Radio Navigation Aids**
3.1.2.1.1	Remote control and monitoring is implemented at all ILS installations for CAT II and III. Most, but not all, CAT I installations are monitored. A−CAT II and III; C− CAT I
3.1.4.1, 3.1.4.2, 3.1.4.3	The U.S. does not require such equipage for aircraft. The United States does not require such equipage for aircraft. Interference from FM broadcast signals will not adversely affect aircraft navigation and communications systems in the United States airspace
3.1.7.3.1 c)	When necessary to achieve coverage to the edges of the localizer course, the U.S. authorizes coverage over a greater distance than that specified in 3.1.7.3.1 c); i.e., up to 1,200 meters (4,000 feet) along the localizer course centerline.
3.3.8.1, 3.3.8.2, 3.3.8.3	The U.S. does not require such equipage for aircraft. The United States does not require such equipage for aircraft. Interference from FM broadcast signals will not adversely affect aircraft navigation and communications systems in the United States airspace.
3.5.5.4.1.	DME interrogator accuracy specified in this paragraph is not included in FAA avionics requirements.
3.7.3.4.4.3	Current satellite contract calls for −150dBW under the conditions specified in 3.7.3.4.4.3. Difference is greater signal power than called for in Annex 10.
PART II	
Chapter 4	
4.1.5.2	In the U.S., the shortage of communications channels, compared with the total operational requirement, has resulted in the geographical separation between facilities working on the same frequency being considerably less (up to 50 percent reduction) than the Standard defined for such separation.
ANNEX 10 − VOLUME II − COMMUNICATION PROCEDURES INCLUDING THOSE WITH PANS STATUS	
Chapter 3	**General Procedures for the International Aeronautical Telecommunication Service**
3.2.2, 3.2.3	US regulations do not have any specific procedures for closing down international aeronautical stations. All international aeronautical stations in the U.S. operate continuously (24 hours a day and seven days a week)
3.3.2	Class B traffic, including reservation messages pertaining to flights scheduled to depart within 72 hours, shall not be acceptable for transmission over U.S. Government operated AFTN circuits, except in those cases where it has been determined by the U.S. that adequate non−government facilities are not available.
Chapter 4	
4.4.2	In the Caribbean Region, U.S. industry−operated AFTN terminals will continue to accept messages in both ICAO and non−ICAO formats. The U.S. now accepts only messages in ICAO format from other states, including the Caribbean Region.
Chapter 5	**Aeronautical Mobile Service − Voice Communications**
5.1.5	US regulations do not require pilots to wait 10 seconds before making a second call. US regulations only require ”a few seconds” instead of ”10 seconds”.
5.2.1.3.1.1	The U.S. will use the term ‘‘hundred’’ in stating altitude numbers by radiotelephone. Whole hundreds will be spoken as follows: 400 − “Four hundred” 4,500 − “Four thousand five hundred”

5.2.1.3.1.2	The U.S. will use the term “point” in lieu of “decimal” in stating frequencies: 126.55 MHz − “One two six point five five” 8,828.5 MHz − “Eight eight two eight point five”
5.2.1.6.1	Air route traffic control centers will use “center” rather than “control” in their radiotelephone identification. Example: “Washington Center.” Approach control service units will use “approach control” or “departure control” rather than “approach” in their radiotelephone identification. Example: “Washington Approach Control” or “Washington Departure Control.” Aerodrome control towers will use “ground control” or “clearance delivery” rather than “tower” in their radiotelephone identification, where appropriate, to identify ground control services. Example: “Washington Ground Control” or “Washington Clearance Delivery.”
5.2.1.6 5.2.1.6.2.1.1 5.2.1.6.2.2.1	U.S. procedures allow abbreviation of only Type a) call signs and limit abbreviation to not less than **three** characters following the first character of the registration marking or the manufacturer of the aircraft. Also, the U.S. does not use call signs comprised of aircraft operating agency telephony designators in combination with aircraft registration markings (Type b).
Remarks	To facilitate understanding, examples (5.2.1.6) should follow rather than precede corresponding provisions which govern them (5.2.1.6.2.1.1 and 5.2.1.6.2.2.1).
5.2.2.1.1.1 5.2.2.1.1.2	The U.S. Federal Aviation Regulations do not require that a continuous airborne guard on VHF121.5 MHz be maintained.
5.2.2.7.1.2	US regulations do not specifically require pilots to send a message twice preceded with the phrase “TRANSMITTING BLIND”. US regulations provides general procedures which allow pilots to make blind transmissions in case of emergency.
5.2.2.7.1.3.2	US regulations do not specifically require pilots to make a blind transmission preceded by “TRANSMITTING BLIND DUE TO RECEIVER FAILURE” with respect to the continuation of the flight of the aircraft. US regulations provide general procedures which allow pilots to make appropriate blind transmissions.
5.2.2.7.2.1, 5.2.2.7.2.2	US regulations do not specifically require aeronautical stations to get assistance from other aircraft in case of communications failure. US regulations require aeronautical stations to use ”all appropriate means” available to re−establish communications with aircraft.
5.2.2.7.2.3	US regulations do not specifically require aeronautical stations to send blind transmissions. US regulations require aeronautical stations to use ”all appropriate means” available to re−establish communications with aircraft.
5.2.2.7.2.4	US regulations do not provide this specific standard. US regulations require aeronautical stations to use ”all appropriate means” available to re−establish communications with aircraft.
5.2.2.7.3.1	US regulations do not specifically require pilots to make a blind transmission preceded by ”TRANSMITTING BLIND DUE TO RECEIVER FAILURE”. US regulations provide general procedures which allow pilots to make appropriate blind transmissions.
ANNEX 10 − VOLUME III − COMMUNICATION SYSTEMS	
PART I − DIGITAL DATA COMMUNICATION SYSTEMS	
Chapter 1	Definitions
ATN Directory Services	The FAA has not implemented the DIR as part of the AMHS Extended Service. The Basic Service AMHS has been implemented.
ATN Security Services	The ATN Security Service can be implemented as part of the AMHS Extended Service.

Authentication	This is a part of ATN Security Services of the ATN DIR/AMHS Extended Service that has not been implemented.
Security Management	This is a part of ATN Security Services capability of the ATN DIR/AMHS Extended Service that has not been implemented.
Chapter 3	**Aeronautical Telecommunication Network**
3.2.1	The Ground−to−Ground ATN service based on OSI has been implemented (AMHS) but not Air−to−Ground.
3.2.2	ATN Ground−to−Ground service does not support sections a) 4) APC, c), e), f) and g)
3.2.3	FAA ATN currently does not support these services.
3.3.1	FAA ATN service does not support a) ATS to aircraft and c) AOC.
3.4.1.4, 3.4.16, 3.4.19, 3.4.32	The FAA ATN only supports AMHS (ground service).
Chapter 4	
4.2.1.2 4.2.1.3	In the U.S., AMSS terminals must have the capability of operating in the frequency bands 1544−1559 MHz and 1645.5−1660.5 MHz bands. (NOTE: Use of the band 1544−1545/1645.5−1646.5 MHz by the mobile satellite service is limited to distress and safety.)
PART II	
2.3.3.1 2.3.3.2 2.3.3.3	The U.S. does not require such equipage for aircraft.
ANNEX 10 − VOLUME IV − SURVEILLANCE AND COLLISION AVOIDANCE SYSTEMS	
Chapter 3	Surveillance Systems
3.1.1.7.13	SPI required to be transmitted for 18 +/− 1 second. US regulations are more stringent than ICAO.
3.1.2.6.5.2	In the request to downlink, Annex 10 assigns bits 0 to 7, many of them are reserved. The FAA Order 6365.1A implements this requirement assigning bits 0 and 1 and the bits 2 through 15 are not assigned.
3.1.2.10.4.3.3	Annex 10 requires ”If antenna selection is based on signal level, it must be carried out at all signal levels between MTL and −21 dBm.” The RTCA MOPS for Mode S transponders, DO−181c, does not specify the range of signal levels over which the antenna selection must correctly be accomplished. FAA Order 6365.1A paragraph 5.5.1 addresses the issue of antenna selection. However, the TSO standard conferred upon manufacturers does not require implementation.
3.1.2.11.3	The US National Standard for the Mode S Beacon System, FAA Order 6365.1A, paragraph 6.3 requires – When the interrogator transmitter is not transmitting an interrogation, its output does not exceed −5 dBm effective radiated power at any frequency. This requirement exceeds the ICAO SARPs frequency of interest 960 to 1215 MHz.
Chapter 4	**Airborne Collision Avoidance System**
4.1	US documentation contains the following definition for TA: Information given to the pilot pertaining to the position of another aircraft in the immediate vicinity. The information contains no suggested maneuver. The ICAO SARPs considers this a potential threat. The TAs are issued to show all nearby traffic. TCAS does not determine by a test or analysis that some of these aircraft may be a potential threat. Information given to the pilot pertaining to the position of another aircraft in the immediate vicinity. The information contains no suggested maneuver.
4.2.3.3	The TSO−C118 (RTCA DO−197) implements this requirement. However, requirement of limiting Mode S power to the level of Mode A/C (paragraph 4.2.3.4) is not implemented.
4.3.1.1.1	Specifies a nominal cycle of 1 second
4.3.2.1.2	The US specifies a false track probability of less than 1.2% for Mode A/C and less than 0.1% for Mode S.

4.3.2.2.2 4.3.2.2.2.2 4.3.2.2.2.2.2 4.3.2.2.2.2.3	TCAS II Version 6.04A Enhanced Interference Limiting Algorithms won't comply with these sections of the standards and recommended practices (SARPs). See remark below.
4.3.5.1	TCAS II Version 6.04A Enhanced won't comply because it has a 3−second coordination delay. See remark below.
4.3.5.3	TCAS II Version 6.04A Enhanced does not comply since the section implies a requirement for reversals in some instances in encounters between two TCAS II−equipped aircraft. See remark below.
4.3.5.4	TCAS II Version 6.04A Enhanced does not comply since the section explicitly requires reversal of coordinated resolution advisories (RAs) under some circumstances. See remark below.
4.3.5.5	TCAS II Version 6.04A Enhanced does not comply since it contains a dormancy requirement, does not have 5−second targets, and only has surveillance of ± 3,000 feet in altitude. See remark below.
4.3.8.4.2.2.1 4.3.8.4.2.2.1.1	TCAS II Version 6.04A Enhanced has different RA Report formats in DF = 20, 21 replies. See remark below.
4.3.8.4.2.2.1.3	TCAS II Version 6.04A Enhanced has different RA Report formats in DF = 20, 21 replies. See remark below. US documentation contains an additional requirement After an RA has been terminated: by TCAS, it is still required to be reported by the Mode S transponder for 18±1 seconds.
4.3.8.4.2.2.1.4 4.3.8.4.2.2.1.5 4.3.8.4.2.2.1.6 4.3.8.4.2.2.16.1 4.3.8.4.2.2.1.6.2 4.3.8.4.2.2.1.6.3	TCAS II Version 6.04A Enhanced has different RA Report formats in DF = 20, 21 replies. See remark below.
4.3.8.4.2.2.2 4.3.8.4.2.2.3	TCAS Version 6.04 Enhanced has different Data Link Capability format in DF = 20, 21 replies. See remark below.
4.3.8.4.2.3.2.3	TCAS Version 6.04 Enhanced has different Data Link Capability format in DF = 20, 21 replies. See remark below. The US uses "don't descend" vs. "do not pass below" and "Don't climb" vs. "do not pass above"
4.3.8.4.2.3.2.5	Limited to TCAS with horizontal on−board resolution equipment
4.3.8.4.2.3.2.7	Limited to TCAS with horizontal on−board resolution equipment
4.3.8.4.2.3.4 4.3.8.4.2.3.4.1 4.3.8.4.2.3.4.2 4.3.8.4.2.3.4.3 4.3.8.4.2.3.4.4	TCAS II Version 6.04A Enhanced RA does not meet the Broadcast format specified in these sections. See remark below.
4.3.8.4.2.3.4.5	TCAS II Version 6.04A Enhanced RA does not meet the Broadcast format specified in these sections. See remark below. The US specifies a different bit coding scheme. The US has implemented the AID code. The bit pattern documented in the RTCA document is in the bit order as received from the control head. The Annex 10 SARPs show the bit order of the RF transmission.
4.3.8.4.2.3.4.6	TCAS II Version 6.04A Enhanced RA does not meet the Broadcast format specified in these sections. See remark below.
4.3.8.4.2.4.2.1 4.3.8.4.2.4.2.3 4.3.8.4.2.4.2.4	TCAS II Version 6.04A Enhanced has a different Coordination Reply format in DF = 16 replies. See remark below.

Remark	The U.S. does not require TCAS II Version 7 (ACAS II) equipage in its National Airspace System.
4.3.9.3.1	The US specifies 10 ft or less.
ACAS	The US uses the term Traffic Alert and Collision Avoidance System (TCAS). The difference of terminology does not impact interoperability of the systems.
ANNEX 10 − VOLUME V − AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION	
Chapter 2	**Distress frequencies**
2.1.2	Emergency locator transmitters (ELT) installed on or after 1 January 2002 do not have to operate on both 406 MHz and 121.5 MHz in the US.
2.1.3	Effective date of 1 January 2005 for emergency locator transmitters to operate on both 406 MHz and 121.5 MHz was not met in the US.
Chapter 4	Utilization of frequencies above 30 MHz
4.1.1.1	The 121.5 MHz aeronautical emergency channel guard−band is reduced to 25 kHz. In the U.S. this 121.5 MHz channel is protected on either side by a single 25 kHz channel centered on frequencies 121.475 MHz and 121.525 MHz. The other four (4) guard band channels, centered on frequencies 121.425 MHz, 121.450MHz, 121.550MHz, and 121.575MHz are utilized to transmit weather information on simplex operations (ground−to−air only) using 25kHz channels. The maximum transmit power of the ground−based equipment is limited to 2.5 W. The ground−based equipment must also meet specific output spectral masks (defined as ± 25 kHz −33 dBm − 33 dBm; ± 50 kHz −45 dBm − 45 dBm; ± 75 kHz −47 dBm)
4.1.2.1	The minimum frequency separation of 8.33 KHz has not been adopted in the US.
4.1.2.2.1	Mandatory carriage of 8.33 KHz equipment has not been established in the US.
4.1.2.2.2	8.33 KHz radios are not safeguarded with respect to its suitability for AM(R)S in the US
4.1.2.2.3	FAA has not issued a mandatory carriage of VDL Mode 3 and VDL Mode 4.
4.1.2.2.3.1	FAA has not issued a mandatory carriage of VDL Mode 3.
4.1.2.2.4	No provision to safeguard VDL Mode 3 and Mode 4 with respect to its suitability for AM(R)S currently exists in the US.
4.1.3.1.6	The US does not require aircraft flying within the US airspace to meet one of the characteristics dealing with the FM interference immunity performance.
4.1.3.2.1	The frequency 123.45 MHz is not designated for air−to−air communications in the US airspace.
4.1.3.2.2	The frequency 123.45 MHz is not designated for air−to−air communications in remote and oceanic areas within the US airspace.
4.1.4.2	The US does not require aircraft flying within the US airspace to meet one of the characteristics dealing with the FM interference immunity performance.
4.2.3	The US does not follow the VOR assignment priority as defined in Section 4.2.3.

ANNEX 11 − AIR TRAFFIC SERVICES

Chapter 1	**Definitions**
Accepting Unit	The term ”receiving facility” is used.
Advisory Airspace	Advisory service is provided in terminal radar service areas and the outer area associated with class C airspace areas as well as Class E airspace.
Advisory Route	Advisory service is provided in terminal radar service areas and the outer area associated with class C airspace areas as well as Class E airspace.
ACAS	Traffic Alert and Collision Avoidance System (TCAS) – An airborne collision avoidance system based on radar beacon signals which operates independent of ground−based equipment. 14 CFR 1.1 further defines and breaks down TCAS into TCAS 1 – provides traffic advisories 2 – provides traffic advisories and resolution advisories in the vertical plane and 3 – provides traffic advisories and resolution advisories in the vertical and horizontal planes.
AIRMET	FAA Pilot Controller Glossary defines (in part) AIRMET as ”In−flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment instrumentation or pilot qualifications....” The ICAO definition of AIRMET narrows the purpose of the advisory to ”low−level aircraft operations”, where the FAA has a more broad definition to encompass ”all aircraft and ... aircraft having limited capability...” Also, ICAO uses the term ”forecast ... for the flight information region” where the FAA uses ”area forecast”. Difference in character (terminology) for area forecast. FAA uses AIRMETS for broader purpose.
Air traffic control unit	The U.S. uses the term “air traffic control facility”. (i.e. En Route, Terminal, or Flight Service)
Air traffic services reporting office	FAA Pilot Control Glossary defines (in part) Flight Service Stations (FSS) as ”air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft in emergency situations, relay ATC clearances, originate notices to airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans....” FSS’s are available to receive any reports concerning air traffic services as well as accept and file flight plans.
Air traffic services unit	The U.S. uses “Air Route Traffic Control Center”.
Air−taxiing	U.S. uses ‘‘hover taxi’’ for this maneuver above 100 feet above ground level (AGL) and ‘‘air taxi’’ below 100 feet AGL.
Airborne collision avoidance	The U.S. uses “traffic alert collision avoidance system (TCAS).” TCAS is an airborne collision avoidance system based on radar beacon signals and operates independent of ground−based equipment. TCAS−1 generates traffic advisories only. TCAS−II generates traffic advisories and resolution (collision avoidance) advisories in the vertical plane.
Airway	A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.
Alert Phase	Alert – a notification to a position that there is an aircraft−to−aircraft or aircraft−to−airspace conflict as detected by automated problem detection.
Altitude	Height above ground level (AGL), mean sea level (MSL) or indicate altitude.
Apron Management Service	Ground control or ramp control provide the same service. There is no formal definition in the Pilot Controller Glossary.

Area Control Centre	The U.S. uses the terms “Traffic Control Center”, “Radar Approach Control Facility”, and “Tower” to define a facility that provides air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
Area Control Service	Air Traffic Control − A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.
Controlled flight	The US uses the term “IFR Clearance”.
Control Zone	The US uses the term “Surface Area”. Surface area is airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.
Cruising Level	Cruising Altitude – an altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.
Downstream Clearance	Same as air traffic control clearance. Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.
Flight Information Centre	In the US, flight information service and alerting service are often provided by flight service stations.
Level	The term “altitude” is used.
Manoeuvring Area	Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.
Meteorological office	No PCG definition. However FSSs perform this duty.
Movement Area	The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.
Pilot−in−command	The person who has final authority for the operation and safety of the flight has been designated as pilot in command before or during the flight and hold the appropriate category, class and type rating for the flight.
Traffic avoidance advice	US uses the term “Safety Alert”
Traffic information	US uses the term “Traffic Advisory”
Waypoint	A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.
Chapter 2	**General**

2.3.2	Annex 11, paragraph 2.3.2 directs the flight information service to accomplish objective d) of para 2.2, "to provide advice and information for the safe and efficient conduct of flight." Details on procedures to accomplish this objective are contained in FAA Order 7210.3, Part 4, Flight Service Stations. Specific procedures for accomplishing this objective are contained in FAA Order 7110.10, Flight Services. Also, the FAA Pilot Controller Glossary defines Flight Service Stations as "air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDs. In addition, at selected locations, FSSs provide En Route Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of transborder flights.
2.5.2.2.1	FAA uses the generic term "controlled airspace" and "surface areas"
2.5.2.2.1.1	FAA also provides this service in Class E.
2.5.2.2.2	Annex 11, paragraph 2.3.2 directs the flight information service to accomplish objective d) of para 2.2, "to provide advice and information for the safe and efficient conduct of flight." Details on procedures to accomplish this objective are contained in FAA Order 7210.3, Part 4, Flight Service Stations. Specific procedures for accomplishing this objective are contained in FAA Order 7110.10, Flight Services. Also, the FAA Pilot Controller Glossary defines Flight Service Stations as "air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDs. In addition, at selected locations, FSSs provide En Route Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of transborder flights.
2.6	The Class F airspace is not used in the designation of U.S. airspace.
2.6.1	The U.S. has chosen not to use Class F airspace.
2.9	Converting the present U.S. system for identifying ATS routes and significant points to conform to the provisions of amended paragraphs 2.9 − 2.9.2, 2.11 − 2.11.3, Appendix 1 and Appendix 2 is an effort of considerable magnitude and complexity. The U.S. has an ongoing program to accomplish the conversion, but it is estimated that a period of 2 to 5 years will be required for full compliance.
2.10.3.2.2	Class E−5 700/1200−foot airspace areas are used for transitioning aircraft to/from the terminal or en route environment.
2.10.3.3	En Route Domestic Airspace Areas consist of Class E airspace that extends upward from a specified altitude to provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services but the Federal airway structure is inadequate. En Route Domestic Airspace Areas may be designated to serve en route operations when there is a requirement to provide ATC service but the desired routing does not qualify for airway designation. Offshore/ Control Airspace Areas are locations designated in international airspace (between the U.S. 12−mile territorial limit and the CTA/FIR boundary, and within areas of domestic radio navigational signal or ATC radar coverage) wherein domestic ATC procedures may be used for separation purposes.
2.10.5.1	A Class D airspace area must be of sufficient size to: 1. Allow for safe and efficient handling of operations. 2. Contain IFR arrival operations while between the surface and 1,000 feet above the surface, and IFR departure operations while between the surface and 1,000 feet above the surface, and IFR departure operations while between the surface and the base of adjacent controlled airspace.

2.10.5.2	A Class D airspace area must be of sufficient size to: 1. Allow for safe and efficient handling of operations. 2. Contain IFR arrival operations while between the surface and 1,000 feet above the surface, and IFR departure operations while between the surface and the base of adjacent controlled airspace. Size and shape may vary to provide for 1 and 2. The emphasis is that a Class D area must be sized to contain the intended operations.
2.10.5.3	Refer to Surface Areas
2.11	Converting the present U.S. system for identifying ATS routes and significant points to conform to the provisions of amended paragraphs 2.9 − 2.9.2, 2.11 − 2.11.3, Appendix 1 and Appendix 2 is an effort of considerable magnitude and complexity. The U.S. has an ongoing program to accomplish the conversion, but it is estimated that a period of 2 to 5 years will be required for full compliance.
2.25.5	No time is issued prior to taxi for take−off. Time checks are given to the nearest quarter minute.
2.27.5	Process is described in the FAA Safety Management System Manual and the FAA Order 1100.161.
Appendix 1 Appendix 2	Converting the present U.S. system for identifying ATS routes and significant points to conform to the provisions of amended paragraphs 2.9 − 2.9.2, 2.11 − 2.11.3, Appendix 1 and Appendix 2 is an effort of considerable magnitude and complexity. The U.S. has an ongoing program to accomplish the conversion, but it is estimated that a period of 2 to 5 years will be required for full compliance.
Chapter 3	**Air Traffic Control Service**
3.2	Air Route Traffic Control Facilities (ARTCC) are used instead of Area Control Service, and Terminal Control Facilities instead of Approach Control Service.
3.3.3 Exception Clause	Clearances may be issued to conduct flight in VFR conditions without a pilot request if the clearance would result in noise abatement benefits or when a pilot conducts a practice instrument approach.
3.6.2.4	The U.S does not specify notification of 2−way communication. The accepting unit must not alter the clearance of an aircraft that has not yet reached the transfer of control point without the prior approval of the transferring unit.
3.7.3.1	Air crews are not required to read back clearances, only to acknowledge receipt of clearances.
3.7.3.1.1	Air crews are not required to read back clearances, only to acknowledge receipt of clearances.
3.7.4.3	4−3−8. COORDINATION WITH RECEIVING FACILITY Coordinate with the receiving facility before the departure of an aircraft if the departure point is less than 15 minutes flying time from the transferring facility's boundary unless an automatic transfer of of data between automated systems will occur, in which case the flying time requirement may be reduced to 5 minutes or replaced with a mileage from the boundary parameter when mutually agreeable to both facilities.
3.7.4.4	4−4−5. CLASS G AIRSPACE Include routes through Class G airspace only when requested by the pilot. NOTE−1. Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot. 2. Flight plans containing MTR segments in/through Class G airspace are considered a request by the pilot. Air Traffic Control Clearance means an authorization by air traffic control within controlled airspace.
Chapter 4	**Flight Information Service**
4.2.2	No Class F airspace. Collision Hazard information is provided between known traffic to aircraft in Class G airspace.
4.2.2 b)	No provision is made for the issuance of collision hazard information to flights operating in Class G airspace.
4.3.4.4 h) 4.3.4.8	The U.S. requires that the current altimeter setting be included in the ATIS broadcast. Information contained in a current ATIS broadcast, the receipt of which has been acknowledged by an aircraft, is not included in a directed transmission to the aircraft unless requested by the pilot.
4.3.5 4.3.6 4.3.7	The order in which information is listed in ATIS broadcast messages is not mandated and certain elements are regarded as optional.
Chapter 6	**Air Traffic Services Requirements for Communications**

6.1.1.4 6.2.2.3.8	The US uses a 45 day retention period.
6.2.3.6	The US has a 45 day or longer retention period, with some exceptions. US en route facilities using system analysis recording tapes as their radar retention media must retain radar data for 15 days. Facilities using a teletype emulator or console printout must be retained for 30 days unless they are related to an accident or incident. A facility using a console typewriter printout take−up device may retain the printout on the spool for 15 days after the last date on the spool. If a request is received to retain data information following an accident or incident, the printout of the relative data will suffice and the tape/disc may then be returned to service through the normal established rotational program.
6.3.1.3	The US has a 45 day or longer retention period except that those facilities utilizing an analog voice recorder system must retain voice recordings for 15 days.
6.4.1.2	The US retains surveillance data recordings for 45 days or longer when they are pertinent to an accident or incident investigation, except that en route facilities using system analysis recording tapes as their radar retention media (regardless of the type of voice recorder system being used) must retain voice recordings for 15 days and those facilities using an analog voice recorder system must retain voice recordings for 15 days. FAA's Air Traffic Control System Command Center must retain voice recordings for 15 days.
Chapter 7	**Air Traffic Services Requirements for Information**
7.1.5	The term "communication station" is not used but the flight information is passed.
7.6	Temporary Flight Restrictions (TFRs) are the mechanism that would be implemented in such cases.
Appendix 1	**Principles Governing the Identification of RNP Types and the Identification of ATS Routes Other Than Standard Departure and Arrival Routes**
	See 2.9, above.
2.2.1	Routes designated to serve aircraft operating from 18,000 MSL up to and including FL 450 are referred to as ''jet routes'' and are designated with the letter ''J'' followed by a number of up to three digits.
Appendix 2	**Principles Governing the Establishment and Identification of Significant Points**
	See 2.9, above.
2.1	The U.S. will not comply with this guidance in naming the Missed Approach Point (MAP) located at the landing threshold.
Appendix 4	**ATS Airspace Classifications**
	It should be noted that the term ''Class B airspace'' as used in the U.S. is more restrictive than that specified by ICAO. Flights within Class B Airspace in the U.S. must be operated in accord with the provisions of 14 CFR Part 91 (Section 91.90).
	Speed restrictions do not necessarily apply to aircraft operating beyond 12 NM from the coast line within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. However, in airspace underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Part 91 (Sections 91.117(c) and 91.703). This difference will allow airspeed adjustments exceeding 250 knots, thereby improving air traffic services, enhancing safety and expediting air traffic movement.

ANNEX 12 − SEARCH AND RESCUE
There are no reportable differences between U.S. regulations and the Standards and Recommended Practices contained in this Annex.

ANNEX 13 − AIRCRAFT ACCIDENT INVESTIGATION	
Chapter 5	**Investigation**
5.12	The full exchange of information is vital to effective accident investigation and prevention. The U.S. supports, in principle, measures that are intended to facilitate the development and sharing of information. The laws of the U.S. require the determination and public reporting of the facts, circumstances, and probable cause of every civil aviation accident. This requirement does not confine the public disclosure of such information to an accident investigation. However, the laws of the U.S. do provide some protection against public dissemination of certain information of a medical or private nature. Also, U.S. law prohibits the disclosure of cockpit voice recordings to the public and limits the disclosure of cockpit voice recording transcript to that specific information which is deemed pertinent and relevant by the investigative authority. However, U.S. Courts can order the disclosure of the foregoing information for other than accident investigation purposes. The standard for determining access to this information does not consider the adverse domestic or international effects on investigations that might result from such access.
5.25 h)	Investigative procedures observed by the U.S. allow full participation in all progress and investigation planning meetings; however, deliberations related to analysis, findings, probable causes, and safety recommendations are restricted to the investigative authority and its staff. However, participation in these areas is extended through timely written submissions, as specified in paragraph 5.25 i).
5.26 b)	The U.S. supports, in principle, the privacy of the State conducting the investigation regarding the progress and the findings of that investigation. However, the laws of the U.S. facilitate the public disclosure of information held by U.S. government agencies and U.S. commercial business. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the expressed consent of the State conducting the investigation.
Chapter 6	**Reporting**
6.13	The U.S. supports the principle of not circulating, publishing, or providing access to a draft report or any part thereof unless such a report or document has already been published or released by the State which conducted the investigation. However, the laws of the U.S. facilitate the public disclosure of information held by government agencies and commercial business. The U.S. government may not be able to restrict public access to a draft report or any part thereof on behalf of the State conducting the investigation. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the expressed consent of the State conducting an investigation.

ANNEX 14 − AERODROMES	
VOLUME 1 − AERODROME DESIGN AND OPERATIONS	
Chapter 1	**General**
1.2.1	Airports in the U.S. are for the most part owned and operated by local governments and quasi−government organizations formed to operate transportation facilities. The Federal Government provides air traffic control, operates and maintains NAVAIDs, provides financial assistance for airport development, certificates major airports, and issues standards and guidance for airport planning, design, and operational safety. There is general conformance with the Standards and Recommended Practices of Annex 14, Volume I. At airports with scheduled passenger service using aircraft having more than nine seats, compliance with standards is enforced through regulation and certification. At other airports, compliance is achieved through the agreements with individual airports under which Federal development funds were granted; or, through voluntary actions.
1.3.1 1.3.2 1.3.3 1.3.4	In the U.S., the Airport Reference Code is a two−component indicator relating the standards used in the airport's design to a combination of dimensional and operating characteristics of the largest aircraft expected to use the airport. The first element, Aircraft Approach Category, corresponds to the ICAO PANS−OPS approach speed groupings. The second, Airplane Design Group, corresponds to the wingspan groupings of code element 2 of the Annex 14, Aerodrome Reference Code. See below:

TBL GEN 1.7−1

Airport Reference Code (ARC)

Aircraft Approach Category	Approximate Annex 14 Code Number
A	1
B	2
C	3
D	4
E	−
Airplane Design Group	**Corresponding Annex 14 Code Letter**
I	A
II	B
III	C
IV	D
V	E
VI	F (proposed)

EXAMPLE: AIRPORT DESIGNED FOR B747−400 ARC D−V.

Chapter 2	Aerodrome Data
2.2.1	The airport reference point is recomputed when the ultimate planned development of the airport is changed.
2.9.6 2.9.7	Minimum friction values have not been established to indicate that runways are ''slippery when wet.'' However, U.S. guidance recommends that pavements be maintained to the same levels indicated in the ICAO Airport Services Manual.
2.11.3	If inoperative fire fighting apparatus cannot be replaced immediately, a NOTAM must be issued. If the apparatus is not restored to service within 48 hours, operations must be limited to those compatible with the lower index corresponding to operative apparatus.
2.12 e)	Where the original VASI is still installed, the threshold crossing height is reported as the center of the on−course signal, not the top of the red signal from the downwind bar.

Chapter 3	Physical Characteristics
3.1.2*	The crosswind component is based on the ARC: 10.5 kt for AI and BI; 13 kt for AII and BII; 16 kt for AIII, BIII and CI through DIII; 20 kts for AIV through DVI.
3.1.9*	Runway widths (in meters) used in design are shown in the table below:

Width of Runway in Meters

Aircraft Approach Category	Airplane Design Group					
	I	**II**	**III**	**IV**	**V**	VI
A	18[1]	23[1]	−−	−−	45	60
B	18[1]	23[1]	−−	−−	45	60
C	30	30	30[2]	45	45	60
D	30	30	30[2]	45	45	60

[1]The width of a precision (lower than $^3/_4$ statute mile approach visibility minimums) runway is 23 meters for a runway which is to accommodate only small (less than 5,700 kg) airplanes and 30 meters for runways accommodating larger airplanes.

[2]For airplanes with a maximum certificated take−off mass greater than 68,000 kg, the standard runway width is 45 meters.

3.1.12*	Longitudinal runway slopes of up to 1.5 percent are permitted for aircraft approach categories C and D except for the first and last quarter of the runway where the maximum slope is 0.8 percent.
3.1.18*	Minimum and maximum transverse runway slopes are based on aircraft approach categories as follows: For categories A and B: 1.0 − 2.0 percent C and D: 1.0 − 1.5 percent
3.2.2	The U.S. does not require that the minimum combined runway and shoulder widths equal 60 meters. The widths of shoulders are determined independently.
3.2.3*	The transverse slope on the innermost portion of the shoulder can be as high as 5 percent.
3.3.3 3.3.4* 3.3.5*	A strip width of 120 meters is used for code 3 and 4 runways for precision, nonprecision, and non−instrumented operations. For code 1 and 2 precision runways, the width is 120 meters. For non−precision/visual runways, widths vary from 37.5 meters up to 120 meters.
3.3.9*	Airports used exclusively by small aircraft (U.S. Airplane Design Group I) may be graded to distances as little as 18 meters from the runway centerline.
3.3.14*	The maximum transverse slope of the graded portion of the strip can be 3 percent for aircraft approach categories C and D and 5 percent for aircraft approach categories A and B.
3.3.15*	The U.S. does not have standards for the maximum transverse grade on portions of the runway strip falling beyond the area that is normally graded.
3.3.17*	Runways designed for use by smaller aircraft under non−instrument conditions may be graded to distances as little as 18 meters from the runway centerline (U.S. Airplane Design Groups I and II).
3.4.2*	For certain code 1 runways, the runway end safety areas may be only 72 meters.
3.7.1* 3.7.2*	The U.S. does not provide Standards or Recommended Practices for radio altimeter operating areas.
3.8.3*	The U.S. specifies a 6 meter clearance for Design Group VI airplanes.
3.8.4*	The taxiway width for Design Group VI airplanes is 30 meters.
3.8.5*	The U.S. also permits designing taxiway turns and intersections using the judgmental oversteering method.

3.8.7*	Minimum separations between runway and taxiway centerlines, and minimum separations between taxiways and taxilanes and between taxiway/taxilanes and fixed/moveable objects are shown in the tables that follow. Generally, U.S. separations are larger for non−instrumented runways, and smaller for instrumented runways, than the Annex. Values are also provided for aircraft with wingspans up to 80 meters.

Minimum Separations Between Runway Centerline and Parallel Taxiway/Taxilane Centerline

Operation	Aircraft Approach Category	Airplane Design Group						
		I[1]	I	II	III	IV	V	VI
Visual runways and runways with not lower than $^{3}/_{4}$–statute mile (1,200 meters) approach visibility minimums	A and B	150 feet 45 meters	225 feet 67.5 meters	240 feet 72 meters	300 feet 90 meters	400 feet 120 meters	−−	−−
Runways with lower than $^{3}/_{4}$–statute mile (1,200 meters) approach visibility minimums	A and B	200 feet 60 meters	250 feet 75 meters	300 feet 90 meters	350 feet 105 meters	400 feet 120 meters	−−	−−
Visual runways and runways with not lower than $^{3}/_{4}$–statute mile (1,200 meters) approach visibility minimums	C and D	−−	300 feet 90 meters	300 feet 90 meters	400 feet 120 meters	400 feet 120 meters	400[2] feet 120[2] meters	600 feet 180 meters
Runways with lower than $^{3}/_{4}$–statute mile (1,200 meters) approach visibility minimums	C and D	−−	400 feet 120 meters	400 feet 120 meters	400 feet 120 meters	400 feet 120 meters	400[2] feet 120[2] meters	600 feet 180 meters

[1]These dimensional standards pertain to facilities for small airplanes exclusively.

[2]Corrections are made for altitude: 120 meters separation for airports at or below 410 meters; 135 meters for altitudes between 410 meters and 2,000 meters; and, 150 meters for altitudes above 2,000 meters.

Minimum Taxiway and Taxilane Separations:

	Airplane Design Group					
	I	II	III	IV	V	VI
Taxiway centerline to parallel taxiway/ taxilane centerline	69 feet 21 meters	105 feet 32 meters	152 feet 46.5 meters	215 feet 65.5 meters	267 feet 81 meters	324 feet 99 meters
Fixed or movable object	44.5 feet 13.5 meters	65.5 feet 20 meters	93 feet 28.5 meters	129.5 feet 39.5 meters	160 feet 48 meters	193 feet 59 meters
Taxilane centerline to parallel taxilane centerline	64 feet 19.5 meters	97 feet 29.5 meters	140 feet 42.5 meters	198 feet 60 meters	245 feet 74.5 meters	298 feet 91 meters
Fixed or movable object	39.5 feet 12 meters	57.5 feet 17.5 meters	81 feet 24.5 meters	112.5 feet 34 meters	138 feet 42 meters	167 feet 51 meters

3.8.10*	Line−of−sight standards for taxiways are not provided in U.S. practice, but there is a requirement that the sight distance along a runway from an intersecting taxiway must be sufficient to allow a taxiing aircraft to safely enter or cross the runway.
3.8.11*	Transverse slopes of taxiways are based on aircraft approach categories. For categories C and D, slopes are 1.0−1.5 percent; for A and B, 1.0−2.0 percent.
3.11.5	The runway centerline to taxi−holding position separation for code 1 is 38 meters for non−precision operations and 53 meters for precision. Code 3 and 4 precision operations require a separation of 75 meters, except for “wide bodies,” which require 85 meters.

Dimensions and Slopes for Protective Areas and Surfaces

	Precision Approach	Non−precision Instrument Approach			Visual Runway	
	All runways	All runways[a]	Runways other than utility[b]	Utility runways[d]	Runways other than utility	Utility runways
Width of inner edge	305 meters	305 meters	152 meters	152 meters	152 meters	76 meters[c]
Divergency (each side)	15 percent	15 percent	15 percent	15 percent	10 percent	10 percent
Final width	4,877 meters	1,219 meters	1,067 meters[c]	610 meters	475 meters[c]	381 meters[c]
Length	15,240 meters	3,048 meters[c]	3,048 meters[c]	1,524 meters[c]	1,524 meters[c]	1,524 meters[c]
Slope: inner 3,049 meters	2 percent	2.94 percent[c]	2.94 percent[c]	5 percent[c]	5 percent[c]	5 percent[c]
Slope: beyond 3,048 meters	2.5 percent[c]					

[a]With visibility minimum as low as 1.2 km; [b]with visibility minimum greater than 1.2 km; [c]criteria less demanding than Annex 14 Table 4−1 dimensions and slopes. [d]Utility runways are intended to serve propeller−driven aircraft having a maximum take−off mass of 5,570 kg.

Chapter 4	**Obstacle Restriction and Removal**
4.1	Obstacle limitation surfaces similar to those described in 4.1−4.20 are found in 14 CFR Part 77.
4.1.21	A balked landing surface is not used.
4.1.25	The U.S. does not establish take−off climb obstacle limitation areas and surface, *per se*, but does specify protective surfaces for each end of the runway based on the type of approach procedures available or planned. The dimensions and slopes for these surfaces and areas are listed in the table above.
4.2	The dimensions and slopes of U.S. approach areas and surfaces are set forth in the above table. Aviation regulations do not prohibit construction of fixed objects above the surfaces described in these sections.
4.2.1	Primary surface is also used as a civil airport imaginary surface. Primary surface is a surface longitudinally centered on a runway. U.S. uses the width of the primary surface of a runway as prescribed in 14 CFR Part 77.25 for the most precise approach existing or planned for either end of that runway.
4.2.8	The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.
4.2.9	Approach surfaces are applied to each end of each runway based upon the type of approach available or planned for that runway end.
4.2.10, 4.2.11	Any proposed construction of or alteration to an existing structure is normally considered to be physically shielded by one or more existing permanent structure(s), natural terrain, or topographic feature(s) of equal or greater height if the structure under consideration is located within the lateral dimensions of any runway approach surface but would not exceed an overall height above the established airport elevation greater than that of the outer extremity of the approach surface, and located within, but would not penetrate, the shadow plane(s) of the shielding structure(s).
4.2.12	The basic principle in applying shielding guidelines is whether the location and height of the structures are such that aircraft, when operating with due regard for the shielding structure, would not collide with that structure.
4.2.16	The size of each imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.
4.2.17	Approach surfaces are applied to each end of each runway based upon the type of approach available or planned for that runway end.
Chapter 5	**Visual Aids for Navigation**

5.2.1.7*	The U.S. does not require unpaved taxiways to be marked.
5.2.2.2*	The U.S. does not require a runway designator marking for unpaved runways.
5.2.2.4	Zeros are not used to precede single−digit runway markings. An optional configuration of the numeral 1 is available to designate a runway 1 and to prevent confusion with the runway centerline.
5.2.4.2* 5.2.4.3*	Threshold markings are not required, but sometimes provided, for non−instrument runways that do not serve international operations.
5.2.4.5	The current U.S. standard for threshold designation is eight stripes, except that more than eight stripes may be used on runways wider than 45 meters. After 1 January 2008, the U.S. standard will comply with Annex 14.
5.2.4.6	The width and spacing of threshold stripes will comply with Annex 14 after 1 January 2008.
5.2.4.10	When a threshold is temporarily displaced, there is no requirement that runway or taxiway edge markings, prior to the displaced threshold, be obscured. These markings are removed only if the area is unsuitable for the movement of aircraft.
5.2.5.2 5.2.5.3*	Aiming point markings are required on precision instrument runways and code 3 and 4 runways used by jet aircraft.
5.2.5.4	The aiming point marking commences 306 meters from the threshold at all runways.
5.2.6.3	The U.S. pattern for touchdown zone markings, when installed on both runway ends, is only applicable to runways longer than 4,990 feet. On shorter runways, the three pair of markings closest to the runway midpoint are eliminated.
5.2.6.4	The U.S. standard places the aiming point marking 306 meters from the threshold where it replaces one of the pair of three stripe threshold markings. The 306 meters location is used regardless of runway length.
5.2.6.5*	Touchdown zone markings are not required at a non−precision approach runway, though they may be provided.
5.2.7.4*	Runway side stripe markings on a non−instrument runway may have an over−all width of 0.3 meter.
5.2.8.3	Taxiway centerline markings are never installed longitudinally on a runway even if the runway is part of a standard taxi route.
5.2.9.5*	The term ‘‘ILS’’ is used instead of CAT I, CAT II, CAT III.
5.2.11.4 5.2.11.5* 5.2.11.6*	Check−point markings are provided, but the circle is 3 meters in diameter, and the directional line may be of varying width and length. The color is the yellow used for taxiway markings.
5.2.12	Standards for aircraft stand markings are not provided.
5.2.13.1*	Apron safety lines are not required although many airports have installed them.
5.2.14.1	The U.S. does not have standards for holding position markings on roadways that cross runways. Local traffic control practices are used.
5.3.1.1 5.3.1.2*	The U.S. does not have regulations to prevent the establishment of non−aviation ground lights that might interfere with airport operations.
5.3.1.3 5.3.1.4	New approach lighting installations will meet the frangibility requirements. Some existing non−frangible systems may not be replaced before 1 January 2005.
5.3.2.1* 5.3.2.2* 5.3.2.3*	There is no requirement for an airport to have emergency runway lighting available if it does not have a secondary power source. Some airports do have these systems, and there is an FAA specification for these lights.
5.3.3.1 5.3.3.3	Only airports served by aircraft having more than 30 seats are required to have a beacon, though they are available at many others.
5.3.3.6	Although the present U.S. standard for beacons calls for 24−30 flashes per minute, some older beacons may have flash rates as low as 12 flashes per minute.
5.3.3.8	Coded identification beacons are not required and are not commonly installed. Typically, airport beacons conforming to 5.3.3.6 are installed at locations served by aircraft having more than 30 seats.

5.3.4.1	While the U.S. has installed an approach light system conforming to the specifications in 5.3.4.10 through 5.3.4.19, it also provides for a lower cost system consisting of medium intensity approach lighting and sequenced flashing lights (MALSF) at some locations.
5.3.4.2	In addition to the system described in 5.3.4.1, a system consisting of omnidirectional strobe lights (ODALS) located at 90 meters intervals extending out to 450 meters from the runway threshold is used at some locations.
5.3.4.10 through 5.3.4.19	The U.S. standard for a precision approach category I lighting system is a medium intensity approach lighting system with runway alignment indicator lights (MALSR). This system consists of 3 meters barrettes at 60 meters intervals out to 420 meters from the threshold and sequenced flashing lights at 60 meters intervals from 480 meters to 900 meters. A crossbar 20 meters in length is provided 300 meters from the threshold. The total length of this system is dependent upon the ILS glide path angle. For angles 2.75° and higher, the length is 720 meters.
5.3.4.16 5.3.4.31	The capacitor discharge lights can be switched on or off when the steady−burning lights of the approach lighting system are operating. However, they cannot be operated when the other lights are not in operation.
5.3.4.20	The U.S. standard for a precision approach category II and III lighting system has a total length dependent upon the ILS glide path angle. For angles 2.75° and higher, the length is 720 meters.
5.3.5.1 5.3.5.3 5.3.5.4	Visual approach slope indicator systems are not required for all runways used by turbojets except runways involved with land and hold short operations that do not have an electronic glideslope system.
5.3.5.2	In addition to PAPI and APAPI systems, VASI and AVASI type systems remain in service at U.S. airports with commercial service. Smaller general aviation airports may have various other approach slope indicators including tri−color and pulsating visual approach slope indicators.
5.3.5.27	The U.S. standard for PAPI allows for the distance between the edge of the runway and the first light unit to be reduced to 9 meters for code 1 runways used by nonjet aircraft.
5.3.5.42	The PAPI obstacle protection surface used is as follows: The surface begins 90 meters in front of the PAPI system (toward the threshold) and proceeds outward into the approach zone at an angle 1 degree less than the aiming angle of the third light unit from the runway. The surface flares 10 degrees on either side of the extended runway centerline and extends 4 statute miles from its point of origin.
5.3.8.4	The U.S. permits the use of omnidirectional runway threshold identification lights.
5.3.13.2	The U.S. does not require the lateral spacing of touchdown zone lights to be equal to that of touchdown zone marking when runways are less that 45 meters wide. The lateral distance between the markings is 22 meters when installed on runways with a width of 45 meters or greater. The distance is proportionately smaller for narrower runways. The lateral distance between touchdown zone lights is nominally 22 meters but may be reduced to 20 meters to avoid construction problems.
5.3.14	The U.S. has no provision for stopway lights.
5.3.15.1 5.3.15.2*	Taxiway centerline lights are required only below 183 meters RVR on designated taxi routes. However, they are generally recommended whenever a taxiing problem exists.
5.3.15.3 8.2.3	Taxiway centerline lights are not provided on runways forming part of a standard taxi route even for low visibility operations. Under these conditions, the taxi path is coincident with the runway centerline, and the runway lights are illuminated.
5.3.15.5	Taxiway centerline lights on exit taxiways presently are green. However, the new U.S. standard which is scheduled to be published by 1 January 98 will comply with the alternating green/yellow standard of Annex 14.
5.3.15.7*	The U.S. permits an offset of up to 60 cm.
5.3.16.2 8.2.3	Taxiway edge lights are not provided on runways forming part of a standard taxi route.

5.3.17.1 5.3.17.2* 5.3.17.3 5.3.17.4* 5.3.17.5*	Stop bars are required only for runway visual range conditions less than a value of 183 meters at taxiway/runway intersections where the taxiway is lighted during low visibility operations. Once installed, controlled stop bars are operated at RVR conditions less than a value of 350 meters.
5.3.17.6	Elevated stop bar lights are normally installed longitudinally in line with taxiway edge lights. Where edge lights are not installed, the stop bar lights are installed not more than 3 meters from the taxiway edge.
5.3.17.9	The beamspread of elevated stop bar lights differs from the inpavement lights. The inner isocandela curve for the elevated lights is ± 7 horizontal and ± 4 vertical.
5.3.17.12	The U.S. standard for stop bars, which are switchable in groups, does not require the taxiway centerline lights beyond the stop bars to be extinguished when the stop bars are illuminated. The taxiway centerline lights which extend beyond selectively switchable stop bars are grouped into two segments of approximately 45 meters each. A sensor at the end of the first segment re−illuminates the stop bar and extinguishes the first segment of centerline lights. A sensor at the end of the second segment extinguishes that segment of centerline lights.
5.3.18.1*	Taxiway intersection lights are also used at other hold locations on taxiways such as low visibility holding points.
5.3.18.2	Taxiway intersection lights are collocated with the taxiway intersection marking. The marking is located at the following distances from the centerline of the intersecting taxiway: Airplane Design Group — Distance I — 13.5 meters II — 20 meters III — 28.5 meters IV — 39 meters V — 48.5 meters VI — 59 meters
5.3.19.1 5.3.19.2*	Runway guard lights are required only for runway visual range conditions less than a value of 350 meters.
5.3.19.4 5.3.19.5	Runway guard lights are placed at the same distance from the runway centerline as the aircraft holding distance, or within a few feet of this location.
5.3.19.12	The new U.S. standard for in−pavement runway guard lights complies with Annex 14. However, there may be some existing systems that do not flash alternately.
5.3.20.4*	The U.S. does not set aviation standards for flood lighting aprons.
5.3.21	The U.S. does not provide standards for visual docking guidance systems. U.S. manufacturers of these devices generally adhere to ICAO SARPS.
5.3.23.1	The U.S. does not have a requirement for providing roadholding position lights during RVR conditions less than a value of 350 meters.
5.4.1.2	Signs are often installed a few centimeters taller than specified in Annex 14, Volume 1, Table 5−4.
5.4.1.5	Sign inscriptions are slightly larger, and margins around the sign slightly smaller, than indicated in Annex 14, Volume 1, Appendix 4.
5.4.1.6	The sign luminance requirements are not as high as specified in Appendix 4. The U.S. does not specify a nighttime color requirement in terms of chromaticity.
5.4.2.2 5.4.2.4 5.4.2.9 5.4.2.14 5.4.2.16	All signs used to denote precision approach holding positions have the legend "ILS."
5.4.2.6	U.S. practice uses the NO ENTRY sign to prohibit entry by aircraft only.
5.4.2.8 5.4.2.10	The second mandatory instruction sign is usually not installed unless added guidance is necessary.

5.4.2.15	Signs for holding aircraft and vehicles from entering areas where they would infringe on obstacle limitation surfaces or interfere with NAVAIDs are inscribed with the ***designator of the approach***, followed by the letters ‘‘*APCH*’’; *for example, “15−APCH.’*
5.4.3.13 5.4.3.15	U.S. practice is to install signs about 3 to 5 meters closer to the taxiway/runway (See Annex 14, Table 5−4).
5.4.3.16	The U.S. does not have standards for the location of runway exit signs.
5.4.3.24	A yellow border is used on all location signs, regardless of whether they are stand−alone or collocated with other signs.
5.4.3.26	U.S. practice is to use Pattern A on runway vacated signs, except that Pattern B is used to indicate that an ILS critical area has been cleared.
5.4.3.30*	The U.S. does not have standards for signs used to indicate a series of taxi−holding positions on the same taxiway.
5.4.4.4*	The inscription, ‘‘VOR Check Course,’’ is placed on the sign in addition to the VOR and DME data.
5.4.5.1*	The U.S. does not have requirements for airport identification signs, though they are usually installed.
5.4.6.1*	Standards are not provided for signs used to identify aircraft stands.
5.4.7.2	The distance from the edge of road to the road−holding position sign conforms to local highway practice.
5.5.2.2* 5.5.7.1*	Boundary markers may be used to denote the edges of an unpaved runway.
5.5.3	There is no provision for stopway edge markers.
Chapter 6	**Visual Aids for Denoting Obstacles**
6.1	Recommended practices for marking and lighting obstacles are found in FAA Advisory Circular 70/7460−1J, Obstruction Marking and Lighting.
6.1.3	Any temporary or permanent structure, including all appurtenances, that exceeds an overall height of 200 feet (61m) above ground level or exceeds any obstruction standard contained in 14 CFR Part 77, should normally be marked and/or lighted.
6.2.1	This chapter provides recommended guidelines to make certain structures conspicuous to pilots during daylight hours. One way of achieving this conspicuity is by painting and/or marking these structures. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
6.2.3*	The maximum dimension of the rectangles in a checkered pattern is 6 meters on a side.
6.2.7	Markers should be displayed in conspicuous positions on or adjacent to the structure so as to retain the general definition of the structure. They should be recognizable in clear air from a distance of at least 4,000 feet (1219m) and in all directions from which aircraft are likely to approach. Markers should be distinctively shaped, i.e., spherical or cylindrical, so they are not mistaken for items that are used to convey other information. They should be replaced when faded or otherwise deteriorated.
6.2.11	Flag markers should be displayed around, on top, or along the highest edge of the obstruction. When flags are used to mark extensive or closely grouped obstructions, they should be displayed approximately 50 feet (15m) apart. The flag stakes should be of such strength and height that they will support the flags above all surrounding ground, structures, and/or objects of natural growth.
6.2.12	Each side of the flag marker should be at least 2 feet (0.6m) in length. Standard does not specifically address mobile objects.
6.2.14	Color patterns. Flags should be colored as follows: solid, orange and white, and checkerboard. Standard does not specifically address mobile objects.

6.3.1	Obstruction lighting may be displayed on structures as follows: aviation red obstruction lights; medium intensity flashing white obstruction lights, high intensity flashing white obstruction lights, dual lighting, obstruction lights during construction, obstruction lights in urban areas, and temporary construction equipment lighting.
6.3.11	The height of the structure AGL determines the number of light levels. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
6.3.13	When a structure lighted by a high intensity flashing light system is topped with an antenna or similar appurtenance exceeding 40 feet (12m) in height, a medium intensity flashing white light (L−865) should be placed within 40 feet (12m) from the tip of the appurtenance. This light should operate 24 hours a day and flash simultaneously with the rest of the lighting system.
6.3.14	The number of light units recommended depends on the diameter of the structure at the top.
6.3.16	Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.
6.3.17	Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.
6.3.18	Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.
6.3.19, 6.3.20	One or more light units is needed to obtain the desired horizontal coverage. The number of light units recommended per level (except for the supporting structures of catenary wires and buildings) depends upon the average outside diameter of the specific structure, and the horizontal beam width of the light fixture. The light units should be installed in a manner to ensure an unobstructed view of the system by a pilot approaching from any direction. The number of lights recommended is the minimum. The U.S. does not utilize Type A or Type B obstacle lights. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
6.3.21* 6.3.22*	The effective intensity, for daylight−luminance background, of Type A high−intensity obstacle lights is 270,000 cd ± 25 percent. The effective intensity, for daylight−luminance background, of Type B high−intensity obstacle lights is 140,000 cd ± 25 percent.
6.3.22	The height of the structure AGL determines the number of light levels. The light levels may be adjusted slightly, but not to exceed 10 feet (3m) when necessary to accommodate guy wires and personnel who replace or repair light fixtures. If an adjacent object shields any light, horizontal placement of the lights should be adjusted or additional lights should be mounted on that object to retain or contribute to the definition of the obstruction. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.

6.3.23, 6.3.24, 6.3.27, 6.3.29	Red obstruction lights are used to increase conspicuity during nighttime. The red obstruction lighting system is composed of flashing omni directional beacons (L−864) and/or steady burning (L−810) lights. When one or more levels is comprised of flashing beacon lighting, the lights should flash simultaneously. The U.S. does not utilize Type A, B, C, or D obstacle lights. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in
6.3.28	When objects within a group of obstructions are approximately the same overall height above the surface and are located a maximum of 150 feet (46m) apart, the group of obstructions may be considered an extensive obstruction. Install light units on the same horizontal plane at the highest portion or edge of prominent obstructions. Light units should be placed to ensure that the light is visible to a pilot approaching from any direction.
6.3.30, 6.3.31, 6.3.32	The medium intensity flashing white light system is normally composed of flashing omni directional lights. Medium intensity flashing white obstruction lights may be used during daytime and twilight with automatically selected reduced intensity for nighttime operation. The U.S. does not utilize Type A, B, or C obstacle lights. Medium intensity flashing white (L−865) obstruction lights may provide conspicuity both day and night. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of structures and overall layout of design.
6.3.35	Use high intensity flashing white obstruction lights during daytime with automatically selected reduced intensities for twilight and nighttime operations. When high intensity white lights are operated 24 hours a day, other methods of marking and lighting may be omitted. The U.S. does not utilize Type A obstacle lights. Lighting with high intensity (L−856) flashing white obstruction lights provides the highest degree of conspicuity both day and night. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
Chapter 7	**Visual Aids for Denoting Restricted Use Areas**
7.1.2*	A ‘‘closed’’ marking is not used with partially closed runways. See 5.2.4.10, above.
7.1.4	Crosses with shapes similar to figure 7.1, illustration b) are used to indicate closed runways and taxiways. The cross for denoting a closed runway is yellow.
7.1.5	In the U.S. when a runway is permanently closed, only the threshold marking, runway designation marking, and touchdown zone marking need be obliterated. Permanently closed taxiways need not have the markings obliterated.
7.1.7	The U.S. does not require unserviceability lights across the entrance to a closed runway or taxiway when it is intersected by a night−use runway or taxiway.
7.4.4	Flashing yellow lights are used as unserviceability lights. The intensity is such as to be adequate to delineate a hazardous area.
Chapter 8	**Equipment and Installations**
8.1.5* 8.1.6* 8.1.7 8.1.8	A secondary power supply for non−precision instrument and non−instrument approach runways is not required, nor is it required for all precision approach runways. The U.S. does not provide secondary power specifically for take−off operations below 550 meters RVR.
8.2.1	There is no requirement in the U.S. to interleave lights as described in the Aerodrome Design Manual, Part 5.
8.2.3	See 5.3.15.3 and 5.3.16.2
8.7.2* 8.7.3 8.7.4*	Glide slope facilities and certain other installations located within the runway strip, or which penetrate obstacle limitation surfaces, may not be frangibly mounted.

8.9.7*	A surface movement surveillance system is recommended for operations from 350 meters RVR down to 183 meters. Below 183 meters RVR, a surface movement radar or alternative technology is generally required.
Chapter 9	**Emergency and Other Services**
9.1.1	Emergency plans such as those specified in this section are required only at airports serving scheduled air carriers using aircraft having more than 30 seats. These airports are certificated under 14 CFR Part 139. In practice, other airports also prepare emergency plans.
9.1.12	Full−scale airport emergency exercises are conducted at intervals, not to exceed three years, at airports with scheduled passenger service using aircraft with more than 30 seats.
9.2.1	Rescue and fire fighting equipment and services such as those specified in this section are required only at airports serving scheduled air carriers in aircraft having more than 30 seats. Such airports generally equate to ICAO categories 4 through 9. Other airports have varying degrees of services and equipment.
9.2.3*	There is no plan to eliminate, after 1 January 2005, the current practice of permitting a reduction of one category in the index when the largest aircraft has fewer than an average of five scheduled departures a day.
9.2.4 9.2.5	The level of protection at U.S. airports is derived from the length of the largest aircraft serving the airport similar to the Annex's procedure, except that maximum fuselage width is not used. U.S. indices A−E are close equivalents of the Annex's categories 5−9. The U.S. does not have an equivalent to category 10.

Fire Extinguishing Agents and Equipment

Index	Aircraft length		Total minimum quantities of extinguishing agents			
	More than	Not more than	Dry chemical	Water for protein foam	Minimum trucks	Discharge rate[1]
A		27 meters	225 kg	0	1	See below
B	27 meters	38 meters	225 kg	5,700 L	1	See below
C	38 meters	48 meters	225 kg	5,700 L	2	See below
D	48 meters	60 meters	225 kg	5,700 L	3	See below
E	60 meters		225 kg	11,400 L	3	See below

[1]Truck size	Discharge rate
1,900 L but less than 7,600	at least 1,900 L per minute but not more than 3,800 L per minute
7,600 L or greater	at least 2,280 L per minute but not more than 4,560 L per minute

9.2.10	The required firefighting equipment and agents by index are shown in the table above. The substitution equivalencies between complementary agents and foam meeting performance level A are also used for protein and fluoroprotein foam. Equivalencies for foam meeting performance level B are used only for aqueous film forming foams.
9.2.18*	There is no specific requirement to provide rescue equipment as distinguished from firefighting equipment.
9.2.19*	At least one apparatus must arrive and apply foam within 3 minutes with all other required vehicles arriving within 4 minutes. Response time is measured from the alarm at the equipment’s customary assigned post to the commencement of the application of foam at the mid−point of the farthest runway.
9.2.29*	For ICAO category 6 (U.S. index B), the U.S. allows one vehicle.
9.4.4	At the present time, there is no requirement to perform tests using a continuous friction measuring device with self−wetting features. Some U.S. airports own these devices, while others use less formal methods to monitor build−up of rubber deposits and the deterioration of friction characteristics.
9.4.15	The standard grade for temporary ramps is 15 feet longitudinal per 1 inch of height (0.56 percent slope) maximum, regardless of overlay depth.
9.4.19	There is no U.S. standard for declaring a light unserviceable if it is out of alignment or if its intensity is less than 50 percent of its specified value.

*Indicates ICAO Recommended Practice

ANNEX 14 − AERODROMES	
VOLUME II − HELIPORTS	
Chapter 1	**Definitions**
Declared distances	The U.S. does not use declared distances (take−off distance available, rejected take−off distance available, or landing distance available) in designing heliports.
Final approach and take−off area (FATO)	The U.S. ‘‘take−off and landing area’’ is comparable to the ICAO FATO, and the U.S. ‘‘FATO’’ is more comparable to the ICAO TLOF. The U.S. definition for the FATO stops with ‘‘the take−off manoeuvre is commenced.’’ This difference in definition reflects a variation in concept. The rejected take−off distance is an operational computation and is not required as part of the design.
Helicopter stand	The U.S. does not use the term "helicopter stand." Instead, the U.S. considers paved or unpaved aprons, helipads, and helidecks, all as helicopter parking areas; i.e., helicopter stands.
Safety area	The U.S. considers the safety area to be part of the take−off and landing area which surrounds the FATO and does not call for or define a separate safety area.
Touchdown and lift−off area (TLOF)	The U.S. differs in the definition by considering helipads and helidecks to be FATO. The U.S. does not define the load bearing area on which the helicopter may touch down or lift−off as a TLOF.
Chapter 2	**Heliport Data**
2.1 d)	The U.S. does not measure or report a safety area as a separate feature of a heliport.
2.2	The U.S. does not ‘‘declare’’ distances for heliports.
Chapter 3	**Physical Characteristics**
3.1.2	The U.S. does not distinguish between single−engine and multi−engine helicopters for the purposes of heliport design standards. Neither does the U.S. design or classify heliports on the basis of helicopter performance. The U.S. FATO dimensions are at least equal to the rotor diameter of the design single rotor helicopter and the area must be capable of providing ground effect. The U.S. does not have alternative design standards for water FATOs, elevated heliports, or helidecks.
3.1.3	The U.S. has a single gradient standard; i.e., 5 percent, except in fueling areas where the limit is 2 percent, which is applicable for all portions of heliports.
3.1.6 3.1.7* 3.1.8*	The U.S. does not require or provide criteria for clearways in its design standards. It does encourage ownership and clearing of the land underlying the innermost portion of the approach out to where the approach surface is 10.5 meters above the level of the take−off surface.
3.1.14 to 3.1.21	Safety areas are considered part of the take−off and landing area (or primary surface) in U.S. heliport design. The take−off and landing area of the U.S. design criteria, based on 2 rotor diameters, provides for the ICAO safety area; however, the surface does not have to be continuous with the FATO or be load bearing.
3.1.22	Taxiway widths are twice the undercarriage width of the design helicopter.
3.1.23	The U.S. requires 1.25 rotor diameters plus 2 meters of separation between helicopter ground taxiways.
3.1.24	The U.S. gradient standard for taxiways is a maximum of 5 percent.
3.1.32*	The U.S. sets no gradient standards for air taxiways.
3.1.33	The U.S. requires 1.5 rotor diameters of separation between hover or air taxiways.
3.1.34	The U.S. standards for air taxiways and air transit routes are combined as the standards for hover taxiways noted in paragraphs 3.1.23, 3.1.24 and 3.1.33.
3.1.35	The U.S. sets no maximum turning angle or minimum radius of turn on hover taxiways.
3.1.36	The U.S. gradient standard for aprons is a maximum of 5 percent except in fueling areas where it is 2 percent.
3.1.37	The U.S. criterion for object clearances is 1/3 rotor diameter or 3 meters, whichever is greater.
3.1.38	The U.S. standard for helipads (comparable to helicopter stands) is 1.5 times the undercarriage length or width, whichever is greater.

3.1.39	The U.S. standard for separation between FATO center and the centerline of the runway is 120 meters.
3.2.2	The U.S. does not apply either a performance related or an alternative design standard for elevated heliport facilities.
3.2.5 to 3.2.10	The U.S. does not use safety areas in its heliport design.
3.3 3.4	In the U.S., shipboard and relocatable off−shore helicopter ‘‘helideck’’ facilities are under the purview of the U.S. Coast Guard and utilize the International Maritime Organization (IMO) code. Fixed off−shore helideck facilities are under the purview of the Department of Interior based on their document 351DM2. Coastal water helideck facilities are under the purview of the individual affected States.
Chapter 4	**Obstacle Restriction and Removal**
4.1.1	The U.S. approach surface starts at the edge of the take−off and landing area.
4.1.2 a)	The U.S. approach surface width adjacent to the heliport take−off and landing area is a minimum of 2 rotor diameters.
4.1.2 b) 2)	The U.S. precision instrument approach surface flares from a width of 2 rotor diameters to a width of 1,800 meters at the 7,500 meters outer end. The U.S. does not use a note similar to the one that follows 4.1.4, as it does not differentiate between helicopter requirements on the basis of operational performance.
4.1.5	The outer limit of the U.S. transitional surfaces adjacent to the take−off and landing area is 76 meters from the centerline of the VFR approach/departure surfaces. The transitional surface width decreases to zero at a point 1,220 meters from the take−off and landing area. It does not terminate at an inner horizontal surface or at a predetermined height.
4.1.6	The U.S. transitional surfaces have a fixed width, 76 meters less the width of the take−off and landing area, from the approach centerline for visual operations and an outwardly flaring width to 450 meters for precision instrument operations. The U.S. does not use an inner horizontal surface nor terminate the transitional surfaces at a fixed/predetermined height.
4.1.7 b)	Since the U.S. includes the safety area in the take−off and landing area, the comparable elevation is at the elevation of the FATO.
4.1.9 through 4.1.20	The U.S. does not use the inner horizontal surface, the conical surface, or take−off climb surface described in these paragraphs or the note following paragraph 4.1.20 for heliport design.
4.1.21 through 4.1.25	The U.S. does not have alternative criteria for floating or fixed−in−place helidecks.
4.2	The U.S. has no requirement for a note similar to the one following the heading ‘‘Obstacle limitation requirements.’’
4.2.1	The U.S. criteria does not require a take−off climb surface or a conical obstacle limitation surface to establish a precision instrument approach procedure.
4.2.2	The U.S. criteria does not require a take−off climb surface or a conical obstacle limitation surface to establish a non−precision instrument approach procedure.
4.2.3	The U.S. criteria does not require a take−off climb obstacle limitation surface to establish a non−instrument approach procedure.
4.2.4*	The U.S. has no requirement for protective surfaces such as an inner horizontal surface or a conical surface.
4.2.5	The U.S. does not have tables for heliport design comparable to the ICAO Tables 4−1 to 4−4.
4.2.6	The U.S. subscribes to the intent of this paragraph to limit object heights in the heliport protective surfaces but uses fewer surfaces with different dimensions for those surfaces.
4.2.7*	The U.S. subscribes to the intent of this paragraph but uses different dimensional surfaces.
4.2.8	The U.S. criterion requires that a heliport have at least one approach and departure route and encourages multiple approaches separated by arcs of 90 to 180 degrees.
4.2.9*	The U.S. has no requirement that a heliport’s approach surfaces provide 95 percent usability.

4.2.10	Since the U.S. does not differentiate between surface level and elevated heliports, the comments to paragraphs 4.2.1 through 4.2.5 above apply.
4.2.11	The U.S. has no requirement for a take−off climb surface. It does require at least one approach/departure surface and encourages that there be as many approaches as is practical separated by arcs of 90 to 180 degrees.
4.2.12 through 4.2.22	Since the U.S. does not have alternative design criteria for helidecks or shipboard heliports, there are no comparable U.S. protective surface requirements.
Tables 4−1, 4−2, 4−3, 4−4	The U.S. does not have tables comparable to the ICAO Tables 4−1 to 4−4.
Chapter 5	**Visual Aids**
5.2.1	The U.S. does not have criteria for markings to be used in defining winching areas.
5.2.3.3	The U.S. maximum mass markings are specified in 1,000 pound units rather than tonnes or kilograms.
5.2.4.3	The U.S. criterion requires FATO markers but is not specific on the number or spacing between markers.
5.2.4.4	The U.S. criteria for FATO markers is not dimensionally specific.
5.2.6	The U.S. does not require, or have criteria for, marking an aiming point.
5.2.7.1	The U.S. does not require specific criteria for marking floating or off−shore fixed−in−place helicopter or helideck facilities.
5.2.8	The U.S. does not require marking the touchdown area.
5.2.9	The U.S. does not have criteria for heliport name markings.
5.2.10	The U.S. does not have a requirement to mark helideck obstacle−free sectors.
5.2.12.2	The U.S. criterion places the air taxiway markers along the edges of the routes rather than on the centerline.
5.2.12.3	The U.S. criterion for air taxiway markers does not specify the viewing area or height to width ratio.
5.3.2.3	The U.S. heliport beacon flashes white−green−yellow colors rather than a series of timed flashes.
5.3.2.5*	The U.S. criteria is not specific on the light intensity of the flash.
5.3.3.3	The U.S. criterion specifies a 300 meters approach light system configuration. The light bars are spaced at 30 meters intervals. The first two bars of the configuration are single lights, the next two bars are two lights, then two bars with three lights, then two bars with four lights, and finally two bars with five lights.
5.3.3.4	The U.S. approach light system uses aimed PAR−56 lights.
5.3.3.6	The U.S. heliport approach light system does not contain flashing lights.
5.3.5.2 a)	The U.S. requires an odd number of lights, but not less than three lights per side.
5.3.5.2 b)	The U.S. requires a minimum of eight lights for a circular FATO and does not specify the distance between lights.
5.3.5.4*	The U.S. criteria does not specify light distribution.
5.3.6	The U.S. does not have specific criteria for aiming point lights.
5.3.8	The U.S. does not have standards for winching area lighting.
Chapter 6	**Heliport Services**
6.1*	The U.S. requirements for rescue and fire fighting services at certificated heliports are found in 14 CFR Part 139. Criteria for other heliports are established by the National Fire Protection Association (NFPA) pamphlets 403 or 418, or in regulations of local fire departments.

*Indicates ICAO Recommended Practice

ANNEX 15 − AERONAUTICAL INFORMATION SERVICES	
Chapter 2	**Definitions**
ASHTAM	The U.S. doesn't have a series of NOTAM called ASHTAM, although notification procedures are written on handling of Volcanic Ash activity.
Danger area	"Danger area" is not used in reference to areas within the U.S. or in any of its possessions or territories.
Integrated Aeronautical Information Package	The U.S. does not produce the entire information package.The U.S. does not use the term Integrated Aeronautical Information Package. The U.S. provides the elements contained in the ICAO Integrated Aeronautical Information Package individually from several different sources and not from a single source.
Maneuvering area	This term is not used by the U.S.
Movement area	The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover−taxiing, air−taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.
Pre−flight Information Bulletin (PIB)	The US does not use the term PIB. However, current NOTAM information is gathered and available through different sources.
Prohibited area Restricted area	The terms ''prohibited area'' and ''restricted area'' will be employed substantially in accordance with the definitions established. Additionally, the following terms will be used: Alert area. Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. Alert areas are depicted on aeronautical charts for the information of nonparticipating pilots. All activities within an alert area are conducted in accordance with Federal Aviation Regulations, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance. Controlled firing area. Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground. Warning area. Airspace which may contain hazards to nonparticipating aircraft in international airspace. Military operations area (MOA). An airspace assignment of defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.
SNOWTAM	The US presents the information in a different manner via a NOTAM.
Chapter 3	**General**
3.1.7	Data is available, but not as an Integrated Aeronautical Information Package.
3.2.12	The US does not present the information in an integrated package. NFDC is responsible for the validation / verification procedures that ensure that quality requirements and traceability of aeronautical data are met.
3.3.1	The U.S. does not provide an Integrated Aeronautical Information Package. There is no single office for this function. This data can be obtained from different offices (NOTAM, Publications & NFDC)
3.3.5	The U.S. does not provide an Integrated Aeronautical Information Package. The U.S. does provide all of this information, but not from a single source. Information may be obtained from various offices, but not a single office.
3.3.6	The U.S. does not provide an Integrated Aeronautical Information Package. The U.S. provides the elements contained in the ICAO Integrated Aeronautical Information Package individually from several different sources and not from a single source.

3.6.1	The U.S. does not produce an Integrated Aeronautical Information Package. The individual elements of the ICAO Integrated Aeronautical Information are available in plain text.
3.6.6.3	The US does not use a nationality letter in the identification of Special Use Airspace (SUA). The US does not use the letter D for danger area.
3.7.2.2	The US utilizes Geoid−03 which is a component of the North American Vertical Datum of 1988 (NAVD 88).
Chapter 4	**Aeronautical Information Publications (AIP)**
4.1.3	The US does not produce an Aircraft Parking / Docking Chart.
4.2.8 4.3.4	The U.S. does not publish an aeronautical information regulation and control (AIRAC).
4.4 4.5	The U.S. does not issue AIP supplements. Corrections or changes from the latest amendments to the AIP are carried as NOTAMs.
Chapter 5	**NOTAM**
5.1.1.2	The U.S. does not routinely issue ‘‘trigger NOTAMs’’ referencing published material when an AIP amendment is issued.
5.1.1.4	FAA Order states at least 3 days (versus 7 days) notice required
5.2.1	The current U.S. system numbers international NOTAMs consecutively by the location in the A field. The U.S. routinely issues over 70,000 outgoing international NOTAMs each year. Only series A is used for international distribution. This precludes numbering the NOTAMs by the originator. The US does not utilize the ICAO format as noted in Appendix 6.
5.2.3	The U.S. periodically issues multipart NOTAMs which are transmitted as multiple telecommunication messages. The nature of the NOTAM material is such that it will not always fit in one message. The U.S. does not use the term SNOWTAM. Procedures for reporting snow, slush, ice and water are outlined in FAA Order 7930.2K.
5.2.4	The U.S. doesn’t have a series of NOTAM called ASHTAM, although notification procedures are written on handling of Volcanic Ash activity.
5.2.8.1	The monthly checklist of NOTAMs does not specifically reference printed publications, such as AIP amendments.
5.2.8.3	A monthly printed plain language summary of NOTAMs in force is not issued. The International NOTAM publication, issued biweekly, is not inclusive of all U.S. international NOTAMs.
5.3.2	The U.S. does not use the System NOTAM format at this time. The format used is based on the previous ICAO Class I format. See notes on Appendix 6 for details.
Chapter 6	**Aeronautical Information Regulation and Control (AIRAC)**
	See 4.2.8.

Chapter 8	Pre−Flight and Post−Flight Information
8.1.2.1 f)	NOTAMs relating to bird hazards are relayed as local NOTAM information and are not disseminated internationally. The information is available from the local flight service station during preflight briefing.
8.1.3	The FAA does not use PIBs, but does provide pertinent NOTAM information in plain language form every 28 days in a document called the Notices to Airmen Publication (NTAP).
8.2.2	The FAA provides all of this information, but not from a single source.
Appendix 1	**Contents of Aeronautical Information Publication (AIP)**
	The U.S. does not publish sunrise/sunset tables in the AIP.
GEN 3.1.3 4)	The U.S. does not publish pre−flight information bulletins (PIBs).
Appendix 2	**SNOWTAM Format**
	The U.S. does not use the SNOWTAM for issuance of winter weather information. Snow conditions are reported using our current international NOTAM format (Class I).
Appendix 3	**ASHTAM Format**
1.3	ASHTAM information will continue to be distributed as an International NOTAM.
2.1	The heading will not be entered as stated.
3	ASHTAM information will be distributed in U.S. International NOTAM format.
Appendix 6	**NOTAM Format**
	The U.S. is not prepared to transition to the System NOTAM format. NOTAMs are processed in the previous ICAO Class I format.
1.2 General	Multiple conditions, for a single location, may be reported in a NOTAM.
2 NOTAM numbering	The U.S. numbers NOTAMs consecutively by location, not by country of origin. Due to the volume of international NOTAMs generated by the U.S., the current U.S. numbering scheme is expected to continue.
3 Qualifiers	The current software will not accept the Item Q) qualifiers line.
5 Item B)	Item B) is currently issued as an eight digit date−time group. The U.S. also uses the initials ‘‘WIE’’ (with immediate effect) for NOTAMs that take effect immediately upon issuance. The U.S. does not include an Item B) in NOTAMCs. The assumption is that all cancellations take effect immediately when issued. While this date−time group could be added to NOTAMCs, the U.S. position is that it is unnecessary.
6 Item C)	Item C), like item B), is currently issued as an eight digit date−time group. The U.S. also uses the initials ‘‘UFN’’ (until further notice) for NOTAMs that have an uncertain duration.
8 Item E)	U.S. NOTAMs do not contain Item E) information for NOTAMCs. Remark: Item E) contains the NOTAM Code (Q−code) in addition to plain language and ICAO abbreviations.

ANNEX 16 − ENVIRONMENTAL PROTECTION	
VOLUME I − AIRCRAFT NOISE	
Reference: Part 36 of Title 14 of the United States Code of Federal Regulations	
Chapter 1	
1.7	Each person who applies for a type certificate for an airplane covered by 14 CFR Part 36, irrespective of the date of application for the type certificate, must show compliance with Part 36.
Chapter 2	
2.1.1	For type design change applications made after 14 August 1989, if an airplane is a Stage 3 airplane prior to a change in type design, it must remain a Stage 3 airplane after the change in type design regardless of whether Stage 3 compliance was required before the change in type design.
2.3.1 a)	Sideline noise is measured along a line 450 meters from and parallel to the extended runway centerline for two− and three−engine aircraft; for four−engine aircraft, the sideline distance is 0.35 NM.
2.4.2	Noise level limits for Stage 2 derivative aircraft depend upon whether the engine by−pass ratio is less than two. If it is, the Stage 2 limits apply. Otherwise, the limits are the Stage 3 limits plus 3 dB or the Stage 2 value, whichever is lower.
2.4.2.2 b)	Take−off noise limits for three−engine, Stage 2 derivative airplanes with a by−pass ratio equal to or greater than 2 are 107 EPNdB for maximum weights of 385,000 kg (850,000 lb) or more, reduced by 4 dB per halving of the weight down to 92 EPNdB for maximum weights of 28,700 kg (63,177 lb) or less. Aircraft with a by−pass ratio less than 2 only need meet the Stage 2 limits.
2.5.1	Trade−off sum of excesses not greater than 3 EPNdB and no excess greater than 2 EPNdB.
2.6.1.1	For airplanes that do not have turbo−jet engines with a by−pass ratio of 2 or more, the following apply: a) four−engine airplanes − 214 meters (700 feet); b) all other airplanes − 305 meters (1,000 feet). For all airplanes that have turbo−jet engines with a by−pass ratio of 2 or more, the following apply: a) four−engine airplanes − 210 meters (689 feet); b) three−engine airplanes − 260 meters (853 feet); c) airplanes with fewer than three engines − 305 meters (1,000 feet). The power may not be reduced below that which will provide level flight for an engine inoperative or that will maintain a climb gradient of at least 4 percent, whichever is greater.
Chapter 3	
3.1.1	For type design change applications made after 14 August 1989, if an airplane is a Stage 3 airplane prior to a change in type design, it must remain a Stage 3 airplane after the change in type design regardless of whether Stage 3 compliance was required before the change in type design.
3.3.1 a) 2)	The U.S. has no equivalent provision in 14 CFR Part 36.
3.3.2.2	A minimum of two microphones symmetrically positioned about the test flight track must be used to define the maximum sideline noise. This maximum noise may be assumed to occur where the aircraft reaches 305 meters (1,000 feet). 14 CFR Part 36 does not require symmetrical measurements to be made at each and every point for propeller−driven airplane sideline noise determination.
3.6.2.1 c)	Under 14 CFR Part 36, during each test take−off, simultaneous measurements should be made at the sideline noise measuring stations on each side of the runway and also at the take−off noise measuring station. If test site conditions make it impractical to simultaneously measure take−off and sideline noise, and if each of the other sideline measurement requirements is met, independent measurements may be made of the sideline noise under simulated flight path techniques. If the reference flight path includes a power cutback before the maximum possible sideline noise level is developed, the reduced sideline noise level, which is the maximum value developed by the simulated flight path technique, must be the certificated sideline noise value.

3.6.2.1 d)	14 CFR Part 36 specifies the day speeds and the acoustic reference speed to be the minimum approved value of V_2 +10 kt, or the all−engines operating speed at 35 feet (for turbine−engine powered airplanes) or 50 feet (for reciprocating−engine powered airplanes), whichever speed is greater as determined under the regulations constituting the type certification basis of the airplane. The test must be conducted at the test day speeds ±3 kt.
3.7.4	If a take−off test series is conducted at weights other than the maximum take−off weight for which noise certification is requested: a) at least one take−off test must be at or above that maximum weight; b) each take−off test weight must be within +5 or −10 percent of the maximum weight. If an approach test series is conducted at weights other than the maximum landing weight for which certification is requested: a) at least one approach test must be conducted at or above that maximum weight; b) each test weight must exceed 90 percent of the maximum landing weight. Total EPNL adjustment for variations in approach flight path from the reference flight path and for any difference between test engine thrust or power and reference engine thrust or power must not exceed 2 EPNdB.
Chapter 5	
5.1.1	Applies to all large transport category aircraft (as they do to all subsonic turbo−jet aircraft regardless of category). Commuter category aircraft, propeller−driven airplanes below 8,640 kg (19,000 lb) are subject to 14 CFR Part 36, Appendix F or to Appendix G, depending upon the date of completion of the noise certification tests.
Chapter 6	
6.1.1	Applies to new, all propeller−driven airplane types below 19,000 lb (8,640 kg.) in the normal, commuter, utility, acrobatic, transport, or restricted categories for which the noise certification tests are completed before 22 December 1988.
Chapter 8	
General	14 CFR Part 36 (Section 36.1 (h)) defines Stage 1 and Stage 2 noise levels and Stage 1 and Stage 2 helicopters. These definitions parallel those used in 14 CFR Part 36 for turbo−jets and are used primarily to simplify the acoustical change provisions in Section 36.11. 14 CFR Part 36 (Section 36.805(c)) provides for certain derived versions of helicopters for which there are no civil prototypes to be certificated above the noise level limits.
8.1.1 a)	Applicable to new helicopter types for which application for an original type certificate was made on or after 6 March 1988.
8.1.1 b)	Applicable only to "acoustical changes" for which application for an amended or supplemental type certificate was made on or after 6 March 1988.
8.4	14 CFR Part 36 Appendix H specifies a slightly different rate of allowable maximum noise levels as a function of helicopter mass. The difference can lead to a difference in the calculated maximum noise limits of 0.1 EPNdB under certain roundoff condition.
8.6.3.1 b)	Does not include the V_{NE} speeds.
8.7	14 CFR Part 36 Appendix H does not permit certain negative corrections. Annex 16 has no equivalent provision.
8.7.4	EPNL correction must be less than 2.0 EPNdB for any combination of lateral deviation, height, approach angle and, in the case of flyover, thrust or power. Corrections to the measured data are required if the tests were conducted below the reference weight. Corrections to the measured data are required if the tests were conducted at other than reference engine power.
8.7.5	The rotor speed must be maintained within one percent of the normal operating RPM during the take−off procedure.
8.7.8	The helicopter must fly within ±10° from the zenith for approach and take−off, but within ±5° from the zenith for horizontal flyover.

Chapter 10	
General	Exception from acoustical change rule given for aircraft with flight time prior to 1 January 1955 and land configured aircraft reconfigured with floats or skis.
10.1.1	Applies to new, amended, or supplemental type certificates for propeller−driven airplanes not exceeding 8,640 kg (19,000 lb) for which noise certification tests have not been completed before 22 December 1988.
10.4	The maximum noise level is a constant 73 dBA up to 600 kg (1,320 lb). Above that weight, the limit increases at the rate of 1 dBA/75kg (1 dBA/165 lb) up to 85 dBA at 1,500 kg (3,300 lb) after which it is constant up to and including 8,640 kg (19,000 lb).
10.5.2, second phase, d)	For variable−pitch propellers, the definition of engine power is different in the second segment of the reference path. Maximum continuous installed power instead of maximum power is used.
Chapter 11	
11.1	14 CFR Part 36 Appendix J was effective 11 September 1992 and applies to those helicopters for which application for a type certificate was made on or after 6 March 1986.
11.4	14 CFR Part 36 Appendix J specifies a slightly different rate of allowable maximum noise levels as a function of helicopter mass. The difference can lead to a difference in the calculated maximum noise limits of 0.1 EPNdB under certain roundoff condition.
11.6	14 CFR Part 36 Appendix J prescribes a ±15 meter limitation on the allowed vertical deviation about the reference flight path. Annex 16 has no equivalent provision.
PART V	
General	No comparable provision exists in U.S. Federal Regulations. Any local airport proprietor may propose noise abatement operating procedures to the FAA which reviews them for safety and appropriateness.
Appendix 1	
General	Sections 3, 8, and 9 of Appendix 1 which contain the technical specifications for equipment, measurement and analysis and data correction for Chapter 2 aircraft and their derivatives differ in many important aspects from the corresponding requirements in Appendix 2 which has been updated several times. 14 CFR Part 36 updates have generally paralleled those of Appendix 2 of Annex 16. These updated requirements are applicable in the U.S. to both Stage 2 and Stage 3 aircraft and their derivatives.
2.2.1	A minimum of two microphones symmetrically positioned about the test flight track must be used to define the maximum sideline noise. This maximum noise may be assumed to occur where the aircraft reaches 305 meters (1,000 feet), except for four−engine, Stage 2 aircraft for which 439 meters (1,440 feet) may be used.
2.2.2	No obstructions in the cone defined by the axis normal to the ground and the half−angle 80° from the axis.
2.2.3 c)	Relative humidity and ambient temperature over the sound path between the aircraft and 10 meters above the ground at the noise measuring site is such that the sound attenuation in the 8 kHz one−third octave band is not greater than 12 dB/100 meters and the relative humidity is between 20 and 95 percent. However, if the dew point and dry bulb temperature used for obtaining relative humidity are measured with a device which is accurate to within one−half a degree Celsius, the sound attenuation rate must not exceed 14 dB/100 meters in the 8 kHz one−third octave band.
2.2.3 d)	Test site average wind not above 12 kt and average cross−wind component not above 7 kt.
2.3.4	The aircraft position along the flight path is related to the recorded noise 10 dB downpoints.
2.3.5	At least one take−off test must be a maximum take−off weight and the test weight must be within +5 or −10 percent of maximum certificated take−off weight.
Appendix 2	
2.2.1	A minimum of two symmetrically placed microphones must be used to define the maximum sideline noise at the point where the aircraft reaches 305 meters.

2.2.2	When a multiple layering calculation is required, the atmosphere between the airplane and the ground must be divided into layers. These layers are not required to be of equal depth, and the maximum layer depth must be 100 meters.
2.2.2 b)	14 CFR Part 36 specifies that the lower limit of the temperature test window is 36 degrees Fahrenheit (2.2 degrees Celsius). Annex 16 provides 10 degrees Celsius as the lower limit for the temperature test window. 14 CFR Part 36 does not specify that the airport facility used to obtain meteorological condition measurements be within 2,000 meters of the measurement site.
2.2.2 c)	14 CFR Part 36 imposes a limit of 14 dB/100 meters in the 8 kHz one−third octave band when the temperature and dew point are measured with a device which is accurate to within one−half a degree Celsius.
2.2.3	14 CFR Part 36 requires that the limitations on the temperature and relative humidity test window must apply over the whole noise propagation path between a point 10 meters above the ground and the helicopter. Annex 16 specifies that the limitations on the temperature and relative humidity test window apply only at a point 10 meters above the ground. 14 CFR Part 36 requires that corrections for sound attenuation must be based on the average of temperature and relative humidity readings at 10 meters and the helicopter. Annex 16 implies that the corrections for sound absorption are based on the temperature and relative humidity measured at 10 meters only.
3.2.6	No equivalent requirement.
3.4.5	For each detector/integrator the response to a sudden onset or interruption of a constant sinusoidal signal at the respective one−third octave band center frequency must be measured at sampling times 0.5, 1.0, 1.5, and 2.0 seconds after the onset or interruption. The rising responses must be the following amounts before the steady−state level: 0.5 seconds: 4.0 ± 1.0 dB 1.0 seconds: 1.75 ± 0.75 dB 1.5 seconds: 1.0 ± 0.5 dB 2.0 seconds: 0.6 ± 0.5 dB
3.4.5 (Note 1)	No equivalent provision in 14 CFR Part 36.
3.5.2	No equivalent requirement.
5.4	14 CFR Part 36 requires that the difference between airspeed and groundspeed must not exceed 10 kt between the 10 dB down time period.
8.4.2	14 CFR Part 36 specifies a value of −10 in the adjustment for duration correction. Annex 16 specifies a value of −7.5.
9.1.2, 9.1.3	14 CFR Part 36 always requires use of the integrated procedure if the corrected take−off or approach noise level is within 1.0 dB of the applicable noise limit.
Appendix 6	
4.4.1	The microphone performance, not its dimensions, is specified. The microphone must be mounted 1.2 meters (4 feet) above ground level. A windscreen must be employed when the wind speed is in excess of 9 km/h (5 kt).
5.2.2 a)	Reference conditions are different. Noise data outside the applicable range must be corrected to 77 degrees F and 70 percent humidity.
5.2.2 c)	There is no equivalent provision in 14 CFR Part 36. Fixed−pitch propeller−driven airplanes have a special provision. If the propeller is fixed−pitch and the test power is not within 5 percent of reference power, a helical tip Mach number correction is required.

ANNEX 16 − ENVIRONMENTAL PROTECTION	
VOLUME II − AIRCRAFT ENGINE EMISSIONS	
Chapter 1	
	The U.S. currently has regulations prohibiting intentional fuel venting from turbojet, turbofan and turboprop aircraft, but we do not now have a regulation preventing the intentional fuel venting from helicopter engines.

ANNEX 17 − SECURITY − SAFEGUARDING INTERNATIONAL CIVIL AVIATION AGAINST ACTS OF UNLAWFUL INTERFERENCE
There are no reportable differences between U.S. regulations and the Standards and Recommended Practices contained in this Annex.

ANNEX 18 − THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR
Adopted by the ICAO Council 6/26/81
Effective Date: 1/1/83
Applicability Date: 1/1/84
(Note: Differences are to be filed with ICAO by 6/1/83).

PANS ATM Doc 4444	
There are several substantive differences between the U.S. procedures and those of ICAO, in addition to some minor variations in detail which are not considered significant. These differences are the result of initiatives and/or refinements which the U.S. has effected in the interest of improving the safety and efficiency of air traffic.	
PAN ATM Doc 4444 15th Edition	**7110.65 S**
CHAPTER 1	**Definitions**
Definitions	U.S. uses Word Meanings, Definitions (PG Glossary) and Abbreviations
Affirm	U.S. has no phraseology using “AFFIRM”. U.S. uses “**AFFIRMATIVE” – “Yes”**. ; or “**ACKNOWLEDGE**; or **Roger, Wilco”**
Airborne Collision Avoidance System	The U.S. uses traffic alert and collision avoidance system (TCAS).
Aircraft	U.S. uses “**Aircraft”** to mean the airframe, crew members, or both.
AIRMET	In the U.S., AIRMET stands for Airman’s Meteorological Information which is in−flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMETs concern weather of less severity than that covered by SIGMETs or convective SIGMETs. AIRMETs cover moderate icing, moderate turbulence, sustained winds of 30 kt or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement.
Air−report	The U.S. does not normally use the term “air−report.” Pilot weather reports (PIREPs), position, and operational reports are used. PIREPs include reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, and other conditions pertinent to flight safety. They may include information on ceilings, visibility, thunderstorms, icing of light degree or greater, wind shear and its effect on airspeed, or volcanic ash clouds, but do not usually include air temperature.
Air−taxiing	In the U.S., the term “hover taxi” is sometimes used to indicate the ICAO term “air−taxiing.” In the U.S., air−taxiing is the preferred method for helicopter movements on airports provided ground operations/conditions permit. Additionally, in the U.S., air taxi is used to indicate certain commercial aircraft operations. For those operations, usually a special call sign is used, or the prefix “Tango” is added to the aircraft call sign.
ALERFA	The U.S. does not use the code words ALERFA, DETRESFA, and INCERFA to designate an alert.
Altitude	U.S. uses “**Altitude”** to mean **indicated altitude mean sea level (MSL), flight level (FL), or both.**
Approval Request	U. S. uses “**APREQ”**
Approved separation	U.S. uses “**Approved separation”** to mean separation in accordance with the applicable minima in this manual.
Area control service	The U.S. does not use the term “area control service” to indicate controlled flight in controlled areas.
ATS route	In U.S. domestic airspace, the term “ATS route” is not used. Routes in the U.S. include VOR airways, jet routes, substitute routes, off−airway routes, RNAV routes and colored airways. The U.S. also uses instrument departure procedures (DPs), and standard terminal arrivals (STARs).
Automatic Dependent Surveillance (ADS)	The U.S. has not yet published ATS procedures for the use of Automatic Dependent Surveillance (ADS).

Control zone	The U.S. uses “surface area” in place of the ICAO term “control zone.” Surface area is defined as the airspace contained by the lateral boundary of the Class B, C, D or E airspace designated for an airport that begins at the surface and extends upward.
Controlled airspace	The U.S. uses the following definition of controlled airspace found in 14 CFR Section 1.1: “Controlled airspace means an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.”
Course, bearing, azimuth, heading, and wind direction	U.S. uses “**Course, bearing, azimuth, heading, and wind direction”** information and it must always be **magnetic** unless specifically stated otherwise.
Cruising level	The U.S. uses the term “cruising altitude.”
Decision altitude	Approach with vertical guidance (VNAV).
DETRESFA	See ALERFA.
Expedite	U.S. uses **“EXPEDITE”** by ATC when **prompt compliance** is required to avoid the development of an imminent situation. Expedite climb/descent normally indicates to a pilot that the approximate best rate of climb/descent should be used without requiring an exceptional change in aircraft handling characteristics.
Flight information centre	In the U.S., the services provided by flight information centers (FICs) are conducted by air traffic control (ATC) facilities, flight service stations (FSSs), and rescue coordination centers (RCCs).
Glide path	The U.S. uses “glideslope” rather than “glide path” although the terms are sometimes interchangeable. For the U.S., a glideslope provides vertical guidance for aircraft during approach and landing.
Holding procedure	In the U.S., a hold procedure is also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
Holding point	The U.S. uses “holding fix” rather than “holding point.”
INCERFA	See ALERFA.
Kilometres	U.S. ATS units do not accept aircraft speeds in metric terms nor do they use the term “minimum clean speed.” The U.S. does use phrases such as “maintain maximum forward speed” or ”maintain slowest practical speed.”
Level	The U.S. uses ”altitude” or “flight level” rather than “level.”
May or need not	U.S. uses “**May” or “need not”** means a procedure is **optional**.
Miles	U.S. uses “**Miles”** to mean **nautical miles** unless otherwise specified, and **means statute miles in conjunction with visibility.**
Minute	U.S. uses “**minute plus 30 seconds”**, except when time checks are given to the nearest quarter minute.
Movement area	In the U.S., the “movement area” is equivalent to the ICAO “maneuvering area” which does not include parking areas.
Pilot-in-Command	Designated by operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.
Plural	U.S. uses “**Plural words to include the singula**r”.
Runway	U.S. uses “**Runway”**, which means the **runway used by aircraft**, and in discussions of separation standards is applicable to helipads with accompanying takeoff/ landing courses.
Shall	U.S. uses **“Shall”** or an action verb in the imperative sense, to mean a procedure is **mandatory.**
Should	U.S. uses “**Should”** to mean a procedure is **recommended.**
Singular	U.S. uses “**Singular words to include the plural”.**
Slush	In the U.S., ”slush” is not used as a weather phenomenon.
Standard instrument arrival (STAR)	The U.S. uses the acronym STAR to define a standard terminal arrival.
Standard instrument departure (SID)	The U.S. uses the term departure procedure (DP) in lieu of SID.
Stand-by	U. S. uses **“STAND BY”** to mean the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in “stand by for clearance.” The caller should reestablish contact if a delay is lengthy. “Stand by” is not an approval or denial.
Stopway	The U.S. does not define a “stopway” as a rectangular area.

Taxi-holding position	In the U.S., "taxi into position and hold" means taxi onto the departure runway in take-off position and hold while the ICAO "taxi-holding position" or "taxi-holding point" is a designated position that provides adequate clearance from a runway.
Terminal control area	In the U.S., the term "terminal control area" has been replaced by "Class B airspace." Standard IFR services should be provided to IFR aircraft operating in Class B airspace.
Time	U.S. when uses "**Time"** for ATC operational activities, is the hour and the minute in Coordinated Universal Time (UTC). Change to the next minute is made at the minute plus 30 seconds, except time checks are given to the nearest quarter minute
Track	The U.S. uses the term "course" instead of "track."
Transition altitude, transition layer, and transition level	In U.S. domestic airspace, transition altitude, layer, and level are not used. U.S. flight levels begin at FL 180 where a barometric altimeter setting of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings.
Visibility	Definitions are different.
Visual Approach	In the U.S., aircrews may execute visual approaches when the pilot has either the airport or the preceding aircraft in sight and is instructed to follow it.
Will	U.S. uses "**Will"** means futurity, not a requirement for the application of a procedure.
CHAPTER 4	**GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES**
4.13.4	Flight Progress Strips must be retained for at least 15 days. (7110.3 3-4-4b)
4.3.2.1	Transfer of control points vary depending on numerous factors.
4.3.3.1	Transfer of control varies.
4.3.3.1a/ b	The U.S. does not "release" aircraft. Handoff is used.
4.4	In the U.S., flight information and alerting services are provided by ATC facilities, FSSs, and RCCs.
4.5.6.2	U.S. ATS controllers do not normally include clearance for transonic acceleration in their ATC clearances.
4.5.7.3 LEVELS Except as provided for in Chapter 6, 6.3.2 and 6.5.1.5, use of standard departure and arrival clearances, instructions included in clearances relating to levels must consist of the items specified in Chapter 11, 11.4.2.6.2.2. 4.10.4 Provision of altimeter setting information	In U.S. domestic airspace, transition altitude, layer, and level are not used. U.S. flight levels begin at FL180 where a barometric altimeter setting of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings. QNH and QFE altimeter settings are not provided in domestic U.S. airspace.
4.5.7.5	The flight crew must read back to the air traffic controller safety-related parts of ATC clearances.
4.6.3.6	Only minor speed reductions of 20 knots should be used on intermediate or final approach.
4.6.3.7	Speed control after 7KM (4NM) should not be applied.
4.8.3	ATS units are not required to advise a pilot who has canceled an IFR flight plan that IMC conditions are likely to be encountered along the route of flight; however, if a pilot informs a controller of a desire to change from **IFR** to VFR, the controller will request that the pilot contact the appropriate FSS.
4.9.2	In the U.S., the word "heavy" is **used in all communications** with or about heavy jet aircraft in the terminal environment. In the en route environment, "heavy" is used in all communications with or about heavy jet aircraft with a terminal facility, when the en route center is providing approach control service, when the separation from a following aircraft may become less than five miles by approved procedure, and when issuing traffic advisories.
4.11 POSITION REPORTING	The U.S. has different criteria to make position reports. **5 -1-12. POSITION REPORTING**

4.11.4 Transmission of ADS-C reports	The U.S. has not yet published ATS procedures for the use of Automatic Dependent Surveillance- Contract (ADS-C).
4.12.2 Contents of routine air-reports 4.12.3 Contents of special air-reports	The U.S. does not normally use the term “air-report.” Pilot weather reports (PIREPs), position, and operational reports are used. PIREPs include reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, and other conditions pertinent to flight safety. They may include information on ceilings, visibility, thunderstorms, icing of light degree or greater, wind shear and its effect on airspeed, or volcanic ash clouds, but do not usually include air temperature.
4.13.4	Flight Progress Strips must be retained for at least 15 days. (7110.3 3-4-4b)
4.15 DATA LINK COMMUNICATIONS INITIATION PROCEDURES	The U.S. has not yet published ATS procedures for the use of Datalink
CHAPTER 5	**SEPARATION METHODS AND MINIMA**
5.2.1 General	In U.S. airspace, only conflict resolution (not separation) is provided between IFR and VFR operations. Separation is provided between IFR and Special VFR (SVFR) aircraft only within the lateral boundaries of Class B, C, D, or E control zones (the U.S. term is surface areas) below 10,000 feet MSL.
5.2.1 General	In U.S. Class A and B airspace, separation is provided for all aircraft. In U.S. Class C airspace, separation is provided between IFR and SVFR aircraft; conflict resolution is provided between IFR and VFR operations.
5.3.1 Vertical separation application 5.3.4 Vertical separation during climb or descent	U.S. rules allow assignment of altitude to second aircraft after first aircraft has been issued climb/descent and is observed or reports leaving that altitude. 7110.65 6-6-1. APPLICATION 6-6-2. EXCEPTIONS
5.4.2.2.1c/ d	The U.S. uses 22 kt instead of 20 kt and 44 kt instead of 40 kt.
5.4.2.1.5	The U.S. uses the term “course” instead of “track.” “Reciprocal” courses are sometimes referred to as “opposite” courses. The wording of the definitions for U.S. *same, crossing,* or *opposite/reciprocal* courses differs from the ICAO worded definitions, but the intent appears to be the same.
5.4.2.6.4.3.3 Conflict is resolved within a further 7 1/2 minutes.	U. S. 3. When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report. 4. If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation. 7110.65 8-9-3. LONGITUDINAL SEPARATION
CHAPTER 6	**SEPARATION IN THE VICINITY OF AERODROMES**
6.3.2.5 COMMUNICATION FAILURE 8.8.3.2 COMPLETE AIRCRAFT COMMUNICATION FAILURE 15.3 AIR-GROUND COMMUNICATIONS FAILURE	In the U.S., if the communications failure occurs in IFR conditions, or if VFR cannot be complied with, each pilot must continue the flight according to the following requirements: Route a) By the route assigned in the last ATC clearance received; b) If being radar vectored, by the direct route from the point of failure to the fix, route, or airway specified in the vector clearance; c) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or d) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan. Altitude - At the highest of the following altitudes or flight levels for the route segment being flown: a) The altitude or flight level assigned in the last ATC clearance received; b) The minimum altitude as prescribed in 14 CFR Part 91 (Section 91.121(c)) for IFR operations; or c) The altitude or flight level ATC has advised may be expected in a further clearance.
6.3.3.3	Arriving aircraft - delay of 10 minutes or more. 7110.65 4-7-11 d 5
6.5.5.2	Onward clearance time. 7110.65 PG EXPECT FURTHER CLEARANCE (TIME)- The time a pilot can expect to receive clearance beyond a clearance limit

6.7.3.1.2 Whenever parallel approaches are carried out, separate controllers should be responsible for the sequencing and spacing of arriving aircraft to each runway	U.S. has no criteria for separate radar controllers in conducting Parallel approaches.
6.7.3.2.9	U.S. has no parallel approach obstacle assessment surfaces (PAOAS) Criteria.
6.7.3.2.9	U.S. has no criteria for a “45 degree track”.
6.7.3.2.10 a)	U.S. has no criteria for both controllers to be advised when visual separation is applied.
6.7.3.5.3 b)	U.S. has no surveillance radar approach (SRA)
6.7.3.5.3 c)	In the U.S., aircrews may execute visual approaches when the pilot has either the airport or the preceding aircraft in sight and is instructed to follow it. A contact approach is one wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport by visual reference in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.
CHAPTER 7	**PROCEDURES FOR AERODROME CONTROL SERVICE**
7.2 SELECTION OF RUNWAY-IN-USE	Except where a “runway use” program is in effect, in the U.S. the runway used will be the one most nearly aligned with the wind when 5 kt or more, or the “calm wind” runway when less than 5 kt unless use of another runway will be operationally advantageous or is requested by a pilot.
7.4.1.1 START-UP TIME PROCEDURES	U.S. has no start up procedures, taxi clearance.
7.6.3.2.3.2 *Light signal fromaerodrome control*	In the U.S., for movements of other than aircraft traffic (i.e., vehicles, equipment, and personnel), steady green means cleared to cross, proceed, go; flashing green is not applicable; flashing white means return to starting point on airport; and alternating red and green means a general warning signal to exercise extreme caution.
7.6.3.2.3.3 Flashing runway or taxiway lights	U.S. controllers do not flash runway or taxiway lights to instruct aircraft to “vacate the runway and observe the tower for light signal.”
7.10.2 Clearance to land	In the U.S., landing clearance to a succeeding aircraft in a landing sequence need not be withheld if the controller observes the positions of the aircraft and determines that prescribed runway separation will exist when the aircraft crosses the landing threshold. Controllers issue traffic information to the succeeding aircraft if it has not previously been reported.
7.11.4 For the purpose of reduced runway separation, aircraft must be classified as follows: Also *Chapter 4,Section 4.9 and Chapter 5, Section 5.8, respectively.*	ICAO aircraft wake turbulence categories (heavy, medium, light) and FAA weight classes (heavy, large, small) differ. Also, for landing aircraft, wake turbulence separation is defined differently. The U.S. makes special provisions for any aircraft landing behind a B-757 (4 miles for a large aircraft behind or 5 miles for a small aircraft behind).

7.14 AUTHORIZATION OF SPECIAL VFR FLIGHTS	Special VFR operations may be conducted in the U.S. under the following weather minimums and requirements below 10,000 feet MSL within the airspace contained by the upward extension of the lateral boundaries of the controlled airspace designated to the surface for an airport. These minimums and requirements are found in 14 CFR Section 91.157. Special VFR operations may only be conducted: (1) With an ATC clearance; (2) Clear of clouds; (3) Except for helicopters, when flight visibility is at least 1 statute mile; and (4) Except for helicopters, between sunrise and sunset (or in Alaska, when the sun is 6 degrees or more below the horizon) unless: (i) The person being granted the ATC clearance meets the applicable requirements for instrument flight; and (ii) The aircraft is equipped as required in 14 CFR Sec. 91.205(d). No person may take off or land an aircraft (other than a helicopter) under special VFR: (1) Unless ground visibility is at least 1 statute mile; or (2) If ground visibility is not reported, unless flight visibility is at least 1 statute mile.
CHAPTER 8	**ATS SURVEILLANCE SERVICES**
8.6.5.2	The U.S. has not implemented cold temperature corrections to the radar minimum vectoring altitude
CHAPTER 9	**FLIGHT INFORMATION SERVICE AND ALERTING SERVICE**
9.1.3.7 TRANSMISSION OF INFORMATION TO SUPERSONIC AIRCRAFT	The U.S. does not have special procedures for the transmission of information to supersonic aircraft.
9.1.4.1.1	Class F airspace is not used in the U.S. Traffic advisories are provided in Class C airspace and, workload permitting, in Class D, Class E, and Class G airspace.
9.2.1.2	The U.S. does not use “operations normal” or “QRU” messages. U.S. controllers are not normally familiar with the term ”uncertainty phase.”
CHAPTER 10	**COORDINATION**
10.1.3.1 DIVISION OF CONTROL	Except for a VFR aircraft practicing an instrument approach, an IFR approach clearance in the U.S. automatically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. No additional coordination is normally needed between the approach and en route controllers. Once an aircraft commences a missed approach, it may be radar vectored.
CHAPTER 11	**AIR TRAFFIC SERVICES MESSAGES**
11.1.2 Emergency messages	U.S. uses different emergency messages. 7110.10 T Chapter 8. Search and Rescue (SAR) Procedures for VFR Aircraft
11.4.2.3.6 LOGICAL ACKNOWLEDGEMENT MESSAGES (LAM)	The existing U.S. ATS automation system does not process logical acknowledgment messages (LAMs).
CHAPTER 12	**PHRASEOLOGIES**
12.3.1 General to require action when convenient m) WHEN READY *(instruction)*;	U.S. does not use this phraseology. 7110.65 4-5-7. ALTITUDE INFORMATION PHRASEOLOGY CLIMB/ DESCEND AT PILOT’S DISCRETION 1. The pilot is expected to commence descent upon receipt of the clearance and to descend at the suggested rates specified in the AIM, 4-4-9, Adherence to Clearance, until reaching FL 280. At that point, the pilot is authorized to continue descent to FL 240 within the context of the term “at pilot’s discretion” as described in the AIM. f. When the “pilot’s discretion” portion of a climb/descent clearance is being canceled by assigning a new altitude, inform the pilot that the new altitude is an “amended altitude.” EXAMPLE- “American Eighty Three, amend altitude, descend and maintain Flight Level two six zero.”
12.3.1.2 2) TO AND MAINTAIN BLOCK *(level)* TO *(level)*;	U.S. uses “maintain block (altitude) through (altitude). 7110.65 4-5-7. g. ALTITUDE INFORMATION

12.3.1.2 n) MAINTAIN OWN SEPARATION AND VMC [FROM *(level)*] [TO *(level)*]; o) MAINTAIN OWN SEPARATION AND VMC ABOVE (*or* BELOW, *or* TO) *(level)*;	U.S. does not use "maintain own separation and VMC 'from,' 'above,' or 'below' . . . , " U.S. controllers say "maintain visual separation 'from' that traffic."
12.3.1.2 *t) CLEAR OF CONFLICT, RETURNING TO *(assigned* clearance);	TCAS resolution advisories in the U.S., pilots would advise "clear of conflict, returning to ..."
12.3.1.5 CHANGE OF CALL SIGN	U.S. has no phraseology or approved procedure to advise aircraft to change call signs. The U.S. has procedures for a duplicate aircraft identification watch and notification to airline operators but does not publish national procedures for on-the-spot temporary changes to aircraft call signs in accordance with ICAO guidelines.
12.3.1.6 TRAFFIC INFORMATION	In the U.S., traffic information messages include the position of the traffic (aircraft concerned).
12.3.1.7 a) METEOROLOGICAL CONDITIONS	In the U.S., the criterion for a variable wind is: wind speed greater than 6 kt and direction varies by 60 degrees or more. If the wind is >1 kt but <6 kt, the wind direction may be replaced by "VRB" followed by the speed or reported as observed. "VRB" would be spoken as "wind variable at <speed>."
12.3.1.7 d)e)f) METEOROLOGICAL CONDITIONS	U.S. controllers do not give wind speed, visibility, or RVR/RVV values in metric terms. RVR values are given in 100- or 200-foot increments while RW values are given in Venule increments. 2-8-2. ARRIVAL/DEPARTURE RUNWAY VISIBILITY
12.3.1.7 j) METEOROLOGICAL CONDITIONS	U.S. controllers do not use the term "CAVOK." However, the ceiling/sky condition, visibility, and obstructions to vision may be omitted if the ceiling is above 5,000 feet and the visibility is more than 5 miles.
12.3.1.10 g) AERODROME INFORMATION BRAKING ACTION REPORTED BY(aircraft type) AT (time) GOOD (or MEDIUM, or POOR)	U.S. use BRAKING ACTION terms "good," "fair," "poor," "nil," or combination of these terms. "Braking action fair to poor, reported by a heavy D-C Ten.". 7110.65 3-3-4.
12.3.1.10 i) BRAKING ACTION [*(location)*] *(measuring equipment used)*, RUNWAY *(number)*, TEMPERATURE [MINUS] *(number)*, WAS *(reading)* AT *(time)*;	U.S. does not issue Temperature with Braking Action. 7110.65 3-3-4.

12.3.2.2 INDICATION OF ROUTE AND CLEARANCE LIMIT	U.S. will issue a clearance “direct” to a point on the previously issued route. PHRASEOLOGY CLEARED DIRECT (fix). NOTE Clearances authorizing “direct” to a point on a previously issued route do not require the phrase “rest of route unchanged.” However, it must be understood where the previously cleared route is resumed. When necessary**, “rest of route unchanged”** may be used to clarify routing. 7110.65 4-4-1. ROUTE USE & 4-2-5. ROUTE OR ALTITUDE AMENDMENTS 3.
12.3.2.5 Emergency Descent	U.S. has no phraseology or instruction for emergency descent:
12.3.2.8 b) ADVISE IF ABLE TO CROSS (significant point) AT (time or level)	U.S. has no phraseology for “ADVISE IF ABLE”. U.S. does have phraseology “Advise if unable...”
12.3.4.7 n),o),p) BACKTRACT APPROVED	U.S. has no phraseology using ”BACKTRACT”. U.S. does use BACK-TAXI (7110.65) − A term used by air traffic controllers to taxi an aircraft on the runway opposite to the traffic flow. The aircraft may be instructed to back-taxi to the beginning of the runway or at some point before reaching the runway end for the purpose of departure or to exit the runway.
12.3.4.11 a), b) TAKE-OFF CLEARANCE 12.3.4.16 LANDING CLEARANCE	In U.S. **runway number** is **specified after take off or landing clearance**. Issue a take-off clearance in the following form: Phraseology: LEFT/RIGHT TURN OUT, CLEARED FOR TAKEOFF RUNWAY (number). Phraseology: CLEARED TO LAND RUNWAY (number).
12.3.4.11 TAKE-OFF CLEARANCE when take-off clearance has not been complied with c) Vacate 12.3.4.20 RUNWAY VACATING AND COMMUNICATIONS AFTER LANDING b	U.S. uses **CLEAR OF THE RUNWAY** a. Taxiing aircraft, which is approaching a runway, is clear of the runway when all parts of the U.S. uses aircraft are held short of the applicable runway holding position marking. b. A pilot or controller may consider an aircraft, which is exiting or crossing a runway, to be clear of the runway when all parts of the aircraft are beyond the runway edge and there are no restrictions to its continued movement beyond the applicable runway holding position marking. c. Pilots and controllers must exercise good judgment to ensure that adequate separation exists between all aircraft on runways and taxiways at airports with inadequate runway edge lines or holding position markings.
12.3.4.11 TAKE-OFF CLEARANCE ... to cancel a take-off clearance e) HOLD POSITION, CANCEL TAKE-OFF I SAY AGAIN CANCEL TAKE-OFF (reasons); ... to stop a take-off after an aircraft has	U.S. uses different phraseology to cancel a take off. 3-9-10. CANCELLATION OF TAKEOFF CLEARANCE PHRASEOLOGY CANCEL TAKEOFF CLEARANCE (reason). If circumstances require, cancel a previously issued take-off clearance and, when appropriate, inform the aircraft of the reason. Phraseology If a clearance to take off is cancelled: A. before the aircraft has started to roll — TAKE-OFF CLEARANCE CANCELLED; B. after the aircraft has started to roll — ABORT TAKEOFF.

12.3.4.13 b) JOIN (position in circuit) (direction of circuit) (runway number) [SURFACE] WIND (direction and speed) (units) TEMPERATURE [MINUS] (number)] QNH (or QFE) (number) [(units)] [TRAFFIC (detail)]	U.S. uses PHRASEOLOGY: ENTER LEFT/RIGHT BASE. STRAIGHT-IN. MAKE STRAIGHT-IN. STRAIGHT-IN APPROVED. RIGHT TRAFFIC. MAKE RIGHT TRAFFIC. RIGHT TRAFFIC APPROVED. CONTINUE. b. Runway in use. c. Surface wind. d. Altimeter setting. REFERENCE FAAO 7110.65, Current Settings, Para 2-7-1. e. Any supplementary information. f. Clearance to land. g. Requests for additional position reports. Use prominent geographical fixes which can be easily recognized from the air, preferably those depicted on sectional charts. This does not preclude the use of the legs of the traffic pattern as reporting points.
12.3.5.6 HANDOVER	U.S. does not use radar handover. 7110.65 5-4-3. METHODS PHRASEOLOGY HANDOFF/ POINT OUT/TRAFFIC (aircraft position) (aircraft ID),or (discrete beacon code point out only) (altitude, restrictions, and other appropriate information, if applicable). c. When receiving a handoff, point out, or traffic restrictions, respond to the transferring controller as follows: PHRASEOLOGY- (Aircraft ID) (restrictions, if applicable) RADAR CONTACT, or (aircraft ID or discrete beacon code) (restrictions, if applicable) POINT OUT APPROVED, or TRAFFIC OBSERVED,
12.3.5.7 Expedite Clearance	U.S. has no phraseology to expedite clearance.
12.4.1.1 IDENTIFICATION OF AIRCRAFT f) NOT IDENTIFIED [reason], [RESUME (or CONTINUE) OWN NAVIGATION]	U.S. controllers do not say “will shortly lose identification” or “identification lost.” 7110.65 5-6-2 PHRASEOLOGY RADAR CONTACT LOST (alternative instructions when required). PHRASEOLOGY-(Position with respect to course/fix along route).
12.4.2.1 VECTORING FOR APPROACHVECTORING FOR VISUAL APPROACH RUNWAY (number) REPORT FIELD (or RUNWAY) IN SIGHT	U.S. would use “airport or runway” rather than “field.” 7-4-2. VECTORS FOR VISUAL APPROACH PHRASEOLOGY- (ACID) FLY HEADING OR TURN RIGHT/LEFT HEADING (degrees) VECTOR FOR VISUAL APPROACH TO (airport name). PHRASEOLOGY 5-11-2. VISUAL REFERENCE REPORT “REPORT (runway, approach/runway lights or airport) IN SIGHT. REPORT WHEN ABLE TO PROCEED VISUALLY TO AIRPORT/HELIPORT.”
12.4.2.4.4 CHECKS CHECK GEAR DOWN [AND LOCKED]	U.S. uses “CHECK WHEELS DOWN”. 7110.65 2-1-24. WHEELS DOWN CHECK PHRASEOLOGY
12.4.2.5 PAR APPROACH	U.S. controllers say “this will be a P-A-R/surveillance approach to runway (number) or airport/runway (number) or airport/heliport.” U.S. controllers do not say “approach completed”. U.S. controllers say “your missed approach procedure is (missed approach procedure)” and, if needed, “execute missed approach.” For PAR approaches, U.S. controllers say “begin descent” and for surveillance approaches, U.S. controllers say “descend to your minimum descent altitude.” 7110.65 5-12-8. APPROACH GUIDANCE TERMINATION lights in sight and requested to or advised that he/she will proceed visually, and has been instructed to proceed visually, all PAR approach procedures must be discontinued. d. Continue to monitor final approach and frequency. Pilots must remain on final controller’s frequency until touchdown or otherwise instructed. 5-12-9. COMMUNICATION TRANSFER PHRASEOLOGY CONTACT (terminal control function) (frequency, if required) AFTER LANDING

12.4.3.12 TO REQUEST PRESSURE SETTING CHECK AND CONFIRMATION OF LEVEL 12.4.3.13 TO REQUEST TERMINATION OF PRESSURE-ALTITUDE TRANSMISSION BECAUSE OF FAULTY OPERATION	U.S., for aircraft above FL 180, U.S. controllers would say, “confirm using two niner niner two as your altimeter setting, verify altitude” or “stop altitude squawk” “stop altitude squawk; altitude differs by (number) feet.” U.S. controllers would not say “stop squawk Charlie”. 7110.65 5-2-22. BEACON TERMINATION Inform an aircraft when you want it to turn off its transponder.
12.4.3.14 TO REQUEST LEVEL CONFIRM (level)	U.S. controllers would say “verify at (altitude)” and/or “verify assigned altitude.” 7110.65 5-2-17. 1. Issue the correct altimeter setting and confirm the pilot has accurately reported the altitude. PHRASEOLOGY- (Location) ALTIMETER (appropriate altimeter), VERIFY ALTITUDE.
12.6.1 Alerting phraseologies	U.S. controllers would issue MEA/MVA/MOCA/MIA instead of QNH. 7110.65
CHAPTER 15	**PROCEDURES RELATED TO EMERGENICES, COMMUNICATION FAILURE AND CONTINGENCIES**
15.1 Emergency procedures	When neither communications nor radar contact can be established for 30 minutes (or prior, if appropriate), U.S. controllers will consider an aircraft overdue and will initiate overdue aircraft procedures including reporting to the ARTCC or FSS.
15.1.3 Unlawful interference and aircraft bomb threat	U.S. has difference updated. 5-2-13, Code Monitor Note 1. & 2. “10-2-6 HIJACKED AIRCRAFT 10-2-6. HIJACKED AIRCRAFT Hijack attempts or actual events are a matter of national security and require special handling. Policy and procedures for hijack situations are detailed in FAAO JO 7610.4, Special Operations. FAAO JO 7610.4 describes reporting requirements, air crew procedures, air traffic procedures and escort or interceptor procedures for hijack situations. REFERENCE FAAO JO 7610.4, Hijacked/Suspicious Aircraft Reporting and Procedures, Chapter 7. FAAO 7110.65, Code Monitor, Para 5-2-13.
15.4.1 Strayed VFR flights and VFR flights encountering adverse meteorological conditions	U.S. does not use the terms “strayed” or “unidentified” aircraft. 7110.65 10-3-1. OVERDUE AIRCRAFT
15.7.3 Procedures in regard to aircraft equipped with airborne collision avoidance systems (ACAS)	The U.S. uses traffic alert and collision avoidance system (TCAS). U.S. controllers are not to issue control instructions that are contrary to the TCAS resolution advisory (RA) procedure that a crew member advises is being executed. U.S. orders speak to controller actions when advised of an aircraft responding to a resolution alert (RA).
APPENDIX 1	**INSTRUCTIONS FOR AIR-REPORTING BY VOICE COMMUNICATIONS**
AIREP Form of Air-report	U.S. uses Pilot Reports (UAs), or Urgent Pilot Reports (UUAs).
APPENDIX 2	**FLIGHT PLAN**
	Remark: The U.S. uses a flight plan format different from the ICAO model discussed in Appendix 2. The U.S. ATS facilities will transmit ICAO repetitive flight plans (RPLs) even though a different format is used for stored flight plans
A2-5 Wake	ICAO aircraft wake turbulence categories (heavy, medium, light) and FAA weight classes (heavy, large, small) differ. Also, for landing aircraft, wake turbulence separation is defined differently. The U.S. makes special provisions for any aircraft landing behind a B-757 (4 miles for a large aircraft behind or 5 miles for a small aircraft behind).

A2-7 (Item 15)	U.S. ATS units do not accept cruising speeds nor filed altitudes/flight levels in metric terms. The U.S. accepts filed Mach Number expressed as M followed by 3 figures.
A2-7 (Item 15)	The U.S. **requires** filed FIR boundary designators and accumulated estimated elapsed times to such points or FIR boundaries in the sequence and form as prescribed in 2.2, Item 18 of Doc 4444, Appendix 2
APPENDIX 3	**AIR TRAFFIC SERVICES MESSAGES**
APPENDIX 4	**AIR TRAFFIC INCIDENT REPORT**
Appendix 4	U.S. has their accident/incident report in FAA Notice 8020.134
APPENDIX 5	**CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC) MESSAGE SET**
Appendix 5	U.S. has no CPDLC message set

PANS − OPS − 8168/611	
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PART III	
Table III−1−1 and Table III−1−2	The "Max speeds for visual maneuvering (Circling)" must not be applied to circling procedures in the U.S. Comply with the airspeeds and circling restrictions in ENR 1.5, paragraphs 11.1 and 11.6, in order to remain within obstacle protection areas. The table listed below shows aircraft categories with an associated maximum airspeed and distance to remain within from the end of runway.

Aircraft Category	Speeds for Circling (Kts)	Circling Area Maximum Radii from Runway Threshold (NM)
A	Speed less than 91 Knots	1.3
B	Speed 91 Knots or more but less than 121 Knots	1.5
C	Speed 121 Knots or more but less than 141 Knots	1.7
D	Speed 141 Knots or more but less than 166 Knots	2.3
E	Speed 166 Knots or more	4.5

PART IV	
1.2.1	The airspeeds contained in ENR 1.5 must be used in U.S. **CONTROLLED AIRSPACE**.

PAN − ABC − DOC 8400
Differences between abbreviations used in U.S. AIP, International NOTAMs Class I and Class II, and Notices to Airmen Publication and ICAO PANS − ABC are listed in GEN 2.2**.** For other U.S. listings of abbreviations (contractions) for general use, air traffic control, and National Weather Service (NWS), which differ in some respects, see U.S. publication Contractions Handbook (DOT/FAA Order 7340.1). In addition, various U.S. publications contain abbreviations of terms used therein, particularly those unique to that publication.

ICAO:	U/S − unserviceable
V	
VASI	visual approach slope indicator
VCNTY	vicinity
VDP	visual descent point
VFR	visual flight rules
VHF	very high frequency
VOR	VHF omni−directional radio range
VORTAC	Combined VOR and TACAN system (collocated)
VOT	a VOR Receiver testing facility
VSBY	visibility
ICAO:	VIS − visibility

W	
W	west
WEA	weather
ICAO:	WX − weather
WKDAY	weekday
WKEND	weekend
WPT	waypoint
WS	Weather Service
WT	weight
Z	
Z	Coordinated Universal Time
ICAO:	UTC − Coordinated Universal Time

NOTE−
NOTAM number one for the year 1984 for the New York, John F. Kennedy International Airport would read A0001/84 KJFK. All NOTAMs issued will be preceded by an "A."

5.2.2.2 "**B**" for NOTAM classification "2." (Airspace): the identifier of the affected air traffic control center/FIR will be used.

NOTE−
NOTAM number one for the year 1984 for the Oakland ARTCC/FIR (Pacific Ocean Area) would read A0001/84 KZOA.

5.2.2.3 "**C**" for NOTAM classification ''3'' (Permanent Airspace): The KFDC identifier will be used for data of permanent airway/aeronautical services and of a general nature that are transmitted as NOTAMs and are given selected distribution to adjacent or appropriate International NOTAM Offices which require their exchange.

NOTE−
NOTAM number one for the year 1984 for KFDC is A0001/84 KFDC.

5.2.2.4 "**D**" for NOTAM classification "4" (OMEGA/LORAN facilities): The KNMH will be used for OMEGA/LORAN information that is transmitted to all NOTAM Offices that exchange information with the U.S. International NOTAM Office.

NOTE−
NOTAM number one for the year 1984 concerning the status of OMEGA Station Norway would read A0001/84 KNMH.

5.2.2.5 "**E**" for NOTAM classification "5" (domestic): No application (see ENR 1.10.)

5.3 Each NOTAM is provided with an identification letter adjoining the end of the word NOTAM meaning:

5.3.1 NOTAMN: NOTAM containing new information.

5.3.2 NOTAMC: NOTAM cancelling a previous NOTAM indicated.

5.3.3 NOTAMR: NOTAM replacing a previous NOTAM indicated.

5.4 A checklist of NOTAMs currently in force for each international NOTAM classification is issued each month over the Aeronautical Fixed Telecommunications Network (AFTN) to each International NOTAM office which exchanges International NOTAMs with the U.S. International NOTAM Office.

5.5 NOTAM Class I information is exchanged between the U.S. International NOTAM Office and the following International NOTAM Offices.

TBL GEN 3.1−1

COUNTRY	**CITY**
AFGHANISTAN	KABUL
ALBANIA	ROME
ALGERIA	ALGIERS
ANGOLA	LUANDA
ARGENTINA	BUENOS AIRES
AUSTRALIA	SIDNEY
AUSTRIA	VIENNA
AZORES	SANTO MARIA
BAHAMAS	NASSAU
BAHRAIN	BAHRAIN
BANGLADESH	DHAKA (DACCA)
BELGIUM	BRUSSELS
BERMUDA	BERMUDA
BOLIVIA	LA PAZ
BOSNIA	ZAGREB
BRAZIL	RIO DE JANEIRO
BULGARIA	SOFIA
CAMBODIA	PHNOM−PEHN
CANADA	OTTAWA
CAPE VERDE ISLANDS	AMILCAR CABRAL
CHILE	SANTIAGO
CHINA	BEIJING
CHINA (FORMOSA)	TAIPEI
COLOMBIA	BOGOTA
CONGO	BRAZZAVILLE
CROATIA	ZAGREB
CUBA	HAVANA
CYPRUS	NICOSIA
CZECH REPUBLIC	PRAGUE
DENMARK	COPENHAGEN
DOMINICAN REPUBLIC	SANTO DOMINGO
ECUADOR	GUAYAQUIL
ENGLAND	LONDON
ESTONIA	TALLINN
ETHIOPIA	ADDIS ABABA
EYGPT	CAIRO
FIJI	NANDI

COUNTRY	CITY
FINLAND	HELSINKI
FRANCE	PARIS
FRENCH GUIANA	MARTINIQUE
FRENCH POLYNESIA	TAHITI
GERMANY (WEST)	FRANKFURT
GHANA	ACCRA
GREECE	ATHENS
GREENLAND	SONDRE STROMFJORD
GUYANA	GEORGETOWN
HAITI	PORT−AU−PRINCE
HONDURAS	TEQUCIGALPA
HONG KONG	HONG KONG
HUNGARY	BUDAPEST
ICELAND	REYKJAVIK
INDIA	BOMBAY
INDIA	CALCUTTA
INDIA	DELHI
INDIA	MADRAS
INDONESIA	JAKARTA
IRAN	TEHRAN (NOT AVBL)
IRELAND	SHANNON
ISRAEL	TEL AVIV
ITALY	ROME
JAMAICA	KINGSTON
JAPAN	TOKYO
JORDAN	AMMAN
KENYA	NAIROBI
KOREA (SOUTH)	SEOUL
KUWAIT	KUWAIT
LATVIA	MOSCOW
LEBANON	BEIRUT
LIBERIA	ROBERTS
LIBYA	TRIPOLI
MALAYSIA	KUALA LUMPUR
MALTA	LUQA
MAURITIUS	PLAISANCE
MAYNMAR	RANGOON
MEXICO	MEXICO CITY
MOROCCO	CASABLANCA
MOZAMBIQUE	MAPUTO
NAMIBIA	JOHANNESBURG
NAURU ISLAND	NAURU
NETHERLANDS	AMSTERDAM
NETHERLANDS ANTILLES	CURACAO
NEW GUINEA	PORT MOSEBY

COUNTRY	CITY
NEW ZEALAND	AUCKLAND
NIGERIA	LAGOS
NORWAY	OSLO
OMAN	MUSCAT
PAKISTAN	KARACHI
PANAMA	TOCUMEN
PARAGUAY	ASUNCION
PERU	LIMA
PHILLIPINES	MANILLA
POLAND	WARSAW
PORTUGAL	LISBON
ROMANIA	BUCHAREST
RUSSIA	MOSCOW
SAMOA	FALEOLA
SAUDI ARABIA	JEDDAH
SENEGAL	DAKAR
SEYCHELLES	MAHE
SINGAPORE	SINGAPORE
SLOVAKIA	BRATISLAVA
SOLOMON ISLANDS	HONIARA
SOUTH AFRICA	JOHANNESBURG
SPAIN	MADRID
SRI LANKA	COLOMBO
SUDAN	KHARTOUM
SURINAME	PARAMARIBO
SWEDEN	STOCKHOLM
SWITZERLAND	ZURICH
SYRIA	DAMASCUS
TANZANIA	DAR−ES−SALAAM
THAILAND	BANKOK
TRINIDAD	PORT OF SPAIN
TUNISIA	TUNIS
TURKEY	ANKARA
URUGUAY	MONTEVIDEO
VIET NAM	HO CHI MINH CITY
VENEZUELA	CARACAS
YEMEN	ADEN
YUGOSLAVIA	BELGRADE
ZAIRE	KINSHASA
ZAMBIA	LUSAKA
ZIMBABWE	HARARE

6. Pre−Flight Information Service at Aerodromes Available to International Flights

6.1 Pre−Flight Information Units in the U.S. are Flight Service Stations (FSS) operated by either FAA (in Alaska) or by federal contract facilities (elsewhere in the U.S.).

6.2 Flight Service Stations (FSSs) are air traffic facilities which provide pilot briefings, flight plan processing, en route radio communications, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process Notices to Airmen, broadcast aviation weather and aeronautical information, and notify Customs and Border Protection of transborder flights. In addition, at selected locations FSSs provide En Route Flight Advisory Service (Flight Watch) and Airport Advisory Service (AAS). In Alaska, designated FSSs also provide TWEB recordings and take weather observations.

6.3 FSS locations, services and telephone information are available in the U.S. Airport/Facility Directory, Supplement Alaska, and Pacific Chart Supplement.

6.4 Flight Service Stations have telecommunications access to all of the weather and NOTAM information available for preflight briefing to international locations with which the U.S. International NOTAM office exchanges information.

GEN 3.3 Air Traffic Services

1. Responsible Authority

1.1 The authority responsible for the overall administration of air traffic services provided for civil aviation in the U.S. and its territories, possessions and international airspace under its jurisdiction is the Associate Administrator for Air Traffic Services, acting under the authority of the Federal Aviation Administration (FAA).

Postal Address:
Director
Air Traffic Operations Program (ATP−1)
Federal Aviation Administration
800 Independence Ave., SW
Washington, D.C. 20591
U.S.A.
Telephone: 202−267−9155
Telex: 892−562
Commercial Telegraphic Address: FAA WSH
AFTN Address: KDCAYAYX

2. Area of Responsibility

2.1 Air traffic services as indicated in the following paragraphs are provided for the entire territory of the conterminous U.S., Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands, as well as the international airspace in oceanic areas under the jurisdiction of the U.S. which lies within the ICAO Caribbean (CAR), North Atlantic (NAT), North American (NAM) and Pacific (PAC) regions.

3. Air Traffic Services

3.1 With the exception of terminal control services at certain civil aerodromes and military aerodromes, air traffic service in the U.S. is provided by the Air Traffic Operations Program, FAA, Department of Transportation (DOT), U.S. Government.

3.2 Air Traffic control is exercised within the area of responsibility of the U.S.:

3.2.1 On all airways.

3.2.2 In Class B, C, D, and E Airspace; and

3.2.3 Within the Class A airspace whose vertical extent is from 18,000 feet to and including FL 600 throughout most of the conterminous U.S. and, in Alaska, from 18,000 feet to and including FL 600 but not including the airspace less than 1,500 feet above the surface of the earth and the Alaskan Peninsula west of longitude 160° 00″ West. (A complete description of Class A airspace is contained in the Code of Federal Regulations (CFR), Title 14, Part 71.)

3.3 Air traffic control and alerting services are provided by various air traffic control (ATC) units and are described in ENR 1.1.

3.4 Radar service is an integral part of the air traffic system. A description of radar services and procedures is provided in ENR 1.1.

3.5 The description of airspace designated for air traffic services is found in ENR 1.4.

3.6 Procedural data and descriptions are found in ENR 1.5.

3.7 Numerous restricted and prohibited areas are established within U.S. territory. These areas, none of which interfere with normal air traffic, are explained in ENR 1.5. Activation of areas subject to intermittent activity is notified in advance by a Notice to Airmen (NOTAM), giving reference to the area by its identification.

3.8 In general, the air traffic rules and procedures in force and the organization of the air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures. Differences between the national and international rules and procedures are given in GEN 1.7. The regional supplementary procedures and altimeter setting procedures are reproduced in full with an indication wherein there is a difference.

3.9 Coordination between the operator and air traffic services is effected in accordance with 2.11 of Annex II, and 2.1.1.4 and 2.1.2.5 of Part VIII of the PANS−RAC (DOC 4444−RAC/501).

3.10 Minimum flight altitudes on the ATS routes as listed in ENR 1.4 have been determined so as to ensure at least 1,000 feet vertical clearance above the highest obstacle within 4 nautical miles (NM) on each side of the centerline of the route. However, where the regular divergence (4.5 degrees) of the navigational aid signal in combination with the distance between the navigational aids could result in the aircraft being more than 4 NM on either side of the centerline, the

4 NM protection limit is increased by the extent to which the divergence is more than 4 NM from the centerline.

3.11 Pilot Visits to Air Traffic Facilities. Pilots are encouraged to visit air traffic facilities (Airport Traffic Control Towers (ATCTs), Air Route Traffic Control Centers (ARTCCs), and Flight Service Stations (FSSs)) and familiarize themselves with the ATC system. On rare occasions, facilities may not be able to approve a visit because of workload or other reasons. Pilots should contact the facility prior to the visit and advise of the number of persons in the group, the time and date of the proposed visit, and the primary interest of the group. With this information available, the facility can prepare an itinerary and have someone available to guide the group through the facility.

3.12 Operation Take−off and Operation Raincheck. Operation Take−off is a program that educates pilots in how best to utilize the FSS modernization efforts and services available at Flight Service Stations (FSS), as stated in FAA Order 7230.17, Pilot Education Program − Operation Takeoff. Operation Raincheck is a program designed to familiarize pilots with the ATC system, its functions, responsibilities, and benefits.

4. En Route Procedures

4.1 Air Route Traffic Control Center (ARTCC)

An ARTCC is a facility established to provide air traffic control service to aircraft operating on instrument flight rule (IFR) flight plans within CONTROLLED AIRSPACE and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to visual flight rule (VFR) aircraft.

4.2 ARTCC Communications

4.2.1 Direct Communications, Controllers and Pilots

4.2.1.1 ARTCCs are capable of direct communications with IFR air traffic on certain frequencies. Maximum communications coverage is possible through the use of Remote Center Air/Ground (RCAG) sites comprised of very high frequency (VHF) and ultra high frequency (UHF) transmitters and receivers. These sites are located throughout the U.S. Although they may be several hundred miles away from the ARTCC, they are remoted to the various centers by land lines or microwave links. As IFR operations are expedited through the use of direct communications, pilots are requested to use these frequencies strictly for communications pertinent to the control of IFR aircraft. Flight plan filing, en route weather, weather forecasts, and similar data should be requested through Flight Service Stations, company radio, or appropriate military facilities capable of performing these services.

4.2.1.2 An ARTCC is divided into sectors. Each sector is handled by one or a team of controllers and has its own sector discrete frequency. As a flight progresses from one sector to another, the pilot is requested to change to the appropriate sector discrete frequency.

4.2.1.3 Controller Pilot Data Link Communications (CPDLC) is a system that supplements air/ground voice communications. As a result, it expands two−way air traffic control air/ground communications capabilities. Consequently, the air traffic system's operational capacity is increased and any associated air traffic delays become minimized. A related safety benefit is that pilot/controller read−back and hear−back errors will be significantly reduced. The CPDLC's principal operating criteria are:

a) Voice remains the primary and controlling air/ground communications means.

b) Participating aircraft will need to have the appropriate CPDLC avionics equipment in order to receive uplink or transmit downlink messages.

c) CPDLC Build 1 offers four ATC data link services. These are altimeter setting (AS), transfer of communications (TC), initial contact (IC), and menu text messages (MT).

1) Altimeter settings are usually transmitted automatically when a CPDLC session and eligibility has been established with an aircraft. A controller may also manually send an altimeter setting message.

NOTE−
When conducting instrument approach procedures, pilots are responsible to obtain and use the appropriate altimeter setting in accordance with 14 CFR Section 97.20. CPDLC issued altimeter settings are excluded for this purpose.

6.4.2 Flight Along a Direct Route. Regardless of the altitude or flight level being flown, including flights operating in accordance with an ATC clearance specifying "VFR−on−top," pilots must report over each reporting point used in the flight plan to define the route of flight.

6.4.3 Flights in a Radar Environment. When informed by ATC that their aircraft are in "RADAR CONTACT," PILOTS SHOULD DISCONTINUE POSITION REPORTS OVER DESIGNATED REPORTING POINTS. They should resume normal position reporting when ATC advises "RADAR CONTACT LOST" or "RADAR SERVICE TERMINATED."

NOTE−
ATC will inform pilots that they are in "radar contact" (a) When their aircraft is initially identified in the ATC system; and (b) When radar identification is reestablished after radar service has been terminated or radar contact has been lost. Subsequent to being advised that the controller has established radar contact, this fact will not be repeated to the pilot when handed off to another controller. At times, the aircraft identity will be confirmed by the receiving controller; however, this should not be construed to mean that radar contact has been lost. The identity of transponder−equipped aircraft will be confirmed by asking the pilot to "ident, squawk standby," or to change codes. Aircraft without transponders will be advised of their position to confirm identity. In this case, the pilot is expected to advise the controller if in disagreement with the position given. If the pilot cannot confirm the accuracy of the position given because of not being tuned to the NAVAID referenced by the controller, the pilot should ask for another radar position relative to the tuned in NAVAID.

6.5 Position Report Items

6.5.1 Position reports should include the following items:

6.5.1.1 Identification.

6.5.1.2 Position.

6.5.1.3 Time.

6.5.1.4 Altitude or flight level (Include actual altitude or flight level when operating on a clearance specifying "VFR−on−top.").

6.5.1.5 Type of flight plan (not required in IFR position reports made directly to ARTCCs or approach control).

6.5.1.6 ETA and name of next reporting point.

6.5.1.7 The name only of the next succeeding reporting point along the route of flight.

6.5.1.8 Pertinent remarks.

7. Additional Reports

7.1 The following reports should be made to ATC or FSS facilities without a specific request:

7.1.1 At all times, report:

7.1.1.1 When vacating any previously assigned altitude/flight level for a newly assigned altitude/flight level.

7.1.1.2 When an altitude change will be made if operating on a clearance specifying "VFR−on−top."

7.1.1.3 When unable to climb/descend at a rate of at least 500 feet per minute.

7.1.1.4 When approach has been missed. (Request clearance for specific action; i.e., to alternative airport, another approach, etc.).

7.1.1.5 Change in the average true airspeed (at cruising altitude) when it varies by 5 percent or 10 knots (whichever is greater) from that filed in the flight plan.

7.1.1.6 The time and altitude/flight level reaching a holding fix or point to which cleared.

7.1.1.7 When leaving any assigned holding fix or point.

NOTE−
The reports in subparagraphs 7.1.1.6 and 7.1.1.7 may be omitted by pilots of aircraft involved in instrument training at military area facilities when radar service is being provided.

7.1.1.8 Any loss, in controlled airspace, of VOR, TACAN, ADF, low frequency navigation receiver capability, GPS anomalies while using installed IFR−certified GPS/GNSS receivers, complete or partial loss of ILS receiver capability or impairment of air/ground communications capability. Reports should include aircraft identification, equipment affected, degree to which the capability to operate under IFR in the ATC system is impaired, and the nature and extent of assistance desired from ATC.

NOTE−
When reporting GPS anomalies, include the location and altitude of the anomaly. Be specific when describing the location and include duration of the anomaly if necessary.

7.1.1.9 Any information relating to the safety of flight.

NOTE−
Other equipment installed in an aircraft may effectively impair safety and/or the ability to operate under IFR. If such equipment; e.g., airborne weather radar, malfunctions and in the pilot's judgment either safety or IFR capabilities are affected, reports should be made as above.

7.2 When not in radar contact, report:

7.2.1 When leaving the final approach fix inbound on final approach (nonprecision approach) or when leaving the outer marker or fix used in lieu of the outer marker inbound on final approach (precision approach); or

7.2.2 A corrected estimate at any time it becomes apparent that an estimate as previously submitted is in error in excess of 3 minutes. For flights in the North Atlantic (NAT), a revised estimate is required if the error is 3 minutes or more.

7.3 Pilots encountering weather conditions which have not been forecast, or hazardous conditions which have been forecast, are expected to forward a report of such weather to ATC.

8. Quota Flow Control

8.1 Quota Flow Control is designed to balance the ATC system demand with system capacity.

8.2 ARTCCs will hold the optimum number of aircraft that their primary and secondary holding fixes will safely accommodate without imposing undue limitations on the control of other traffic operating within the ARTCC's airspace. This is based on the user's requirement to continue operating to a terminal regardless of the acceptance rate at that terminal. When staffing, equipment, or severe weather will inhibit the number of aircraft the arrival ARTCC may safely hold, a reduction may be necessary.

8.3 When an ARTCC is holding the optimum number of aircraft, the adjacent ARTCCs will be issued quotas concerning aircraft which can be cleared into the impacted ARTCC's airspace. When the adjacent center's demand exceeds the quota, aircraft will be held in the adjacent ARTCC's airspace until they can be permitted to proceed.

8.4 The size of the hourly quota will be based initially on the projected acceptance rate and thereafter on the actual landing and diversion totals. Once quotas have been imposed, departures in the arrival and adjacent ARTCC's area to the affected airport may be assigned ground delay, if necessary, to limit airborne holding to ATC capacity. However, when a forecast of improved acceptance rate appears reliable, in the opinion of the arrival ARTCC, additional above−quota flights may be approved based on the expectation that by the time these additional above−quota flights become an operational factor in the affected area, the system will be able to absorb them without undue difficulty.

8.5 Long distance flights, which originate beyond the adjacent ARTCC area, will normally be permitted to proceed to a point just short of the arrival ARTCC boundary where a delay, at least equal to the delays (ground/airborne) being encountered, will be assigned.

8.6 ARTCCs imposing ground delays make efforts to advise the users when lengthy delays are a prospect to preclude unnecessary boarding and subsequent unloading prior to actual takeoff due to lengthy unanticipated ground delays. Users should advise the ARTCC through FSS or operation offices when there is any significant change in the proposed departure time so as to permit more efficient flow control planning. Airborne aircraft holding in the adjacent ARTCC airspace generally receive more benefit than ground delayed aircraft when increases unexpectedly develop in the quota number because the reaction time is less. For this reason, whenever operationally feasible, adjacent ARTCCs may offer airborne delay within their areas instead of ground delay.

8.7 Flights originating beyond the adjacent ARTCC areas may not have sufficient fuel to absorb the total anticipated delay while airborne. Accordingly, the concerned adjacent ARTCC may permit these flights to land in its area while retaining previously accumulated delay for the purpose of quota priority. When the amount of air traffic backlogging in an adjacent ARTCC area is approaching the saturation point, additional en route traffic will be subject to prior approval.

8.8 Generally, movement of arrival aircraft into the impacted airport terminal area will be made on the basis that those flights with the most accumulated delay, either ground, airborne, or a combination of both, normally receive priority over other traffic. This applies only to delays encountered because of the situation at the airport of intended landing.

8.9 Pilots/operators are advised to check for flow control advisories which are transmitted to FSSs, to selected airline dispatch offices, and to ARTCCs.

9. Advisory and Air Traffic Information Services

9.1 Approach Control Service for VFR Arriving Aircraft

9.1.1 Numerous approach control facilities have established programs for arriving VFR aircraft to contact approach control for landing information. This information includes: wind, runway, and altimeter setting at the airport of intended landing. This information may be omitted if contained in the ATIS broadcast and the pilot states the appropriate ATIS code.

NOTE−
Pilot use of "have numbers" does not indicate receipt of the ATIS broadcast. In addition, the controller will provide traffic advisories on a workload permitting basis.

9.1.2 Such information will be furnished upon initial contact with the concerned approach control facility. The pilot will be requested to change to the tower frequency at a predetermined time or point, to receive further landing information.

9.1.3 Where available, use of this procedure will not hinder the operation of VFR flights by requiring excessive spacing between aircraft or devious routing. Radio contact points will be based on time or distance rather than on landmarks.

9.1.4 Compliance with this procedure is not mandatory, but pilot participation is encouraged. (See ENR 1.1, paragraph 39, Terminal Radar Services for VFR Aircraft.)

NOTE−
Approach control services for VFR aircraft are normally dependent on air traffic control radar. These services are not available during periods of a radar outage. Approach control services for VFR aircraft are limited when Center Radar ARTS Presentation/ Processing (CENRAP) is in use.

9.2 Traffic Advisory Practices at Airports Without Operating Control Towers

9.2.1 Airport Operations Without an Operating Control Tower

9.2.1.1 There is no substitute for alertness while in the vicinity of an airport. It is essential that pilots be alert and look for other traffic and exchange traffic information when approaching or departing an airport without an operating control tower. This is of particular importance since other aircraft may not have communication capability or, in some cases, pilots may not communicate their presence or intentions when operating into or out of such airports. To achieve the greatest degree of safety, it is essential that all radio−equipped aircraft transmit/receive on a common frequency identified for the purpose of airport advisories.

9.2.1.2 An airport may have a full or part−time tower or FSS located on the airport, a full or part−time UNICOM station or no aeronautical station at all. There are three ways for pilots to communicate their intention and obtain airport/traffic information when operating at an airport that does not have an operating tower: by communicating with an FSS, a UNICOM operator, or by making a self−announce broadcast.

9.2.1.3 Many airports are now providing completely automated weather, radio check capability and airport advisory information on an automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks, on the UNICOM frequency. Availability of the automated UNICOM will be published in the Airport/Facility Directory and approach charts.

9.2.2 Communicating on a Common Frequency

9.2.2.1 The key to communicating at an airport without an operating control tower is selection of the correct common frequency. The acronym, CTAF, which stands for common traffic advisory frequency, is synonymous with this program. A CTAF is a frequency designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, MULTICOM, FSS, or tower frequency and is identified in appropriate aeronautical publications.

9.2.2.2 The CTAF frequency for a particular airport is contained in the Airport/Facility Directory (A/FD), Alaska Supplement, Alaska Terminal Publication, Instrument Approach Procedure Charts, and Instrument Departure Procedure (DP) charts. Also, the CTAF frequency can be obtained by contacting any

FSS. Use of the appropriate CTAF, combined with a visual alertness and application of the following recommended good operating practices, will enhance safety of flight into and out of all uncontrolled airports.

9.2.3 Recommended Traffic Advisory Practices

9.2.3.1 Pilots of inbound aircraft should monitor and communicate on the designated CTAF from 10 miles to landing. Pilots of departing aircraft should monitor/communicate on the appropriate frequency from start−up, during taxi, and until 10 miles from the airport unless the Code of Federal Regulations (CFR) or local procedures require otherwise.

9.2.3.2 Pilots of aircraft conducting other than arriving or departing operations at altitudes normally used by arriving and departing aircraft should monitor/communicate on the appropriate frequency while within 10 miles of the airport unless required to do otherwise by the CFR or local procedures. Such operations include parachute jumping/dropping (see ENR 5.1, paragraph 2.3, Parachute Jump Aircraft Operations), en route, practicing maneuvers, etc.

9.2.4 Airport Advisory/Information Services Provided by a FSS

9.2.4.1 There are three advisory type services provided at selected airports.

a) Local Airport Advisory (LAA) is provided at airports that have a FSS physically located on the airport, which does not have a control tower or where the tower is operated on a part−time basis. The CTAF for LAA airports is disseminated in the appropriate aeronautical publications.

b) Remote Airport Advisory (RAA) is provided at selected very busy GA airports, which do not have an operating control tower. The CTAF for RAA airports is disseminated in the appropriate aeronautical publications. Hours of operation may be changed by NOTAM D.

c) Remote Airport Information Service (RAIS) is provided in support of special events at nontowered airports by request from the airport authority and must be published as a NOTAM D.

9.2.4.2 In communicating with a CTAF FSS, check the airport's automated weather and establish two−way communications before transmitting outbound/inbound intentions or information. An inbound aircraft should initiate contact approximately 10 miles from the airport, reporting aircraft identification and type, altitude, location relative to the airport, intentions (landing or over flight), possession of the automated weather, and request airport advisory or airport information service. A departing aircraft should initiate contact before taxiing, reporting aircraft identification and type, VFR or IFR, location on the airport, intentions, direction of take−off, possession of the automated weather, and request airport advisory or information service, as applicable. Also, report intentions before taxiing onto the active runway for departure. If you must change frequencies for other service after initial report to FSS, return to FSS frequency for traffic update.

a) Inbound

EXAMPLE−
Vero Beach radio, Centurion Six Niner Delta Delta is ten miles south, two thousand, landing Vero Beach. I have the automated weather, request airport advisory.

b) Outbound

EXAMPLE−
Vero Beach radio, Centurion Six Niner Delta Delta, ready to taxi to runway 22, VFR, departing to the southwest. I have the automated weather, request airport advisory.

9.2.4.3 Airport advisory service includes wind direction and velocity, favored or designated runway, altimeter setting, known airborne and ground traffic, NOTAMs, airport taxi routes, airport traffic pattern information, and instrument approach procedures. These elements are varied so as to best serve the current traffic situation. Some airport managers have specified that under certain wind or other conditions designated runways be used. Pilots should advise the FSS of the runway they intend to use.

9.2.4.4 Automatic Flight Information Service (AFIS) − Alaska FSSs Only

a) Alaska FSSs AFIS is the continuous broadcast of recorded noncontrol information at airports in Alaska where a Flight Service Station (FSS) provides local airport advisory service. Its purpose is to improve FSS Specialist efficiency by reducing frequency congestion on the local airport advisory frequency. The AFIS broadcast will automate the repetitive transmission of essential but routine information (weather, favored runway, breaking action, airport NOTAMs, other applicable information). The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS

9.4 Designated UNICOM/MULTICOM Frequencies

9.4.1 Frequency Use

9.4.1.1 TBL GEN 3.3−2 depicts UNICOM and MULTICOM frequency uses as designated by the Federal Communications Commission (FCC).

NOTE−
1. *In some areas of the country, frequency interference may be encountered from nearby airports using the same UNICOM frequency. Where there is a problem, UNICOM operators are encouraged to develop a "least interference" frequency assignment plan for airports concerned using the frequencies designated for airports without operating control towers. UNICOM licensees are encouraged to apply for UNICOM 25 KHz spaced channel frequencies. Due to the extremely limited number of frequencies with 50 KHz channel spacing, 25 KHz channel spacing should be implemented. UNICOM licensees may then request FCC to assign frequencies in accordance with the plan, which FCC will review and consider for approval.*

2. *Wind direction and runway information may not be available on UNICOM frequency 122.950.*

9.4.1.2 TBL GEN 3.3−3 depicts other frequency uses as designated by the FCC.

9.5 Use of UNICOM for ATC purposes

9.5.1 UNICOM service may be used for air traffic control purposes, only under the following circumstances:

9.5.1.1 Revision to proposed departure time.

9.5.1.2 Takeoff, arrival, or flight plan cancellation time.

9.5.1.3 ATC clearance, provided arrangements are made between the ATC facility and the UNICOM licensee to handle such messages.

TBL GEN 3.3−2
UNICOM/MULTICOM Frequency Usage

Use	Frequency
Airports without an operating control tower.	122.700 122.725 122.800 122.975 123.000 123.050 123.075
(MULTICOM FREQUENCY) Activities of a temporary, seasonal, emergency nature or search and rescue, as well as, airports with no tower, FSS, or UNICOM.	122.900
(MULTICOM FREQUENCY) Forestry management and fire suppression, fish and game management and protection, and environmental monitoring and protection.	122.925
Airports with a control tower or FSS on airport.	122.950

TBL GEN 3.3−3
Other Frequency Usage Designated by FCC

Use	Frequency
Air-to-air communication (private fixed wing aircraft).	122.750
Air-to-air communications (general aviation helicopters).	123.025
Aviation instruction, Glider, Hot Air Balloon **(not to be used for advisory service)**.	123.300 123.500

9.6 Automatic Terminal Information Service (ATIS)

9.6.1 ATIS is the continuous broadcast of recorded noncontrol information in selected high activity terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information. The information is continuously broadcast over a discrete VHF radio frequency or the voice portion of a local NAVAID. ATIS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 60 NM from the ATIS site and a maximum altitude of 25,000 feet AGL. At most locations, ATIS signals may be received on the surface of the airport, but local conditions may limit the maximum ATIS reception distance and/or altitude. Pilots are urged to cooperate in the ATIS program as it relieves frequency congestion on approach control, ground control, and local control frequencies. The Airport/Facility Directory indicates airports for which ATIS is provided.

9.6.2 ATIS information includes the time of the latest weather sequence, ceiling, visibility, obstructions to visibility, temperature, dew point (if available), wind direction (magnetic), and velocity, altimeter, other pertinent remarks, instrument approach, and runway in use. The ceiling/sky condition, visibility, and obstructions to vision may be omitted from the ATIS broadcast if the ceiling is above 5,000 feet and the visibility is more than 5 miles. The departure runway will only be given if different from the landing runway except at locations having a separate ATIS for departure. The broadcast may include the appropriate frequency and instructions for VFR arrivals to make initial contact with approach control. Pilots of aircraft arriving or departing the terminal area can receive the continuous ATIS broadcast at times when cockpit duties are least pressing and listen to as many repeats as desired. ATIS broadcast must be updated upon the receipt of any official hourly and special weather. A new recording will also be made when there is a change in other pertinent data such as runway change, instrument approach in use, etc.

SAMPLE BROADCAST−
DULLES INTERNATIONAL INFORMATION SIERRA. 1300ZULU WEATHER. MEASURED CEILING THREE THOUSAND OVERCAST. VISIBILITY THREE, SMOKE. TEMPERATURE SIX EIGHT. WIND THREE FIVE ZERO AT EIGHT. ALTIMETER TWO NINER NINER TWO. ILS RUNWAY ONE RIGHT APPROACH IN USE. LANDING RUNWAY ONE RIGHT AND LEFT. DEPARTURE RUNWAY THREE ZERO. ARMEL VORTAC OUT OF SERVICE. ADVISE YOU HAVE SIERRA.

9.6.3 Pilots should listen to ATIS broadcasts whenever ATIS is in operation.

9.6.4 Pilots should notify controllers on initial contact that they have received the ATIS broadcast by repeating the alphabetical code word appended to the broadcast.

EXAMPLE−
"Information Sierra received."

9.6.5 When the pilot acknowledges receipt of the ATIS broadcast, controllers may omit those items contained on the broadcast if they are current. Rapidly changing conditions will be issued by ATC and the ATIS will contain words as follows:

EXAMPLE−
"Latest ceiling/visibility/altimeter/wind/(other conditions) will be issued by approach control/tower."

NOTE−
The absence of a sky condition/ceiling and/or visibility on ATIS indicates a sky condition/ceiling of 5,000 feet or above and visibility of 5 miles or more. A remark may be made on the broadcast, "the weather is better than 5,000 and 5," or the existing weather may be broadcast.

9.6.6 Controllers will issue pertinent information to pilots who do not acknowledge receipt of a broadcast or who acknowledge receipt of a broadcast which is not current.

9.6.7 To serve frequency−limited aircraft, FSSs are equipped to transmit on the omnirange frequency at most en route VORs used as ATIS voice outlets. Such communication interrupts the ATIS broadcast. Pilots of aircraft equipped to receive on other FSS frequencies are encouraged to do so in order that these override transmissions may be kept to an absolute minimum.

9.6.8 While it is a good operating practice for pilots to make use of the ATIS broadcast where it is available, some pilots use the phrase "Have Numbers" in communications with the control tower. Use of this phrase means that the pilot has received wind, runway and altimeter information ONLY and the tower does not have to repeat this information. It does not indicate receipt of the ATIS broadcast and should never be used for this purpose.

3.1.4.5 Nondirectional Radio Beacon (NDB)

a) NDBs are classified according to their intended use.

b) The ranges of NDB service volumes are shown in TBL GEN 3.4−2. The distances (radius) are the same at all altitudes.

TBL GEN 3.4−1

VOR/DME/TACAN Standard Service Volumes

SSV Class Designator	Altitude and Range Boundaries
T (Terminal)	From 1,000 feet above ground level (AGL) up to and including 12,000 feet AGL at radial distances out to 25 NM.
L (Low Altitude)	From 1,000 feet AGL up to and including 18,000 feet AGL at radial distances out to 40 NM.
H (High Altitude)	From 1,000 feet AGL up to and including 14,500 feet AGL at radial distances out to 40 NM. From 14,500 AGL up to and including 60,000 feet at radial distances out to 100 NM. From 18,000 feet AGL up to and including 45,000 feet AGL at radial distances out to 130 NM.

TBL GEN 3.4−2

NDB Service Volumes

Class	Distance (Radius)
Compass Locator	15 NM
MH	25 NM
H	50 NM*
HH	75 NM

** Service ranges of individual facilities may be less than 50 nautical miles (NM). Restrictions to service volumes are first published as a Notice to Airmen and then with the alphabetical listing of the NAVAID in the A/FD.*

FIG GEN 3.4−4

Service Volume Lower Edge Terminal

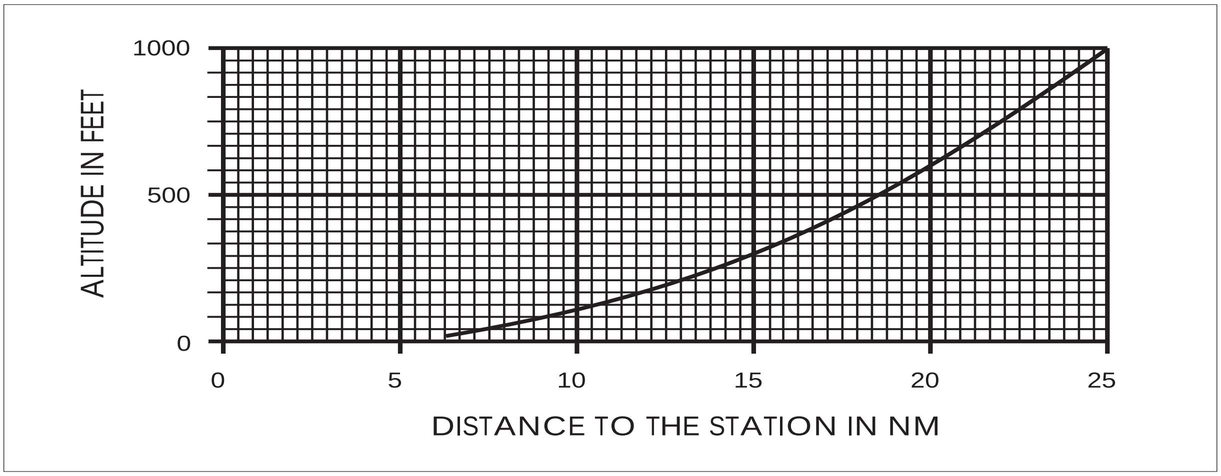
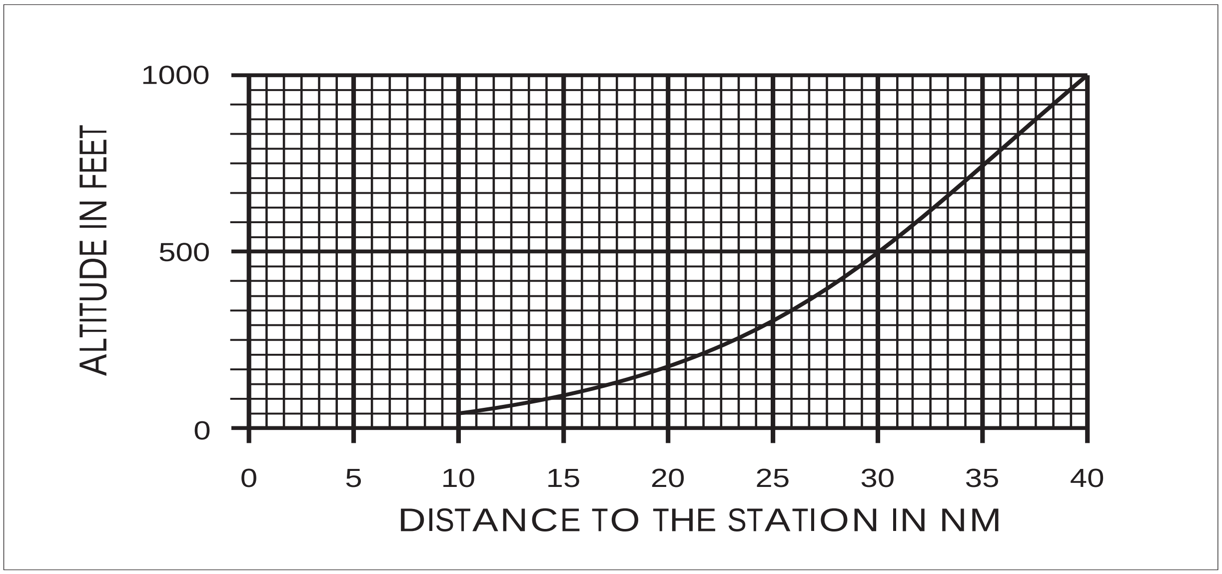


FIG GEN 3.4−5
**Service Volume Lower Edge
Standard High and Low**



3.1.5 NAVAIDs with Voice

3.1.5.1 Voice equipped en route radio navigational aids are under the operational control of either an FAA Flight Service Station (FSS) or an approach control facility. The voice communication is available on some facilities. Hazardous Inflight Weather Advisory Service (HIWAS) broadcast capability is available on selected VOR sites throughout the conterminous U.S. and does not provide two-way voice communication. The availability of two-way voice communication and HIWAS is indicated in the A/FD and aeronautical charts.

3.1.5.2 Unless otherwise noted on the chart, all radio navigation aids operate continuously except during shutdowns for maintenance. Hours of operation of facilities not operating continuously are annotated on charts and in the Airport/Facility Directory.

3.2 Mobile Service

3.2.1 The aeronautical stations (Airport Traffic Control Towers, Air Route Traffic Control Centers, and Flight Service Stations) maintain a continuous watch on their assigned frequencies during the published hours of service unless otherwise notified. An aircraft should normally communicate with the air−ground control radio station which exercises control in the area in which it is flying. Aircraft should maintain continuous watch on the appropriate frequency of the control station and should not abandon watch, except in an emergency, without informing the control radio station.

3.2.2 Flight Service Stations (FSSs) are allocated frequencies for different functions. For Airport Advisory Service, the pilot should contact the FSS on 123.6 MHz. Individually assigned FSS frequencies are listed in Airport/Facility Directory under the FSS entry. If you are in doubt as to what frequency to use to contact an FSS, transmit on 122.1 MHz and advise the FSS of the frequency on which you are receiving.

3.3 Fixed Service

3.3.1 Messages to be transmitted over the Aeronautical Fixed Service are accepted only if they satisfy the requirements of:

3.3.1.1 ICAO Annex 10, Vol. II, Chapter 3, paragraph 3.3.

3.3.1.2 Are prepared in the form specified in Annex 10.

3.3.1.3 The text of an individual message does not exceed 200 groups.

3.3.2 General aircraft operating messages, Class B traffic, including reservation messages pertaining to flights scheduled to depart within 72 hours, must not be acceptable for transmission over U.S. government operated telecommunications circuits except in those cases where it has been determined by the U.S. that adequate non−government facilities are not available.

3.4 Broadcast Service

3.4.1 The following meteorological broadcasts are available for the use of aircraft in flight:

3.4.1.1 LF Transcribed Weather Broadcast (TWEB).

3.4.1.2 Sub−Area Meteorological Broadcast (Volmet).

3.4.1.3 VHF RTF Meteorological Broadcasts.

3.4.2 Full details of broadcast service are given in GEN 3.5, Meteorological Services.

3.4.3 All broadcast services to aircraft are provided in the English language only.

4. Aeronautical Fixed Services

4.1 General

4.1.1 All U.S. ATC facilities have the ability to communicate with all other ATS facilities via either telephone or other domestic telecommunications systems. Circuit diagrams depicting these connections are not available for this publication due to the number of ATS facilities available in the U.S.

4.2 The Domestic Telecommunications Network

4.2.1 The U.S. Domestic telecommunications network is an automated system operating through the National Airspace Data Interchange Network (NADIN) in Atlanta, GA, and Salt Lake City, NV. All Flight Service Stations (FSS) and Air Route Traffic Control Centers (ARTCC) connect through the NATCOM. All FSS and ARTCC facilities have both transmit and receive capabilities.

4.2.2 Airport Air Traffic Control Towers (ATCT) and Approach Control (A/C) Facilities do not connect with this system. Messages originating from or destined to these facilities are relayed through the associated FSS. Associated FSSs for these facilities are listed in the Airport/Facility Directory.

4.2.3 Airport administrative offices, airport managers or airport administrative officials do not normally connect with the domestic telecommunications network. Urgent messages destined to these facilities must be forwarded to the associated FSS for relay or the message must be sent through commercial telegraphic systems.

4.3 The International Message Network (Aeronautical Fixed Telecommunications Network−AFTN)

4.3.1 AFTN messages originating from outside the U.S. domestic telecommunications system must be prepared in accordance with ICAO procedures. All incoming messages are received by NADIN and relayed to the addressed facility through automated procedures. The automated system will interpret the international address group and automatically forward the message via the domestic system to the addressee. For example, a message addressed KIKKYFYX will be accepted by AFTN and relayed to IKK (Kankakee FSS). The Kankakee FSS will manually relay this message to the intended recipient when necessary. Intended recipients are to be addressed in the first line of the message text.

4.3.2 All international flight plans entering the U.S. system must adhere to ICAO format. These flight plans are to be forwarded, via AFTN, to each affected, U.S. controlled, Flight Information Region (FIR) or Air Route Traffic Control Center (ARTCC) outside the continental U.S. (e.g., Miami FIR, San Juan, P.R. ARTCC) or the first FIR/ARTCC for flights entering the continental U.S. (e.g., New York FIR/ARTCC). If the flight plan content is acceptable, it is entered into the ARTCC system and is forwarded, automatically, via ARTCC computer, to all subsequently affected domestic ARTCCs. Flight plans which cannot be processed are rejected at the point of entry into the U.S. system and the originator is queried. Format adherence, once the flight plan is in the ARTCC system, is assured since each of the ARTCCs are automated facilities. Each subsequent ARTCC computer, however, will process incoming flight plans according to the requested routing. Flight plans can be rejected by any ARTCC due to errors in routing. Rejected flight plans, regardless of reason or point of rejection, are held in suspense until the needed clarification is received by the ARTCC facility.

4.4 Radio Communications Phraseology and Techniques

4.4.1 General

4.4.1.1 Radio communications are a critical link in the ATC system. The link can be a strong bond between pilot and controller − or it can be broken with surprising speed and disastrous results. Discussion herein provides basic procedures for new pilots and also highlights safe operating concepts for all pilots.

4.4.1.2 The single, most important thought in pilot−controller communications is understanding. It is essential, therefore, that pilots acknowledge each radio communication with ATC by using the appropriate aircraft call sign. Brevity is important, and contacts should be kept as brief as possible, but the controller must know what you want to do before he/she can properly carry out his/her control duties. And you, the pilot, must know exactly what he/she wants you to do. Since concise phraseology may not always be adequate, use whatever words are necessary to get your message across. Pilots are to maintain vigilance in monitoring air traffic control radio communications frequencies for potential traffic conflicts with their aircraft especially when operating on an active runway and/or when conducting a final approach to landing.

4.4.1.3 All pilots will find the Pilot/Controller Glossary very helpful in learning what certain words or phrases mean. Good phraseology enhances safety and is the mark of a professional pilot. Jargon, chatter and “CB” slang have no place in ATC communications. The Pilot/Controller Glossary is the same glossary used in the ATC controller’s handbook. We recommend that it be studied and reviewed from time to time to sharpen your communication skills.

4.4.2 Radio Technique

4.4.2.1 Listen before you transmit. Many times you can get the information you want through ATIS or by monitoring the frequency. Except for a few situations where some frequency overlap occurs, if you hear someone else talking, the keying of your transmitter will be futile and you will probably jam their receivers causing them to repeat their call. If you have just changed frequency, pause for your receiver to tune, listen, and make sure the frequency is clear.

4.4.2.2 Think before keying your transmitter. Know what you want to say and if it is lengthy; e.g., a flight plan or IFR position report, jot it down. (But do not lock your head in the cockpit.)

4.4.2.3 The microphone should be very close to your lips and after pressing the mike button, a slight pause may be necessary to be sure the first word is transmitted. Speak in a normal conversational tone.

4.4.2.4 When you release the button, wait a few seconds before calling again. The controller or FSS specialist may be jotting down your number, looking for your flight plan, transmitting on a different frequency, or selecting his/her transmitter to your frequency.

4.4.2.5 Be alert to the sounds or lack of sounds in your receiver. Check your volume, recheck your frequency, and make sure that your microphone is not stuck in the transmit position. Frequency blockage can, and has, occurred for extended periods of time due to unintentional transmitter operation. This type of interference is commonly referred to as a “stuck mike,’’ and controllers may refer to it in this manner when attempting to assign an alternate frequency. If the assigned frequency is completely blocked by this type of interference, use the procedures described in paragraph 12., Two−Way Radio Communications Failure.

4.4.2.6 Be sure that you are within the performance range of your radio equipment and the ground station equipment. Remote radio sites do not always transmit and receive on all of a facilities’ available frequencies, particularly with regard to VOR sites where you can hear but not reach a ground station’s receiver. Remember that higher altitude increases the range of VHF “line of sight” communications.

4.4.3 Aircraft Call Signs

4.4.3.1 Improper use of call signs can result in pilots executing a clearance intended for another aircraft. Call signs should never be abbreviated on an initial contact or at any time when other aircraft call signs have similar numbers/sounds or identical letters/numbers, (e.g., Cessna 6132F, Cessna 1622F, Baron 123F, Cherokee 7732F, etc.).

EXAMPLE−
As an example, assume that a controller issues an approach clearance to an aircraft at the bottom of a holding stack and an aircraft with a similar call sign (at the top of the stack) acknowledges the clearance with the last two or three numbers of his/her call sign. If the aircraft at the bottom of

the stack did not hear the clearance and intervene, flight safety would be affected, and there would be no reason for either the controller or pilot to suspect that anything is wrong. This kind of "human factors" error can strike swiftly and is extremely difficult to rectify.

4.4.3.2 Pilots, therefore, must be certain that aircraft identification is complete and clearly identified before taking action on an ATC clearance. ATC specialists will not abbreviate call signs of air carrier or other civil aircraft having authorized call signs. ATC specialists may initiate abbreviated call signs of other aircraft by using the prefix and the last three digits/letters of the aircraft identification after communications are established. The pilot may use the abbreviated call sign in subsequent contacts with the ATC specialist. When aware of similar/identical call signs, ATC specialists will take action to minimize errors by emphasizing certain numbers/letters, by repeating the entire call sign, repeating the prefix, or by asking pilots to use a different call sign temporarily. Pilots should use the phrase "Verify clearance for (your complete call sign)" if doubt exists concerning proper identity.

4.4.3.3 Civil aircraft pilots should state the aircraft type, model or manufacturer's name followed by the digits/letters of the registration number. When the aircraft manufacturer's name or model is stated, the prefix "N" is dropped.

EXAMPLE−
"Bonanza Six Five Five Golf," "Douglas One One Zero," "Breezy Six One Three Romeo Experimental" (Omit "Experimental" after initial contact).

4.4.3.4 Air taxi or other commercial operators not having FAA authorized call signs should prefix their normal identification with the phonetic word "Tango."

EXAMPLE−
"Tango Aztec Two Four Six Four Alpha."

4.4.3.5 Air carriers and commuter air carriers having FAA authorized call signs should identify themselves by stating the complete call sign, using group form for the numbers.

EXAMPLE−
"United Twenty−five, Midwest Commuter Seven Eleven."

4.4.3.6 Military aircraft use a variety of systems including serial numbers, word call signs and combinations of letters/numbers.

EXAMPLE−
"Army Copter 48931" "Air Force 61782" "REACH 31792" "Pat 157" "AirEvac 17652" "Navy Golf Alpha Kilo 21" "Marine 4 Charlie 36"

4.4.3.7 Air Ambulance Flights. Because of the priority afforded air ambulance flights in the ATC system, extreme discretion is necessary when using the term "LIFEGUARD." It is only intended for those missions of an urgent medical nature and to be utilized only for that portion of the flight requiring expeditious handling. When requested by the pilot, necessary notification to expedite ground handling of patients, etc., is provided by ATC; however, when possible, this information should be passed in advance through non−ATC communications systems.

a) Civilian air ambulance flights responding to medical emergencies (first call to an accident scene, carrying patients, organ donors, organs, or other urgently needed lifesaving medical material) will be expedited by ATC when necessary. When expeditious handling is necessary, add the word "LIFEGUARD" in the remarks section of the flight plan. In radio communications, use the call sign "LIFEGUARD" followed by the aircraft registration letters/numbers.

b) Similar provisions have been made for the use of "Air−Evac" and "Med−Evac" by military air ambulance flights, except that these military flights will receive priority only when specifically requested.

EXAMPLE−
"Lifeguard Two Six Four Six."

c) Air carrier and air taxi flights responding to medical emergencies will also be expedited by ATC when necessary. The nature of these medical emergency flights usually concerns the transportation of urgently needed lifesaving medical materials or vital organs. IT IS IMPERATIVE THAT THE COMPANY/PILOT DETERMINE, BY THE NATURE/URGENCY OF THE SPECIFIC MEDICAL CARGO, IF PRIORITY ATC ASSISTANCE IS REQUIRED. Pilots must ensure that the word "LIFEGUARD" is included in the remarks section of the flight plan and use the call sign "LIFEGUARD" followed by the company name and flight number, for all transmissions when expeditious handling is required. It is important for ATC to be aware of "LIFEGUARD" status, and it is the pilot's responsibility to ensure that this information is provided to ATC.

EXAMPLE−
"Lifeguard Delta Thirty−seven."

4.4.3.8 Student Pilots Radio Identification. The FAA desires to help the student pilot in acquiring sufficient practical experience in the environment in which he/she will be required to operate. To receive additional assistance while operating in areas of concentrated air traffic, a student pilot need only identify himself/herself as a student pilot during his/her initial call to an FAA radio facility. For instance, "Dayton Tower, Fleetwing One Two Three Four, Student Pilot." This special identification will alert FAA air traffic control personnel and enable them to provide the student pilot with such extra assistance and consideration as he/she may need. It is recommended that student pilots identify themselves as such, on initial contact with each clearance delivery prior to taxiing, ground control, tower, approach and departure control frequency, or FSS contact.

4.4.4 Description of Interchange or Leased Aircraft

4.4.4.1 Controllers issue traffic information based on familiarity with airline equipment and color/markings. When an air carrier dispatches a flight using another company's equipment and the pilot does not advise the terminal ATC facility, the possible confusion in aircraft identification can compromise safety.

4.4.4.2 Pilots flying an "interchange" or "leased" aircraft not bearing the colors/markings of the company operating the aircraft should inform the terminal ATC facility on first contact the name of the operating company and trip number, followed by the company name as displayed on the aircraft, and aircraft type.

EXAMPLE−
AIR CAL 311, United (Interchange/Lease), Boeing 727.

4.4.5 Ground Station Call Signs

4.4.5.1 Pilots, when calling a ground station, should begin with the name of the facility being called followed by the type of the facility being called, as indicated in the following examples.

TBL GEN 3.4−3
Calling a Ground Station

Facility	Call Sign
Airport UNICOM	"Shannon UNICOM"
FAA Flight Service Station	"Chicago Radio"
FAA Flight Service Station (En Route Flight Advisory Service (Weather))	"Seattle Flight Watch"
Airport Traffic Control Tower	"Augusta Tower"
Clearance Delivery Position (IFR)	"Dallas Clearance Delivery"
Ground Control Position in Tower	"Miami Ground"
Radar or Nonradar Approach Control Position	"Oklahoma City Approach"
Radar Departure Control Position	"St. Louis Departure"
FAA Air Route Traffic Control Center	"Washington Center"

4.5 Radio Communications Phraseology

4.5.1 Phonetic Alphabet

4.5.1.1 The International Civil Aviation Organization (ICAO) phonetic alphabet is used by FAA personnel when communications conditions are such that the information cannot be readily received without their use. Air traffic control facilities may also request pilots to use phonetic letter equivalents when aircraft with similar sounding identifications are receiving communications on the same frequency. Pilots should use the phonetic alphabet when identifying their aircraft during initial contact with air traffic control facilities. Additionally, use the phonetic equivalents for single letters and to spell out groups of letters or difficult words during adverse communications conditions.

TBL GEN 3.4−4

Character	Morse Code	Telephony	Phonic (Pronunciation)
A	• —	Alfa	(AL−FAH)
B	— • • •	Bravo	(BRAH−VOH)
C	— • — •	Charlie	(CHAR−LEE) or (SHAR−LEE)
D	— • •	Delta	(DELL−TAH)
E	•	Echo	(ECK−OH)
F	• • — •	Foxtrot	(FOKS−TROT)
G	— — •	Golf	(GOLF)
H	• • • •	Hotel	(HOH−TEL)
I	• •	India	(IN−DEE−AH)
J	• — — —	Juliett	(JEW−LEE−ETT)
K	— • —	Kilo	(KEY−LOH)
L	• — • •	Lima	(LEE−MAH)
M	— —	Mike	(MIKE)
N	— •	November	(NO−VEM−BER)
O	— — —	Oscar	(OSS−CAH)
P	• — — •	Papa	(PAH−PAH)
Q	— — • —	Quebec	(KEH−BECK)
R	• — •	Romeo	(ROW−ME−OH)
S	• • •	Sierra	(SEE−AIR−RAH)
T	—	Tango	(TANG−GO)
U	• • —	Uniform	(YOU−NEE−FORM) or (OO−NEE−FORM)
V	• • • —	Victor	(VIK−TAH)
W	• — —	Whiskey	(WISS−KEY)
X	— • • —	Xray	(ECKS−RAY)
Y	— • — —	Yankee	(YANG−KEY)
Z	— — • •	Zulu	(ZOO−LOO)
1	• — — — —	One	(WUN)
2	• • — — —	Two	(TOO)
3	• • • — —	Three	(TREE)
4	• • • • —	Four	(FOW−ER)
5	• • • • •	Five	(FIFE)
6	— • • • •	Six	(SIX)
7	— — • • •	Seven	(SEV−EN)
8	— — — • •	Eight	(AIT)
9	— — — — •	Nine	(NIN−ER)
0	— — — — —	Zero	(ZEE−RO)

4.5.2 Figures

4.5.2.1 Figures indicating hundreds and thousands in round numbers, as for ceiling heights, and upper wind levels up to 9,900, must be spoken in accordance with the following:

EXAMPLE−
1. *500 . . . . five hundred*
2. *4,500 . . . . . . four thousand five hundred*

4.5.2.2 Numbers above 9,900 must be spoken by separating the digits preceding the word "thousand."

EXAMPLE−
1. *10,000 . . . . . one zero thousand*
2. *13,500 . . . . . one three thousand five hundred*

4.5.2.3 Transmit airway or jet route numbers as follows:

EXAMPLE−
1. *V12 . . . . Victor Twelve*
2. *J533 . . . . J Five Thirty− Three*

4.5.2.4 All other numbers must be transmitted by pronouncing each digit.

EXAMPLE−
10 . . . . one zero

4.5.2.5 When a radio frequency contains a decimal point, the decimal point is spoken as "Point."

EXAMPLE−
122.1 . . . . one two two point one

NOTE−
ICAO procedures require the decimal point be spoken as "decimal." The FAA will honor such usage by military aircraft and all other aircraft required to use ICAO procedures.

4.5.3 Altitudes and Flight Levels

4.5.3.1 Up to but not including 18,000 feet MSL, by stating the separate digits of the thousands, plus the hundreds.

EXAMPLE−
1. *12,000 . . . . . one two thousand*
2. *12,500 . . . . . one two thousand five hundred*

4.5.3.2 At and above 18,000' MSL (FL 180) by stating the words "flight level" followed by the separated digits of the flight level.

EXAMPLE−
1. *190 . . . . Flight Level One Niner Zero*
2. *275 . . . . Flight Level Two Seven Five*

4.5.4 Directions

4.5.4.1 The three digits of a magnetic course, bearing, heading or wind direction, should always be magnetic. The word "true" must be added when it applies.

EXAMPLE−

1. *(Magnetic course) 005 . . . . . . zero zero five*

2. *(True course) 050 . . . . zero five zero true*

3. *(Magnetic bearing) 360 . . . . . three six zero*

4. *(Magnetic heading) 100 . . . . . heading one zero zero*

5. *(Wind direction) 220 . . . . wind two two zero*

4.5.5 Speeds

4.5.5.1 The separate digits of the speed are to be followed by the word "KNOTS" except that controllers may omit the word "KNOTS" when using speed adjustment procedures (e.g., "REDUCE/INCREASE SPEED TO TWO FIVE ZERO").

EXAMPLE−

1. *(Speed) 250 . . . . two five zero knots*

2. *(Speed) 190 . . . . one niner zero knots*

4.5.5.2 The separate digits of the Mach number are to be preceded by the word "Mach."

EXAMPLE−

1. *(Mach number) 1.5 . . . . Mach one point five*

2. *(Mach number) 0.64 . . . . Mach point six four*

3. *(Mach number) 0.7 . . . . Mach point seven*

4.5.6 Time

4.5.6.1 FAA uses Coordinated Universal Time (UTC) for all operations. The word "local" or the time zone equivalent must be used to denote local when local time is given during radio and telephone communications. The term "ZULU" may be used to denote UTC.

EXAMPLE−

0920 UTC . . . . zero niner two zero,
zero one two zero pacific or local,
or one twenty AM

4.5.6.2 To convert from Standard Time to UTC:

TBL GEN 3.4−5

Standard Time to Coordinated Universal Time

Eastern Standard Time Central	Add 5 hours
Standard Time	Add 6 hours
Mountain Standard Time	Add 7 hours
Pacific Standard Time Alaska	Add 8 hours
Standard Time	Add 9 hours
Hawaii Standard Time	Add 10 hours

NOTE−

For daylight time, subtract 1 hour.

4.5.6.3 A reference may be made to local daylight or standard time utilizing the 24−hour clock system. The hour is indicated by the first two figures and the minutes by the last two figures.

EXAMPLE−

1. *0000 . . . . zero zero zero zero*

2. *0920 . . . . zero niner two zero*

4.5.6.4 Time may be stated in minutes only (two figures) in radio telephone communications when no misunderstanding is likely to occur.

4.5.6.5 Current time in use at a station is stated in the nearest quarter minute in order that pilots may use this information for time checks. Fractions of a quarter minute or more, but less than eight seconds more, are stated as the preceding quarter minute; fractions of a quarter minute of eight seconds or more are stated as the succeeding quarter minute.

EXAMPLE−

1. *0929:05 . . . . time, zero niner two niner*

2. *0929:10 . . . . time, zero niner two niner and one−quarter*

4.5.7 Communications with Tower when Aircraft Transmitter/Receiver or Both are Inoperative

4.5.7.1 Arriving Aircraft

a) Receiver Inoperative. If you have reason to believe your receiver is inoperative, remain outside or above Class D airspace until the direction and flow of traffic has been determined; then, advise the tower of your type aircraft, position, altitude, intention to land, and request that you be controlled with light signals. When you are approximately 3 to 5 miles from the airport, advise the tower of your position and join the airport traffic pattern. From this point on, watch the tower for light signals. Thereafter, if a complete pattern is made, transmit your position when downwind and/or turning base leg.

5.2.4 Cape Cod and Islands Radar Overwater Flight Following

5.2.4.1 In addition to normal VFR radar advisory service, traffic permitting, Otis Approach Control provides a radar overwater flight following service for aircraft traversing the Cape Code and adjacent island area. Pilots desiring this service may contact Cape TRACON on 118.2 MHz.

5.2.4.2 Pilots requesting this service should be prepared to give the following information:

a) Type and color of aircraft.

b) Altitude.

c) Position and heading.

d) Route of flight.

e) True airspeed.

5.2.4.3 For best radar coverage, pilots are encouraged to fly at 1,500 feet MSL or above.

5.2.4.4 Pilots are responsible for cancelling their request for overwater flight following when they are over the mainland and/or outside the service area boundary.

5.2.5 Lake Reporting Service

5.2.5.1 Cleveland and Lansing FSS Radio Sectors provide Lake Reporting Service on request for aircraft traversing the western half of Lake Erie. Green Bay, Kankakee, Lansing, and Terre Haute FSS Radio Sectors provide Lake Reporting Service on request for aircraft traversing Lake Michigan.

a) When requesting the service, pilots should ask for LAKE REPORTING SERVICE.

b) Pilots not on a VFR flight plan should be prepared to provide all information that is normally provided for a complete VFR flight plan.

c) Pilots already on a VFR flight plan should be prepared to provide the following information:

1) Aircraft or flight identification.

2) Type of aircraft.

3) Near−shore crossing point or last fix before crossing.

4) Proposed time over near−shore crossing point or last fix before crossing.

5) Proposed altitude.

6) Proposed route of flight.

7) Estimated time over water.

8) Next landing point.

9) FSS having complete VFR flight plan information.

d) Radio contacts must not exceed 10 minutes when pilots fly at an altitude that affords continuous communications. If radio contact is lost for more than 15 minutes (5 minutes after a scheduled reporting time), Search and Rescue (SAR) will be alerted.

5.2.5.2 The estimated time for crossing the far shore will be the scheduled reporting time for aircraft that fly at an altitude that does not afford continuous communication coverage while crossing the lake. If radio contact is not established within 5 minutes of that time, SAR will be alerted.

5.2.5.3 Pilots are responsible for canceling their request for Lake Reporting Service when outside the service area boundary. Aircraft experiencing radio failure will be expected to land as soon as practicable and cancel their Lake Reporting Service flight plan.

5.2.5.4 Communications. Primary communications − Pilots should communicate with the following facilities on the indicated frequencies:

a) Cleveland FSS Radio Sector Controls:

1) Cleveland RCO (FSS transmits and receives on 122.35 or 122.55 MHz).

2) Sandusky VOR (FSS transmits on 109.2 and receives on 122.1 MHz).

b) Green Bay FSS Radio Sector Controls:

1) Escanaba VORTAC (FSS transmits on 110.8 and receives on 122.1 MHz).

2) Green Bay RCO (FSS transmits and receives on 122.55 MHz).

3) Manistique RCO (FSS transmits and receives on 122.25 MHz).

4) Manitowoc VOR (FSS transmits on 111.0 and receives on 122.1 MHz).

5) Menominee VOR (FSS transmits on 109.6 and receives on 122.1 MHz).

6) Milwaukee RCO (FSS transmits and receives on 122.65 MHz).

7) Falls VOR (FSS transmits on 110.0 and receives on 122.1 MHz).

c) Kankakee FSS Radio Sector Controls:

1) Chicago Heights VORTAC (FSS transmits on 114.2 and receives on 122.1 MHz).

2) Meigs RCO (FSS transmits and receives on 122.15 MHz).

3) Waukegan RCO (FSS transmits and receives on 122.55 MHz).

d) Lansing FSS Radio Sector Controls:

1) Lake Erie. Detroit City RCO (FSS transmits and receives on 122.55 MHz).

2) Lake Michigan:

(a) Keeler VORTAC (FSS transmits on 116.6 and receives on 122.1 MHz).

(b) Ludington RCO (FSS transmits and receives on 122.45 MHz).

(c) Manistee VORTAC (FSS transmits on 111.4 and receives on 122.1 MHz).

(d) Muskegon RCO (FSS transmits and receives on 122.5 MHz).

(e) Pellston RCO (FSS transmits and receives on 122.3 MHz).

(f) Pullman VORTAC (FSS transmits on 112.1 and receives on 122.1 MHz).

(g) Traverse City RCO (FSS transmits and receives on 122.65 MHz).

e) Terre Haute FSS Radio Sector Controls. South Bend RCO (FSS transmits and receives on 122.6 MHz).

5.2.5.5 Florida Everglades Reporting Service. This service is offered by Miami Automated International Flight Service Station (MIA AIFSS), in extreme southern Florida. The service is provided to aircraft crossing the Florida Everglades, between Lee County (Ft. Myers, FL) VORTAC (RSW) on the northwest side, and Dolphin (Miami, FL) VOR (DHP) on the southeast side.

a) The pilot must request the service from Miami AIFSS.

b) MIA AIFSS frequency information, 122.2, 122.3, and 122.65.

c) The pilot must file a VFR flight plan with the remark: ERS.

d) The pilot must maintain 2000 feet of altitude.

e) The pilot must make position reports every ten (10) minutes. SAR begins fifteen (15) minutes after position report is not made on time.

f) The pilot is expected to land as soon as is practical, in the event of two−way radio failure, and advise MIA AIFSS that the service is terminated.

g) The pilot must notify Miami AIFSS when the flight plan is cancelled or the service is suspended.

6. Over−water Flights Radio Procedure

6.1 Pilots should remember that there is a need to continuously guard the VHF emergency frequency 121.5 MHz when on long over−water flights, except when communications on other VHF channels, equipment limitations, or cockpit duties prevent simultaneous guarding of two channels. Guarding of 121.5 MHz is particularly critical when operating in proximity to flight information region (FIR) boundaries; for example, operations on Route R220 between Anchorage and Tokyo, since it serves to facilitate communications with regard to aircraft which may experience in−flight emergencies, communications, or navigational difficulties. (Reference ICAO Annex 10, Vol II Paras. 5.2.2.1.1.1 and 5.2.2.1.1.2.)

7. Radio Communications and Navigation Facilities

7.1 A complete listing of air traffic radio communications facilities and frequencies and radio navigation facilities and frequencies is contained in the Airport/Facility Directory. Similar information for the Pacific and Alaskan areas is contained in the Pacific and Alaskan Supplements (See GEN 3.2, Aeronautical Charts).

8. U.S. Aeronautical Telecommunications Services

8.1 The following services are available for aircraft engaged in international or overseas flight.

8.2 The aeronautical voice communication stations listed are available to and utilized by the U.S. Federal Aviation Administration Air Traffic Control Centers for air traffic control purposes.

8.3 The frequencies in use will depend upon the time of day or night and conditions which affect radio wave propagation. Voice communications handled on a single channel simplex basis (i.e., with the aircraft and the ground station using the same frequency for transmission and reception) unless otherwise noted in remarks.

8.4 The stations will remain on continuous watch for aircraft within their communications areas and, when practicable, will transfer this watch to another station when the aircraft reaches the limit of the communications area.

8.5 Stations listed below which are designated "FAA" are operated by the U.S. Federal Aviation Administration. Stations designated "ARINC" are operated by Aeronautical Radio, Incorporated, 2551 Riva Road, Annapolis, MD 21401. Contact the Aviation Voice Services Support Section at 410−266−4430, E:Mail AGOPS@arinc.com or cable HDQXGXA. (See TBL GEN 3.4−7.)

8.6 All users of the North Atlantic HF MWARA services should consult International NOTAMS and ICAO Regional Supplementary Procedures, Document 7030, for current procedures concerning the operational use of the North Atlantic HF families. At present, procedures for the distribution of HF communications traffic in the North Atlantic are:

8.6.1 All aircraft registered in the hemisphere west of 30W should use family alpha on the southern routes and family bravo on the central and northern routes. (Southern routes are those which enter the New York, San Juan and Santa Maria FIRs. The central and northern routes comprise all others).

8.6.2 All aircraft registered in the hemisphere east of 30W should use family alpha on the southern routes and family charlie on the central and northern routes.

8.6.3 All aircraft should use family alpha on the southern route and family delta on the central and northern routes while outside the organized track system (OTS).

8.6.4 Aircraft registered in Australia will use families designated to aircraft registered east of 30W.

8.7 Aircraft operating in the Anchorage Arctic CTA/FIR beyond line of sight range of remote control VHF air/ground facilities operated from the Anchorage ACC, must maintain communications with Cambridge Bay radio and a listening or SELCAL watch on HF frequencies of the North Atlantic D (NAT D) network (2971 kHz, 4675 kHz, 8891 kHz and 11279 kHz). Additionally, and in view of reported marginal reception of the Honolulu Pacific Volmet broadcasts in that and adjacent Canadian airspace, Cambridge Bay radio can provide Anchorage and Fairbanks surface observations and terminal forecasts to flight crews on request.

TBL GEN 3.4−7

Station and Operating Agency	Radio Call	Transmitting Frequencies	Remarks
HONOLULU (FAA)	Honolulu Radio	122.6 122.2 #121.5 MHz	#Emergency. Frequency 122.1 also available for receiving only.
	Volmet	2863 6679 8828 13282 kHz	Broadcasts at H+00−05 and H+30−35; Aerodrome Forecasts, Honolulu, Hilo, Agana, Honolulu. SIGMET. Hourly Report, Honolulu, Hilo, Kahului, Agana, Honolulu.
			Broadcasts at H+05−10 and H+35−40; Hourly Reports, San Francisco, Los Angeles, Seattle, Portland, Sacramento, Ontario, Las Vegas. SIGMET. Aerodrome Forecasts, San Francisco, Seattle, Los Angeles.
			Broadcasts at H+25−30 and H+55−60; Hourly Reports, Anchorage, Elmendorf, Fairbanks, Cold Bay, King Salmon, Vancouver. SIGMET. Aerodrome Forecasts, Anchorage, Fairbanks, Cold Bay, Vancouver.
MIAMI (FAA)	Miami Radio	126.7 118.4 126.9 122.2 122.4 122.75 123.65 127.9 MHz	Local and Short Range.
		#121.5 MHz	#Emergency.
NEW YORK (FAA)	New York Radio (Volmet)	3485* 6604 10051 13270* kHz	*3485 Volmet broadcasts from 1 hour after sunset to 1 hour before sunrise.
			*13270 Volmet broadcasts from 1 hour before sunrise to 1 hour after sunset.
			Broadcasts at H+00−05; Aerodrome Forecasts, Detroit, Chicago, Cleveland. Hourly Reports, Detroit, Chicago, Cleveland, Niagara Falls, Milwaukee, Indianapolis.
			Broadcasts at H+05−10; SIGMET, (Oceanic−New York). Aerodrome Forecasts, Bangor, Pittsburgh, Charlotte. Hourly Reports, Bangor, Pittsburgh, Windsor Locks, St. Louis, Charlotte, Minneapolis.
			Broadcasts at H+10−15; Aerodrome Forecasts, New York, Newark, Boston. Hourly reports, New York, Newark, Boston, Baltimore, Philadelphia, Washington.
			Broadcasts at H+15−20; SIGMET (Oceanic−Miami/San Juan). Aerodrome Forecasts, Bermuda, Miami, Atlanta. Hourly Reports, Bermuda, Miami, Nassau, Freeport, Tampa, West Palm Beach, Atlanta.
			Broadcasts at H+30−35; Aerodrome Forecasts, Niagara Falls, Milwaukee, Indianapolis. Hourly Reports Detroit, Chicago, Cleveland, Niagara Falls, Milwaukee, Indianapolis.
			Broadcasts at H+35−40; SIGMET (Oceanic−New York). Aerodrome Forecasts, Windsor Locks, St. Louis. Hourly Reports, Bangor, Pittsburgh, Windsor Locks, St. Louis, Charlotte, Minneapolis.
			Broadcasts at H+40−45; Aerodrome Forecasts, Baltimore, Philadelphia, Washington. Hourly Reports, New York, Newark, Boston, Baltimore, Philadelphia, Washington.
			Broadcasts at H+45−50; SIGMET (Oceanic−Miami/San Juan). Aerodrome Forecasts, Nassau, Freeport. Hourly Reports, Bermuda, Miami, Nassau, Freeport, Tampa, West Palm Beach, Atlanta.

9. Selective Calling System (SELCAL) Facilities Available

9.1 The SELCAL is a communication system which permits the selective calling of individual aircraft over radio−telephone channels from the ground station to properly equipped aircraft, so as to eliminate the need for the flight crew to constantly monitor the frequency in use.

TBL GEN 3.4−8

Location	Operator	HF	VHF
New York	ARINC	X	X
San Francisco	ARINC	X	X

10. Special North Atlantic, Caribbean, and Pacific Area Communications

10.1 VHF air−to−air frequencies enable aircraft engaged on flights over remote and oceanic areas out of range of VHF ground stations to exchange necessary operational information and to facilitate the resolution of operational problems.

10.2 Frequencies have been designated as follows:

TBL GEN 3.4−9

Area	Frequency
North Atlantic	123.45 MHz
Caribbean	123.45 MHz
Pacific	123.45 MHz

11. Distress and Urgency Communications

11.1 A pilot who encounters a distress or urgency condition can obtain assistance simply by contacting the air traffic facility or other agency in whose area of responsibility the aircraft is operating, stating the nature of the difficulty, pilot's intentions, and assistance desired. Distress and urgency communications procedures are prescribed by the International Civil Aviation Organization (ICAO), however, and have decided advantages over the informal procedure described above.

11.2 Distress and urgency communications procedures discussed in the following paragraphs relate to the use of air ground voice communications.

11.3 The initial communication, and if considered necessary, any subsequent transmissions by an aircraft in distress should begin with the signal MAYDAY, preferably repeated three times. The signal PAN−PAN should be used in the same manner for an urgency condition.

11.4 Distress communications have absolute priority over all other communications, and the word MAYDAY commands radio silence on the frequency in use. Urgency communications have priority over all other communications except distress, and the word PAN−PAN warns other stations not to interfere with urgency transmissions.

11.5 Normally, the station addressed will be the air traffic facility or other agency providing air traffic services, on the frequency in use at the time. If the pilot is not communicating and receiving services, the station to be called will normally be the air traffic facility or other agency in whose area of responsibility the aircraft is operating, on the appropriate assigned frequency. If the station addressed does not respond, or if time or the situation dictates, the distress or urgency message may be broadcast, or a collect call may be used, addressing "Any Station (Tower) (Radio) (Radar)."

11.6 The station addressed should immediately acknowledge a distress or urgency message, provide assistance, coordinate and direct the activities of assisting facilities, and alert the appropriate Search and Rescue coordinator if warranted. Responsibility will be transferred to another station only if better handling will result.

11.7 All other stations, aircraft and ground, will continue to listen until it is evident that assistance is being provided. If any station becomes aware that the station being called either has not received a distress or urgency message, or cannot communicate with the aircraft in difficulty, it will attempt to contact the aircraft and provide assistance.

11.8 Although the frequency in use or other frequencies assigned by ATC are preferable, the following emergency frequencies can be used for distress or urgency communications, if necessary or desirable:

11.8.1 121.5 MHz and 243.0 MHz. Both have a range generally limited to line of sight. 121.5 MHz is guarded by direction finding stations and some military and civil aircraft. 243.0 MHz is guarded by military aircraft. Both 121.5 MHz and 243.0 MHz are guarded by military towers, most civil towers, flight service stations, and radar facilities. Normally ARTCC emergency frequency capability does not extend to radar coverage limits. If an ARTCC does not respond when called on 121.5 MHz or 243.0 MHz, call the nearest tower or flight service station.

11.8.2 2182 kHz. The range is generally less than 300 miles for the average aircraft installation. It can be used to request assistance from stations in the maritime service. 2182 kHz is guarded by major radio stations serving Coast Guard Rescue Coordination Centers and Coast Guard units along the sea coasts of the U.S. and shores of the Great Lakes. The call "Coast Guard" will alert all Coast Guard Radio Stations within range. 2182 kHz is also guarded by most commercial coast stations and some ships and boats.

12. Two−Way Radio Communications Failure

12.1 It is virtually impossible to provide regulations and procedures applicable to all possible situations associated with two−way radio communications failure. During two−way radio communications failure when confronted by a situation not covered in the regulation, pilots are expected to exercise good judgment in whatever action they elect to take. Should the situation so dictate, they should not be reluctant to use the emergency action contained in 14 CFR Section 91.3(b).

12.2 Whether two−way communications failure constitutes an emergency depends on the circumstances, and in any event is a determination made by the pilot. 14 CFR Section 91.3 authorizes a pilot to deviate from any rule to the extent required to meet an emergency.

12.3 In the event of two−way radio communications failure, ATC service will be provided on the basis that the pilot is operating in accordance with 14 CFR Section 91.185. A pilot experiencing two−way communications failure should (unless emergency authority is exercised) comply with 14 CFR Section 91.185 as indicated below.

12.4 Unless otherwise authorized by ATC, each pilot who has two−way radio communications failure when operating under IFR must comply with the following conditions:

12.4.1 If the failure occurs in VFR conditions, or if VFR conditions are encountered after the failure, each pilot must continue the flight under VFR and land as soon as practicable.

NOTE−
This procedure also applies when two-way radio failure occurs while operating in Class A airspace. The primary objective of this provision in 14 CFR Section 91.185 is to preclude extended IFR operation by these aircraft within the ATC system. Pilots should recognize that operation under these conditions may unnecessarily as well as adversely affect other users of the airspace, since ATC may be required to reroute or delay other users in order to protect the failure aircraft. However, it is not intended that the requirement to "land as soon as practicable" be construed to mean "as soon as possible." Pilots retain the prerogative of exercising their best judgment and are not required to land at an unauthorized airport, at an airport unsuitable for the type of aircraft flown, or to land only minutes short of their intended destination.

12.4.2 If the failure occurs in IFR conditions, or if VFR conditions cannot be complied with, each pilot must continue the flight according to the following requirements.

12.5 Route requirements:

12.5.1 By the route assigned in the last ATC clearance received.

12.5.2 If being radar vectored, by the direct route from the point of radio failure to the fix, route, or airway specified in the vector clearance.

12.5.3 In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance.

12.5.4 In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan.

12.6 Altitude requirements. At the HIGHEST of the following altitudes or flight levels FOR THE ROUTE SEGMENT BEING FLOWN:

12.6.1 The altitude or flight level assigned in the last ATC clearance received.

GEN 3.5 Meteorological Services

1. Meteorological Authority

1.1 The meteorological services for civil aviation are prepared by the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

Postal Address:
National Weather Service
National Oceanic and Atmospheric Administration
Department of Commerce
1325 East West Highway
Silver Spring, Maryland 20910
Telephone: 301−713−1726
Telex: None
Commercial Telegraphic Address:
METEO WASHINGTON DC

1.2 Meteorological Offices

1.2.1 FAA Flight Service Stations

1.2.1.1 A complete listing of FAA Flight Service Stations and their telephone numbers is contained in the Airport/Facility Directory. Additionally, communications data and en route services provided by FAA Flight Service Stations are contained in the same publication. Similar information for the Pacific and Alaskan areas is contained in the Pacific and Alaskan Supplements. (See GEN 3.2, Aeronautical Charts.)

1.3 Climatological Summaries

1.3.1 Requests for copies of climatological summaries are made available through the:

National Climatic Data Center
Department of Commerce
National Oceanic and Atmospheric
Administration
Environmental Data Services Branch
Federal Building
Asheville, North Carolina 28801

2. Area of Responsibility

2.1 The National Weather Service (NWS) is responsible for providing meteorological services for the 50 states of the U.S., its external territories, and possessions.

2.2 International Flight Documentation Sites. Airports listed below are designated as international flight documentation sites.

TBL GEN 3.5−1

Location	Airport Name	Indicator
Anchorage, AK	Anchorage International	PANC
Atlanta, GA	William B. Hartsfield International	KATL
Baltimore, MD	Baltimore−Washington International	KBWI
Boston, MA	General Edward Lawrence Logan International	KBOS
Charlotte, NC	Charlotte/Douglas International	KCLT
Chicago, IL	O’Hare International	KORD
Cincinnati, OH	Cincinnati/Northern Kentucky International	KCVG
Dallas−Ft. Worth, TX	Dallas−Ft. Worth International	KDFW
Detroit, MI	Detroit Metropolitan Wayne County	KDTW
Fairbanks, AK	Fairbanks International	PAFA
Guam	Guam/Agana Naval Air Station	NOCD AGANA
Hartford, CT	Bradley International	KBDL
Houston, TX	George Bush Intercontinental/Houston	KIAH
Kahului, HI	Kahului	PHOG
Las Vegas, NV	McCarran International	KLAS
Los Angeles, CA	Los Angeles International	KLAX
Miami, FL	Miami International	KMIA
Minneapolis, MN	Minneapolis−St. Paul International (Wold−Chamberlain)	KMSP
New Orleans, LA	New Orleans International (Moisant Field)	KMSY
New York, NY	John F. Kennedy International	KJFK
Newark, NJ	Newark International	KEWR
Orlando, FL	Orlando International	KMCO
Pago Pago, American Samoa	Pago Pago International	NSTU
Philadelphia, PA	Philadelphia International	KPHL
Pittsburgh, PA	Pittsburgh International	KPIT
Portland, OR	Portland International	KPDX
Raleigh−Durham, NC	Raleigh−Durham International	KRDU
San Francisco, CA	San Francisco International	KSFO
San Juan, PR	Luis Munoz Marin International	TJSJ
Seattle, WA	Seattle−Tacoma International	KSEA
Tampa, FL	Tampa International	KTPA
Washington, DC	Washington Dulles International	KIAD

2.2.1 Climatological information, basically in the form of climatological summaries, is available at all designated international airports in the U.S.

2.2.2 Flight documentation is provided in the form of copies of facsimile charts, copies of teletype−writer forecasts, and airport forecast decode sheets. Flight documentation materials are available at all destination regular airport meteorological stations. English is the language used for all U.S. flight documentation. Briefings can be provided either in person or received by telephone at all airport meteorological offices.

2.2.3 All airport forecasts (TAF) prepared for U.S. international airports cover the following validity periods: 00−24 UTC, 06−06 UTC, 12−12 UTC, and 18−18 UTC. At the present time, specific landing forecasts are not made for any U.S. airport. The portion of the airport's TAF valid closest to the time of landing is used in lieu of a landing forecast.

2.2.4 Supplementary information available at U.S. meteorological airport offices includes extended weather and severe weather outlooks, pilot reports, runway braking action reports (during the winter), relative humidity, times of sunrise and sunset, surface and upper air analyses, radar echo charts, and forecasts of maximum and minimum surface temperatures.

2.2.5 All meteorological offices shown as taking routine aviation observations also take unscheduled special aviation observations when meteorological conditions warrant.

3. Types of Service Provided

3.1 Area Forecast Charts (Facsimile Form)

3.1.1 The U.S. has one Area Forecast Center, the National Center for Environmental Predictions (NCEP), located in Suitland, Maryland. The NCEP prepares current weather, significant weather, forecast weather, constant pressure, and tropopause−vertical wind shear charts for the U.S., the Caribbean and Northern South America, the North Atlantic, and the North Pacific areas. The NCEP also prepares a constant pressure and tropopause−vertical wind shear chart for Canada.

3.2 Local and Regional Aviation Forecasts (Printed Form)

3.2.1 Numerous forecasts and weather advisories are prepared which serve local and regional areas of the U.S. These forecasts are generally prepared by the NWS on a scheduled basis or, as in the case of severe weather advisories, as needed. These forecasts are Area Forecast (FA), Airport Forecast (TAF), Severe Weather Forecast (WW), Hurricane Advisories (WT), Winds and Temperature Aloft Forecast (FD), Simplified Surface Analyses (AS), 12− and 24−Hour Prognoses (FS), and flight advisory notices, such as SIGMETs (WS), AIRMETs (text bulletins−[WA] and graphics [G−AIRMET]), Center Weather Advisories (CWA), and Radar Weather Reports (SD).

3.3 Preflight Briefing Services

3.3.1 Preflight briefing services and flight documentation are provided through FAA Flight Service Stations (FSS).

3.4 National Weather Service Aviation Products

3.4.1 Weather service to aviation is a joint effort of the NWS, the FAA, the military weather services, and other aviation oriented groups and individuals. The NWS maintains an extensive surface, upper air, and radar weather observing program and a nationwide aviation weather forecasting service. Pilot weather briefings are provided by personnel at Flight Service Stations operated by FAA (in Alaska) or by federal contract facilities (elsewhere in the U.S.). Surface weather observations are taken by the NWS and NWS−certified FAA, contract, and supplemental observers and by automated observing systems. (See paragraph 7., Weather Observing Programs.)

3.4.2 Weather element values may be expressed by using different measurement systems depending on several factors including the user of the weather products; i.e., the general public, aviation interests, international services, or a combination of these users. FIG GEN 3.5−1, Weather Elements Conversion Tables, provides conversion tables for the weather elements that will be most often encountered by pilots.

FIG GEN 3.5−1
Weather Elements Conversion Tables

TIME

STANDARD TO UTC

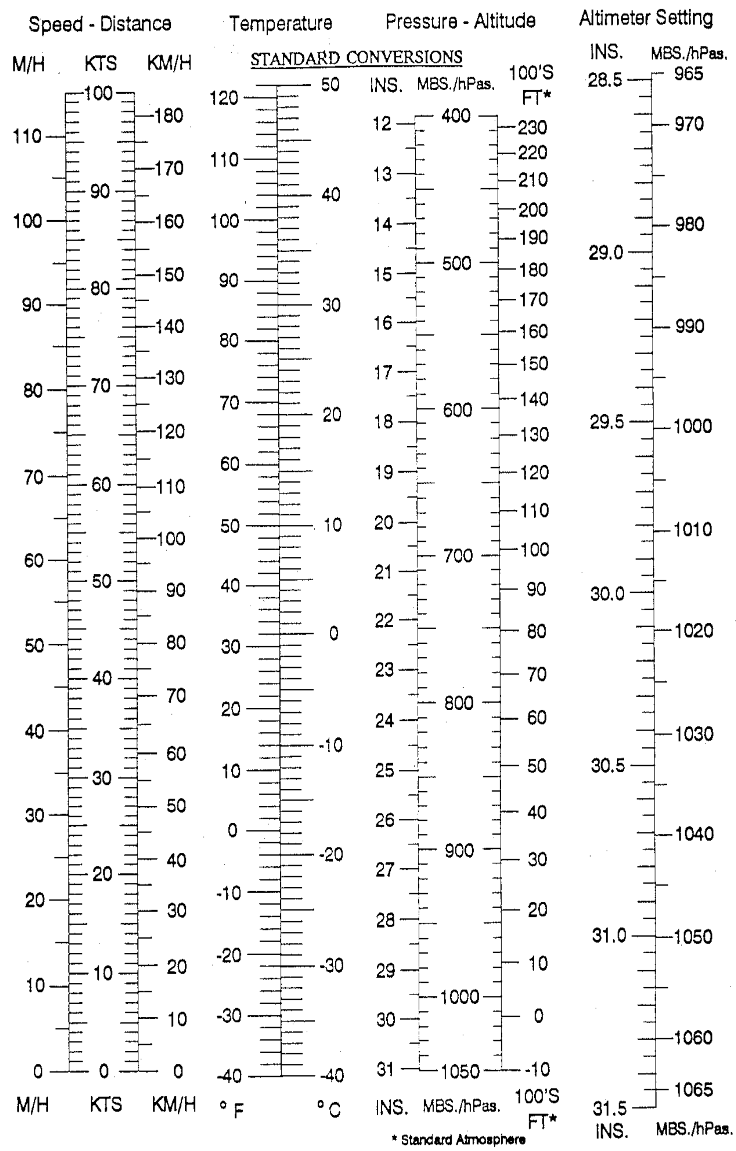
Eastern	+ 5 hr	= UTC
Central	+ 6 hr	= UTC
Mountain	+ 7 hr	= UTC
Pacific	+ 8 hr	= UTC
Alaskan	+ 9 hr	= UTC
Hawaii & Aleutian Islands	+ 10 hr	= UTC

Subtract one hour for Daylight Time

WINDSPEED

MPH	KNOTS
1-2	1-2
3-8	3-7
9-14	8-12
15-20	13-17
21-25	18-22
26-31	23-27
32-37	28-32
38-43	33-37
44-49	38-42
50-54	43-47
55-60	48-52
61-66	53-57
67-71	58-62
72-77	63-67
78-83	68-72
84-89	73-77
119-123	103-107

Knots x 1.15 = Miles Per Hour
Miles Per Hour x 0.869 = Knots



3.5 FAA Weather Services

3.5.1 The FAA maintains a nationwide network of FSSs to serve the weather needs of pilots. In addition, NWS meteorologists are assigned to all Air Route Traffic Control Centers (ARTCCs) as part the Center Weather Service Unit (CWSU). They provide advisory service and short−term forecasts (nowcasts) to support the needs of the FAA and other users of the national airspace system.

3.5.2 The primary source of preflight weather briefings is an individual briefing obtained from a briefer at a FSS. These briefings, which are tailored to your specific flight, are available 24 hours a day through the use of toll free number 1−800−WX−BRIEF. Numbers for these services can be found in the Airport/Facility Directory under the “FAA and NWS Telephone Numbers” section. They may also be listed in the U.S. Government section of your local telephone directory under Department of Transportation, Federal Aviation Administration.

3.5.3 Other Sources of Weather Information

3.5.3.1 Telephone Information Briefing Service (TIBS) (FSS); and in Alaska, Transcribed Weather Broadcast (TWEB) locations, and telephone access to the TWEB (TEL−TWEB) provide continuously updated recorded weather information for short or local flights. Separate paragraphs in this section give additional information regarding these services.

3.5.3.2 Weather and aeronautical information is also available from numerous private industry sources on an individual or contract pay basis. Information on how to obtain this service should be available from local pilot organizations.

3.5.3.3 The Direct User Access System (DUATS) can be accessed by U.S. certified pilots with a current medical certificate toll−free via personal computer. Pilots can receive alpha−numeric preflight weather data and file domestic VFR and IFR flight plans. The following are the contract DUATS vendors:

Computer Sciences Corporation (CSC)
15000 Conference Center Drive
Chantilly, VA 22021−3808
Internet Access: http://www.duats.com
Telnet Access (modem terminal−style):
(800) 767−9989 or
telnet://direct.duats.com
For customer service: (800) 345−3828

Data Transformation Corporation (DTC)
108−D Greentree Road
Turnersville, NJ 08012
Internet Access: http://www.duat.com
For customer service: (800)243−3828

3.5.4 Inflight weather information is available from any FSS within radio range. The common frequency for all FSSs is 122.2. Discrete frequencies for individual stations are listed in the Airport/Facility Directory. See paragraph 6 for information on broadcasts. En Route Flight Advisory Service (EFAS) is provided to serve the non−routine weather needs of pilots in flight. See paragraph 3.8, En Route Flight Advisory Service (EFAS), for details on this service.

3.6 Use of Aviation Weather Products

3.6.1 Air carriers and operators certificated under the provisions of 14 CFR Part 119 are required to use the aeronautical weather information systems defined in the Operations Specifications issued to that certificate holder by the FAA. These systems may utilize basic FAA/National Weather Service (NWS) weather services, contractor− or operator−proprietary weather services and/or Enhanced Weather Information System (EWINS) when approved in the Operations Specifications. As an integral part of this system approval, the procedures for collecting, producing and disseminating aeronautical weather information, as well as the crew member and dispatcher training to support the use of system weather products, must be accepted or approved.

3.6.2 Operators not certificated under the provisions of 14 CFR Part 119 are encouraged to use FAA/NWS products through Flight Service Stations, Direct User Access Terminal System (DUATS), and/or Flight Information Services Data Link (FISDL).

3.6.3 The suite of available aviation weather product types is expanding, with the development of new sensor systems, algorithms and forecast models. The FAA and NWS, supported by the National Center for Atmospheric Research and the Forecast Systems Laboratory, develop and implement new aviation weather product types through a comprehensive process known as the Aviation Weather Technology Transfer process. This process ensures that user needs and technical readiness requirements are met before experimental products mature to operational application.

3.6.4 The FAA, in conjunction with the NWS, established the Aviation Weather Technology Transfer (AWTT) Board so that newly developed aviation weather products meet regulatory requirements and enhance safety. The AWTT is charged with managing and accelerating the transfer of these products into operational use. Members of the AWTT Board include mid−level managers from the FAA and NWS who are responsible for various aspects of the development and use of aviation weather products (e.g., aviation weather R & D, transition of weather products from R & D to operational use, etc.).

3.6.5 The AWTT is a management−review and decision−making process that applies criteria to weather products at various development stages

NOTE−
Commercial weather information providers contracted by FAA to provide weather observations, analyses, and forecasts (e.g., contract towers) are included in the Federal Government category of approved sources by virtue of maintaining required technical and quality assurance standards under Federal Government oversight.

3.6.14 As a point of clarification, Advisory Circular 00−62, Internet Communications of Aviation Weather and NOTAMS, describes the process for a weather information provider to become a Qualified Internet Communications Provider (QICP) and only applies to 14 CFR Part 121 and Part 135 certificate holders. Therefore, pilots conducting operations under 14 CFR Part 91 may access weather products via the public Internet.

3.7 Preflight Briefing

3.7.1 Flight Service Stations are the primary source of obtaining preflight briefings and inflight weather information. Flight Service Specialists are qualified and certificated by the NWS as Pilot Weather Briefers. They are not authorized to make original forecasts, but are authorized to translate and interpret available forecasts (TAF) and reports (METAR/SPECI) directly into terms describing the weather conditions which you can expect along your flight route and at your destination. Available aviation weather reports and forecasts are displayed at each FSS. Some of the larger FSSs provide a separate display for pilot use. Pilots should feel free to use these self−briefing displays where available, or to ask for a briefing or for assistance from the specialist on duty. Three basic types of preflight briefings are available: Standard Briefing, Abbreviated Briefing, and Outlook Briefing. You should specify to the briefer the type of briefing you want, along with appropriate background information. This will enable the briefer to tailor the information to your intended flight. The following paragraphs describe the types of briefings available and the information provided in each.

3.7.2 Standard Briefing. You should request a Standard Briefing any time you are planning a flight and you have not received a previous briefing or have not received preliminary information through mass dissemination media; e.g., TIBS, TWEB (Alaska only), etc. International data may be inaccurate or incomplete. If you are planning a flight outside of U.S. controlled airspace, the briefer will advise you to check data as soon as practical after entering foreign airspace, unless you advise that you have the international cautionary advisory. The briefer will automatically provide the following information in the sequence listed, except as noted, when it is applicable to your proposed flight.

3.7.2.1 Adverse Conditions. Significant meteorological and/or aeronautical information that might influence the pilot to alter or cancel the proposed flight; for example, hazardous weather conditions, airport closures, air traffic delays, etc. Pilots should be especially alert for current or forecast weather that could reduce flight minimums below VFR or IFR conditions. Pilots should also be alert for any reported or forecast icing if the aircraft is not certified for operating in icing conditions. Flying into areas of icing or weather below minimums could have disastrous results.

3.7.2.2 VFR Flight Not Recommended. When VFR flight is proposed and sky conditions or visibilities are present or forecast, surface or aloft, that, in the briefer's judgment, would make flight under VFR doubtful, the briefer will describe the conditions, describe the affected locations, and use the phrase *"VFR flight not recommended."* This recommendation is advisory in nature. The final decision as to whether the flight can be conducted safely rests solely with the pilot. Upon receiving a "*VFR flight not recommended*" statement, the non−IFR rated pilot will need to make a "go or no go" decision. This decision should be based on weighing the current and forecast weather conditions against the pilot's experience and ratings. The aircraft's equipment, capabilities and limitations should also be considered.

NOTE−
Pilots flying into areas of minimal VFR weather could encounter unforecasted lowering conditions that place the aircraft outside the pilot's ratings and experience level. This could result in spatial disorientation and/or loss of control of the aircraft.

3.7.2.3 Synopsis. A brief statement describing the type, location, and movement of weather systems and/or air masses which might affect the proposed flight.

NOTE−
The first 3 elements of a standard briefing may be combined in any order when the briefer believes it will help to describe conditions more clearly.

3.7.2.4 Current Conditions. Reported weather conditions applicable to the flight will be summarized from all available sources; e.g., METARs, PIREPs, RAREPs. This element may be omitted if the proposed time of departure is beyond two hours, unless the information is specifically requested by the pilot.

3.7.2.5 En Route Forecast. En route conditions forecast for the proposed route are summarized in logical order; i.e., departure−climbout, en route, and descent.

3.7.2.6 Destination Forecast. The destination forecast (TAF) for the planned estimated time of arrival (ETA). Any significant changes within 1 hour before and after the planned arrival are included.

3.7.2.7 Winds Aloft. Forecast winds aloft for the proposed route will be provided using degrees of the compass. The briefer will interpolate wind directions and speeds between levels and stations as necessary to provide expected conditions at planned altitudes.

3.7.2.8 Notices to Airmen (NOTAMs)

a) Available NOTAM (D) information pertinent to the proposed flight, including special use airspace (SUA) NOTAMs for restricted areas, aerial refueling, and night vision goggles (NVG).

NOTE−
Other SUA NOTAMs (D), such as military operations area (MOA), military training route (MTR), and warning area NOTAMs, are considered "upon request" briefing items as indicated in paragraph 3.7.2.10.

b) Prohibited Areas P−40, P−49, P−56, and the special flight rules area (SFRA) for Washington, DC.

c) FSS briefers do not provide FDC NOTAM information for special instrument approach procedures unless specifically asked. Pilots authorized by the FAA to use special instrument approach procedures must specifically request FDC NOTAM information for these procedures.

NOTE−
NOTAM information may be combined with current conditions when the briefer believes it is logical to do so.

NOTE−
NOTAM (D) information and Flight Data Center NOTAMs which have been published in the Notices to Airmen Publication are not included in pilot briefings unless a review of this publication is specifically requested by the pilot. For complete flight information you are urged to review both the Notices to Airmen Publication and the Airport/Facility Directory in addition to obtaining a briefing.

3.7.2.9 Air Traffic Control (ATC) Delays. Any known ATC delays and flow control advisories which might affect the proposed flight.

3.7.2.10 Pilots may obtain the following from flight service station briefers upon request:

a) Information on Special Use Airspace (SUA) and SUA related airspace, except those listed in paragraph 3.7.2.8.

NOTE−
1. *For the purpose of this paragraph, SUA and related airspace includes the following types of airspace: alert area, military operations area (MOA), warning area, and air traffic control assigned airspace (ATCAA). MTR data includes the following types of airspace: IFR training routes (IR), VFR training routes (VR), and slow training routes (SR).*

2. *Pilots are encouraged to request updated information from ATC facilities while in flight.*

b) A review of the Notices to Airmen publication for pertinent NOTAMs and Special Notices.

c) Approximate density altitude data.

d) Information regarding such items as air traffic services and rules, customs/immigration procedures, ADIZ rules, and search and rescue.

e) LORAN−C NOTAMs, available military NOTAMs, runway friction measurement value NOTAMs.

f) GPS RAIM availability for 1 hour before to 1 hour after ETA, or a time specified by the pilot.

g) Other assistance as required.

3.7.3 Abbreviated Briefing. Request an Abbreviated Briefing when you need information to supplement mass disseminated data, to update a previous briefing, or when you need only one or two specific items. Provide the briefer with appropriate background information, the time you received the previous information, and/or the specific items needed. You should indicate the source of the information already received so that the briefer can limit the briefing to the information that you have not received, and/or appreciable changes in meteorological/aeronautical conditions since your previous briefing. To the extent possible, the briefer will provide the information in the sequence shown for a Standard Briefing. If you request only one or two specific items, the briefer will advise you if adverse conditions are present or forecast. Adverse conditions contain both meteorological and aeronautical information. Details on these conditions will be provided at your request.

3.7.4 Outlook Briefing. You should request an Outlook Briefing whenever your proposed time of departure is 6 or more hours from the time of the briefing. The briefer will provide available forecast data applicable to the proposed flight. This type of briefing is provided for planning purposes only. You should obtain a Standard or Abbreviated Briefing prior to departure in order to obtain such items as adverse conditions, current conditions, updated forecasts, winds aloft, and NOTAMs.

3.7.5 Inflight Briefing. You are encouraged to obtain your preflight briefing by telephone or in person before departure. In those cases where you need to obtain a preflight briefing or an update to a previous briefing by radio, you should contact the nearest FSS to obtain this information. After communications have been established, advise the specialist of the type briefing you require and provide appropriate background information. You will be provided information as specified in the above paragraphs, depending on the type of briefing requested. In addition, the specialist will recommend shifting to the Flight Watch frequency when conditions along the intended route indicate that it would be advantageous to do so. Remember that weather conditions can change rapidly and that a "go or no go" decision, as mentioned in paragraph 3.7.2.2, should be assessed at all phases of flight.

3.7.6 Following any briefing, feel free to ask for any information that you or the briefer may have missed. It helps to save your questions until the briefing has been completed. This way the briefer is able to present the information in a logical sequence and lessens the chance of important items being overlooked.

3.8 En Route Flight Advisory Service (EFAS)

3.8.1 EFAS (radio call "Flight Watch") is a service specifically designed to provide en route aircraft with timely and meaningful weather advisories pertinent to the type of flight intended, route of flight, and altitude. In conjunction with this service, EFAS is also a central collection and distribution point for pilot−reported weather information. EFAS is provided by specially trained FSS specialists controlling multiple remote communications outlets covering a large geographical area and is normally available throughout the conterminous U.S. and Puerto Rico from 6 a.m. to 10 p.m. EFAS provides communications capabilities for aircraft flying at 5,000 feet AGL to 17,500 feet MSL on a common frequency of 122.0 MHz. Discrete EFAS frequencies have been established to ensure communications coverage from 18,000 through 45,000 MSL serving in each specific ARTCC area. These discrete frequencies may be used below 18,000 feet when coverage permits reliable communication.

NOTE−
When an EFAS outlet is located in a time zone different from the zone in which the flight watch control station is located, the availability of service may be plus or minus 1 hour from the normal operating hours.

3.8.2 In some regions of the contiguous U.S., especially those that are mountainous, it is necessary to be above 5000 feet AGL in order to be at an altitude where the EFAS frequency, 122.0 MHz, is available. Pilots should take this into account when flight planning. Other FSS communication frequencies may be available at lower altitudes. See FIG GEN 3.5−2.

3.8.3 Contact flight watch by using the name of the ARTCC facility serving the area of your location, followed by your aircraft identification and the name of the nearest VOR to your position. The specialist needs to know this approximate location to select the most appropriate outlet for communications coverage.

EXAMPLE−
Cleveland flight watch, Cessna One Three Four Two Kilo, Mansfield V−O−R, over.

3.8.4 Charts depicting the location of the flight watch control stations (parent facility) and the outlets they use are contained in the Airport/Facility Directory. If you do not know in which flight watch area you are flying, initiate contact by using the words "FLIGHT WATCH," your aircraft identification, and the name of the nearest VOR. The facility will respond using the name of the flight watch facility.

EXAMPLE−
Flight watch, Cessna One Two Three Four Kilo, Mansfield V−O−R,over.

3.8.5 Radio outlets that provide En Route Flight Advisory Service are listed in the Airport/Facility Directory.

3.8.6 EFAS is not intended to be used for filing or closing flight plans, position reporting, getting complete preflight briefings, or obtaining random weather reports and forecasts. En route flight advisories are tailored to the phase of flight that begins after climb−out and ends with descent to land. Immediate destination weather and terminal airport forecasts will be provided on request. Pilots requesting information not within the scope of flight watch will be advised of the appropriate FSS frequency to contact to obtain the information. Pilot participation is essential to the success of EFAS by providing a continuous exchange of information on weather, winds, turbulence, flight visibility, icing or other hazardous conditions between pilots and flight watch specialists. Pilots are encouraged to report good weather as well as bad, and to confirm both expected conditions and unexpected conditions to EFAS facilities.

3.9 Inflight Aviation Weather Advisories

3.9.1 Background

3.9.1.1 Inflight Aviation Weather Advisories are forecasts to advise en route aircraft of development of potentially hazardous weather. All inflight aviation weather advisories in the conterminous U.S. are issued by the Aviation Weather Center (AWC) in Kansas City, Missouri. The Weather Forecast Office (WFO) in Honolulu issues advisories for the Hawaiian Islands. In Alaska, the Alaska Aviation Weather Unit (AAWU) issues inflight aviation weather advisories. All heights are referenced MSL, except in the case of ceilings (CIG) which indicate AGL.

3.9.1.2 There are three types of inflight aviation weather advisories: the Significant Meteorological Information (SIGMET), the Convective SIGMET and the Airmen's Meteorological Information (AIRMET−text or graphical product). All of these advisories, with the exception of G−AIRMET, use the same location identifiers (either VORs, airports, or well−known geographic areas) (G−AIRMET uses Lat./Long.) to describe the hazardous weather areas. See FIG GEN 3.5−3 and FIG GEN 3.5−4. Graphics with improved clarity can be found in the latest version of Advisory Circular AC 00−45, Aviation Weather Services, which is available on the following Web site: **http://www.faa.gov**.

3.9.1.3 Two other weather products supplement these Inflight Aviation Weather Advisories:

a) The Severe Weather Watch Bulletins (WWs), (with associated Alert Messages) (AWW), and

b) The Center Weather Advisories (CWAs).

3.9.2 SIGMET (WS)/AIRMET (text [WA] or graphical [G−AIRMET])

SIGMETs/AIRMETs (text or graphical [CONUS−only] products) are issued corresponding to the Area Forecast (FA) areas described in FIG GEN 3.5−5, FIG GEN 3.5−6 and FIG GEN 3.5−7. The maximum forecast period is 4 hours for SIGMETs and 6 hours for AIRMETs. The G−AIRMET is issued over the CONUS every 6 hours, valid at 3−hour increments through 12 hours, with optional forecasts possible during the first 6 hours. The first 6 hours of the G−AIRMET correspond to the 6−hour period of the AIRMET. SIGMETS and AIRMETS are considered "widespread" because they must be either affecting or be forecasted to affect an area of at least 3,000 square miles at any one time. However, if the total area to be affected during the forecast period is very large, it could be that in actuality only a small portion of this total area would be affected at any one time.

c) These SIGMETs are considered “widespread” because they must be either affecting or be forecasted to affect an area of at least 3,000 square miles at any one time. The International SIGMET is issued for 6 hours for volcanic ash events, 6 hours for hurricanes and tropical storms, and 4 hours for all other events. Like the domestic SIGMETs, International SIGMETs are also identified by an alphabetic designator from Alpha through Mike and are numbered sequentially until that weather phenomenon ends. The criteria for an International SIGMET are:

1) Thunderstorms occurring in lines, embedded in clouds, or in large areas producing tornadoes or large hail.

2) Tropical cyclones.

3) Severe icing.

4) Severe or extreme turbulence.

5) Dust storms and sandstorms lowering visibilities to less than 3 miles.

6) Volcanic ash.

EXAMPLE−
Example of an International SIGMET:
WSNT06 KKCI 022014
SIGA0F
KZMA KZNY TJZS SIGMET FOXTROT 3 VALID 022015/030015 KKCI− MIAMI OCEANIC FIR NEW YORK OCEANIC FIR SAN JUAN FIR FRQ TS WI AREA BOUNDED BY 2711N6807W 2156N6654W 2220N7040W 2602N7208W 2711N6807W. TOPS TO FL470. MOV NE 15KT. WKN. BASED ON SAT AND LTG OBS.
MOSHER

3.9.3.6 AIRMET (WA)

a) AIRMETs (WAs) are advisories of significant weather phenomena but describe conditions at intensities lower than those which require the issuance of SIGMETs. AIRMETs are intended for dissemination to all pilots in the preflight and en route phase of flight to enhance safety. AIRMET information is available in two formats: text bulletins (WA) and graphics (G−AIRMET). Both formats meet the criteria of paragraph 3.6.9.1 and are issued on a scheduled basis every 6 hours beginning at 0145 UTC during Central Daylight Time and at 0245 UTC during Central Standard Time. Unscheduled updates and corrections are issued as necessary. Each AIRMET Bulletin contains any current AIRMETs in effect and an outlook for conditions expected after the AIRMET valid period. AIRMETs contain details about IFR, extensive mountain obscuration, turbulence, strong surface winds, icing, and freezing levels.

b) There are three AIRMETs: Sierra, Tango, and Zulu. After the first issuance each day, scheduled or unscheduled bulletins are numbered sequentially for easier identification.

1) AIRMET Sierra describes IFR conditions and/or extensive mountain obscurations.

2) AIRMET Tango describes moderate turbulence, sustained surface winds of 30 knots or greater, and/or nonconvective low−level wind shear.

3) AIRMET Zulu describes moderate icing and provides freezing level heights.

EXAMPLE−
Example of AIRMET Sierra issued for the Chicago FA area:
CHIS WA 131445
AIRMET SIERRA UPDT 2 FOR IFR AND MTN OBSCN VALID UNTIL 132100.
AIRMET IFR...KY
FROM 20SSW HNN TO HMV TO 50ENE DYR TO20SSW HNN
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS ENDG BY 18Z.
.
AIRMET IFR....MN LS
FROM INL TO 70W YQT TO 40ENE DLH TO 30WNW DLH TO 50SE GFK TO 20 ENE GFK TO INL
CIG BLW 010/VIS BLW 3SM BR. CONDS ENDG 15−18Z.
.
AIRMET IFR....KS
FROM 30N SLN TO 60E ICT TO 40S ICT TO 50W LBL TO 30SSW GLD TO 30N SLN
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS ENDG 15−18Z.
.
AIRMET MTN OBSCN...KY TN
FROM HNN TO HMV TO GQO TO LOZ TO HNN
MTN OBSC BY CLDS/PCPN/BR. CONDS CONTG BYD 21Z THRU 03Z.
.....

EXAMPLE−
Example of AIRMET Tango issued for the Salt Lake City FA area:
SLCT WA 131445
AIRMET TANGO UPDT 2 FOR TURB VALID UNTIL 131200.
AIRMET TURB...MT

FROM 40NW HVR TO 50SE BIL TO 60E DLN TO 60SW YQL TO 40NW HVR
MOD TURB BLW 150. CONDS DVLPG 18−21Z. CONDS CONTG BYD 21Z THRU 03Z.
.
AIRMET TURB....ID MT WY NV UT CO
FROM 100SE MLS TO 50SSW BFF TO 20SW BTY TO 40SW BAM TO 100SE MLS
MOD TURB BTN FL310 AND FL410. CONDS CONTG BYD 21Z ENDG 21−00Z.
.
AIRMET TURB...NV AZ NM CA AND CSTL WTRS
FROM 100WSW ENI TO 40W BTY TO 40S LAS TO 30ESE TBE TO INK TO ELP TO 50S TUS TO BZA TO 20S MZB TO 150SW PYE TO 100WSW ENI
MOD TURB BTWN FL210 AND FL380. CONDS CONTG BYD 21Z THRU 03Z.
....

EXAMPLE−
Example of AIRMET Zulu issued for the San Francisco FA area:
SFOZ WA 131445
AIRMET ZULU UPDT 2 FOR ICE AND FRZLVL VALID UNTIL 132100.
NO SGFNT ICE EXP OUTSIDE OF CNVTV ACT.
.
FRZLVL....RANGING FROM SFC−105 ACRS AREA
MULT FRZLVL BLW 080 BOUNDED BY 40SE YDC−60NNW GEG−60SW MLP−30WSW BKE−20SW BAM−70W BAM−40SW YKM−40E HUH−40SE YDC
SFC ALG 20NNW HUH−30SSE HUH−60S SEA 50NW LKV−60WNWOAL−30SW OAL
040 ALG 40W HUH−30W HUH−30NNW SEA−40N PDX−20NNW DSD
080 ALG 160NW FOT−80SW ONP−50SSW EUG 40SSE OED−50SSE CZQ−60E EHF−40WSW LAS
....

3.9.3.7 Graphical AIRMETs (G−AIRMETs)

a) G−AIRMETs found on the Aviation Weather Center webpage at http://aviationweather.gov, are graphical forecasts of en−route weather hazards valid at discrete times no more than 3 hours apart for a period of up to 12 hours into the future (for example, 00, 03, 06, 09, and 12 hours). Additional forecasts may be inserted during the first 6 hours (for example, 01, 02, 04, and 05). 00 hour represents the initial conditions, and the subsequent graphics depict the area affected by the particular hazard at that valid time. Forecasts valid at 00 through 06 hours correspond to the text AIRMET bulletin. Forecasts valid at 06 through 12 hours correspond to the text bulletin outlook. G−AIRMET depicts the following en route aviation weather hazards:

1) Instrument flight rule conditions (ceiling <1000' and/or surface visibility <3 miles)

2) Mountain obscuration

3) Icing

4) Freezing level

5) Turbulence

6) Low level wind shear (LLWS)

7) Strong surface winds.

b) G−AIRMETs are snap shots at discrete time intervals as defined above. The text AIRMET is the result of the production of the G−AIRMET but provided in a time smear for a 6hr valid period. G−AIRMETs provide a higher forecast resolution than text AIRMET products. Since G−AIRMETs and text AIRMETs are created from the same forecast "production" process, there exists perfect consistency between the two. Using the two together will provide clarity of the area impacted by the weather hazard and improve situational awareness and decision making.

Interpolation of time periods between G−AIRMET valid times: Users must keep in mind when using the G−AIRMET that if a 00 hour forecast shows no significant weather and a 03 hour forecast shows hazardous weather, they must assume a change is occurring during the period between the two forecasts. It should be taken into consideration that the hazardous weather starts immediately after the 00 hour forecast unless there is a defined initiation or ending time for the hazardous weather. The same would apply after the 03 hour forecast. The user should assume the hazardous weather condition is occurring between the snap shots unless informed otherwise. For example, if a 00 hour forecast shows no hazard, a 03 hour forecast shows the presence of hazardous weather, and a 06 hour forecast shows no hazard, the user should assume the hazard exists from the 0001 hour to the 0559 hour time period.

EXAMPLE−
See FIG GEN 3.5−8 for an example of the G−AIRMET graphical product.

3.9.3.8 Severe Weather Watch Bulletins (WWs) and Alert Messages (AWWs)

a) WWs define areas of possible severe thunderstorms or tornado activity. The bulletins are issued by

FIG GEN 3.5−8
G−AIRMET Graphical Product

Example G-AIRMET
Valid at 1200Z on May 6, 2009
Displaying:
Low Level Turbulence
Icing

Example G-AIRMET
Valid at 1500Z on May 6, 2009
Displaying:
Low Level Turbulence
Icing

Example G-AIRMET
Valid at 1800Z on May 6, 2009
Displaying:
Low Level Turbulence
Icing

5. Telephone Information Briefing Service (TIBS)

5.1 TIBS, provided by FSS, is a system of automated telephone recordings of meteorological and aeronautical information available throughout the United States. Based on the specific needs of each area, TIBS provides route and/or area briefings in addition to airspace procedures and special announcements concerning aviation interests that may be available. Depending on user demand, other items may be provided; for example, surface weather observations, terminal forecasts, wind and temperatures aloft forecast, etc.

6. Inflight Weather Broadcasts

6.1 Weather Advisory Broadcasts. ARTCCs' broadcast a Severe Weather Forecast Alert (AWW), Convective SIGMET, or CWA alert once on all frequencies, except emergency, when any part of the area described is within 150 miles of the airspace under their jurisdiction. These broadcasts contain SIGMET or CWA identification and a brief description of the weather activity and general area affected.

EXAMPLE−
Attention all aircraft, SIGMET Delta Three, from Myton to Tuba City to Milford, severe turbulence and severe clear icing below one zero thousand feet. Expected to continue beyond zero three zero zero zulu.

EXAMPLE−
Attention all aircraft, Convective SIGMET Two Seven Eastern. From the vicinity of Elmira to Phillipsburg. Scattered embedded thunderstorms moving east at one zero knots. A few intense level five cells, maximum tops four five zero.

EXAMPLE−
Attention all aircraft, Kansas City Center weather advisory one zero three. Numerous reports of moderate to severe icing from eight to niner thousand feet in a three zero mile radius of St. Louis. Light or negative icing reported from four thousand to one two thousand feet remainder of Kansas City Center area.

NOTE−
1. *Terminal control facilities have the option to limit the AWW, Convective SIGMET, SIGMET, or CWA broadcast as follows: local control and approach control positions may opt to broadcast SIGMET or CWA alerts only when any part of the area described is within 50 miles of the airspace under their jurisdiction.*

2. *In areas where HIWAS is available, ARTCC, Terminal ATC, and FSS facilities do not broadcast inflight advisories as described in this paragraph.*

6.2 Hazardous Inflight Weather Advisory Service (HIWAS). HIWAS is an automated, continuous broadcast provided by FSS over select VOR outlets of inflight weather advisories, including the following weather products: AWW, SIGMET, Convective SIGMET, CWA, AIRMET (text [WA] or graphical [G−AIRMET] products), and urgent PIREP. HIWAS broadcasts are available throughout the conterminous United States as an additional source of hazardous weather information. HIWAS does not replace preflight or inflight weather briefings from FSS or real-time weather updates from Enroute Flight Advisory Service (EFAS), radio call "Flight Watch." Pilots should call FSS if there are any questions about weather that is different than forecasted or is different than the HIWAS broadcast.

NOTE−
In areas where HIWAS is available, ARTCC, Terminal ATC, and FSS facilities do not broadcast inflight advisories as described in the preceding paragraph.

6.2.1 Where HIWAS is available, a HIWAS alert will be broadcast once on all frequencies, except emergency frequencies, upon receipt by ARTCC and terminal facilities, which will include an alert announcement, frequency instruction, number, and type of advisory updated; for example, AWW, SIGMET, Convective SIGMET, or CWA.

EXAMPLE−
Attention all aircraft. Hazardous weather information (SIGMET, Convective SIGMET, AIRMET (text [WA] or graphical [G−AIRMET] product), urgent pilot weather report [UUA], or Center Weather Advisory [CWA]), (number or numbers) for (geographical area) available on HIWAS, flight watch, or flight service frequencies.

6.2.2 In HIWAS ARTCC areas, FSSs will broadcast a HIWAS update announcement once on all frequencies, except emergency frequencies, upon the addition of an update to the HIWAS broadcast. Included in the broadcast will be the type of advisory updated; for example, AWW, SIGMET, Convective SIGMET, CWA, etc.

EXAMPLE−
Attention all aircraft. Hazardous weather information for (geographical area) available from flight watch or flight service.

6.2.3 HIWAS availability is notated with VOR listings in the Airport/Facility Directory (A/FD), and is shown by symbols on IFR Enroute Low Altitude Charts and VFR Sectional Charts. The symbol depiction is identified in the chart legend.

7. Flight Information Services (FIS)

7.1 FIS. Aviation weather and other operational information may be displayed in the cockpit through the use of FIS. FIS systems are of two basic types: Broadcast only systems (called FIS−B) and two−way request/reply systems. Broadcast system components include a ground− or space−based transmitter, an aircraft receiver, and a portable or installed cockpit display device. Two−way systems utilize transmitter/ receivers at both the ground− or space−based site and the aircraft.

7.1.1 Broadcast FIS (i.e., FIS−B) allows the pilot to passively collect weather and other operational data and to display that data at the appropriate time. In addition to textual weather products such as Aviation Routine Weather Reports (METARs)/Aviation Selected Special Weather Reports (SPECIs) and Terminal Area Forecasts (TAFs), graphical weather products such as radar composite/mosaic images, temporary flight restricted airspace and other NOTAMs may be provided to the cockpit. Two−way FIS services permit the pilot to make specific weather and other operational information requests for cockpit display. A FIS service provider will then prepare a reply in response to that specific request and transmit the product to that specific aircraft.

7.1.2 FIS services are available from four types of service providers:

7.1.2.1 A private sector FIS provider operating under service agreement with the FAA using broadcast data link over VHF aeronautical spectrum and whose products have been reviewed and accepted by the FAA prior to transmission. (Products and services are defined under subparagraph 7.3.)

7.1.2.2 Through an FAA operated service using a broadcast data link on the ADS−B UAT network. (Products and services are defined under subparagraph 7.4.)

7.1.2.3 Private sector FIS providers operating under customer contracts using aeronautical spectrum.

7.1.2.4 Private sector FIS providers operating under customer contract using methods other than aeronautical spectrum, including Internet data−to−the−cockpit service providers.

7.1.3 FIS is a method of receiving aviation weather and other operational data in the cockpit that augments traditional pilot voice communication with FAA's Flight Service Stations (FSSs), ATC facilities, or Airline Operations Control Centers (AOCCs). FIS is not intended to replace traditional pilot and controller/flight service specialist/aircraft dispatcher pre−flight briefings or inflight voice communications. FIS; however, can provide textual and graphical background information that can help abbreviate and improve the usefulness of such communications. FIS enhances pilot situational awareness and improves safety.

7.1.4 To ensure airman compliance with Federal Aviation Regulations, manufacturer's operating manuals should remind airmen to contact ATC controllers, FSS specialists, operator dispatchers, or airline operations control centers for general and mission critical aviation weather information and/or NAS status conditions (such as NOTAMs, Special Use Airspace status, and other government flight information). If FIS products are systemically modified (for example, are displayed as abbreviated plain text and/or graphical depictions), the modification process and limitations of the resultant product should be clearly described in the vendor's user guidance.

7.2 Operational Use of FIS. Regardless of the type of FIS system being used, several factors must be considered when using FIS:

7.2.1 Before using FIS for inflight operations, pilots and other flight crewmembers should become familiar with the operation of the FIS system to be used, the airborne equipment to be used, including its system architecture, airborne system components, coverage service volume and other limitations of the particular system, modes of operation and indications of various system failures. Users should also be familiar with the specific content and format of the services available from the FIS provider(s). Sources of information that may provide this specific guidance include manufacturer's manuals, training programs and reference guides.

7.2.2 FIS should not serve as the sole source of aviation weather and other operational information. ATC, FSSs and, if applicable, AOCC VHF/HF voice remain as a redundant method of communicating aviation weather, NOTAMs, and other operational information to aircraft in flight. FIS augments these traditional ATC/FSS/AOCC services and, for some products, offers the advantage of being displayed as graphical information. By using FIS for orientation, the usefulness of information received from conventional means may be enhanced. For example, FIS may alert the pilot to specific areas of concern that will more accurately focus requests made to FSS or AOCC for inflight updates or similar queries made to ATC.

7.2.3 The airspace and aeronautical environment is constantly changing. These changes occur quickly and without warning. Critical operational decisions should be based on use of the most current and appropriate data available. When differences exist between FIS and information obtained by voice communication with ATC, FSS, and/or AOCC (if applicable), pilots are cautioned to use the most recent data from the most authoritative source.

7.2.4 FIS aviation weather products (e.g., graphical ground−based radar precipitation depictions) are not appropriate for tactical avoidance of severe weather such as negotiating a path through a weather hazard area. FIS supports strategic weather decision making such as route selection to avoid a weather hazard area in its entirety. The misuse of information beyond its applicability may place the pilot and aircraft in jeopardy. In addition, FIS should never be used in lieu of an individual pre−flight weather and flight planning briefing.

7.2.5 FIS NOTAM products, including Temporary Flight Restriction (TFR) information, are advisory−use information and are intended for situational awareness purposes only. Cockpit displays of this information are not appropriate for tactical navigation − pilots should stay clear of any geographic area displayed as a TFR NOTAM. Pilots should contact FSSs and/or ATC while en route to obtain updated information and to verify the cockpit display of NOTAM information.

7.2.6 FIS supports better pilot decision making by increasing situational awareness. Better decision−making is based on using information from a variety of sources. In addition to FIS, pilots should take advantage of other weather/NAS status sources, including, briefings from Flight Service Stations, FAA's en route "Flight Watch" service, data from other air traffic control facilities, airline operation control centers, pilot reports, as well as their own observations.

7.3 FAA FISDL (VHF) Service. The FAA's FISDL (VHF datalink) system is a VHF Data Link (VDL) Mode 2 implementation that provides pilots and flight crews of properly equipped aircraft with a cockpit display of certain aviation weather and flight operational information. This information may be displayed in both textual and graphical formats. The system is operated under a service agreement with the FAA, using broadcast data link on VHF aeronautical spectrum on two 25 KHz spaced frequencies (136.450 and 136.475 MHz). The FAA FISDL (VHF) service is designed to provide coverage throughout the continental U.S. from 5,000 feet AGL to 17,500 feet MSL, except in areas where this is not feasible due to mountainous terrain. Aircraft operating near transmitter sites may receive useable FISDL signals at altitudes lower than 5,000 feet AGL, including on the surface in some locations, depending on transmitter/aircraft line of sight geometry. Aircraft operating above 17,500 feet MSL may also receive useable FISDL signals under certain circumstances.

7.3.1 FAA FISDL (VHF) service provides, free of charge, the following basic text products:

7.3.1.1 Aviation Routine Weather Reports (METARs).

7.3.1.2 Aviation Selected Special Weather Reports (SPECIs).

7.3.1.3 Terminal Area Forecasts (TAFs), and their amendments.

7.3.1.4 Significant Meteorological Information (SIGMETs).

7.3.1.5 Convective SIGMETs.

7.3.1.6 AIRMET text bulletins (WA).

7.3.1.7 Pilot Reports (both urgent and routine) (PIREPs); and,

7.3.1.8 Severe Weather Forecast Alerts and Warnings (AWWs/WW) issued by the NOAA Storm Prediction Center (SPC).

7.3.2 The format and coding of these text products are described in Advisory Circular AC−00−45, Aviation Weather Services, and FIG GEN 3.5−24 and FIG GEN 3.5−25, Key to Aerodrome Forecast (TAF) and Aviation Routine Weather Report (METAR).

7.3.3 Additional products, called “Value−Added Products,” are also available from the vendor on a paid subscription basis. Details concerning the content, format, symbology and cost of these products may be obtained from the vendor.

7.4 FAA’s Flight Information Service−Broadcast (FIS−B) Service. FIS−B is a ground−based broadcast service provided through the FAA’s Automatic Dependent Surveillance – Broadcast Services (ADS−B) Universal Access Transceiver (UAT) network. The service provides users with a 978 MHz data link capability when operating within range and line−of−sight of a transmitting ground station. FIS−B enables users of properly equipped aircraft to receive and display a suite of broadcast weather and aeronautical information products. Services are currently available in specific geographic regions of the U.S. with NAS−wide service availability planned for 2013.

7.4.1 The following list represents the initial suite of text and graphical products available through FIS−B and provided free−of−charge. Detailed information concerning FIS−B meteorological products can be found in Advisory Circular 00−45, Aviation Weather Services. Information on Special Use Airspace (SUA), Temporary Flight Restriction (TFR) and Notice to Airmen (NOTAM) products can be found in Chapters ENR 1and ENR 5 of this manual.

7.4.1.1 Text: Aviation Routine Weather Report (METAR) and Special Aviation Report (SPECI);

7.4.1.2 Text: Pilot Weather Report (PIREP);

7.4.1.3 Text: Winds and Temperatures Aloft;

7.4.1.4 Text: Terminal Area Forecast (TAF) and amendments;

7.4.1.5 Text: Notice to Airmen (NOTAM) Distant and Flight Data Center;

7.4.1.6 Text/Graphic: Airmen’s Meteorological Conditions (AIRMET);

7.4.1.7 Text/Graphic: Significant Meteorological Conditions (SIGMET);

7.4.1.8 Text/Graphic: Convective SIGMET;

7.4.1.9 Text/Graphic: Special Use Airspace (SUA);

7.4.1.10 Text/Graphic: Temporary Flight Restriction (TFR) NOTAM; and

7.4.1.11 Graphic: NEXRAD Composite Reflectivity Products (Regional and National).

7.4.2 Users of FIS−B should familiarize themselves with the operational characteristics and limitations of the system, including: system architecture; service environment; product lifecycles; modes of operation; and indications of system failure.

7.4.3 FIS−B products are updated and transmitted at specific intervals based primarily on product issuance criteria. Update intervals are defined as the rate at which the product data is available from the source for transmission. Transmission intervals are defined as the amount of time within which a new or updated product transmission must be completed and/or the rate or repetition interval at which the product is rebroadcast. Update and transmission intervals for each product are provided in NO TAG.

7.4.4 Where applicable, FIS−B products include a look−ahead range expressed in nautical miles (NM) for three service domains: Airport Surface; Terminal Airspace; and En−route/Gulf−of−Mexico (GOMEX). NO TAG provides service domain availability and look−ahead ranging for each FIS−B product.

7.4.5 Prior to using this capability, users should familiarize themselves with the operation of FIS−B avionics by referencing the applicable User’s Guides. Guidance concerning the interpretation of information displayed should be obtained from the appropriate avionics manufacturer.

7.4.6 FIS−B malfunctions not attributed to aircraft system failures or covered by active NOTAM should be reported by radio or telephone to the nearest FSS facility. Malfunctions may also be reported by submitting FAA Form 8740−5, Safety Improvement Report via mail, fax, or email to your local Flight District Standards Office, Safety Program Manager.

7.5 Non−FAA FISDL Systems. Several commercial vendors also provide customers with FIS data over both the aeronautical spectrum and on other frequencies using a variety of data link protocols. In some cases, the vendors provide only the communications system that carries customer messages, such as the Aircraft Communications Addressing and Reporting System (ACARS) used by many air carrier and other operators.

7.5.1 Operators using non−FAA FIS data for inflight weather and other operational information should ensure that the products used conform to FAA/NWS standards. Specifically, aviation weather and NAS status information should meet the following criteria:

TBL GEN 3.5−2

Product	Update Interval	Transmission Interval	Service Domain and Look-ahead Range (NM)
AIRMET	As Available	5 minutes	100 (Airport Surface), 500 (Terminal, Enroute/ GOMEX)
SIGMET & Convective SIGMET	As Available, then at 15 minute intervals for 1 hour	5 minutes	100 (Airport Surface), 500 (Terminal, Enroute/ GOMEX)
METAR/SPECI	1 minute (where available), As Available otherwise	5 minute	100 (Airport Surface), 500 (Terminal, Enroute/ GOMEX)
NEXRAD Composite Reflectivity (National)	~5 minutes precipitation mode 10 minutes for clear air mode	15 minutes	CONUS
NEXRAD Composite Reflectivity (Regional)	~5 minutes precipitation mode 10 minutes for clear air mode	2.5 minutes	250
NOTAM (D) / FDC (including TFR)	As Available	10 minutes	100
PIREP	As Available	10 minutes	N/A (Airport Surface), 500 (Terminal, Enroute/ GOMEX)
SUA	As Available	10 minutes	N/A (Airport Surface), 500 (Terminal, Enroute/ GOMEX)
TAF/AMEND	8 Hours	10 minutes	100 (Airport Surface), 500 (Terminal, Enroute/ GOMEX)
Winds & Temperatures Aloft	12 Hours	10 minutes	1,000

7.5.1.1 The products should be either FAA/NWS “accepted” aviation weather reports or products, or based on FAA/NWS accepted aviation weather reports or products. If products are used which do not meet this criteria, they should be so identified. The operator must determine the applicability of such products to their particular flight operations.

7.5.1.2 In the case of a weather product which is the result of the application of a process which alters the form, function or content of the base FAA/NWS accepted weather product(s), that process, and any limitations to the application of the resultant product, should be described in the vendor’s user guidance material.

7.5.2 An example would be a NEXRAD radar composite/mosaic map, which has been modified by changing the scaling resolution. The methodology of assigning reflectivity values to the resultant image components should be described in the vendor’s guidance material to ensure that the user can accurately interpret the displayed data.

8. Weather Observing Programs

8.1 Manual Observations. Aviation Routine Weather Reports (METAR) are taken at more than

600 locations in the U.S. With only a few exceptions, these stations are located at airport sites and most are staffed by FAA or NWS personnel who manually observe, perform calculations, and enter the observation into the distribution system. The format and coding of these observations are contained in FIG GEN 3.5−24.

8.2 Automated Weather Observing System (AWOS)

8.2.1 Automated weather reporting systems are increasingly being installed at airports. These systems consist of various sensors, a processor, a computer−generated voice subsystem, and a transmitter to broadcast local, minute−by−minute weather data directly to the pilot.

NOTE−
When the barometric pressure exceeds 31.00 inches Hg., see Section ENR 1.7, Altimeter Setting Procedures.

8.2.2 The AWOS observations will include the prefix "AUTO" to indicate that the data are derived from an automated system. Some AWOS locations will be augmented by certified observers who will provide weather and obstruction to vision information in the remarks of the report when the reported visibility is less than 3 miles. These sites, along with the hours of augmentation, are published in the Airport/Facility Directory. Augmentation is identified in the observation as "OBSERVER WEATHER." The AWOS wind speed, direction and gusts, temperature, dew point, and altimeter setting are exactly the same as for manual observations. The AWOS will also report density altitude when it exceeds the field elevation by more than 1,000 feet. The reported visibility is derived from a sensor near the touchdown of the primary instrument runway. The visibility sensor output is converted to a visibility value using a 10−minute harmonic average. The reported sky condition/ceiling is derived from the ceilometer located next to the visibility sensor. The AWOS algorithm integrates the last 30 minutes of ceilometer data to derive cloud layers and heights. This output may also differ from the observer sky condition in that the AWOS is totally dependent upon the cloud advection over the sensor site.

8.2.3 Referred to as AWOS, these real−time systems are operationally classified into nine basic levels:

8.2.3.1 AWOS−A only reports altimeter setting.

NOTE−
Any other information is advisory only.

8.2.3.2 AWOS−AV reports altimeter and visibility;

NOTE−
Any other information is advisory only.

8.2.3.3 AWOS−l usually reports altimeter setting, wind data, temperature, dew point, and density altitude.

8.2.3.4 AWOS−2 provides the information provided by AWOS−l, plus visibility.

8.2.3.5 AWOS−3 provides the information provided by AWOS−2, plus cloud/ceiling data.

8.2.3.6 AWOS− 3P provides reports the same as the AWOS 3 system, plus a precipitation identification sensor.

8.2.3.7 AWOS− 3PT reports the same as the AWOS 3P System, plus thunderstorm/lightning reporting capability.

8.2.3.8 AWOS− 3T reports the same as AWOS 3 system and includes a thunderstorm/lightning reporting capability.

8.2.3.9 AWOS− 4 reports the same as the AWOS 3 system, plus precipitation occurrence, type and accumulation, freezing rain, thunderstorm, and runway surface sensors.

8.2.4 The information is transmitted over a discrete VHF radio frequency or the voice portion of a local NAVAID. AWOS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 25 NM from the AWOS site and a maximum altitude of 10,000 feet AGL. At many locations, AWOS signals may be received on the surface of the airport, but local conditions may limit the maximum AWOS reception distance and/or altitude. The system transmits a 20− to 30−second weather message updated each minute. Pilots should monitor the designated frequency for the automated weather broadcast. A description of the broadcast is contained in paragraph 8.3, Automated Weather Observing System (AWOS) Broadcasts. There is no two−way communication capability. Most AWOS sites also have a dial−up capability so that the minute−by−minute weather messages can be accessed via telephone.

8.2.5 AWOS information (system level, frequency, phone number) concerning specific locations is published, as the systems become operational, in the

Airport/Facility Directory and, where applicable, on published Instrument Approach Procedure (IAP) charts. Selected individual systems may be incorporated into nationwide data collection and dissemination networks in the future.

8.3 Automated Weather Observing System (AWOS) Broadcasts. Computer−generated voice is used in AWOS to automate the broadcast of the minute−by−minute weather observations. In addition, some systems are configured to permit the addition of an operator−generated voice message; e.g., weather remarks, following the automated parameters. The phraseology used generally follows that used for other weather broadcasts. Following are explanations and examples of the exceptions.

8.3.1 Location and Time. The location/name and the phrase "AUTOMATED WEATHER OBSERVATION" followed by the time are announced.

8.3.1.1 If the airport's specific location is included in the airport's name, the airport's name is announced.

EXAMPLE−
"Bremerton National Airport automated weather observation one four five six zulu."

"Ravenswood Jackson County Airport automated weather observation one four five six zulu."

8.3.1.2 If the airport's specific location is not included in the airport's name, the location is announced followed by the airport's name.

EXAMPLE−
"Sault Ste. Marie, Chippewa County International Airport automated weather observation."

"Sandusky, Cowley Field automated weather observation."

8.3.1.3 The word "TEST" is added following "OBSERVATION" when the system is not in commissioned status.

EXAMPLE−
"Bremerton National Airport automated weather observation test one four five six zulu."

8.3.1.4 The phrase "TEMPORARILY INOPERATIVE" is added when the system is inoperative.

EXAMPLE−
"Bremerton National Airport automated weather observing system temporarily inoperative."

8.3.2 Ceiling and Sky Cover

8.3.2.1 Ceiling is announced as either "CEILING" or "INDEFINITE CEILING." The phrases "MEASURED CEILING" and "ESTIMATED CEILING" are not used. With the exception of indefinite ceilings, all automated ceiling heights are measured.

EXAMPLE−
"Bremerton National Airport automated weather observation one four five six zulu, ceiling two thousand overcast."

"Bremerton National Airport automated weather observation one four five six zulu, indefinite ceiling two hundred."

8.3.2.2 The word "CLEAR" is not used in AWOS due to limitations in the height ranges of the sensors. No clouds detected is announced as, "No clouds below XXX" or, in newer systems as, "Clear below XXX" (where XXX is the range limit of the sensor).

EXAMPLE−
"No clouds below one two thousand."

"Clear below one two thousand."

8.3.2.3 A sensor for determining ceiling and sky cover is not included in some AWOS. In these systems, ceiling and sky cover are not announced. "SKY CONDITION MISSING" is announced only if the system is configured with a ceilometer, and the ceiling and sky cover information is not available.

8.3.3 Visibility

8.3.3.1 The lowest reportable visibility value in AWOS is "less than $^1/_4$." It is announced as "VISIBILITY LESS THAN ONE QUARTER."

8.3.3.2 A sensor for determining visibility is not included in some AWOSs. In these systems, visibility is not announced. "VISIBILITY MISSING" is announced only if the system is configured with a visibility sensor and visibility information is not available.

8.3.4 Weather. In the future, some AWOSs are to be configured to determine the occurrence of precipitation. However, the type and intensity may not always be determined. In these systems, the word "PRECIPITATION" will be announced if precipitation is occurring, but the type and intensity are not determined.

8.3.5 Remarks. If remarks are included in the observation, the word "REMARKS" is announced following the altimeter setting. Remarks are announced in the following order of priority:

8.3.5.1 Automated "remarks."

a) Variable visibility.

b) Density altitude.

8.3.5.2 Manual input remarks. Manual input remarks are prefaced with the phrase "OBSERVER WEATHER." As a general rule the manual remarks are limited to:

a) Type and intensity of precipitation.

b) Thunderstorms, intensity (if applicable), and direction.

c) Obstructions to vision when the visibility is less than 7 miles.

EXAMPLE−
"Remarks...density altitude, two thousand five hundred...visibility variable between one and two...wind direction variable between two four zero and three one zero...observed weather...thunderstorm moderate rain showers and mist...thunderstorm overhead."

8.3.5.3 If an automated parameter is "missing" and no manual input for that parameter is available, the parameter is announced as "MISSING." For example, a report with the dew point "missing," and no manual input available, would be announced as follows:

EXAMPLE−
"Ceiling one thousand overcast, visibility three, precipitation, temperature three zero, dew point missing, wind calm, altimeter three zero zero one."

8.3.5.4 "REMARKS" are announced in the following order of priority:

a) Automated "REMARKS":

1) Variable visibility.

2) Density altitude.

b) Manual Input "REMARKS." As a general rule, the remarks are announced in the same order as the parameters appear in the basic text of the observation.

EXAMPLE−
"Remarks, density altitude, two thousand five hundred, visibility variable between one and two, wind direction variable between two four zero and three one zero, observer ceiling estimated two thousand broken, observer temperature two, dew point minus five."

8.4 Automated Surface Observing System (ASOS)/Automated Weather Sensor System (AWSS)

8.4.1 The ASOS/AWSS is the primary surface weather observing system of the U.S. The program to install and operate these systems throughout the U.S. is a joint effort of the NWS, the FAA and the Department of Defense. AWSS is a follow−on program that provides identical data as ASOS. ASOS/AWSS is designed to support aviation operations and weather forecast activities. The ASOS/AWSS will provide continuous minute-by-minute observations and perform the basic observing functions necessary to generate an aviation routine weather report (METAR) and other aviation weather information. The information may be transmitted over a discrete VHF radio frequency or the voice portion of a local NAVAID. ASOS/AWSS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 25 NM from the ASOS/AWSS site and a maximum altitude of 10,000 feet AGL. At many locations, ASOS/AWSS signals may be received on the surface of the airport, but local conditions may limit the maximum reception distance and/or altitude. While the automated system and the human may differ in their methods of data collection and interpretation, both produce an observation quite similar in form and content. For the "objective" elements such as pressure, ambient temperature, dew point temperature, wind, and precipitation accumulation, both the automated system and the observer use a fixed location and time-averaging technique. The quantitative differences between the observer and the automated observation of these elements are negligible. For the "subjective" elements, however, observers use a fixed time, spatial averaging technique to describe the visual elements (sky condition, visibility and present weather), while the automated systems use a fixed location, time averaging technique. Although this is a fundamental change, the manual and automated techniques yield remarkably similar results within the limits of their respective capabilities. (See FIG GEN 3.5−26 and FIG GEN 3.5−27, Key to Decode an ASOS/AWSS (METAR) Observation.

8.4.2 System Description

8.4.2.1 The ASOS/AWSS at each airport location consists of four main components:

a) Individual weather sensors.

b) Data collection and processing units.

c) Peripherals and displays.

8.4.2.2 The ASOS/AWSS sensors perform the basic function of data acquisition. They continuously sample and measure the ambient environment, derive raw sensor data and make them available to the collection and processing units.

8.4.3 Every ASOS/AWSS will contain the following basic set of sensors.

8.4.3.1 Cloud height indicator (one or possibly three).

8.4.3.2 Visibility sensor (one or possibly three).

8.4.3.3 Precipitation identification sensor.

8.4.3.4 Freezing rain sensor.

8.4.3.5 Pressure sensors (two sensors at small airports; three sensors at large airports).

8.4.3.6 Ambient temperature/dew point temperature sensor.

8.4.3.7 Anemometer (wind direction and speed sensor).

8.4.3.8 Rainfall accumulation sensor.

8.4.4 The ASOS/AWSS data outlets include:

8.4.4.1 Those necessary for on−site airport users.

8.4.4.2 National communications networks.

8.4.4.3 Computer−generated voice (available through FAA radio broadcast to pilots and dial−in telephone line).

NOTE−
Wind direction broadcast over FAA radios is in reference to magnetic north.

8.5 A comparison of weather observing programs and the elements observed by each are in TBL GEN 3.5−3, Weather Observing Programs.

8.6 Service Standards. During 1995, a government/industry team worked to comprehensively reassess the requirements for surface observations at the nation's airports. That work resulted in agreement on a set of service standards and the FAA and NWS ASOS sites to which the standards would apply. The term "Service Standards" refers to the level of detail in the weather observation. The service standards consist of four different levels of service (A, B, C, and D) as described below. Specific observational elements included in each service level are listed in TBL GEN 3.5−4, Weather Observation Service Standards.

8.6.1 Service Level D defines the minimum acceptable level of service. It is a completely automated service in which the ASOS/AWSS observation will constitute the entire observation; i.e., no additional weather information is added by a human observer. This service is referred to as a stand alone D site.

8.6.2 Service Level C is a service in which the human observer, usually an air traffic controller, augments or adds information to the automated observation. Service Level C also includes backup of ASOS/AWSS elements in the event of an ASOS/AWSS malfunction or an unrepresentative ASOS/AWSS report.

8.6.3 In backup, the human observer inserts the correct or missing value for the automated ASOS/AWSS elements. This service is provided by air traffic controllers under the Limited Aviation Weather Reporting Station (LAWRS) process, FSS and NWS observers, and, at selected sites, Non−Federal Observation Program observers.

Two categories of airports require detail beyond Service Level C in order to enhance air traffic control efficiency and increase system capacity. Services at these airports are typically provided by contract weather observers, NWS observers, and, at some locations, FSS observers.

8.6.4 Service Level B is a service in which weather observations consist of all elements provided under Service Level C, plus augmentation of additional data beyond the capability of the ASOS/AWSS. This category of airports includes smaller hubs or airports special in other ways that have worse than average bad weather operations for thunderstorms and/or freezing/frozen precipitation, and/or that are remote airports.

8.6.5 Service Level A, the highest and most demanding category, includes all the data reported in Service Standard B, plus additional requirements as specified. Service Level A covers major aviation hubs and/or high volume traffic airports with average or worse weather.

of traffic density, ATC coordination requirements, complex departure and arrival routes, and adjacent airports. As a consequence, controllers are less likely to be able to accommodate all requests for weather detours in a terminal area or be in a position to volunteer such routes to the pilot. Nevertheless, pilots should not hesitate to advise controllers of any observed severe weather and should specifically advise controllers if they desire circumnavigation of observed weather.

10.3 ATC Severe Weather Avoidance Plans

10.3.1 Air Route Traffic Control Centers and some Terminal Radar Control facilities utilize plans for severe weather avoidance within their control areas. Aviation−oriented meteorologists provide weather information. Preplanned alternate route packages developed by the facilities are used in conjunction with flow restrictions to ensure a more orderly flow of traffic during periods of severe or adverse weather conditions.

10.3.2 During these periods, pilots may expect to receive alternative route clearances. These routes are predicated upon the forecasts of the meteorologist and coordination between the Air Traffic Control System Command Center and the other centers. The routes are utilized as necessary in order to allow as many aircraft as possible to operate in any given area, and frequently they will deviate from the normal preferred routes. With user cooperation, this plan may significantly reduce delays.

10.4 Procedures for Weather Deviations and Other Contingencies in Oceanic Controlled Airspace

10.4.1 When the pilot initiates communications with ATC, rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate priority is desired on the frequency and for ATC response.

10.4.2 The pilot still retains the option of initiating the communications using the urgency call "PAN−PAN" three times to alert all listening parties of a special handling condition which will receive ATC priority for issuance of a clearance or assistance.

10.4.3 ATC will:

10.4.3.1 Approve the deviation, or

10.4.3.2 Provide vertical separation and then approve the deviation, or

10.4.3.3 If ATC is unable to establish vertical separation, ATC must advise the pilot that standard separation cannot be applied; provide essential traffic information for all affected aircraft, to the extent practicable; and if possible, suggest a course of action. ATC may suggest that the pilot climb or descend to a contingency altitude (1,000 feet above or below that assigned if operating above FL 290; 500 feet above or below that assigned if operating at or below FL 290).

PHRASEOLOGY−
STANDARD SEPARATION NOT AVAILABLE; DEVIATE AT PILOT'S DISCRETION; SUGGEST CLIMB (or descent) TO (appropriate altitude); TRAFFIC (position and altitude); REPORT DEVIATION COMPLETE.

10.4.4 The pilot will follow the ATC advisory altitude when approximately 10 NM from track as well as execute the procedures detailed in paragraph 10.4.5.

10.4.5 If contact cannot be established or a revised ATC clearance or advisory is not available and deviation from track is required, the pilot must take the following actions:

10.4.5.1 If possible, deviate away from an organized track or route system.

10.4.5.2 Broadcast aircraft position and intentions on the frequency in use, as well as on frequency 121.5 MHz at suitable intervals stating: flight identification (operator call sign), flight level, track code or ATS route designator, and extent of deviation expected.

10.4.5.3 Watch for conflicting traffic both visually and by reference to the Traffic Alert and Collision Avoidance System (TCAS), if equipped.

10.4.5.4 Turn on aircraft exterior lights.

10.4.5.5 Deviations of less than 10 NM or operations within COMPOSITE (NOPAC and CEPAC) Airspace, should REMAIN at ASSIGNED altitude. Otherwise, when the aircraft is approximately 10 NM from track, initiate an altitude change based upon the following criteria:

TBL GEN 3.5−5

Route Centerline/Track	Deviations >10 NM	Altitude Change
East 000 − 179°M	Left Right	Descend 300 Feet Climb 300 Feet
West 180−359°M	Left Right	Climb 300 Feet Descend 300 Feet
Pilot Memory Slogan: "East right up, West right down."		

10.4.5.6 When returning to track, be at the assigned flight level when the aircraft is within approximately 10 NM of centerline.

10.4.5.7 If contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

11. Notifications Required From Operators

11.1 Preflight briefing and flight documentation services provided by FSSs do not require prior notification.

11.2 Preflight briefing and flight documentation services provided by a National Weather Service Office (or contract office) are available upon request for long−range international flights for which meteorological data packages are prepared for the pilot−in−command. Briefing times should be coordinated between the local representative and the local meteorological office.

11.3 Flight Service Stations do not normally have the capability to prepare meteorological data packages for a preflight briefing.

12. Weather Observing Systems and Operating Procedures

For surface wind readings, most meteorological reporting stations have a direct reading, 3−cup anemometer wind system for which a 1−minute mean wind speed and direction (based on true north) is taken. Some stations also have a continuous wind speed recorder which is used in determining the gustiness of the wind.

13. Runway Visual Range (RVR)

There are currently two configurations of the RVR, commonly identified as Taskers and New Generation RVR. The Taskers use transmissometer technology. The New Generation RVRs use forward scatter technology and are currently being deployed to replace the existing Taskers.

13.1 RVR values are measured by transmissometers mounted on 14−foot towers along the runway. A full RVR system consists of:

13.1.1 A transmissometer projector and related items.

13.1.2 A transmissometer receiver (detector) and related items.

13.1.3 An analog recorder.

13.1.4 A signal data converter and related items.

13.1.5 A remote digital or remote display programmer.

13.2 The transmissometer projector and receiver are mounted on towers 250 feet apart. A known intensity of light is emitted from the projector and is measured by the receiver. Any obscuring matter, such as rain, snow, dust, fog, haze, or smoke, reduces the light intensity arriving at the receiver. The resultant intensity measurement is then converted to an RVR value by the signal data converter. These values are displayed by readout equipment in the associated air traffic facility and updated approximately once every minute for controller issuance to pilots.

13.3 The signal data converter receives information on the high−intensity runway edge light setting in use (step 3, 4, or 5), transmission values from the transmissometer, and the sensing of day or night conditions. From the three data sources, the system will compute appropriate RVR values.

13.4 An RVR transmissometer established on a 250−foot baseline provides digital readouts to a minimum of 600 feet, which are displayed in 200−foot increments to 3,000 feet, and in 500−foot increments from 3,000 feet to a maximum value of 6,000 feet.

13.5 RVR values for Category IIIa operations extend down to 700−foot RVR; however, only 600 and 800 feet are reportable RVR increments. The 800 RVR reportable value covers a range of 701 feet to 900 feet and is therefore a valid minimum indication of Category IIIa operations.

18. Pilot Weather Reports (PIREPs)

18.1 FAA air traffic facilities are required to solicit PIREPs when the following conditions are reported or forecast: ceilings at or below 5,000 feet, visibility at or below 5 miles (surface or aloft), thunderstorms and related phenomena, icing of a light degree or greater, turbulence of a moderate degree or greater, wind shear, and reported or forecast volcanic ash clouds.

18.2 Pilots are urged to cooperate and promptly volunteer reports of these conditions and other atmospheric data, such as cloud bases, tops and layers, flight visibility, precipitation, visibility restrictions (haze, smoke, and dust), wind at altitude, and temperature aloft.

18.3 PIREPs should be given to the ground facility with which communications are established; i.e., EFAS, FSS, ARTCC, or terminal ATC. Radio call "FLIGHT WATCH," which serves as a collection point for the exchange of PIREPs with en route aircraft, is one of the primary duties of EFAS facilities.

18.4 If pilots do not make PIREPs by radio, it is helpful if, upon landing, they report to the nearest FSS or Weather Forecast Office the inflight conditions which they encountered. Some of the uses made of the reports are:

18.4.1 The ATCT uses the reports to expedite the flow of air traffic in the vicinity of the field and for hazardous weather avoidance procedures.

18.4.2 The FSS uses the reports to brief other pilots, to provide inflight advisories and weather avoidance information to en route aircraft.

18.4.3 The ARTCC uses the reports to expedite the flow of en route traffic, to determine most favorable altitudes, and to issue hazardous weather information within the center's area.

18.4.4 The NWS uses the reports to verify or amend conditions contained in aviation forecasts and advisories; (In some cases, pilot reports of hazardous conditions are the triggering mechanism for the issuance of advisories.)

18.4.5 The NWS, other government organizations, the military, and private industry groups use PIREPs for research activities in the study of meteorological phenomena.

18.4.6 All air traffic facilities and the NWS forward the reports received from pilots into the weather distribution system to assure the information is made available to all pilots and other interested parties.

18.5 The FAA, NWS, and other organizations that enter PIREPs into the weather reporting system use the format listed in TBL GEN 3.5−7, PIREP Element Code Chart. Items 1 through 6 are included in all transmitted PIREPs along with one or more of items 7 through 13. Although the PIREP should be as complete and concise as possible, pilots should not be overly concerned with strict format or phraseology. The important thing is that the information is relayed so other pilots may benefit from your observation. If a portion of the report needs clarification, the ground station will request the information.

18.6 Completed PIREPs will be transmitted to weather circuits as in the following examples:

EXAMPLE−
KCMH UA/OV APE 230010/TM 1516/FL085/TP BE20/SK BKN065/WX FV03SM HZ FU/TA 20/TB LGT.

Translation: one zero miles southwest of Appleton VOR; time 1516 UTC; altitude eight thousand five hundred; aircraft type BE20; base of the broken cloud layer is six thousand five hundred; flight visibility 3 miles with haze and smoke; air temperature 20 degrees Celsius; light turbulence.

EXAMPLE−
KCRW UA/OV KBKW 360015−KCRW/TM 1815/ FL120/TP BE99/SK IMC/WX RA−/TA M08/WV 290030/TB LGT−MDT/IC LGT RIME/RM MDT MXD ICG DURC KROA NWBND FL080−100 1750Z.

Translation: from 15 miles north of Beckley VOR to Charleston VOR; time 1815 UTC; altitude 12,000 feet; type aircraft, BE−99; in clouds; rain; temperature minus 8 Celsius; wind 290 degrees magnetic at 30 knots; light to moderate turbulence; light rime icing during climb northwestbound from Roanoke, VA, between 8,000 and 10,000 feet at 1750 UTC.

TBL GEN 3.5−7

PIREP Element Code Chart

	PIREP ELEMENT	PIREP CODE	CONTENTS
1.	3−letter station identifier	XXX	Nearest weather reporting location to the reported phenomenon
2.	Report type	UA or UUA	Routine or urgent PIREP
3.	Location	/OV	In relation to a VOR
4.	Time	/TM	Coordinated Universal Time
5.	Altitude	/FL	Essential for turbulence and icing reports
6.	Type aircraft	/TP	Essential for turbulence and icing reports
7.	Sky cover	/SK	Cloud height and coverage (sky clear, few, scattered, broken, or overcast)
8.	Weather	/WX	Flight visibility, precipitation, restrictions to visibility, etc.
9.	Temperature	/TA	Degrees Celsius
10.	Wind	/WV	Direction in degrees magnetic north and speed in knots
11.	Turbulence	/TB	See paragraph 22.
12.	Icing	/IC	See paragraph 20.
13.	Remarks	/RM	For reporting elements not included or to clarify previously reported items

19. Mandatory MET Points

19.1 Within the ICAO CAR/SAM Regions and within the U.S. area of responsibility, several mandatory MET reporting points have been established. These points are located within the Houston, Miami, and San Juan Flight Information Regions (FIR). These points have been established for flights between the South American and Caribbean Regions and Europe, Canada and the U.S.

19.2 Mandatory MET Reporting Points Within the Houston FIR

Point	For Flights Between
ABBOT	Acapulco and Montreal, New York, Toronto, Mexico City and New Orleans.
ALARD	New Orleans and Belize, Guatemala, San Pedro Sula, Mexico City and Miami, Tampa.
ARGUS	Toronto and Guadalajara, Mexico City, New Orleans and Mexico City.
SWORD	Dallas−Fort Worth, New Orleans, Chicago and Cancun, Cozumel, and Central America.

19.3 Mandatory MET Reporting Points Within the Miami FIR

Point	For Flights Between
Grand Turk	New York and Aruba, Curacao, Kingston, Miami and Belem, St. Thomas, Rio de Janeiro, San Paulo, St. Croix, Kingston and Bermuda.
GRATX	Madrid and Miami, Havana.
MAPYL	New York and Guayaquil, Montego Bay, Panama, Lima, Atlanta and San Juan.
RESIN	New Orleans and San Juan.
SLAPP	New York and Aruba, Curacao, Kingston, Port−au−Prince. Bermuda and Freeport, Nassau. New York and Barranquilla, Bogota, Santo Domingo, Washington and Santo Domingo, Atlanta and San Juan.

19.4 Mandatory MET Reporting Points Within the San Juan FIR

Point	For Flights Between
GRANN	Toronto and Barbados, New York and Fort de France. At intersection of routes A321, A523, G432.
KRAFT	San Juan and Buenos Aires, Caracas, St. Thomas, St. Croix, St. Maarten, San Juan, Kingston and Bermuda.
PISAX	New York and Barbados, Fort de France, Bermuda and Antigua, Barbados.

TBL GEN 3.5−8

Intensity	Ice Accumulation
Light	The rate of ice accumulation requires occasional cycling of manual deicing systems** to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is 1/4 inch to one inch (0.6 to 2.5 cm) per hour (see Approximately Equivalent Icing Rates below) * on the unprotected part of the outer wing. The pilot should consider exiting the condition. ***
Moderate	The rate of ice accumulation requires frequent cycling of manual deicing systems** to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is 1 to 3 inches (2.5 to 7.5 cm) per hour (see Approximately Equivalent Icing Rates below) * on the unprotected part of the outer wing. The pilot should consider exiting the condition as soon as possible.***
Heavy	The rate of ice accumulation requires maximum use of the ice protection systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is more than 3 inches (7.5 cm) per hour (see Approximately Equivalent Icing Rates below) * on the unprotected part of the outer wing. Immediate exit from the conditions should be considered.***
Severe	The rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice and ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. Immediate exit from the condition is necessary.****

Approximately Equivalent Icing Rates

Intensity	Inches/hour	Inches/15 min.	1/4-inch in	mm/minute
Light	1/4 to 1 in. (0.6 – 2.5 cm)	Less than 1/4 inches	15 – 60 minutes	0.1 – 0.4
Moderate	1 to 3 in. (2.5 – 7.5 cm)	1/4 to 3/4 inches	5 –15 minutes	0.4 – 1.3
Heavy	Greater than 3 in. (7.5 cm)	Greater than 3/4 inch	Less than 5 minutes	Greater than 1.3

***These rates can be estimated or if available measured by a suitable icing rate meter.**

****It is expected that deicing or anti-icing systems will be activated and operated continuously in the automatic mode, if available, at the first sign of ice accumulation, or as directed in the Airplane Flight Manual. Occasional and frequent cycling refers to manually activated systems.**

*****It is assumed that the aircraft's de/anti-icing system is fully operative and the aircraft is approved to fly in the cited icing conditions. Otherwise, immediate exit from any of these intensity categories is required by regulations (14 CFR 91.13(a), 91.527, 121.341, 125.221, and 135.227).**

******Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any ice accumulation rate when the icing rate or ice accumulations exceed the capability of the aircraft's de/anti-icing system. Icing certification implies an increased tolerance to icing intensities up through heavy.**

Pilot Report: Aircraft Identification, Location, Time (UTC), Icing Intensity, Type of Icing[1], Altitude/FL, Aircraft Type, and Outside Air Temperature (OAT)[3]

[1]Rime or Clear Ice: Rime ice is a rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets. Clear ice is a glossy, clear, or translucent ice formed by the relatively slow freezing of large supercooled water droplets.

[2]The Outside Air Temperature (OAT) should be requested by the FSS or ATC if not included in the PIREP.

20. PIREPs Relating to Airframe Icing

20.1 The effects of ice accretion on aircraft are: cumulative−thrust is reduced, drag increases, lift lessens, weight increases. The results are an increase in stall speed and a deterioration of aircraft performance. In extreme cases, 2 to 3 inches of ice can form on the leading edge of the airfoil in less than 5 minutes. It takes but $^{1}/_{2}$ inch of ice to reduce the lifting power of some aircraft by 50 percent and to increase the frictional drag by an equal percentage.

20.2 A pilot can expect icing when flying in visible precipitation, such as rain or cloud droplets, and the temperature is between +02 and −10 degrees Celsius. When icing is detected, a pilot should do one of two things (particularly if the aircraft is not equipped with deicing equipment). The pilot should get out of the area of precipitation or go to an altitude where the temperature is above freezing. This "warmer" altitude may not always be a lower altitude. Proper preflight action includes obtaining information on the freezing level and the above−freezing levels in precipitation areas. Report the icing to an ATC or FSS facility, and if operating IFR, request new routing or altitude if icing will be a hazard. Be sure to give the type of aircraft to ATC when reporting icing. TBL GEN 3.5−8, describes how to report icing conditions.

21. Definitions of Inflight Icing Terms

See TBL GEN 3.5−9, Icing Types, and TBL GEN 3.5−10, Icing Conditions.

TBL GEN 3.5−9

Icing Types

Clear Ice	See Glaze Ice.
Glaze Ice	Ice, sometimes clear and smooth, but usually containing some air pockets, which results in a lumpy translucent appearance. Glaze ice results from supercooled drops/droplets striking a surface but not freezing rapidly on contact. Glaze ice is denser, harder, and sometimes more transparent than rime ice. Factors, which favor glaze formation, are those that favor slow dissipation of the heat of fusion (i.e., slight supercooling and rapid accretion). With larger accretions, the ice shape typically includes “horns” protruding from unprotected leading edge surfaces. It is the ice shape, rather than the clarity or color of the ice, which is most likely to be accurately assessed from the cockpit. The terms “clear” and “glaze” have been used for essentially the same type of ice accretion, although some reserve “clear” for thinner accretions which lack horns and conform to the airfoil.
Intercycle Ice	Ice which accumulates on a protected surface between actuation cycles of a deicing system.
Known or Observed or Detected Ice Accretion	Actual ice observed visually to be on the aircraft by the flight crew or identified by on−board sensors.
Mixed Ice	Simultaneous appearance or a combination of rime and glaze ice characteristics. Since the clarity, color, and shape of the ice will be a mixture of rime and glaze characteristics, accurate identification of mixed ice from the cockpit may be difficult.
Residual Ice	Ice which remains on a protected surface immediately after the actuation of a deicing system.
Rime Ice	A rough, milky, opaque ice formed by the rapid freezing of supercooled drops/droplets after they strike the aircraft. The rapid freezing results in air being trapped, giving the ice its opaque appearance and making it porous and brittle. Rime ice typically accretes along the stagnation line of an airfoil and is more regular in shape and conformal to the airfoil than glaze ice. It is the ice shape, rather than the clarity or color of the ice, which is most likely to be accurately assessed from the cockpit.
Runback Ice	Ice which forms from the freezing or refreezing of water leaving protected surfaces and running back to unprotected surfaces.
Note− *Ice types are difficult for the pilot to discern and have uncertain effects on an airplane in flight. Ice type definitions will be included in the AIP for use in the “Remarks” section of the PIREP and for use in forecasting.*	

TBL GEN 3.5−10

Icing Conditions

Appendix C Icing Conditions	Appendix C (14 CFR, Part 25 and 29) is the certification icing condition standard for approving ice protection provisions on aircraft. The conditions are specified in terms of altitude, temperature, liquid water content (LWC), representative droplet size (mean effective drop diameter [MED]), and cloud horizontal extent.
Forecast Icing Conditions	Environmental conditions expected by a National Weather Service or an FAA−approved weather provider to be conducive to the formation of inflight icing on aircraft.
Freezing Drizzle (FZDZ)	Drizzle is precipitation at ground level or aloft in the form of liquid water drops which have diameters less than 0.5 mm and greater than 0.05 mm. Freezing drizzle is drizzle that exists at air temperatures less than 0°C (supercooled), remains in liquid form, and freezes upon contact with objects on the surface or airborne.
Freezing Precipitation	Freezing precipitation is freezing rain or freezing drizzle falling through or outside of visible cloud.
Freezing Rain (FZRA)	Rain is precipitation at ground level or aloft in the form of liquid water drops which have diameters greater than 0.5 mm. Freezing rain is rain that exists at air temperatures less than 0°C (supercooled), remains in liquid form, and freezes upon contact with objects on the ground or in the air.
Icing in Cloud	Icing occurring within visible cloud. Cloud droplets (diameter < 0.05 mm) will be present; freezing drizzle and/or freezing rain may or may not be present.
Icing in Precipitation	Icing occurring from an encounter with freezing precipitation, that is, supercooled drops with diameters exceeding 0.05 mm, within or outside of visible cloud.
Known Icing Conditions	Atmospheric conditions in which the formation of ice is observed or detected in flight. ***Note−*** *Because of the variability in space and time of atmospheric conditions, the existence of a report of observed icing does not assure the presence or intensity of icing conditions at a later time, nor can a report of no icing assure the absence of icing conditions at a later time.*
Potential Icing Conditions	Atmospheric icing conditions that are typically defined by airframe manufacturers relative to temperature and visible moisture that may result in aircraft ice accretion on the ground or in flight. The potential icing conditions are typically defined in the Airplane Flight Manual or in the Airplane Operation Manual.
Supercooled Drizzle Drops (SCDD)	Synonymous with freezing drizzle aloft.
Supercooled Drops or /Droplets	Water drops/droplets which remain unfrozen at temperatures below 0 °C. Supercooled drops are found in clouds, freezing drizzle, and freezing rain in the atmosphere. These drops may impinge and freeze after contact on aircraft surfaces.
Supercooled Large Drops (SLD)	Liquid droplets with diameters greater than 0.05 mm at temperatures less than 0°C, i.e., freezing rain or freezing drizzle.

22. PIREPs Relating to Turbulence

22.1 When encountering turbulence, pilots are urgently requested to report such conditions to ATC as soon as practicable. PIREPs relating to turbulence should state:

22.1.1 Aircraft location.

22.1.2 Time of occurrence in UTC.

22.1.3 Turbulence intensity.

22.1.4 Whether the turbulence occurred in or near clouds.

22.1.5 Aircraft altitude, or flight level.

22.1.6 Type of aircraft.

22.1.7 Duration of turbulence.

EXAMPLE−

1. *Over Omaha, 1232Z, moderate turbulence in clouds at Flight Level three one zero, Boeing 707.*

2. *From five zero miles south of Albuquerque to three zero miles north of Phoenix, 1250Z, occasional moderate chop at Flight Level three three zero, DC8.*

22.2 Duration and classification of intensity should be made using TBL GEN 3.5−11, Turbulence Reporting Criteria Table.

TBL GEN 3.5−11

Turbulence Reporting Criteria Table

<table>
<tr><th>Intensity</th><th>Aircraft Reaction</th><th>Reaction inside Aircraft</th><th>Reporting Term−Definition</th></tr>
<tr><td>Light</td><td>Turbulence that momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw). Report as Light Turbulence; [1]
or
Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude. Report as Light Chop.</td><td>Occupants may feel a slight strain against seat belts or shoulder straps. Unsecured objects may be displaced slightly. Food service may be conducted, and little or no difficulty is encountered in walking.</td><td>Occasional−Less than $1/3$ of the time.

Intermittent−$1/3$ to $2/3$.

Continuous−More than $2/3$.</td></tr>
<tr><td>Moderate</td><td>Turbulence that is similar to Light Turbulence but of greater intensity. Changes in altitude and/or attitude occur, but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed. Report as Moderate Turbulence; [1]
or
Turbulence that is similar to Light Chop but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude. Report as Moderate Chop. [1]</td><td>Occupants feel definite strains against seat belts or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult.</td><td rowspan="3">NOTE
1. Pilots should report location(s), time (UTC), intensity, whether in or near clouds, altitude, type of aircraft and, when applicable, duration of turbulence.

2. Duration may be based on time between two locations or over a single location. All locations should be readily identifiable.

EXAMPLES:
a. Over Omaha. 1232Z, Moderate Turbulence, in cloud, Flight Level 310, B707.

b. From 50 miles south of Albuquerque to 30 miles north of Phoenix, 1210Z to 1250Z, occasional Moderate Chop, Flight Level 330, DC8.</td></tr>
<tr><td>Severe</td><td>Turbulence that causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control. Report as Severe Turbulence.[1]</td><td>Occupants are forced violently against seat belts or shoulder straps. Unsecured objects are tossed about. Food service and walking are impossible.</td></tr>
<tr><td>Extreme</td><td>Turbulence in which the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage. Report as Extreme Turbulence. [1]</td><td></td></tr>
<tr><td colspan="4">[1] High level turbulence (normally above 15,000 feet ASL) not associated with cumuliform cloudiness, including thunderstorms, should be reported as clear air turbulence (CAT) preceded by the appropriate intensity, or light or moderate chop.</td></tr>
</table>

23. Wind Shear PIREPs

23.1 Because unexpected changes in wind speed and direction can be hazardous to aircraft operations at low altitudes on approach to and departing from airports, pilots are urged to promptly volunteer reports to controllers of wind shear conditions they encounter. An advance warning of this information will assist other pilots in avoiding or coping with a wind shear on approach or departure.

23.2 When describing conditions, the use of the terms "negative" or "positive" wind shear should be avoided. PIREPs of negative wind shear on final, intended to describe loss of airspeed and lift, have been interpreted to mean that no wind shear was encountered. The recommended method for wind shear reporting is to state the loss/gain of airspeed and the altitude(s) at which it was encountered.

EXAMPLE−

1. *Denver Tower, Cessna 1234 encountered wind shear, loss of 20 knots at 400.*

2. *Tulsa Tower, American 721 encountered wind shear on final, gained 25 knots between 600 and 400 feet followed by loss of 40 knots between 400 feet and surface.*

Pilots using Inertial Navigation Systems should report the wind and altitude both above and below the shear layer.

EXAMPLE−

Miami Tower, Gulfstream 403 Charlie encountered an abrupt wind shear at 800 feet on final, max thrust required.

Pilots who are not able to report wind shear in these specific terms are encouraged to make reports in terms of the effect upon their aircraft.

24. Clear Air Turbulence (CAT) PIREPs

24.1 Clear air turbulence (CAT) has become a very serious operational factor to flight operations at all levels and especially to jet traffic flying in excess of 15,000 feet. The best available information on this phenomenon must come from pilots via the PIREP procedures. All pilots encountering CAT conditions are urgently requested to report time, location, and intensity (light, moderate, severe, or extreme) of the element to the FAA facility with which they are maintaining radio contact. If time and conditions permit, elements should be reported according to the standards for other PIREPs and position reports. See TBL GEN 3.5−11, Turbulence Reporting Criteria Table.

25. Microbursts

25.1 Relatively recent meteorological studies have confirmed the existence of microburst phenomena. Microbursts are small−scale intense downdrafts which, on reaching the surface, spread outward in all directions from the downdraft center. This causes the presence of both vertical and horizontal wind shears that can be extremely hazardous to all types and categories of aircraft, especially at low altitudes. Due to their small size, short life−span, and the fact that they can occur over areas without surface precipitation, microbursts are not easily detectable using conventional weather radar or wind shear alert systems.

25.2 Parent clouds producing microburst activity can be any of the low or middle layer convective cloud types. Note however, that microbursts commonly occur within the heavy rain portion of thunderstorms, and in much weaker, benign−appearing convective cells that have little or no precipitation reaching the ground.

25.3 The life cycle of a microburst as it descends in a convective rain shaft is seen in FIG GEN 3.5−9, Evolution of a Microburst. An important consideration for pilots is the fact that the microburst intensifies for about 5 minutes after it strikes the ground.

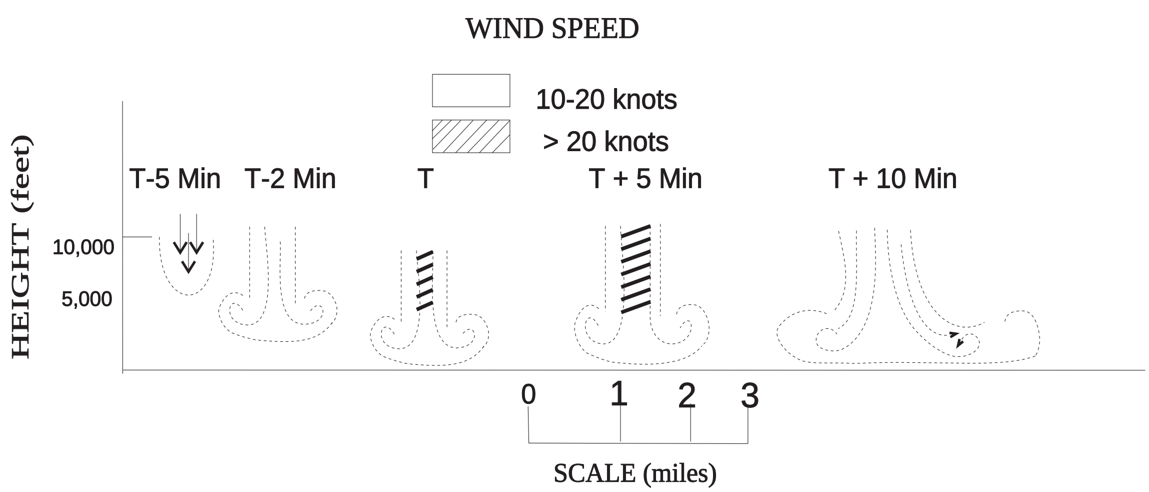
25.4 Characteristics of microbursts include:

25.4.1 Size. The microburst downdraft is typically less than 1 mile in diameter as it descends from the cloud base to about 1,000−3,000 feet above the ground. In the transition zone near the ground, the downdraft changes to a horizontal outflow that can extend to approximately 2 $^{1}/_{2}$ miles in diameter.

25.4.2 Intensity. The downdrafts can be as strong as 6,000 feet per minute. Horizontal winds near the surface can be as strong as 45 knots resulting in a 90−knot shear (headwind to tailwind change for a traversing aircraft) across the microburst. These strong horizontal winds occur within a few hundred feet of the ground.

25.4.3 Visual Signs. Microbursts can be found almost anywhere that there is convective activity. They may be embedded in heavy rain associated with a thunderstorm or in light rain in benign− appearing virga. When there is little or no precipitation at the surface accompanying the microburst, a ring of blowing dust may be the only visual clue of its existence.

FIG GEN 3.5−9
Evolution of a Microburst

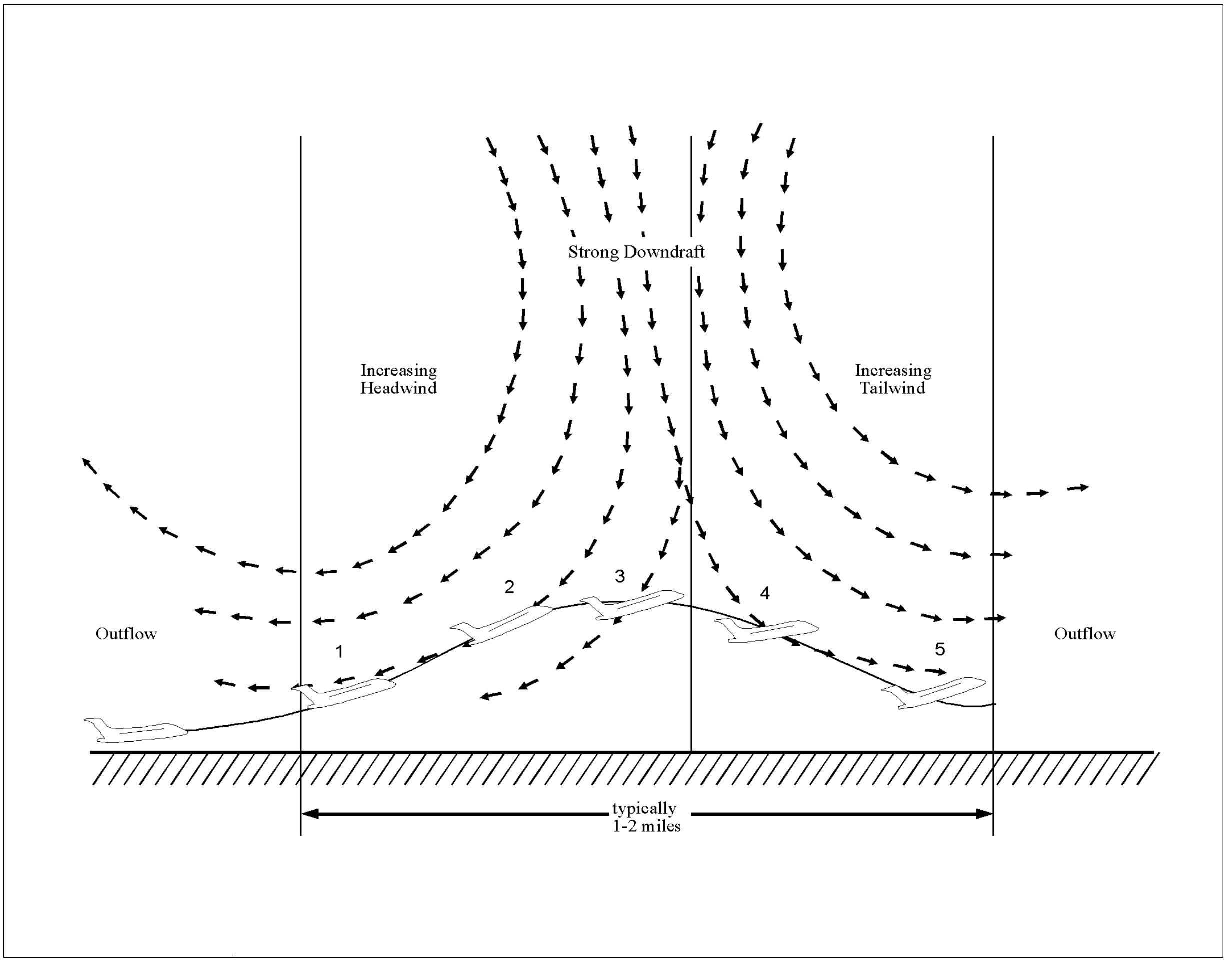


Vertical cross section of the evolution of a microburst wind field. T is the time of initial divergence at the surface. The shading refers to the vector wind speeds. Figure adapted from Wilson et al., 1984, Microburst Wind Structure and Evaluation of Doppler Radar for Wind Shear Detection, DOT/FAA Report No. DOT/FAA/PM-84/29, National Technical Information Service, Springfield, VA 37 pp.

25.4.4 Duration. An individual microburst will seldom last longer than 15 minutes from the time it strikes the ground until dissipation. The horizontal winds continue to increase during the first 5 minutes with the maximum intensity winds lasting approximately 2−4 minutes. Sometimes microbursts are concentrated into a line structure and, under these conditions, activity may continue for as long as 1 hour. Once microburst activity starts, multiple microbursts in the same general area are not uncommon and should be expected.

FIG GEN 3.5−10

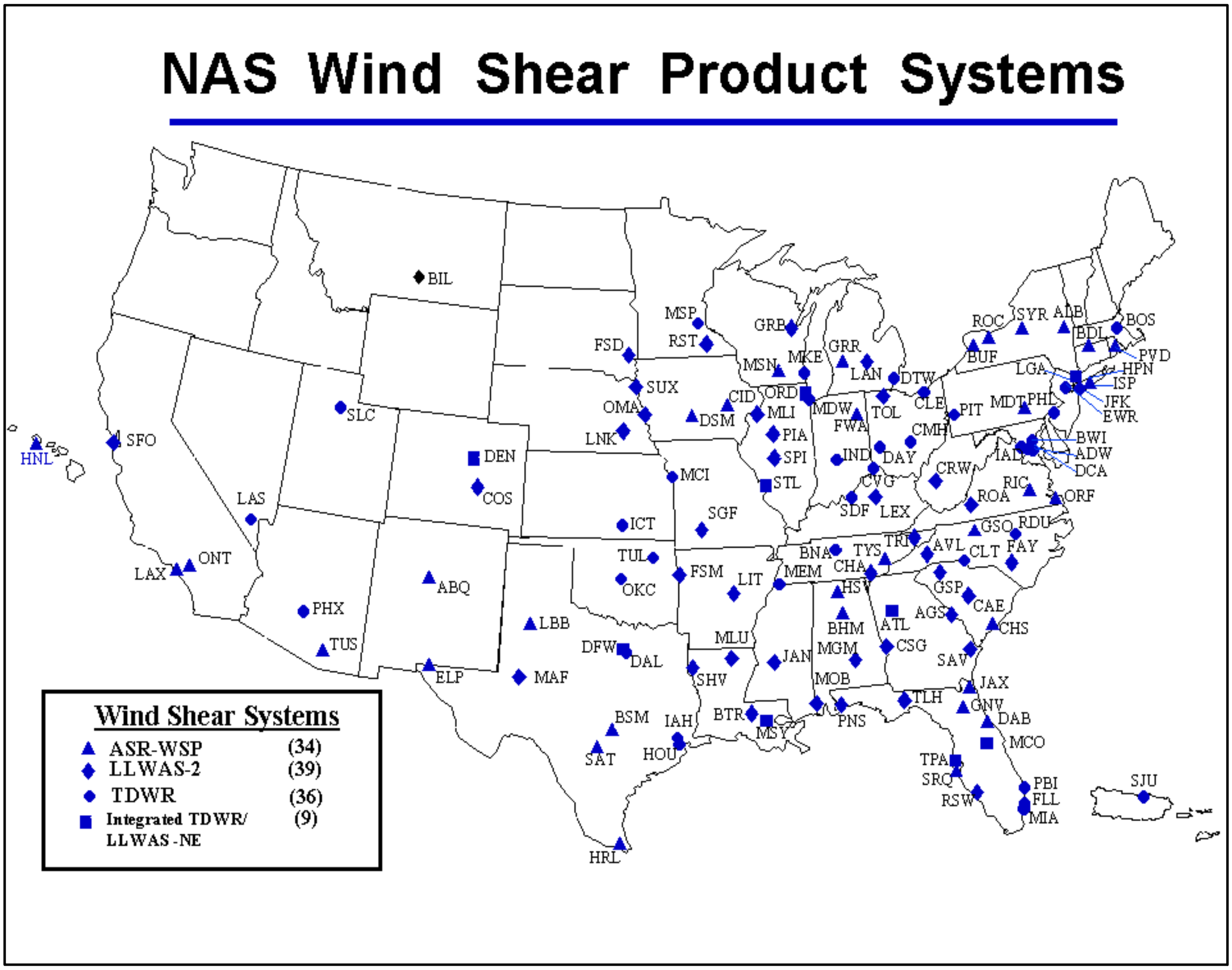
Microburst Encounter During Takeoff



NOTE−
A microburst encounter during takeoff. The airplane first encounters a headwind and experiences increasing performance (1), this is followed in short succession by a decreasing headwind component (2), a downdraft (3), and finally a strong tailwind (4), where 2 through 5 all result in decreasing performance of the airplane. Position (5) represents an extreme situation just prior to impact. Figure courtesy of Walter Frost, FWG Associates, Inc., Tullahoma, Tennessee.

25.5 Microburst wind shear may create a severe hazard for aircraft within 1,000 feet of the ground, particularly during the approach to landing and landing and take−off phases. The impact of a microburst on aircraft which have the unfortunate experience of penetrating one is characterized in FIG GEN 3.5−10. The aircraft may encounter a headwind (performance increasing), followed by a downdraft and a tailwind (both performance decreasing), possibly resulting in terrain impact.

FIG GEN 3.5−11



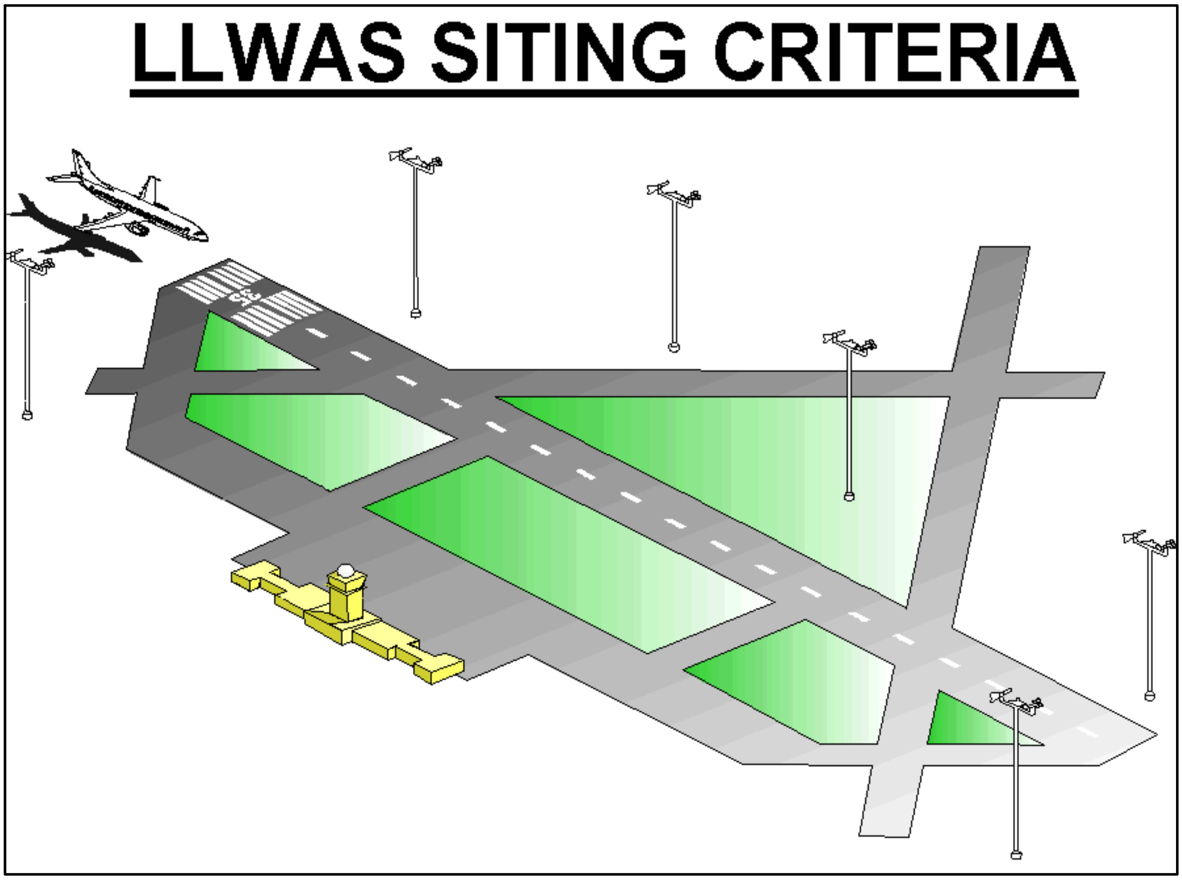
25.6 Detection of Microbursts, Wind Shear, and Gust Fronts

25.6.1 FAA's Integrated Wind Shear Detection Plan

25.6.1.1 The FAA currently employs an integrated plan for wind shear detection that will significantly improve both the safety and capacity of the majority of the airports currently served by the air carriers. This plan integrates several programs, such as the Integrated Terminal Weather System (ITWS), Terminal Doppler Weather Radar (TDWR), Weather System Processor (WSP), and Low Level Wind Shear Alert Systems (LLWAS) into a single strategic concept that significantly improves the aviation weather information in the terminal area.
(See FIG GEN 3.5−11.)

25.6.1.2 The wind shear/microburst information and warnings are displayed on the ribbon display terminal (RBDT) located in the tower cabs. They are identical (and standardized) to those in the LLWAS, TDWR and WSP systems, and designed so that the controller does not need to interpret the data, but simply read the displayed information to the pilot. The RBDTs are constantly monitored by the controller to ensure the rapid and timely dissemination of any hazardous event(s) to the pilot.

FIG GEN 3.5−12



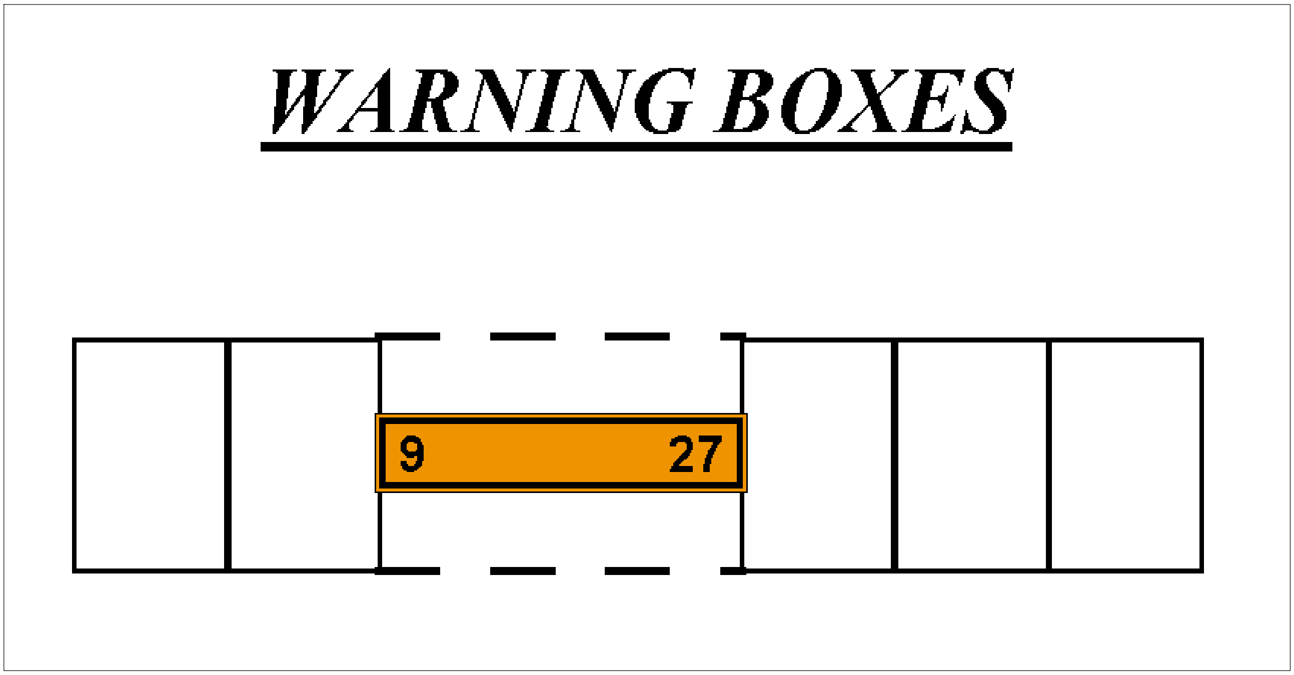
25.6.1.3 The early detection of a wind shear/microburst event, and the subsequent warning(s) issued to an aircraft on approach or departure, will alert the pilot/crew to the potential of, and to be prepared for, a situation that could become very dangerous! Without these warnings, the aircraft may NOT be able to climb out of or safely transition the event, resulting in a catastrophe. The air carriers, working with the FAA, have developed specialized training programs using their simulators to train and prepare their pilots on the demanding aircraft procedures required to escape these very dangerous wind shear and/or microburst encounters.

25.6.1.4 Low Level Wind Shear Alert System (LLWAS)

a) The LLWAS provides wind data and software processes to detect the presence of hazardous wind shear and microbursts in the vicinity of an airport. Wind sensors, mounted on poles sometimes as high as 150 feet, are (ideally) located 2,000 − 3,500 feet, but not more than 5,000 feet, from the centerline of the runway. (See FIG GEN 3.5−12.)

b) The LLWAS was fielded in 1988 at 110 airports across the nation. Many of these systems have been replaced by new terminal doppler weather radar (TDWR) and weather systems processor (WSP) technology. Eventually all LLWAS systems will be phased out; however, 39 airports will be upgraded to the LLWAS−NE (Network Expansion) system, which employs the very latest software and sensor technology. The new LLWAS−NE systems will not only provide the controller with wind shear warnings and alerts, including wind shear/microburst detection at the airport wind sensor location, but will also provide the location of the hazards relative to the airport runway(s). It will also have the flexibility and capability to grow with the airport as new runways are built. As many as 32 sensors, strategically located around the airport and in relationship to its runway configuration, can be accommodated by the LLWAS−NE network.

FIG GEN 3.5−13



25.6.1.5 Terminal Doppler Weather Radar (TDWR)

a) TDWRs are being deployed at 45 locations across the U.S. Optimum locations for TDWRs are 8 to 12 miles from the airport proper, and designed to look at the airspace around and over the airport to detect microbursts, gust fronts, wind shifts, and precipitation intensities. TDWR products advise the controller of wind shear and microburst events impacting all runways and the areas $^{1}/_{2}$ mile on either side of the extended centerline of the runways and to a distance of 3 miles on final approach and 2 miles on departure. FIG GEN 3.5−13 is a theoretical view of the runway and the warning boxes that the software uses to determine the location(s) of wind shear or microbursts. These warnings are displayed (as depicted in the examples in subparagraph e) on the ribbon display terminal located in the tower cabs.

b) It is very important to understand what TDWR DOES NOT DO:

1) It **DOES NOT** warn of wind shear outside of the alert boxes (on the arrival and departure ends of the runways).

2) It **DOES NOT** detect wind shear that is NOT a microburst or a gust front.

3) It **DOES NOT** detect gusty or cross wind conditions.

4) It **DOES NOT** detect turbulence.

However, research and development is continuing on these systems. Future improvements may include such areas as storm motion (movement), improved gust front detection, storm growth and decay, microburst prediction, and turbulence detection.

c) TDWR also provides a geographical situation display (GSD) for supervisors and traffic management specialists for planning purposes. The GSD displays (in color) 6 levels of weather (precipitation), gust fronts and predicted storm movement(s). This data is used by the tower supervisor(s), traffic management specialists, and controllers to plan for runway changes and arrival/departure route changes in order to reduce aircraft delays and increase airport capacity.

25.6.1.6 Weather Systems Processor (WSP)

a) The WSP provides the controller, supervisor, traffic management specialist, and ultimately the pilot, with the same products as the terminal doppler weather radar at a fraction of the cost. This is accomplished by utilizing new technologies to access the weather channel capabilities of the existing ASR−9 radar located on or near the airport, thus eliminating the requirements for a separate radar location, land acquisition, support facilities, and the associated communication landlines and expenses.

b) The WSP utilizes the same RBDT display as the TDWR and LLWAS, and, like the TDWR, has a GSD for planning purposes by supervisors, traffic management specialists, and controllers. The WSP GSD emulates the TDWR display; i.e., it also depicts 6 levels of precipitation, gust fronts and predicted storm movement, and like the TDWR, GSD is used to plan for runway changes and arrival/departure route changes in order to reduce aircraft delays and to increase airport capacity.

c) This system is currently under development and is operating in a developmental test status at the Albuquerque, New Mexico, airport. When fielded, the WSP is expected to be installed at 34 airports across the nation, substantially increasing the safety of flying.

25.6.1.7 Operational Aspects of LLWAS, TDWR, and WSP

To demonstrate how this data is used by both the controller and the pilot, 3 ribbon display examples and their explanations are presented:

a) MICROBURST ALERTS

EXAMPLE−
This is what the controller sees on his/her ribbon display in the tower cab.

27A MBA 35K− 2MF 250 20

NOTE−
(See FIG GEN 3.5−14 to see how the TDWR/WSP determines the microburst location).

This is what the controller will say when issuing the alert.

PHRASEOLOGY−
RUNWAY 27 ARRIVAL, MICROBURST ALERT, 35 KT LOSS 2 MILE FINAL, THRESHOLD WINDS 250 AT 20.

In plain language, the controller is telling the pilot that on approach to runway 27, there is a microburst alert on the approach lane to the runway, and to anticipate or expect a 35−knot loss of airspeed at approximately 2 miles out on final approach (where the aircraft will first encounter the phenomena). With that information, the aircrew is forewarned, and should be prepared to apply wind shear/microburst escape procedures should they decide to continue the approach. Additionally, the surface winds at the airport for landing runway 27 are reported as 250 degrees at 20 knots.

NOTE−
Threshold wind is at pilot's request or as deemed appropriate by the controller.

b) WIND SHEAR ALERTS

EXAMPLE−
This is what the controller sees on his/her ribbon display in the tower cab.

27A WSA 20K− 3MF 200 15

NOTE−
(See FIG GEN 3.5−15 to see how the TDWR/WSP determines the wind shear location).

This is what the controller will say when issuing the alert.

PHRASEOLOGY−
RUNWAY 27 ARRIVAL, WIND SHEAR ALERT, 20 KT LOSS 3 MILE FINAL, THRESHOLD WINDS 200 AT 15.

In plain language, the controller is advising the aircraft arriving on runway 27 that at 3 miles out the pilot should expect to encounter a wind shear condition that will decrease airspeed by 20 knots and possibly the aircraft will encounter turbulence. Additionally, the airport surface winds for landing runway 27 are reported as 200 degrees at 15 knots.

NOTE−
Threshold wind is at pilot's request or as deemed appropriate by the controller.

FIG GEN 3.5−14

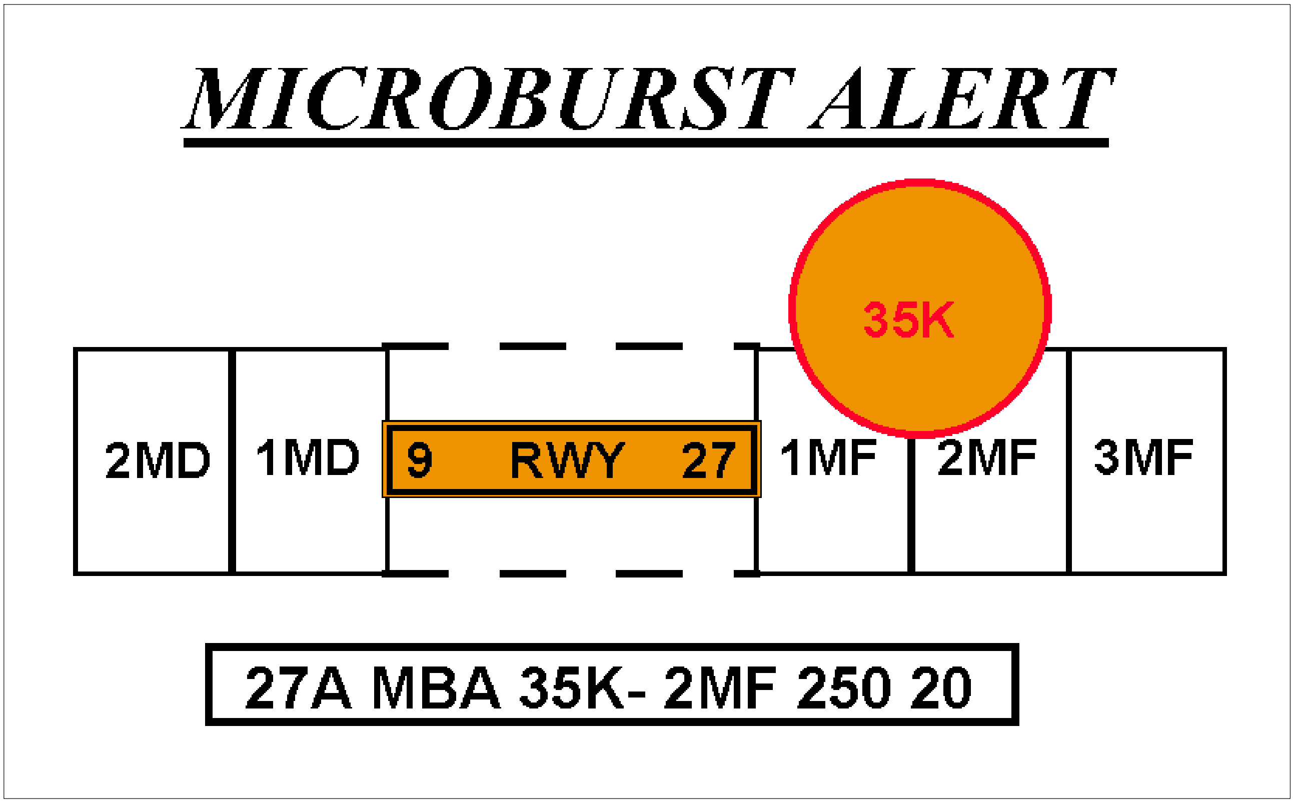

MICROBURST ALERT
35K
2MD
1MD
9 RWY 27
1MF
2MF
3MF
27A MBA 35K- 2MF 250 20

FIG GEN 3.5−15

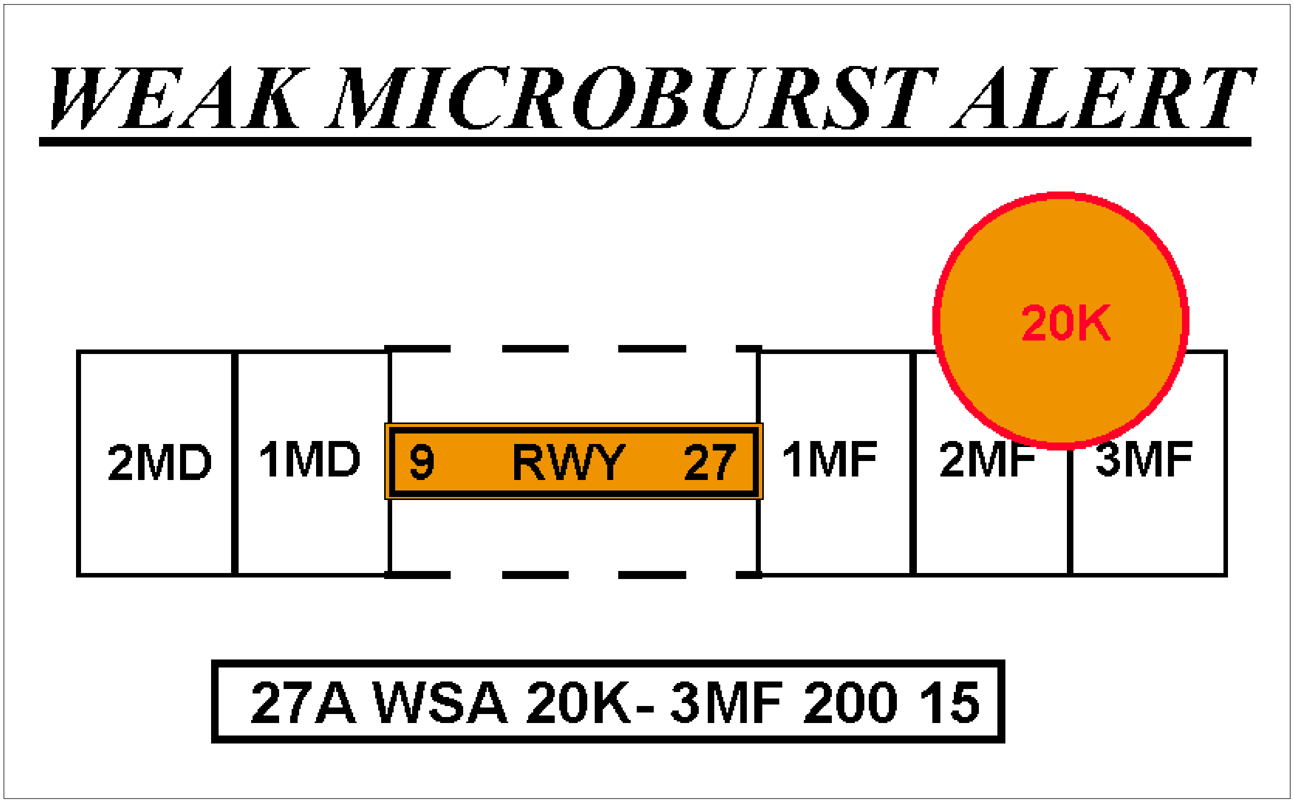
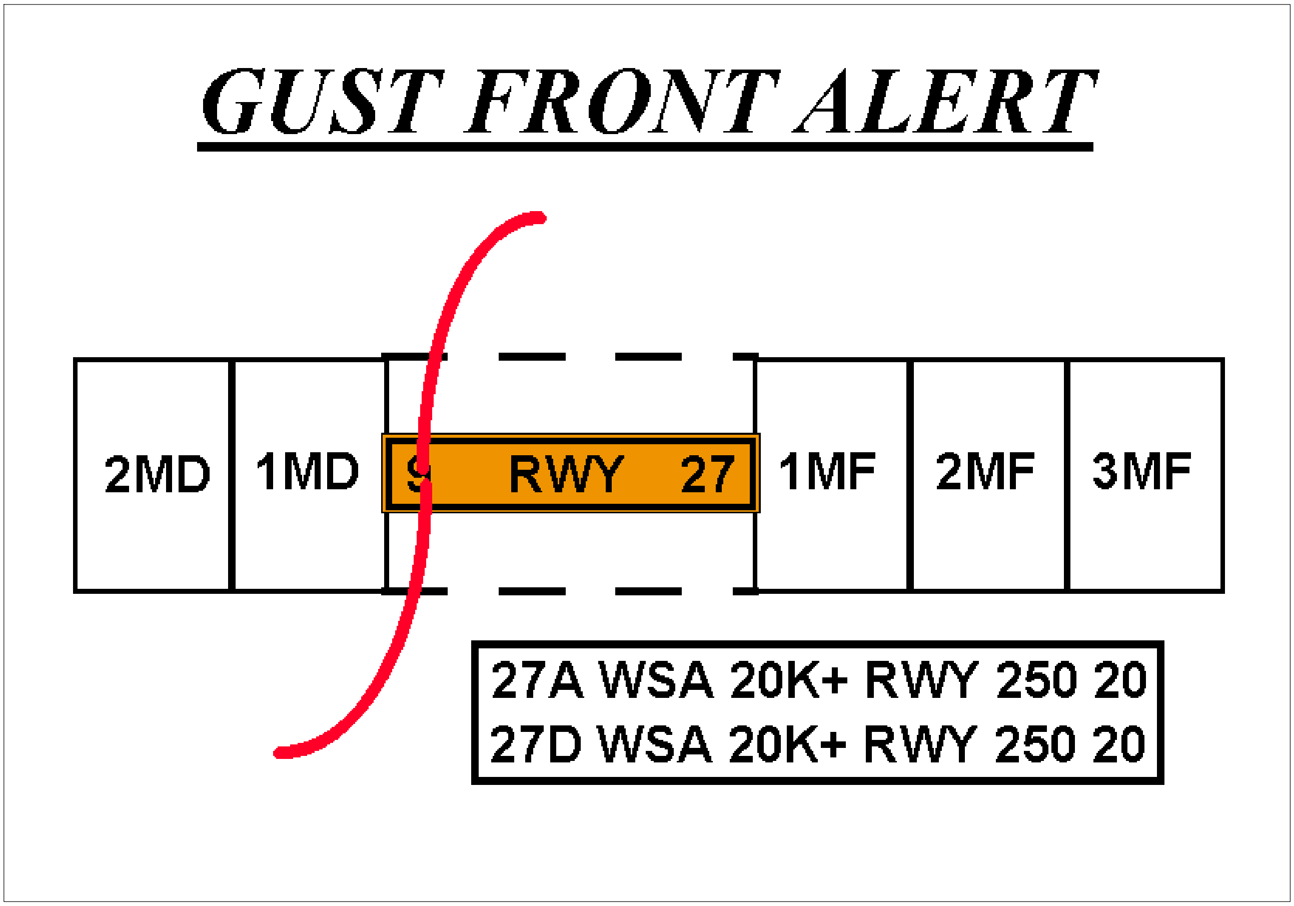

WEAK MICROBURST ALERT
20K
2MD
1MD
9 RWY 27
1MF
2MF
3MF
27A WSA 20K- 3MF 200 15

FIG GEN 3.5−16



c) MULTIPLE WIND SHEAR ALERTS

EXAMPLE−
This is what the controller sees on his/her ribbon display in the tower cab.

27A WSA 20K+ RWY 250 20
27D WSA 20K+ RWY 250 20

NOTE−
(See FIG GEN 3.5−16 to see how the TDWR/WSP determines the gust front/wind shear location).

This is what the controller will say when issuing the alert.

PHRASEOLOGY−
MULTIPLE WIND SHEAR ALERTS.
RUNWAY 27 ARRIVAL, WIND SHEAR ALERT, 20 KT GAIN ON RUNWAY;
RUNWAY 27 DEPARTURE, WIND SHEAR ALERT, 20 KT GAIN ON RUNWAY, WINDS 250 AT 20.

EXAMPLE−
In this example, the controller is advising arriving and departing aircraft that they could encounter a wind shear condition right on the runway due to a gust front (significant change of wind direction) with the possibility of a 20 knot gain in airspeed associated with the gust front. Additionally, the airport surface winds (for the runway in use) are reported as 250 degrees at 20 knots.

25.6.1.8 The Terminal Weather Information for Pilots System (TWIP)

a) With the increase in the quantity and quality of terminal weather information available through TDWR, the next step is to provide this information directly to pilots rather than relying on voice communications from ATC. The National Airspace System has long been in need of a means of delivering terminal weather information to the cockpit more efficiently in terms of both speed and accuracy to enhance pilot awareness of weather hazards and to reduce air traffic controller workload. With the TWIP capability, terminal weather information, both alphanumerically and graphically, is now available directly to the cockpit on a test basis at 9 locations.

b) TWIP products are generated using weather data from the TDWR or the Integrated Terminal Weather System (ITWS) testbed. TWIP products are generated and stored in the form of text and character graphic messages. Software has been developed to allow TDWR or ITWS to format the data and send the TWIP products to a database resident at Aeronautical Radio, Inc. (ARINC). These products can then be accessed by pilots using the ARINC Aircraft Communications Addressing and Reporting System (ACARS) data link services. Airline dispatchers can also access this database and send messages to specific aircraft whenever wind shear activity begins or ends at an airport.

c) TWIP products include descriptions and character graphics of microburst alerts, wind shear alerts, significant precipitation, convective activity within 30 NM surrounding the terminal area, and expected weather that will impact airport operations. During inclement weather; i.e., whenever a predetermined level of precipitation or wind shear is detected within 15 miles of the terminal area, TWIP products are updated once each minute for text messages and once every 5 minutes for character graphic messages. During good weather (below the predetermined precipitation or wind shear parameters) each message is updated every 10 minutes. These products are intended to improve the situational awareness of the pilot/flight crew, and to aid in flight planning prior to arriving or departing the terminal area. It is important to understand that, in the context of TWIP, the predetermined levels for inclement versus good weather has nothing to do with the criteria for VFR/MVFR/IFR/LIFR; it only deals with precipitation, wind shears, and microbursts.

26. PIREPs Relating to Volcanic Ash Activity

26.1 Volcanic eruptions which send ash into the upper atmosphere occur somewhere around the world several times each year. Flying into a volcanic ash cloud can be exceedingly dangerous. At least two B747s have lost all power in all four engines after such an encounter. Regardless of the type aircraft, some damage is almost certain to ensue after an encounter with a volcanic ash cloud.

26.2 While some volcanoes in the U.S. are monitored, many in remote areas are not. These unmonitored volcanoes may erupt without prior warning to the aviation community. A pilot observing a volcanic eruption who has not had previous notification of it may be the only witness to the eruption. Pilots are strongly encouraged to transmit a PIREP regarding volcanic eruptions and any observed volcanic ash clouds.

26.3 Pilots should submit PIREPs regarding volcanic activity using the Volcanic Activity Reporting form (VAR) as illustrated in FIG GEN 3.5−31. (If a VAR form is not immediately available, relay enough information to identify the position and type of volcanic activity.)

26.4 Pilots should verbally transmit the data required in items 1 through 8 of the VAR as soon as possible. The data required in items 9 through 16 of the VAR should be relayed after landing, if possible.

27. Thunderstorms

27.1 Turbulence, hail, rain, snow, lightning, sustained updrafts and downdrafts, and icing conditions are all present in thunderstorms. While there is some evidence that maximum turbulence exists at the middle level of a thunderstorm, recent studies show little variation of turbulence intensity with altitude.

27.2 There is no useful correlation between the external visual appearance of thunderstorms and the severity or amount of turbulence or hail within them. Also, the visible thunderstorm cloud is only a portion of a turbulent system whose updrafts and downdrafts often extend far beyond the visible storm cloud. Severe turbulence can be expected up to 20 miles from severe thunderstorms. This distance decreases to about 10 miles in less severe storms. These turbulent areas may appear as a well−defined echo on weather radar.

27.3 Weather radar, airborne or ground−based, will normally reflect the areas of moderate to heavy precipitation. (Radar does not detect turbulence.) The frequency and severity of turbulence generally increases with the areas of highest liquid water content of the storm. NO FLIGHT PATH THROUGH AN AREA OF STRONG OR VERY STRONG RADAR ECHOES SEPARATED BY 20−30 MILES OR LESS MAY BE CONSIDERED FREE OF SEVERE TURBULENCE.

27.4 Turbulence beneath a thunderstorm should not be minimized. This is especially true when the relative humidity is low in any layer between the surface and 15,000 feet. Then the lower altitudes may be characterized by strong out−flowing winds and severe turbulence.

27.5 The probability of lightning strikes occurring to aircraft is greatest when operating at altitudes where temperatures are between −5 C and +5 C. Lightning can strike aircraft flying in the clear in the vicinity of a thunderstorm.

27.6 Current weather radar systems are able to objectively determine precipitation intensity. These precipitation intensity areas are described as “light,” “moderate,” “heavy,” and “extreme.”

REFERENCE−
Pilot/Controller Glossary Term− Precipitation Radar Weather Descriptions.

EXAMPLE−
Alert provided by an ATC facility to an aircraft:
(aircraft identification) EXTREME precipitation between ten o'clock and two o'clock, one five miles. Precipitation area is two five miles in diameter.

EXAMPLE−
Alert provided by an FSS:
(aircraft identification) EXTREME precipitation two zero miles west of Atlanta V−O−R, two five miles wide, moving east at two zero knots, tops flight level three niner zero.

28. Thunderstorm Flying

28.1 Above all, remember this: never regard any thunderstorm lightly, even when radar observers report the echoes are of light intensity. Avoiding thunderstorms is the best policy. Following are some Do's and Don'ts of thunderstorm avoidance:

28.1.1 Don't land or takeoff in the face of an approaching thunderstorm. A sudden gust front of low−level turbulence could cause loss of control.

28.1.2 Don't attempt to fly under a thunderstorm even if you can see through to the other side. Turbulence and wind shear under the storm could be disastrous.

28.1.3 Don't fly without airborne radar into a cloud mass containing scattered embedded thunderstorms. Scattered thunderstorms not embedded usually can be visually circumnavigated.

28.1.4 Don't trust the visual appearance to be a reliable indicator of the turbulence inside a thunderstorm.

28.1.5 Do avoid by at least 20 miles any thunderstorm identified as severe or giving an intense radar echo. This is especially true under the anvil of a large cumulonimbus.

28.1.6 Do clear the top of a known or suspected severe thunderstorm by at least 1,000 feet altitude for each 10 knots of wind speed at the cloud top. However, the altitude capability of most aircraft make it unlikely that the aircraft will be able to clear the storm top.

28.1.7 Do circumnavigate the entire area if the area has 6/10 thunderstorm coverage.

28.1.8 Do remember that vivid and frequent lightning indicates the probability of a severe thunderstorm.

28.1.9 Do regard as extremely hazardous any thunderstorm that tops 35,000 feet or higher whether the top is visually sighted or determined by radar.

28.2 If you cannot avoid penetrating a thunderstorm, before entering the storm, you should do the following:

28.2.1 Tighten your safety belt, put on your shoulder harness if you have one, and secure all loose objects.

28.2.2 Plan and hold your course to take you through the storm in a minimum time.

28.2.3 To avoid the most critical icing, establish a penetration altitude below the freezing level or above the level of −15 C.

28.2.4 Verify that pitot heat is on and turn on carburetor heat or jet engine anti−ice. Icing can be rapid at any altitude and cause almost instantaneous power failure and/or loss of airspeed indication.

28.2.5 Establish power settings for turbulence penetration airspeed recommended in your aircraft manual.

28.2.6 Turn up cockpit lights to highest intensity to lessen danger of temporary blindness from lightning.

28.2.7 If using automatic pilot, disengage altitude hold mode and speed hold mode. The automatic altitude and speed controls will increase maneuvers of the aircraft thus increasing structural stresses.

28.2.8 If using airborne radar, tilt the antenna up and down occasionally. This will permit you to detect other thunderstorm activity at altitudes other than the one being flown.

28.3 Following are some Do's and Don'ts during the thunderstorm penetration:

28.3.1 Do keep your eyes on your instruments. Looking outside the cockpit can increase danger of temporary blindness from lightning.

28.3.2 Don't change power settings; maintain settings for the recommended turbulence penetration airspeed.

28.3.3 Don't attempt to maintain constant altitude; let the aircraft "ride the waves."

28.3.4 Don't turn back once you are in the thunderstorm. A straight course through the storm most likely will get you out of the hazards more quickly. In addition, turning maneuvers increase stress on the aircraft.

29. Wake Turbulence

29.1 General

29.1.1 Every aircraft generates a wake while in flight. Initially, when pilots encountered this wake in flight, the disturbance was attributed to "prop wash." It is known, however, that this disturbance is caused by a pair of counterrotating vortices trailing from the wing tips. The vortices from larger aircraft pose problems to encountering aircraft. For instance, the wake of these aircraft can impose rolling moments exceeding the roll control authority of the encountering aircraft. Further, turbulence generated within the vortices can damage aircraft components and equipment if encountered at close range. The pilot must learn to envision the location of the vortex wake generated by larger (transport category) aircraft and adjust the flight path accordingly.

29.1.2 During ground operations and during takeoff, jet engine blast (thrust stream turbulence) can cause damage and upsets if encountered at close range. Exhaust velocity versus distance studies at various thrust levels have shown a need for light aircraft to maintain an adequate separation behind large turbojet aircraft. Pilots of larger aircraft should be particularly careful to consider the effects of their "jet blast" on other aircraft, vehicles, and maintenance equipment during ground operations.

29.2 Vortex Generation

29.2.1 Lift is generated by the creation of a pressure differential over the wing surface. The lowest pressure occurs over the upper wing surface and the highest pressure under the wing. This pressure differential triggers the roll up of the airflow aft of the wing resulting in swirling air masses trailing downstream of the wing tips. After the roll up is completed, the wake consists of two counter rotating cylindrical vortices. Most of the energy is within a few feet of the center of each vortex, but pilots should avoid a region within about 100 feet of the vortex core. (See FIG GEN 3.5−17.)

29.3 Vortex Strength

29.3.1 The strength of the vortex is governed by the weight, speed, and shape of the wing of the generating aircraft. The vortex characteristics of any given aircraft can also be changed by extension of flaps or other wing configuring devices as well as by change in speed. However, as the basic factor is weight, the vortex strength increases proportionately. Peak vortex tangential speeds up to almost 300 feet per second have been recorded. The greatest vortex strength occurs when the generating aircraft is HEAVY, CLEAN, and SLOW.

29.3.2 Induced Roll

29.3.2.1 In rare instances, a wake encounter could cause inflight structural damage of catastrophic proportions. However, the usual hazard is associated with induced rolling moments which can exceed the roll control authority of the encountering aircraft. In flight experiments, aircraft have been intentionally flown directly up trailing vortex cores of larger aircraft. It was shown that the capability of an aircraft to counteract the roll imposed by the wake vortex primarily depends on the wing span and counter−control responsiveness of the encountering aircraft.

29.3.2.2 Counter−control is usually effective and induced roll minimal in cases where the wing span and ailerons of the encountering aircraft extend beyond the rotational flow field of the vortex. It is more difficult for aircraft with short wing span (relative to the generating aircraft) to counter the imposed roll induced by vortex flow. Pilots of short−span aircraft, even of the high−performance type, must be especially alert to vortex encounters. (See FIG GEN 3.5−18.)

29.3.2.3 The wake of larger aircraft requires the respect of all pilots.

29.4 Vortex Behavior

29.4.1 Trailing vortices have certain behavioral characteristics which can help a pilot visualize the wake location and thereby take avoidance precautions.

29.4.1.1 Vortices are generated from the moment aircraft leave the ground, since trailing vortices are a by−product of wing lift. Prior to takeoff or touchdown pilots should note the rotation or touchdown point of the preceding aircraft. (See FIG GEN 3.5−19.)

29.4.1.2 The vortex circulation is outward, upward and around the wing tips when viewed from either ahead or behind the aircraft. Tests with large aircraft have shown that the vortices remain spaced a bit less than a wing span apart, drifting with the wind, at altitudes greater than a wing span from the ground. In view of this, if persistent vortex turbulence is encountered, a slight change of altitude and lateral position (preferably upwind) will provide a flight path clear of the turbulence.

29.4.1.3 Flight tests have shown that the vortices from larger (transport category) aircraft sink at a rate of several hundred feet per minute, slowing their descent and diminishing in strength with time and distance behind the generating aircraft. Atmospheric turbulence hastens breakup. Pilots should fly at or above the preceding aircraft's flight path, altering course as necessary to avoid the area behind and below the generating aircraft. However, vertical separation of 1,000 feet may be considered safe. (See FIG GEN 3.5−20.)

FIG GEN 3.5−17
Wake Vortex Generation

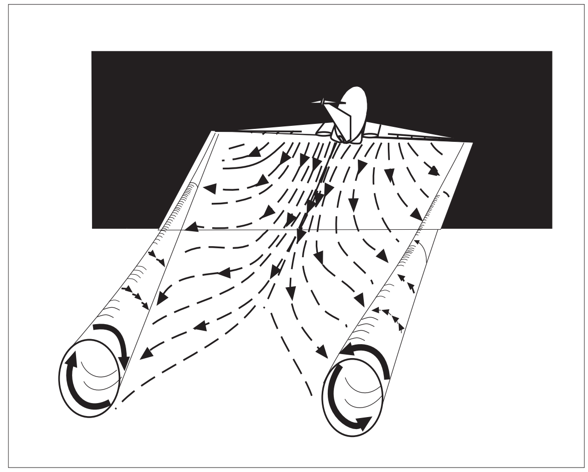


FIG GEN 3.5−18
Wake Encounter Counter Control

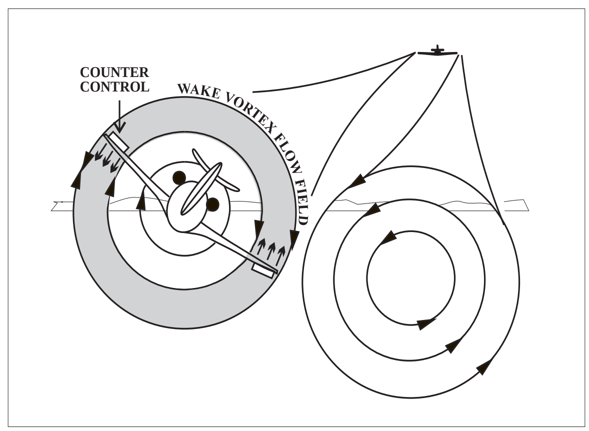


FIG GEN 3.5−19
Wake Ends/Wake Begins

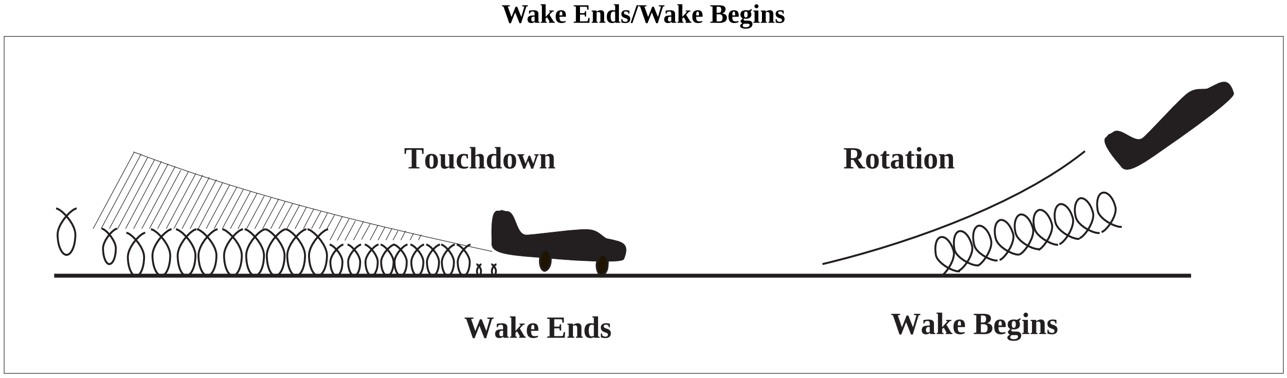


FIG GEN 3.5−20
Vortex Flow Field

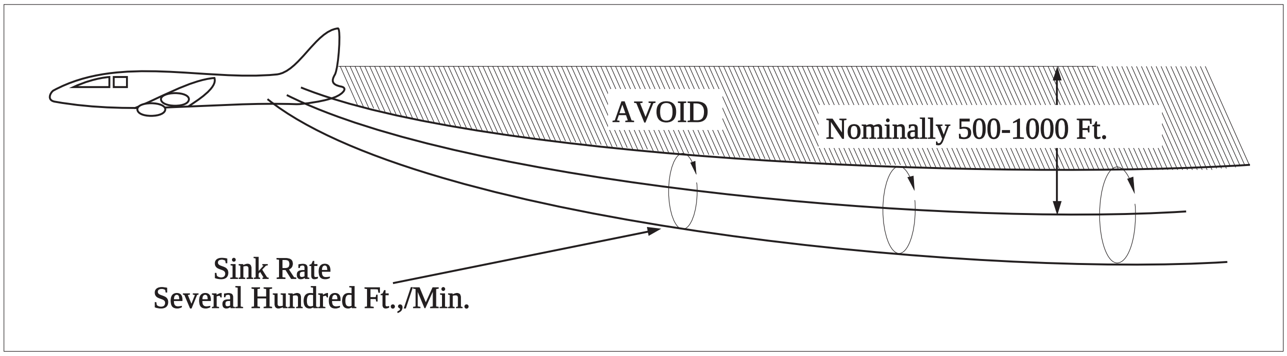
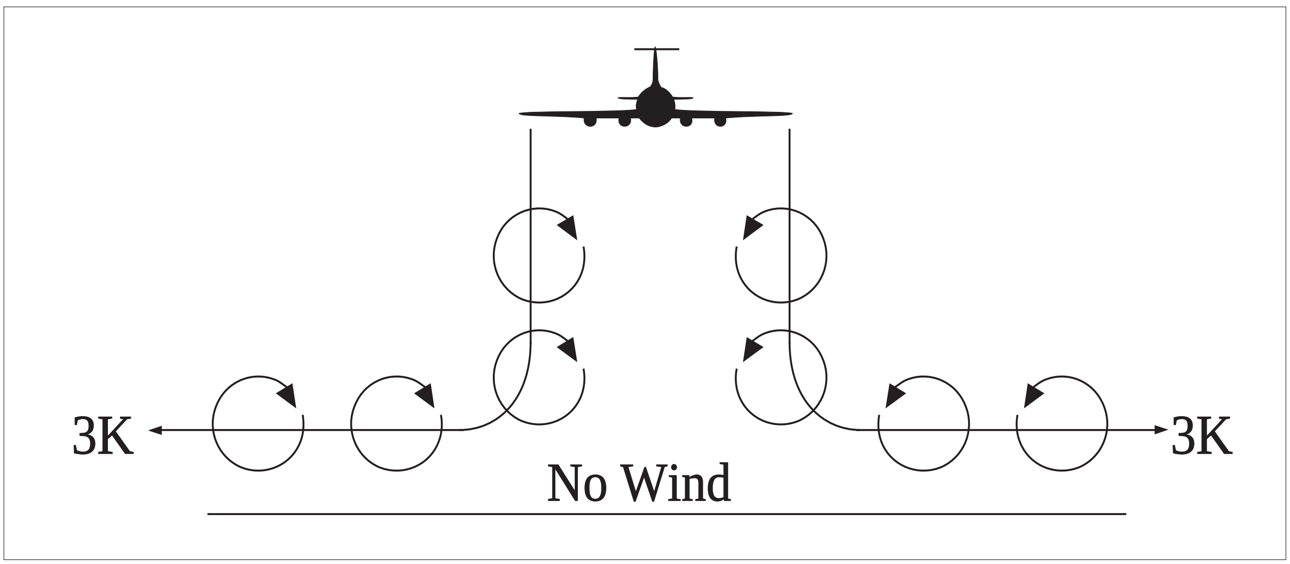


FIG GEN 3.5−21
Vortex Movement Near Ground − No Wind



29.4.1.4 When the vortices of larger aircraft sink close to the ground (within 100 to 200 feet), they tend to move laterally over the ground at a speed of 2 or 3 knots. (See FIG GEN 3.5−21.)

29.4.1.5 There is a small segment of the aviation community that have become convinced that wake vortices may "bounce" up to twice their nominal steady state height. With a 200−foot span aircraft, the "bounce" height could reach approximately 200 feet AGL. This conviction is based on a single unsubstantiated report of an apparent coherent vortical flow that was seen in the volume scan of a research sensor. No one can say what conditions cause vortex bouncing, how high they bounce, at what angle they bounce, or how many times a vortex may bounce. On the other hand, no one can say for certain that vortices never "bounce." Test data have shown that vortices can rise with the air mass in which they are embedded. Wind shear, particularly, can cause vortex flow field "tilting." Also, ambient thermal lifting and orographic effects (rising terrain or tree lines) can cause a vortex flow field to rise. Notwithstanding the foregoing, pilots are reminded that they should be alert at all times for possible wake vortex encounters when conducting approach and landing operations. The pilot has the ultimate responsibility for ensuring appropriate separations and positioning of the aircraft in the terminal area to avoid the wake turbulence created by a preceding aircraft.

FIG GEN 3.5−22
Vortex Movement Near Ground − with Cross Winds

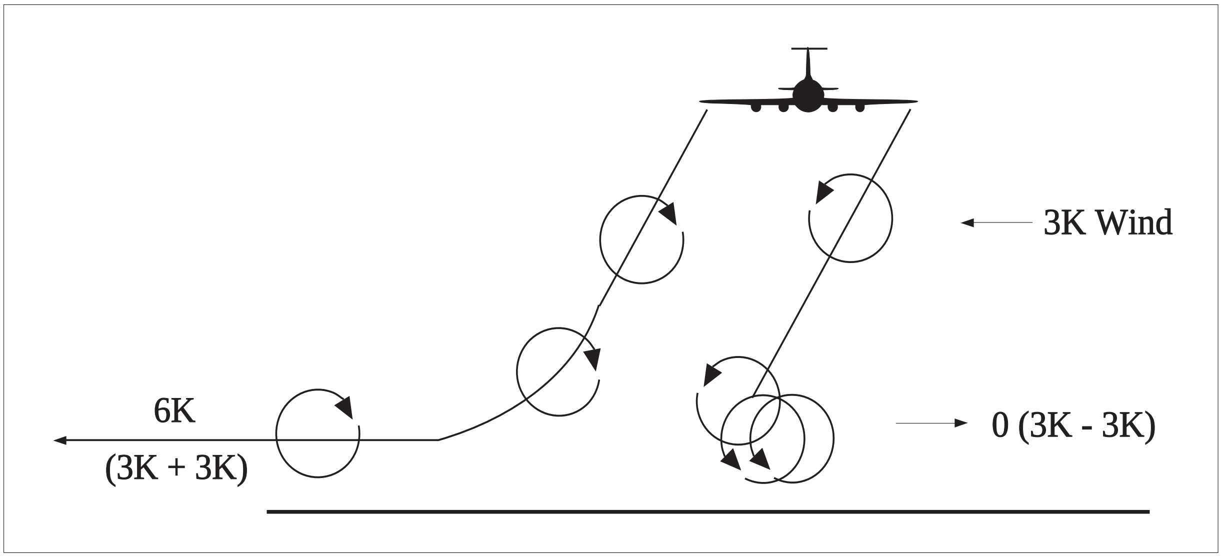
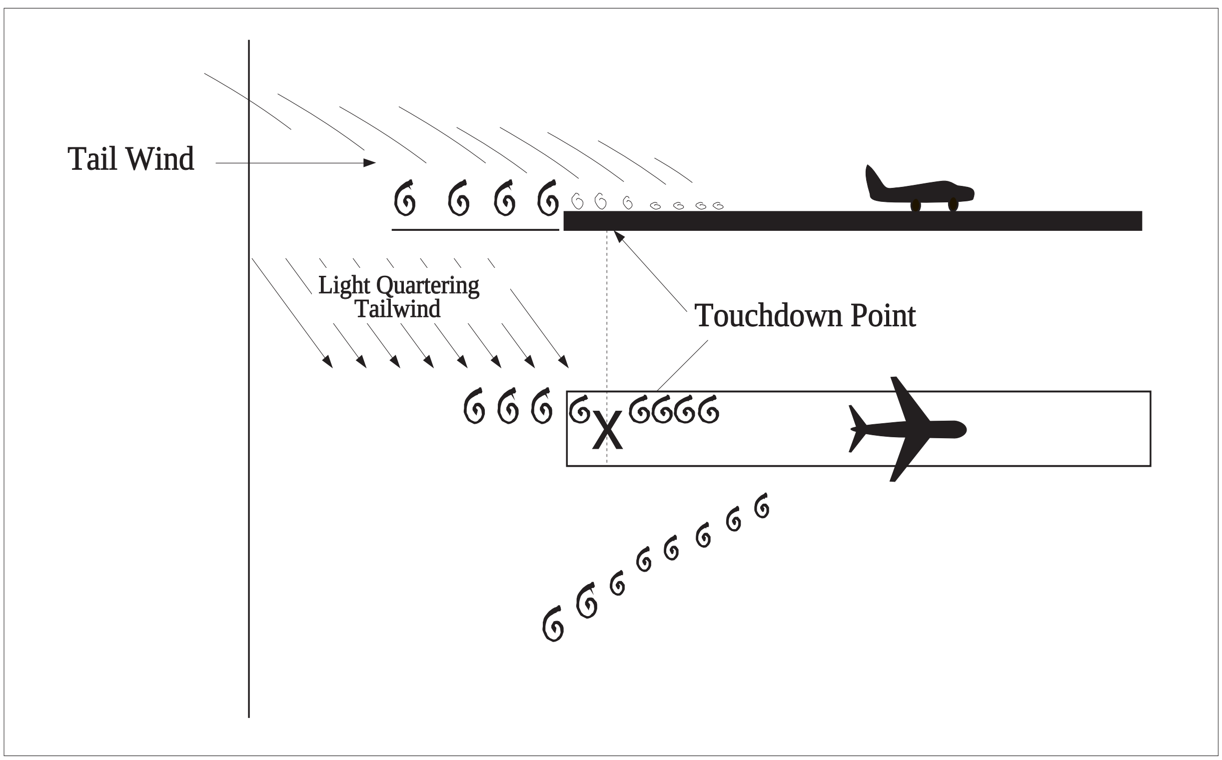


FIG GEN 3.5−23
Vortex Movement in Ground Effect − Tailwind



29.4.2 A crosswind will decrease the lateral movement of the upwind vortex and increase the movement of the downwind vortex. Thus a light wind with a cross−runway component of 1 to 5 knots could result in the upwind vortex remaining in the touchdown zone for a period of time and hasten the drift of the downwind vortex toward another runway. (See FIG GEN 3.5−22.) Similarly, a tailwind condition can move the vortices of the preceding aircraft forward into the touchdown zone. THE LIGHT QUARTERING TAILWIND REQUIRES MAXIMUM CAUTION. Pilots should be alert to larger aircraft upwind from their approach and takeoff flight paths. (See FIG GEN 3.5−23.)

29.5 Operations Problem Areas

29.5.1 A wake encounter can be catastrophic. In 1972 at Fort Worth, Texas, a DC−9 got too close to a DC−10 (two miles back), rolled, caught a wingtip, and cartwheeled coming to rest in an inverted position on the runway. All aboard were killed. Serious and even fatal general aviation accidents induced by wake vortices are not uncommon. However, a wake encounter is not necessarily hazardous. It can be one or more jolts with varying severity depending upon the direction of the encounter, weight of the generating aircraft, size of the encountering aircraft, distance from the generating aircraft, and point of vortex encounter. The probability of induced roll increases when the encountering aircraft's heading is generally aligned with the flight path of the generating aircraft.

29.5.2 AVOID THE AREA BELOW AND BEHIND THE GENERATING AIRCRAFT, ESPECIALLY AT LOW ALTITUDE WHERE EVEN A MOMENTARY WAKE ENCOUNTER COULD BE HAZARDOUS. This is not easy to do. Some accidents have occurred even though the pilot of the trailing aircraft had carefully noted that the aircraft in front was at a considerably lower altitude. Unfortunately, this does not ensure that the flight path of the lead aircraft will be below that of the trailing aircraft.

29.5.3 Pilots should be particularly alert in calm wind conditions and situations where the vortices could:

29.5.3.1 Remain in the touchdown area.

29.5.3.2 Drift from aircraft operating on a nearby runway.

29.5.3.3 Sink into the takeoff or landing path from a crossing runway.

29.5.3.4 Sink into the traffic pattern from other airport operations.

29.5.3.5 Sink into the flight path of VFR aircraft operating on the hemispheric altitude 500 feet below.

29.5.4 Pilots of all aircraft should visualize the location of the vortex trail behind larger aircraft and use proper vortex avoidance procedures to achieve safe operation. It is equally important that pilots of larger aircraft plan or adjust their flight paths to minimize vortex exposure to other aircraft.

29.6 Vortex Avoidance Procedures

29.6.1 Under certain conditions, airport traffic controllers apply procedures for separating IFR aircraft. If a pilot accepts a clearance to visually follow a preceding aircraft, the pilot accepts responsibility for separation and wake turbulence avoidance. The controllers will also provide to VFR aircraft, with whom they are in communication and which in the tower's opinion may be adversely affected by wake turbulence from a larger aircraft, the position, altitude and direction of flight of larger aircraft followed by the phrase "CAUTION − WAKE TURBULENCE." After issuing the caution for wake turbulence, the airport traffic controllers generally do not provide additional information to the following aircraft unless the airport traffic controllers know the following aircraft is overtaking the preceding aircraft. WHETHER OR NOT A WARNING OR INFORMATION HAS BEEN GIVEN, HOWEVER, THE PILOT IS EXPECTED TO ADJUST AIRCRAFT OPERATIONS AND FLIGHT PATH AS NECESSARY TO PRECLUDE SERIOUS WAKE ENCOUNTERS. When any doubt exists about maintaining safe separation distances between aircraft during approaches, pilots should ask the control tower for updates on separation distance and aircraft groundspeed.

29.6.2 The following vortex avoidance procedures are recommended for the various situations:

29.6.2.1 Landing Behind a Larger Aircraft − Same Runway. Stay at or above the larger aircraft's final approach flight path − note its touchdown point − land beyond it.

29.6.2.2 Landing Behind a Larger Aircraft − When a Parallel Runway is Closer Than 2,500 Feet. Consider possible drift to your runway. Stay at or above the larger aircraft's final approach flight path − note its touchdown point.

29.6.2.3 Landing Behind a Larger Aircraft − Crossing Runway. Cross above the larger aircraft's flight path.

29.6.2.4 Landing Behind a Departing Larger Aircraft − Same Runway. Note the larger aircraft's rotation point − land well prior to rotation point.

29.6.2.5 Landing Behind a Departing Larger Aircraft − Crossing Runway. Note the larger aircraft's rotation point − if past the intersection − continue the approach − land prior to the intersection. If larger aircraft rotates prior to the intersection, avoid flight below the larger aircraft's flight path. Abandon the approach unless a landing is ensured well before reaching the intersection.

29.6.2.6 Departing Behind a Larger Aircraft. Note the larger aircraft's rotation point − rotate prior to larger aircraft's rotation point − continue climb above the larger aircraft's climb path until turning clear of the larger aircraft's wake. Avoid subsequent headings which will cross below and behind a larger aircraft. Be alert for any critical takeoff situation which could lead to a vortex encounter.

29.6.2.7 Intersection Takeoffs − Same Runway. Be alert to adjacent larger aircraft operations, particularly upwind of your runway. If intersection takeoff clearance is received, avoid subsequent headings which will cross below a larger aircraft's path.

29.6.2.8 Departing or Landing After a Larger Aircraft Executing a Low Approach, Missed Approach, Or Touch−and−go Landing. Because vortices settle and move laterally near the ground, the vortex hazard may exist along the runway and in your flight path after a larger aircraft has executed a low approach, missed approach, or a touch−and−go landing, particular in light quartering wind conditions. You should ensure that an interval of at least 2 minutes has elapsed before your takeoff or landing.

29.6.2.9 En Route VFR (Thousand−foot Altitude Plus 500 Feet). Avoid flight below and behind a large aircraft's path. If a larger aircraft is observed above on the same track (meeting or overtaking) adjust your position laterally, preferably upwind.

29.7 Helicopters

29.7.1 In a slow hover−taxi or stationary hover near the surface, helicopter main rotor(s) generate downwash producing high velocity outwash vortices to a distance approximately three times the diameter of the rotor. When rotor downwash hits the surface, the resulting outwash vortices have behavioral characteristics similar to wing tip vortices produced by fixed−wing aircraft. However, the vortex circulation is outward, upward, around, and away from the main rotor(s) in all directions. Pilots of small aircraft should avoid operating within three rotor diameters of any helicopter in a slow hover−taxi or stationary hover. In forward flight, departing or landing helicopters produce a pair of strong, high−speed trailing vortices similar to wing tip vortices of larger fixed−wing aircraft. Pilots of small aircraft should use caution when operating behind or crossing behind landing and departing helicopters.

29.8 Pilot Responsibility

29.8.1 Government and industry groups are making concerted efforts to minimize or eliminate the hazards of trailing vortices. However, the flight disciplines necessary to ensure vortex avoidance during VFR operations must be exercised by the pilot. Vortex visualization and avoidance procedures should be exercised by the pilot using the same degree for concern as in collision avoidance.

29.8.2 Wake turbulence may be encountered by aircraft in flight as well as when operating on the airport movement area.

29.8.3 Pilots are reminded that in operations conducted behind all aircraft, acceptance of instructions from ATC in the following situations is an acknowledgment that the pilot will ensure safe takeoff and landing intervals and accepts the responsibility of providing his/her own wake turbulence separation:

29.8.3.1 Traffic information.

29.8.3.2 Instructions to follow an aircraft.

29.8.3.3 The acceptance of a visual approach clearance.

29.8.4 For operations conducted behind heavy aircraft, ATC will specify the word "heavy" when this information is known. Pilots of heavy aircraft should always use the word "heavy" in radio communications.

29.8.5 Heavy and large jet aircraft operators should use the following procedures during an approach to landing. These procedures establish a dependable baseline from which pilots of in−trail, lighter aircraft may reasonably expect to make effective flight path adjustments to avoid serious wake vortex turbulence.

29.8.5.1 Pilots of aircraft that produce strong wake vortices should make every attempt to fly on the established glidepath, not above it; or, if glidepath guidance is not available, to fly as closely as possible to a "3−1" glidepath, not above it.

EXAMPLE−
Fly 3,000 feet at 10 miles from touchdown, 1,500 feet at 5 miles, 1,200 feet at 4 miles, and so on to touchdown.

29.8.5.2 Pilots of aircraft that produce strong wake vortices should fly as closely as possible to the approach course centerline or to the extended centerline of the runway of intended landing as appropriate to conditions.

29.8.6 Pilots operating lighter aircraft on visual approaches in−trail to aircraft producing strong wake vortices should use the following procedures to assist in avoiding wake turbulence. These procedures apply only to those aircraft that are on visual approaches.

29.8.6.1 Pilots of lighter aircraft should fly on or above the glidepath. Glidepath reference may be furnished by an ILS, by a visual approach slope system, by other ground−based approach slope guidance systems, or by other means. In the absence of visible glidepath guidance, pilots may very nearly duplicate a 3−degree glideslope by adhering to the "3 to 1" glidepath principle.

EXAMPLE−
Fly 3,000 feet at 10 miles from touchdown, 1,500 feet at 5 miles, 1,200 feet at 4 miles, and so on to touchdown.

29.8.6.2 If the pilot of the lighter following aircraft has visual contact with the preceding heavier aircraft and also with the runway, the pilot may further adjust for possible wake vortex turbulence by the following practices:

a) Pick a point of landing no less than 1,000 feet from the arrival end of the runway.

b) Establish a line−of−sight to that landing point that is above and in front of the heavier preceding aircraft.

c) When possible, note the point of landing of the heavier preceding aircraft and adjust point of intended landing as necessary.

EXAMPLE−
A puff of smoke may appear at the 1,000−foot markings of the runway, showing that touchdown was at that point; therefore, adjust point of intended landing to the 1,500−footmarkings.

d) Maintain the line−of−sight to the point of intended landing above and ahead of the heavier preceding aircraft; maintain it to touchdown.

e) Land beyond the point of landing of the preceding heavier aircraft.

29.8.7 During visual approaches pilots may ask ATC for updates on separation and groundspeed with respect to heavier preceding aircraft, especially when there is any question of safe separation from wake turbulence.

29.9 Air Traffic Wake Turbulence Separations

29.9.1 Because of the possible effects of wake turbulence, controllers are required to apply no less than specified minimum separation for aircraft operating behind a heavy jet and, in certain instances, behind large nonheavy aircraft; i.e., B757 aircraft.

29.9.1.1 Separation is applied to aircraft operating directly behind a heavy and/or B757 jet at the same altitude or less than 1,000 feet below:

a) Heavy jet behind heavy jet−4 miles.

b) Large/heavy behind B757 − 4 miles.

c) Small behind B757−5 miles.

d) Small/large aircraft behind heavy jet − 5 miles.

29.9.1.2 Also, separation, measured at the time the preceding aircraft is over the landing threshold, is provided to small aircraft:

a) Small aircraft landing behind heavy jet − 6 miles.

b) Small aircraft landing behind B757 − 5 miles.

c) Small aircraft landing behind large aircraft − 4 miles.

NOTE−
Aircraft classes are listed in the Pilot/Controller Glossary in the Aeronautical Information Manual.

29.9.1.3 Additionally, appropriate time or distance intervals are provided to departing aircraft. Two minutes or the appropriate 4 or 5 mile radar separation when takeoff behind a heavy/B757 jet will be:

a) From the same threshold.

b) On a crossing runway and projected flight paths will cross.

c) From the threshold of a parallel runway when staggered ahead of that of the adjacent runway by less than 500 feet and when the runways are separated by less than 2,500 feet.

NOTE−
Controllers may not reduce or waive these intervals.

29.9.2 A 3−minute interval will be provided for a small aircraft taking off:

29.9.2.1 From an intersection on the same runway (same or opposite direction) behind a departing large aircraft.

29.9.2.2 In the opposite direction on the same runway behind a large aircraft takeoff or low/missed approach.

NOTE−
This 3−minute interval may be waived upon specific pilot request.

29.9.3 A 3−minute interval will be provided for all aircraft taking off when the operations are as described in paragraph 29.9.2 above, the preceding aircraft is a heavy and/or a B757 jet, and the operations are on either the same runway or parallel runways separated by less than 2,500 feet. Controllers may not reduce or waive this interval.

29.9.4 Pilots may request additional separation; i.e., 2 minutes instead of 4 or 5 miles for wake turbulence avoidance. This request should be made as soon as practical on ground control and at least before taxiing onto the runway.

NOTE−
Federal Aviation Administration Regulations state: "The pilot in command of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft."

29.9.5 Controllers may anticipate separation and need not withhold a takeoff clearance for an aircraft departing behind a large/heavy aircraft if there is reasonable assurance the required separation will exist when the departing aircraft starts takeoff roll.

30. International Civil Aviation Organization (ICAO) Weather Formats

30.1 The U.S. uses the ICAO world standard for aviation weather reporting and forecasting. The utilization of terminal forecasts affirms U.S. commitment to a single global format for aviation weather. The World Meteorological Organization's (WMO) publication No. 782, "Aerodrome Reports and Forecasts," contains the base METAR and TAF code as adopted by the WMO member countries.

30.2 Although the METAR code is adopted worldwide, each country is allowed to make modifications or exceptions to the code for use in their particular country; e.g., the U.S. will continue to use statute miles for visibility, feet for RVR values, knots for wind speed, inches of mercury for altimetry, and will continue reporting prevailing visibility rather than lowest sector visibility. A METAR report contains the following sequence of elements in the following order:

30.2.1 Type of report.

30.2.2 ICAO station identifier.

30.2.3 Date and time of report.

30.2.4 Modifier (as required).

30.2.5 Wind.

30.2.6 Visibility.

30.2.7 Runway Visual Range (RVR).

30.2.8 Weather phenomena.

30.2.9 Sky conditions.

30.2.10 Temperature/Dew point group.

30.2.11 Altimeter.

30.2.12 Remarks (RMK).

30.3 The following paragraphs describe the elements in a METAR report.

30.3.1 Type of Report. There are two types of reports:

30.3.1.1 The METAR, an aviation routine weather report.

30.3.1.2 The SPECI, a nonroutine (special) aviation weather report.

The type of report (METAR or SPECI) will always appear as the lead element of the report.

30.3.2 ICAO Station Identifier. The METAR code uses ICAO 4−letter station identifiers. In the contiguous 48 states, the 3−letter domestic station identifier is prefixed with a "K"; i.e., the domestic identifier for Seattle is SEA while the ICAO identifier is KSEA. For Alaska, all station identifiers start with "PA"; for Hawaii, all station identifiers start with "PH." The identifier for the eastern Caribbean is "T" followed by the individual country's letter; i.e., Puerto Rico is "TJ." For a complete worldwide listing see ICAO Document 7910, "Location Indicators."

30.3.3 Date and Time of Report. The date and time the observation is taken are transmitted as a six−digit date/time group appended with Z to denote Coordinated Universal Time (UTC). The first two digits are the date followed with two digits for hour and two digits for minutes.

EXAMPLE−
172345Z (the 17th day of the month at 2345Z)

30.3.4 Modifier (As Required). "AUTO" identifies a METAR/SPECI report as an automated weather report with no human intervention. If "AUTO" is shown in the body of the report, the type of sensor equipment used at the station will be encoded in the remarks section of the report. The absence of "AUTO" indicates that a report was made manually by an observer or that an automated report had human augmentation/backup. The modifier "COR" indicates a corrected report that is sent out to replace an earlier report with an error.

NOTE−
There are two types of automated stations, AO1 for automated weather reporting stations without a precipitation discriminator, and AO2 for automated stations with a precipitation discriminator. (A precipitation discriminator can determine the difference between liquid and frozen/freezing precipitation). This information appears in the remarks section of an automated report.

30.3.5 Wind. The wind is reported as a five digit group (six digits if speed is over 99 knots). The first three digits are the direction from which the wind is blowing, in tens of degrees referenced to true north, or "VRB" if the direction is variable. The next two digits is the wind speed in knots, or if over 99 knots, the next three digits. If the wind is gusty, it is reported as a "G" after the speed followed by the highest gust reported. The abbreviation "KT" is appended to denote the use of knots for wind speed.

EXAMPLE−
13008KT − wind from 130 degrees at 8 knots

08032G45KT − wind from 080 degrees at 32 knots with gusts to 45 knots

VRB04KT − wind variable in direction at 4 knots

00000KT − wind calm

210103G130KT − wind from 210 degrees at 103 knots with gusts to 130 knots

If the wind direction is variable by 60 degrees or more and the speed is greater than 6 knots, a variable group consisting of the extremes of the wind direction separated by a "V" will follow the prevailing wind group.

32012G22KT 280V350

30.3.5.1 Peak Wind. Whenever the peak wind exceeds 25 knots, "PK WND" will be included in Remarks; e.g., PK WND 280045/1955 "Peak wind two eight zero at four five occurred at one niner five five." If the hour can be inferred from the report time, only the minutes will be appended; e.g., PK WND 34050/38 "Peak wind three four zero at five zero occurred at three eight past the hour."

30.3.5.2 Wind Shift. Whenever a wind shift occurs, "WSHFT" will be included in remarks followed by the time the wind shift began; e.g., WSHFT 30 FROPA "Wind shift at three zero due to frontal passage."

30.3.6 Visibility. Prevailing visibility is reported in statute miles with "SM" appended to it.

EXAMPLE−
7SM . . . . seven statute miles
15SM . . . . fifteen statute miles
$^1/_2$SM . . . . one−half statute mile

30.3.6.1 Tower/Surface Visibility. If either tower or surface visibility is below 4 statute miles, the lesser of the 2 will be reported in the body of the report; the greater will be reported in remarks.

30.3.6.2 Automated Visibility. ASOS/AWSS visibility stations will show visibility 10 or greater than 10 miles as "10SM." AWOS visibility stations will show visibility less than $^1/_4$ statute mile as "M$^1/_4$SM" and visibility 10 or greater than 10 miles as "10SM."

30.3.6.3 Variable Visibility. Variable visibility is shown in remarks when rapid increase or decrease by $^1/_2$ statute mile or more and the average prevailing visibility is less than 3 statute miles; e.g., VIS 1V2 means "visibility variable between 1 and 2 statute miles."

30.3.6.4 Sector Visibility. Sector visibility is shown in remarks when it differs from the prevailing visibility, and either the prevailing or sector visibility is less than 3 statute miles.

EXAMPLE−
VIS N2 . . . . visibility north two

30.3.7 Runway Visual Range (when reported). "R" identifies the group followed by the runway heading (and parallel runway designator, if needed) "/" and the visual range in feet (meters in other countries) followed with "FT." ("Feet" is not spoken.)

30.3.7.1 Variability Values. When RVR varies by more than on reportable value, the lowest and highest values are shown with "V" between them.

30.3.7.2 Maximum/Minimum Range. "P" indicates an observed RVR is above the maximum value for this system (spoken as "more than"). "M" indicates an observed RVR is below the minimum value which can be determined by the system (spoken as "less than").

EXAMPLE−
R32L/1200FT − Runway Three Two Left R−V−R one thousand two hundred

R27R/M1000V4000FT − Runway Two Seven Right R−V−R variable from less than one thousand to four thousand.

30.3.8 Weather Phenomena. In METAR, weather is reported in the format:

Intensity / Proximity / Descriptor / Precipitation / Obstruction to Visibility / Other

NOTE−
The "/" above and in the following descriptions (except as the separator between the temperature and dew point) are for separation purposes in this publication and do not appear in the actual METARs.

30.3.8.1 Intensity applies only to the first type of precipitation reported. A "−" denotes light, no symbol denotes moderate, and a "+" denotes heavy.

30.3.8.2 Proximity applies to and is reported only for weather occurring in the vicinity of the airport (between 5 and 10 miles of the point(s) of observation). It is denoted by the letters "VC." (Intensity and "VC" will not appear together in the weather group.)

30.3.8.3 Descriptor. These eight descriptors apply to the precipitation or obstructions to visibility:

TS	thunderstorm
DR	low drifting
SH	showers
MI	shallow
FZ	freezing
BC	patches
BL	blowing
PR	partial

NOTE−
Although "TS" and "SH" are used with precipitation and may be preceded with an intensity symbol, the intensity still applies to the precipitation not the descriptor.

30.3.8.4 Precipitation. There are nine types of precipitation in the METAR code:

RA	rain
DZ	drizzle
SN	snow
GR	hail ($^1/_4$″ or greater)
GS	small hail/snow pellets
PL	ice pellets
SG	snow grains
IC	ice crystals
UP	unknown precipitation (automated stations only)

EXAMPLE−

TSRA	thunderstorm with moderate rain
+SN	heavy snow
−RA FG	light rain and fog
BRHZ	mist and haze (visibility $^5/_8$ mile or greater)
FZDZ	freezing drizzle
VCSH	rain shower in the vicinity
+SHRASNPL	heavy rain showers, snow, ice pellets (Intensity indicator refers to the predominant rain.)

30.3.8.5 Obstructions to Visibility. Obscurations are any phenomena in the atmosphere, other than precipitation, that reduce horizontal visibility. There are eight types of obscuration phenomena in the METAR code:

FG	fog (visibility less than $^5/_8$ mile)
HZ	haze
FU	smoke
PY	spray
BR	mist (visibility $^5/_8$−6 miles)
SA	sand
DU	dust
VA	volcanic ash

NOTE−
Fog (FG) is observed or forecast only when the visibility is less than $^5/_8$ mile. Otherwise, mist (BR) is observed or forecast.

30.3.8.6 Other. There are five categories of other weather phenomena which are reported when they occur:

SQ	squall
SS	sandstorm
DS	duststorm
PO	dust/sand whirls
FC +FC	funnel cloud tornado/waterspout

30.3.9 Sky Condition. In METAR, sky condition is reported in the format:

Amount / Height / (Type) or Indefinite Ceiling / Height

30.3.9.1 Amount. The amount of sky cover is reported in eighths of sky cover, using contractions:

SKC	clear (no clouds)
FEW	>$^0/_8$ to $^2/_8$ cloud cover
SCT	scattered ($^3/_8$ to $^4/_8$ cloud cover)
BKN	broken ($^5/_8$ to $^7/_8$ cloud cover)
OVC	overcast ($^8/_8$ cloud cover)
CB	cumulonimbus when present
TCU	towering cumulus when present

NOTE−
1. *"SKC" will be reported at manual stations. "CLR" will be used at automated stations when no clouds below 12,000 feet are reported.*

2. A *ceiling layer is not designated in the METAR code. For aviation purposes, the ceiling is the lowest broken or overcast layer, or vertical visibility into obscuration. Also, there is no provision for reporting thin layers in the METAR code. When clouds are thin, that layer must be reported as if it were opaque.*

30.3.9.2 Height. Cloud bases are reported with three digits in hundreds of feet. (Clouds above 12,000 feet cannot be reported by an automated station.)

30.3.9.3 Type. If towering cumulus clouds (TCU) or cumulonimbus clouds (CB) are present, they are reported after the height which represents their base.

EXAMPLE−
SCT025TCU BKN080 BKN250 − "two thousand five hundred scattered towering cumulus, ceiling eight thousand broken, two five thousand broken."

SCT008 OVC012CB − "eight hundred scattered ceiling one thousand two hundred overcast cumulonimbus clouds."

30.3.9.4 Vertical Visibility (indefinite ceiling height). The height into an indefinite ceiling is preceded by "VV" and followed by three digits indicating the vertical visibility in hundreds of feet. This layer indicates total obscuration.

EXAMPLE−
$^1/_8$ SM FG VV006 − visibility one eighth, fog, indefinite ceiling six hundred.

30.3.9.5 Obscurations are reported when the sky is partially obscured by a ground−based phenomena by indicating the amount of obscuration as FEW, SCT, BKN followed by three zeros (000). In remarks, the obscuring phenomenon precedes the amount of obscuration and three zeros.

EXAMPLE−
BKN000 (IN BODY) − "sky partially obscured."

FU BKN000 (IN REMARKS) − "smoke obscuring five− to seven−eighthsof the sky."

30.3.9.6 When sky conditions include a layer aloft other than clouds, such as smoke or haze, the type of phenomena, sky cover, and height are shown in remarks.

EXAMPLE−
BKN020 (IN BODY) − "ceiling two thousand broken."
RMK FU BKN020 − "broken layer of smoke aloft, based at two thousand."

30.3.9.7 Variable Ceiling. When a ceiling is below three thousand and is variable, the remark "CIG" will be shown followed with the lowest and highest ceiling heights separated by a "V."

EXAMPLE−
CIG 005V010 − "ceiling variable between five hundred and one thousand."

30.3.9.8 Second Site Sensor. When an automated station uses meteorological discontinuity sensors, remarks will be shown to identify site specific sky conditions which differ and are lower than conditions reported in the body.

EXAMPLE−
CIG 020 RY11 − "ceiling two thousand at Runway One One."

30.3.9.9 Variable Cloud Layer. When a layer is varying in sky cover, remarks will show the variability range. If there is more than one cloud layer, the variable layer will be identified by including the layer height.

EXAMPLE−
SCT V BKN − "scattered layer variable to broken."

BKN025 V OVC − "broken layer at two thousand five hundred variable to overcast."

30.3.9.10 Significant Clouds. When significant clouds are observed, they are shown in remarks, along with the specified information as shown below:

a) Cumulonimbus (CB), or Cumulonimbus Mammatus (CBMAM), distance (if known), direction from the station, and direction of movement, if known. If the clouds are beyond 10 miles from the airport, DSNT will indicate distance.

EXAMPLE−
CB W MOV E − "cumulonimbus west moving east."

CBMAM DSNT S − "cumulonimbus mammatus distant south."

b) Towering Cumulus (TCU), location, (if known), or direction from the station.

EXAMPLE−
TCU OHD − "towering cumulus overhead."

TCU W − "towering cumulus west."

c) Altocumulus Castellanus (ACC), Stratocumulus Standing Lenticular (SCSL), Altocumulus Standing Lenticular (ACSL), Cirrocumulus Standing Lenticular (CCSL) or rotor clouds, describing the clouds (if needed), and the direction from the station.

ACC W	"altocumulus castellanus west"
ACSL SW−S	"standing lenticular altocumulus southwest through south"
APRNT ROTOR CLD S	"apparent rotor cloud south"
CCSL OVR E	"standing lenticular cirrocumulus over the east"

30.3.10 Temperature/Dew Point. Temperature and dew point are reported in two, two−digit groups in degrees Celsius, separated by a solidus (/). Temperatures below zero are prefixed with an "M." If the temperature is available but the dew point is missing, the temperature is shown followed by a solidus. If the temperature is missing, the group is omitted from the report.

EXAMPLE−
15/08 . . . . "temperature one five, dew point 8"
00/M02 . . . . "temperature zero, dew point minus 2"
M05/ . . . . "temperature minus five, dew point missing"

30.3.11 Altimeter. Altimeter settings are reported in a four−digit format in inches of mercury prefixed with an "A" to denote the units of pressure.

EXAMPLE−
A2995 . . . . "altimeter two niner niner five"

30.3.12 Remarks. Remarks will be included in all observations, when appropriate. The contraction "RMK" denotes the start of the remarks section of a METAR report.

Location of a phenomena within 5 statute miles of the point of observation will be reported as at the station. Phenomena between 5 and 10 statute miles will be reported in the vicinity, "VC." Phenomena beyond 10 statute miles will be shown as distant, "DSNT." Distances are in statute miles except for automated lightning remarks which are in nautical miles. Movement of clouds or weather will be indicated by the direction toward which the phenomena is moving.

There are two categories of remarks: Automated, Manual, and Plain Language; and Additive and Automated Maintenance Data.

30.3.12.1 Automated, Manual, and Plain Language Remarks. This group of remarks may be generated from either manual or automated weather reporting stations and generally elaborates on parameters reported in the body of the report. Plain language remarks are only provided by manual stations.

1) Volcanic Eruptions
2) Tornado, Funnel Cloud, Waterspout
3) Type of Automated Station (AO1 or AO2)
4) Peak Wind
5) Wind Shift
6) Tower or Surface Visibility
7) Variable Prevailing Visibility
8) Sector Visibility
9) Visibility at Second Location
10) Dispatch Visual Range
11) Lightning (freq) LTG (type) (loc)
12) Beginning/Ending Time of Precipitation
13) Beginning/Ending Time of Thunderstorms
14) Thunderstorm Location; Movement Direction
15) Hailstone Size
16) Virga
17) Variable Ceiling
18) Obscurations
19) Variable Sky Condition
20) Significant Cloud Types
21) Ceiling Height at Second Location
22) Pressure Rising or Falling Rapidly
23) Sea−Level Pressure
24) Aircraft Mishap (not transmitted)
25) No SPECI Reports Taken
26) Snow Increasing Rapidly
27) Other Significant Information

30.3.12.2 Additive and Automated Maintenance Data Remarks.

1) Hourly Precipitation
2) Precipitation Amount
3) 24−Hour Precipitation
4) Snow Depth on Ground
5) Water Equivalent of Snow on Ground
6) Cloud Types
7) Duration of Sunshine
8) Hourly Temperature and Dew Point (Tenths)
9) 6−Hour Maximum Temperature
10) 6−Hour Minimum Temperature
11) 24−Hour Maximum/Minimum Temperatures
12) Pressure Tendency
13) Sensor Status:
WINO
ZRANO
SNO
VRNO
PNO
VISNO

EXAMPLE−
METAR report and explanation:

METAR KSFO 041453Z AUTO VRB02KT 3SM BR CLR 15/12 A3012 RMK AO2

METAR	Type of report (aviation routine weather report)
KSFO	Station identifier (San Francisco, CA)
041453Z	Date/Time (4th day of month; time 1453 UTC)
AUTO	Fully automated; no human intervention
VRB02KT	Wind (wind variable at two)
3SM	Visibility (visibility three statute miles)
BR	Visibility obscured by mist
CLR	No clouds below one two thousand
15/12	Temperature one five; dew point one two
A3012	Altimeter three zero one two
RMK	Remarks
AO2	This automated station has a weather discriminator (for precipitation).

EXAMPLE−
METAR report and explanation:

METAR KBNA 281250Z 33018KT 290V360 1/2SM R31/2700FT SN BLSN FG VV008 00/M03 A2991 RMK RAE42SNB42

METAR	Aviation routine weather report
KBNA	Nashville, TN
281250Z	28th day of month; time 1250 UTC
(no modifier)	This is a manually generated report, due to the absence of "AUTO" and "AO1 or AO2" in remarks.
33018KT	Wind three three zero at one eight
290V360	Wind variable between two nine zero and three six zero
1/2SM	Visibility one half statute mile
R31/2700FT	Runway three one RVR two thousand seven hundred feet
SN	Moderate snow
BLSN FG	Visibility obscured by blowing snow and fog
VV008	Indefinite ceiling eight hundred
00/M03	Temperature zero; dew point minus three
A2991	Altimeter two niner niner one
RMK	Remarks
RAE36	Rain ended at three six
SNB42	Snow began at four two

EXAMPLE−
SPECI report and explanation:

SPECI KCVG 152224Z 28024G36KT 3/4SM +TSRA BKN008 OVC020CB 28/23 A3000 RMK TSRAB24 TS W MOV E.

SPECI	Nonroutine aviation special weather report
KCVG	Cincinnati, OH
152224Z	15th day of month; time 2224 UTC
(no modifier)	This is a manually generated report due to the absence of "AUTO" and "AO1 or AO2" in remarks.
28024G36KT	Wind two eight zero at two four gusts three six
3/4SM	Visibility three fourths statute mile
+TSRA	Thunderstorms, heavy rain
BKN008	Ceiling eight hundred broken
OVC020CB	Two thousand overcast cumulonim-bus clouds
28/23	Temperature two eight; dew point two three
A3000	Altimeter three zero zero zero
RMK	Remarks
TSRAB24	Thunderstorm and rain began at two four
TS W MOV E	Thunderstorm west moving east

30.4 Aerodrome Forecast (TAF). A concise statement of the expected meteorological conditions at an airport during a specified period. At most locations, TAFs have a 24 hour forecast period. However, TAFs for some locations have a 30 hour forecast period. These forecast periods may be shorter in the case of an amended TAF. TAFs use the same codes as METAR weather reports. They are scheduled four times daily for 24−hour periods beginning at 0000Z, 0600Z, 1200Z, and 1800Z.

Forecast times in the TAF are depicted in two ways. The first is a 6−digit number to indicate a specific point in time, consisting of a two−digit date, two−digit hour, and two−digit minute (such as issuance time or FM). The second is a pair of four−digit numbers separated by a "/" to indicate a beginning and end for a period of time. In this case, each four−digit pair consists of a two−digit date and a two−digit hour.

TAFs are issued in the following format:

TYPE OF REPORT/ICAO STATION IDENTIFIER/DATE AND TIME OF ORIGIN/VALID PERIOD DATE AND TIME/FORECAST METEOROLOGICAL CONDITIONS

NOTE−
The "/" above and in the following descriptions are for separation purposes in this publication and do not appear in the actual TAFs.

TAF KORD 051130Z 0512/0618 14008KT 5SM BR BKN030
TEMPO 0513/0516 1 1/2SM BR
FM051600 16010KT P6SM SKC
FM052300 20013G20KT 4SM SHRA OVC020
PROB40 0600/0606 2SM TSRA OVC008CB
BECMG 0606/0608 21015KT P6SM NSW SCT040

TAF format observed in the above example:

TAF = type of report

KORD = ICAO station identifier

051130Z = date and time of origin (issuance time)

0512/0618 = valid period date and times

14008KT 5SM BR BKN030 = forecast meteorological conditions

30.4.1 Explanation of TAF elements

30.4.1.1 Type of Report. There are two types of TAF issuances, a routine forecast issuance (TAF) and an amended forecast (TAF AMD). An amended TAF is issued when the current TAF no longer adequately describes the on−going weather or the forecaster feels the TAF is not representative of the current or expected weather. Corrected (COR) or delayed (RTD) TAFs are identified only in the communications header which precedes the actual forecasts.

30.4.1.2 ICAO Station Identifier. The TAF code uses ICAO 4−letter location identifiers as described in the METAR section.

30.4.1.3 Date and Time of Origin. This element is the date and time the forecast is actually prepared. The format is a two−digit date and four−digit time followed, without a space, by the letter "Z."

30.4.1.4 Valid Period Date and Time. he UTC valid period of the forecast consists of two four−digit sets, separated by a "/". The first four−digit set is a two−digit date followed by the two−digit beginning hour, and the second four−digit set is a two−digit date followed by the two−digit ending hour. Although most airports have a 24−hour TAF, a select number of airports have a 30−hour TAF. In the case of an amended forecast, or a forecast which is corrected or delayed, the valid period may be for less than 24 hours. Where an airport or terminal operates on a part−time basis (less than 24 hours/day), the TAFs issued for those locations will have the abbreviated statement "NIL AMD SKED AFT (closing time) Z" added to the end of the forecasts. For the TAFs issued while these locations are closed, the word "NIL" will appear in place of the forecast text. A delayed (RTD) forecast will then be issued for these locations after two complete observations are received.

30.4.1.5 Forecast Meteorological Conditions. This is the body of the TAF. The basic format is:

Wind / Visibility / Weather / Sky Condition / Optional Data (Wind Shear)

The wind, visibility, and sky condition elements are always included in the initial time group of the forecast. Weather is included only if significant to aviation. If a significant, lasting change in any of the elements is expected during the valid period, a new time period with the changes is included. It should be noted that with the exception of an "FM" group, the new time period will include only those elements which are expected to change; i.e., if a lowering of the visibility is expected but the wind is expected to remain the same, the new time period reflecting the lower visibility would not include a forecast wind. The forecast wind would remain the same as in the previous time period.

Any temporary conditions expected during a specific time period are included with that time period. The following describes the elements in the above format.

a) Wind. This five (or six) digit group includes the expected wind direction (first 3 digits) and speed (last 2 digits or 3 digits if 100 knots or greater). The contraction "KT" follows to denote the units of wind speed. Wind gusts are noted by the letter "G" appended to the wind speed followed by the highest expected gust.

NOTE−
A variable wind direction is noted by "VRB" where the three digit direction usually appears. A calm wind (3 knots or less) is forecast as "00000KT."

EXAMPLE−
18010KT − wind one eight zero at one zero (wind is blowing from 180 at 10 knots).

35012G20KT − wind three five zero at one two gust two zero

b) Visibility. The expected prevailing visibility up to and including 6 miles is forecast in statute miles, including fractions of miles, followed by "SM" to note the units of measure. Expected visibilities greater than 6 miles are forecast as P6SM (Plus six statute miles).

EXAMPLE−
1/2SM . . . . visibility one−half
4SM . . . . visibility four
P6SM . . . . visibility more than six

c) Weather. The expected weather phenomena is coded in TAF reports using the same format, qualifiers, and phenomena contractions as METAR reports (except UP).

Obscurations to vision will be forecast whenever the prevailing visibility is forecast to be 6 statute miles or less.

If no significant weather is expected to occur during a specific time period in the forecast, the weather group is omitted for that time period. If, after a time period in which significant weather has been forecast, a change to a forecast of no significant weather occurs, the contraction NSW (no significant weather) will appear as the weather group in the new time period. (NSW is included only in becoming (BECMG) or temporary (TEMPO) groups.)

d) Sky Condition. TAF sky condition forecasts use the METAR format described in the METAR section. Cumulonimbus clouds (CB) are the only cloud type forecast in TAFs.

When clear skies are forecast, the contraction "SKC" will always be used. The contraction "CLR" is never used in the aerodrome forecast (TAF).

When the sky is obscured due to a surface−based phenomenon, vertical visibility (VV) into the obscuration is forecast. The format for vertical visibility is "VV" followed by a three−digit height in hundreds of feet.

NOTE−
As in METAR, ceiling layers are not designated in the TAF code. For aviation purposes, the ceiling is the lowest broken or overcast layer or vertical visibility into a complete obscuration.

SKC	"sky clear"
SCT005 BKN025CB	"five hundred scattered, ceiling two thousand five hundred broken cumulonimbus clouds"
VV008	"indefinite ceiling eight hundred"

e) Optional Data (Wind Shear). Wind Shear is the forecast of non−convective, low−level winds (up to 2,000 feet). The forecast includes the letters "WS" followed by the height of the wind shear, the wind direction and wind speed at the indicated height and the ending letters "KT" (knots). Height is given in hundreds of feet (AGL) up to and including 2,000 feet. Wind shear is encoded with the contraction "WS" followed by a three−digit height, slant character "/" and winds at the height indicated in the same format as surface winds. The wind shear element is omitted if not expected to occur.

WS010/18040KT	"low level wind shear at one thousand, wind one eight zero at four zero"

30.5 Probability Forecast. The probability or chance of thunderstorms or other precipitation events occurring, along with associated weather conditions (wind, visibility, and sky conditions). The PROB30 group is used when the occurrence of thunderstorms or precipitation is 30−39% and the PROB40 group is used when the occurrence of thunderstorms or precipitation is 40−49%. This is followed by two four−digit groups separated by a "/", giving the beginning date and hour, and the ending date and hour of the time period during which the thunderstorms or precipitation are expected.

NOTE−
Neither PROB30 nor PROB40 will be shown during the first six hours of a forecast.

EXAMPLE−

PROB40 2221/2302 $^{1}/_{2}$SM +TSRA	*"chance between 2100Z and 0200Z of visibility one−half statute mile in thunderstorms and heavy rain."*
PROB30 3010/3014 1SM RASN .	*"chance between 1000Z and 1400Z of visibility one statute mile in mixed rain and snow."*

30.6 Forecast Change Indicators. The following change indicators are used when either a rapid, gradual, or temporary change is expected in some or all of the forecast meteorological conditions. Each change indicator marks a time group within the TAF report.

30.6.1 From (FM) Group. The FM group is used when a rapid change, usually occurring in less than one hour, in prevailing conditions is expected. Typically, a rapid change of prevailing conditions to more or less a completely new set of prevailing conditions is associated with a synoptic feature passing through the terminal area (cold or warm frontal passage). Appended to the "FM" indicator is the six−digit date, hour, and minute the change is expected to begin and continues until the next change group or until the end of the current forecast. A "FM" group will mark the beginning of a new line in a TAF report (indented 5 spaces). Each "FM" group contains all the required elements−wind, visibility, weather, and sky condition. Weather will be omitted in "FM" groups when it is not significant to aviation. FM groups will not include the contraction NSW.

EXAMPLE−
FM210100 14010KT P6SM SKC − "after 0100Z on the 21st, wind one four zero at one zero, visibility more than six, sky clear."

30.6.2 Becoming (BECMG) Group. The BECMG group is used when a gradual change in conditions is expected over a longer time period, usually two hours. The time period when the change is expected is two four−digit groups separated by a "/", with the beginning date and hour, and ending date and hour of the change period which follows the BECMG indicator. The gradual change will occur at an unspecified time within this time period. Only the changing forecast meteorological conditions are included in BECMG groups. The omitted conditions are carried over from the previous time group.

EXAMPLE−
OVC012 BECMG 0114/0116 BKN020 − "ceiling one thousand two hundred overcast. Then a gradual change to ceiling two thousand broken between 1400Z on the 1st and 1600Z on the 1st."

30.6.3 Temporary (TEMPO) Group. The TEMPO group is used for any conditions in wind, visibility, weather, or sky condition which are expected to last for generally less than an hour at a time (occasional), and are expected to occur during less than half the time period. The TEMPO indicator is followed by two four−digit groups separated by a "/". The first four digit group gives the beginning date and hour, and the second four digit group gives the ending date and hour of the time period during which the temporary conditions are expected. Only the changing forecast meteorological conditions are included in TEMPO groups. The omitted conditions are carried over from the previous time group.

EXAMPLE−
1. *SCT030 TEMPO 0519/0523 BKN030 − "three thousand scattered with occasional ceilings three thousand broken between 1900Z on the 5th and 2300Z on the 5th."*

2. *4SM HZ TEMPO 1900/1906 2SM BR HZ − "visibility four in haze with occasional visibility two in mist and haze between 0000Z on the 19th and 0600Z on the 19th."*

FIG GEN 3.5−24

Key to Aerodrome Forecast (TAF) and Aviation Routine Weather Report (METAR) (Front)

TAF KPIT 091730Z 0918/1024 15005KT 5SM HZ FEW020 WS010/31022KT
FM091930 30015G25KT 3SM SHRA OVC015
TEMPO 0920/0922 1/2SM +TSRA OVC008CB
FM100100 27008KT 5SM SHRA BKN020 OVC040
PROB30 1004/1007 1SM -RA BR
FM101015 18005KT 6SM -SHRA OVC020
BECMG 1013/1015 P6SM NSW SKC

NOTE: Users are cautioned to confirm ***DATE*** and ***TIME*** of the TAF. For example FM**10**0000 is 0000Z on the **10th**. Do not confuse with ***1000Z!***

METAR KPIT 091955Z COR 22015G25KT 3/4SM R28L/2600FT TSRA OVC010CB 18/16 A2992 RMK SLP045 T01820159

Forecast	Explanation	Report
TAF	Message type: TAF-routine or TAF AMD-amended forecast, METAR-hourly, SPECI-special or TESTM-non-commissioned ASOS report	**METAR**
KPIT	ICAO location indicator	**KPIT**
091730Z	Issuance time: ALL times in UTC “Z”, 2-digit date, 4-digit time	**091955Z**
0918/1024	Valid period, either 24 hours or 30 hours. The first two digits of EACH four digit number indicate the date of the valid period, the final two digits indicate the time (valid from 18Z on the 9th to 24Z on the 10th).	
	In U.S. METAR: CORrected ob; or AUTOmated ob for automated report with no human intervention; omitted when observer logs on.	**COR**
15005KT	Wind: 3 digit true-north direction , nearest 10 degrees (or VaRiaBle); next 2-3 digits for speed and unit, KT (KMH or MPS); as needed, Gust and maximum speed; 00000KT for calm; for METAR, if direction varies 60 degrees or more, Variability appended, e.g., 180V260	**22015G25KT**
5SM	Prevailing visibility; in U.S., Statute Miles & fractions; above 6 miles in TAF Plus6SM. (Or, 4-digit minimum visibility in meters and as required, lowest value with direction)	**¾SM**
	Runway Visual Range: R; 2-digit runway designator Left, Center, or Right as needed; “/”, Minus or Plus in U.S., 4-digit value, FeeT in U.S., (usually meters elsewhere); 4-digit value Variability 4-digit value (and tendency Down, Up or No change)	**R28L/2600FT**
HZ	Significant present, forecast and recent weather: see table (on back)	**TSRA**
FEW020	Cloud amount, height and type: Sky Clear 0/8, FEW >0/8-2/8, ScaTtered 3/8-4/8, BroKeN 5/8-7/8, OverCast 8/8; 3-digit height in hundreds of ft; Towering Cumulus or CumulonimBus in **METAR**; in **TAF**, only CB. Vertical Visibility for obscured sky and height “VV004”. More than 1 layer may be reported or forecast. In automated **METAR** reports only, CleaR for “clear below 12,000 feet”	**OVC 010CB**
	Temperature: degrees Celsius; first 2 digits, temperature “/” last 2 digits, dew-point temperature; Minus for below zero, e.g., M06	**18/16**
	Altimeter setting: indicator and 4 digits; in U.S., A-inches and hundredths; (Q-hectoPascals, e.g., Q1013)	**A2992**
WS010/31022KT	In U.S. **TAF**, non-convective low-level (≤2,000 ft) Wind Shear; 3-digit height (hundreds of ft); “/”; 3-digit wind direction and 2-3 digit wind speed above the indicated height, and unit, KT	

FIG GEN 3.5−25

Key to Aerodrome Forecast (TAF) and Aviation Routine Weather Report (METAR) (Back)

	In **METAR**, ReMarK indicator & remarks. For example: Sea- Level Pressure in hectoPascals & tenths, as shown: 1004.5 hPa; Temp/ dew-point in tenths °C, as shown: temp. 18.2°C, dew-point 15.9°C	**RMK SLP045 T01820159**
FM091930	FroM: changes are expected at: 2-digit date, 2-digit hour, and 2-digit minute beginning time: indicates significant change. Each FM starts on a new line, indented 5 spaces	
TEMPO 0920/0922	TEMPOrary: changes expected for <1 hour and in total, < half of the period between the 2-digit date and 2-digit hour beginning, and 2-digit date and 2-digit hour ending time	
PROB30 1004/1007	PROBability and 2-digit percent (30 or 40): probable condition in the period between the 2-digit date & 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time	
BECMG 1013/1015	BECoMinG: change expected in the period between the 2-digit date and 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time	

Table of Significant Present, Forecast and Recent Weather - Grouped in categories and used in the order listed below; or as needed in TAF, No Significant Weather.			
Qualifiers **Intensity or Proximity**			
"-" = Light	**No sign** = Moderate		**"+"** = Heavy
"VC" = Vicinity, but not at aerodrome. In the US METAR, 5 to 10 SM from the point of observation. In the US TAF, 5 to 10 SM from the center of the runway complex. Elsewhere, within 8000m.			
Descriptor			
BC – Patches	**BL** – Blowing	**DR** – Drifting	**FZ** – Freezing
MI – Shallow	**PR** – Partial	**SH** – Showers	**TS** – Thunderstorm
Weather Phenomena **Precipitation**			
DZ – Drizzle	**GR** – Hail	**GS** – Small Hail/Snow Pellets	
IC – Ice Crystals	**PL** – Ice Pellets	**RA** – Rain	**SG** – Snow Grains
SN – Snow	**UP** – Unknown Precipitation in automated observations		
Obscuration			
BR – Mist (≥5/8SM)	**DU** – Widespread Dust	**FG** – Fog (<5/8SM)	**FU** – Smoke
HZ – Haze	**PY** – Spray	**SA** – Sand	**VA** – Volcanic Ash
Other			
DS – Dust Storm	**FC** – Funnel Cloud	**+FC** – Tornado or Waterspout	
PO – Well developed dust or sand whirls		**SQ** – Squall	**SS** – Sandstorm
- Explanations in parentheses "()" indicate different worldwide practices. - Ceiling is not specified; defined as the lowest broken or overcast layer, or the vertical visibility. - NWS TAFs exclude BECMG groups and temperature forecasts, NWS TAFS do not use PROB in the first 9 hours of a TAF; NWS METARs exclude trend forecasts. US Military TAFs include Turbulence and Icing groups.			

31. Meteorological Broadcasts (ATIS, VHF and LF)

31.1 Continuous Transcribed Weather Broadcasts (TWEB)

31.1.1 Weather broadcasts are made continuously over selected navigational aids. These broadcasts contain the general weather forecasts and winds up to 12,000 feet within a 250−mile radius of the radio. In some cases the forecasts are for route of flight rather than the general area. They also broadcast pilot reports, radar reports, and hourly weather reports of selected locations within a 400−mile radius of the broadcast station.

31.2 Automatic Terminal Information Service (ATIS) Broadcasts

31.2.1 These broadcasts are made continuously and include as weather information only the ceiling, visibility, wind, and altimeter setting of the aerodrome at which they are located.

31.3 Scheduled Weather Broadcasts (SWB)

31.3.1 Scheduled broadcasts are made only in Alaska at 15 minutes past the hour over en route navigational aids not used for TWEB or ATIS. These broadcasts contain hourly weather reports of selected locations within 150 miles of the station and weather advisories, pilot weather reports, radar weather reports, and Notices to Airmen (NOTAMs).

31.4 Navigational Aids Providing Broadcast Services

31.4.1 A compilation of navigational aids over which weather broadcasts are transmitted is not available for this publication. Complete information concerning all navigational aids providing this service is contained in the Airport/Facility directory. Similar information for the Pacific and Alaskan areas is contained in the Pacific and Alaska Supplements.

31.5 Hazardous Inflight Weather Advisory Service (HIWAS)

31.5.1 A 24−hour continuous broadcast of hazardous inflight weather is available on selected navigational outlets. Broadcasts include: severe weather forecast alerts (AWW), airman's meteorological information (AIRMET−text [WA] or graphical [G−AIRMET] product), significant meteorological information (SIGMET), Convective SIGMET (WST), urgent pilot weather reports (UUA), hazardous portions of the domestic area forecasts (FA), and center weather advisories (CWA). HIWAS broadcast outlets are identified on en route/sectional charts and in airport facility directories. For further details, contact your nearest FSS.

TBL GEN 3.5−12

Meteorological Broadcasts (VOLMET)

Name	Call Sign	Frequency	Broadcast	Form	Contents	Emission	Remarks
Honolulu	Honolulu Radio	2863, 6679, 8828, 13282 kHz	H00−05 and H30−35	Forecasts	PHNL Honolulu PHTO Hilo PGUM Guam	Voice	Plain language English
				SIGMET	Oakland FIR		
				Hourly Reports	PHNL Honolulu PHTO Hilo PHOG Kahului PGUM Guam		
			E05−10 and E35−40	Hourly Reports	KSFO San Francisco KSEA Seattle KLAX Los Angeles KPDX Portland KSMF Sacramento KONT Ontario KLAS Las Vegas		
				SIGMET	Oakland FIR		
				Aerodrome Forecasts	KSFO San Francisco KSEA Seattle KLAX Los Angeles		
			E25−30 and E55−00	Hourly Reports	PANC Anchorage PAED ElmendorfAFB PAFA Fairbanks PACD Cold Bay PAKN King Salmon CYVR Vancouver		
				SIGMET	Oakland FIR		
				Forecasts	PANC Anchorage PAFA Fairbanks PACD Cold Bay CYVR Vancouver		
New York	New York Radio	3485, 6604, 10051, 13270 kHz	H00−05	Aerodrome Forecasts	KDTW Detroit KCLE Cleveland KCVG Cincinnati	Voice	Plain language English
				Hourly Reports	KDTW Detroit KCLE Cleveland KCVG Cincinnati KIND Indianapolis KPIT Pittsburgh		
			H05−10	SIGMET	Oceanic − New York FIR		
				Aerodrome Forecasts	KBGR Bangor KBDL Windsor Locks KCLT Charlotte		
				Hourly Reports	KBGR Bangor KBDL Windsor Locks KORF Norfolk KCLT Charlotte		
			H10−15	Aerodrome Forecasts	KJFK New York KEWR Newark KBOS Boston		
				Hourly Reports	KJFK New York KEWR Newark KBOS Boston KBAL Baltimore KIAD Washington		

Meteorological Broadcasts (VOLMET) − continued							
Name	**Call Sign**	**Frequency**	**Broadcast**	**Form**	**Contents**	**Emission**	**Remarks**
			H15−20	SIGMET	Oceanic − Miami FIR/San Juan FIR		
				Aerodrome Forecasts	MXKF Bermuda KMIA Miami KATL Atlanta		
				Hourly Reports	MXKF Bermuda KMIA Miami MYNN Nassau KMCO Orlando KATL Atlanta		
			H30−35	Aerodrome Forecasts	KORD Chicago KMKE Milwaukee KMSP Minneapolis		
				Hourly Reports	KORD Chicago KMKE Milwaukee KMSP Minneapolis KDTW Detroit KBOS Boston		
			E35−40	SIGMET	Oceanic − New York FIR		
				Aerodrome Forecasts	KIND Indianapolis KSTL St. Louis KPIT Pittsburgh		
				Hourly Reports	KIND Indianapolis KSTL St. Louis KPIT Pittsburgh KACY Atlantic City		
			E40−45	Aerodrome Forecasts	KBAL Baltimore KPHL Philadelphia KIAD Washington		
				Hourly Reports	KBAL Baltimore KPHL Philadelphia KIAD Washington KJFK New York KEWR Newark		
			E45−50	SIGMET	Oceanic − Miami FIR/San Juan FIR		
				Aerodrome Forecasts	MYNN Nassau KMCO Orlando		
				Hourly Reports	MXKF Bermuda KMIA Miami MYNN Nassau KMCO Orlando KATL Atlanta KTPA Tampa KPBI West Palm Beach		
All stations operate on A3 emission H24.							
All broadcasts are made 24 hours daily, seven days a week.							

FIG GEN 3.5−26

Key to Decode an ASOS/AWSS (METAR) Observation (Front)

METAR KABC 121755Z AUTO 21016G24KT 180V240 1SM R11/P6000FT -RA BR BKN015 OVC025 06/04 A2990
RMK A02 PK WND 20032/25 WSHFT 1715 VIS 3/4V1 1/2 VIS 3/4 RWY11 RAB07 CIG 013V017 CIG 017 RWY11 PRESFR
SLP125 P0003 6009 T00640036 10066 21012 58033 TSNO $

TYPE OF REPORT	METAR: hourly (scheduled report; SPECI: special (unscheduled) report.	METAR
STATION IDENTIFIER	Four alphabetic characters; ICAO location identifiers.	KABC
DATE/TIME	All dates and times in UTC using a 24-hour clock; two-digit date and four-digit time; always appended with Z to indicate UTC.	121755Z
REPORT MODIFIER	Fully automated report, no human intervention; removed when observer signed-on.	AUTO
WIND DIRECTION AND SPEED	Direction in tens of degrees from true north (first three digits); next two digits: speed in whole knots; as needed Gusts (character) followed by maximum observed speed; always appended with KT to indicate knots; 00000KT for calm; if direction varies by 60° or more a Variable wind direction group is reported.	21016G24KT 108V240
VISIBILITY	Prevailing visibility in statute miles and fractions (space between whole miles and fractions); always appended with SM to indicate statute miles.	1SM
RUNWAY VISUAL RANGE	10-minute RVR value in hundreds of feet; reported if prevailing visibility is ≤ one mile or RVR ≤6000 feet; always appended with FT to indicate feet; value prefixed with M or P to indicate value is lower or higher than the reportable RVR value.	R11/P6000FT
WEATHER PHENOMENA	RA: liquid precipitation that does not freeze; SN: frozen precipitation other than hail; UP: precipitation of unknown type; intensity prefixed to precipitation: light (-), moderate (no sign), heavy (+); FG: fog; FZFG: freezing fog (temperature below 0°C); BR: mist; HZ: haze; SQ: squall; maximum of three groups reported; augmented by observer: FC (funnel cloud/tornado/waterspout); TS(thunderstorm); GR (hail); GS (small hail; <1/4 inch); FZRA (intensity; freezing rain); VA (volcanic ash).	-RA BR
SKY CONDITION	Cloud amount and height: CLR (no clouds detected below 12000 feet); FEW (few); SCT (scattered); BKN (broken); OVC (overcast); followed by 3-digit height in hundreds of feet; or vertical visibility (VV) followed by height for indefinite ceiling.	BKN015 OVC025
TEMPERATURE/DEW POINT	Each is reported in whole degrees Celsius using two digits; values are separated by a solidus; sub-zero values are prefixed with an M (minus).	06/04
ALTIMETER	Altimeter always prefixed with an A indicating inches of mercury; reported using four digits: tens, units, tenths, and hundredths.	A2990

FIG GEN 3.5−27

Key to Decode an ASOS/AWSS (METAR) Observation (Back)

REMARKS IDENTIFIER: RMK	RMK
TORNADIC ACTIVITY: Augmented; report should include TORNADO, FUNNEL CLOUD, or WATERSPOUT, time begin/end, location, movement; e.;g., TORNADO B25 N MOV E.	
TYPE OF AUTOMATED STATION: AO2; automated station with precipitation discriminator.	AO2
PEAK WIND: PK WND dddff(f)/(hh)mm; direction in tens of degrees, speed in whole knots, and time.	PK WND 20032/25
WIND SHIFT: WSHFT (hh)mm	WSHFT 1715
TOWER OR SURFACE VISIBILITY: TWR VIS vvvvv: visibility reported by tower personnel, e.g., TWR VIS 2; SFC VIS vvvvv: visibility reported by ASOS, e.g., SFC VIS 2.	
VARIABLE PREVAILING VISIBILITY: VIS v_n v_n v_n v_n v_nV$v_x$$v_x$$v_x$$v_x$$v_x$; reported if prevailing visibility is <3 miles and variable.	VIS 3/4V1 1/2
VISIBILITY AT SECOND LOCATION: VIS vvvvv [LOC]; reported if different than the reported prevailing visibility in body of report.	VIS 3/4 RWY11
LIGHTNING: [FREQ] LTG [LOC]; when detected the frequency and location is reported, e.g., FRQ LTG NE.	
BEGINNING AND ENDING OF PRECIPITATION AND THUNDERSTORMS: w'w'B(hh)mmE(hh)mm; TSB(hh)mmE(hh)mm	RAB07
VIRGA: Augmented; precipitation not reaching the ground, e.g., VIRGA.	
VARIABLE CEILING HEIGHT: CIG h_n h_n h_nV$h_x$$h_x$$h_x$; reported if ceiling in body of report is <3000 feet and variable.	CIG 013V017
CEILING HEIGHT AT SECOND LOCATION: CIG hhh [LOC]; Ceiling height reported if secondary ceilometer site is different than the ceiling height in the body of the report.	CIG 017 RWY11
PRESSURE RISING OR FALLING RAPIDLY: PRESRR or PRESFR; pressure rising or falling rapidly at time of observation.	PRESFR
SEA-LEVEL PRESSURE: SLPppp; tens, units, and tenths of SLP in hPa.	SLP125
HOURLY PRECIPITATION AMOUNT: Prrrr; in .01 inches since last METAR; a trace is P0000.	P0003
3- AND 6-HOUR PRECIPITATION AMOUNT: 6RRRR; precipitation amount in .01 inches for past 6 hours reported in 00, 06, 12, and 18 UTC observations and for past 3 hours in 03, 09, 15, and 21 UTC observations; a trace is 60000.	60009
24-HOUR PRECIPITATION AMOUNT: 7R_{24} R_{24} R_{24} R_{24}; precipitation amount in .01 inches for past 24 hours reported in 12 UTC observation, e.g., 70015.	
HOURLY TEMPERATURE AND DEW POINT: T$s_n$$T_a$$T_a$$T_a$$s_n$$T'_a$$T'_a$$T'_a$; tenth of degree Celsius; s_n: 1 if temperature below 0° C and 0 if temperature 0°C or higher.	T00640036
6-HOUR MAXIMUM TEMPERATURE: 1$s_n$$T_x$$T_x$$T_x$; tenth of degree Celsius; 00, 06, 12, 18 UTC; s_n: 1 if temperature below 0°C and 0 if temperature 0°C or higher.	10066
6-HOUR MINIMUM TEMPERATURE: 2$s_n$$T_n$$T_n$$T_n$; tenth of degree Celsius; 00, 06, 12, 18 UTC; s_n: 1 if temperature below 0°C and 0 if temperature 0°C or higher.	21012
24-HOUR MAXIMUM AND MINIMUM TEMPERATURE: 4$s_n$$T_x$$T_x$$T_x$$s_n$$T_n$$T_n$$T_n$; tenth of degree Celsius; reported at midnight local standard time; 1 if temperature below 0°C and 0 if temperature 0°C or higher, e.g., 400461006.	
PRESSURE TENDENCY: 5appp; the character (a) and change in pressure (ppp; tenths of hPa) the past 3 hours.	58033
SENSOR STATUS INDICATORS: RVRNO: RVR missing; PWINO: precipitation identifier information not available; PNO: precipitation amount not available; FZRANO: freezing rain information not available; TSNO: thunderstorm information not available; VISNO [LOC]: visibility at secondary location not available, e.g., VISNO RWY06; CHINO [LOC]: (cloud-height-indicator) sky condition at secondary location not available, e.g., CHINO RWY06.	TSNO
MAINTENANCE CHECK INDICATOR: Maintenance needed on the system.	$
If an element or phenomena does not occur, is missing, or cannot be observed, the corresponding group and space are omitted (body and/or remarks) from that particular report, except for Sea-Level Pressure (SLPppp). SLPNO shall be reported in a METAR when the SLP is not available.	

U.S. DEPARTMENT OF TRANSPORTATION • FEDERAL AVIATION ADMINISTRATION • Aviation Weather Directorate, 400 7[TH] Street, SW, Rooms 8200-8326, Washington, D.C 20591

FIG GEN 3.5−28
NEXRAD Coverage

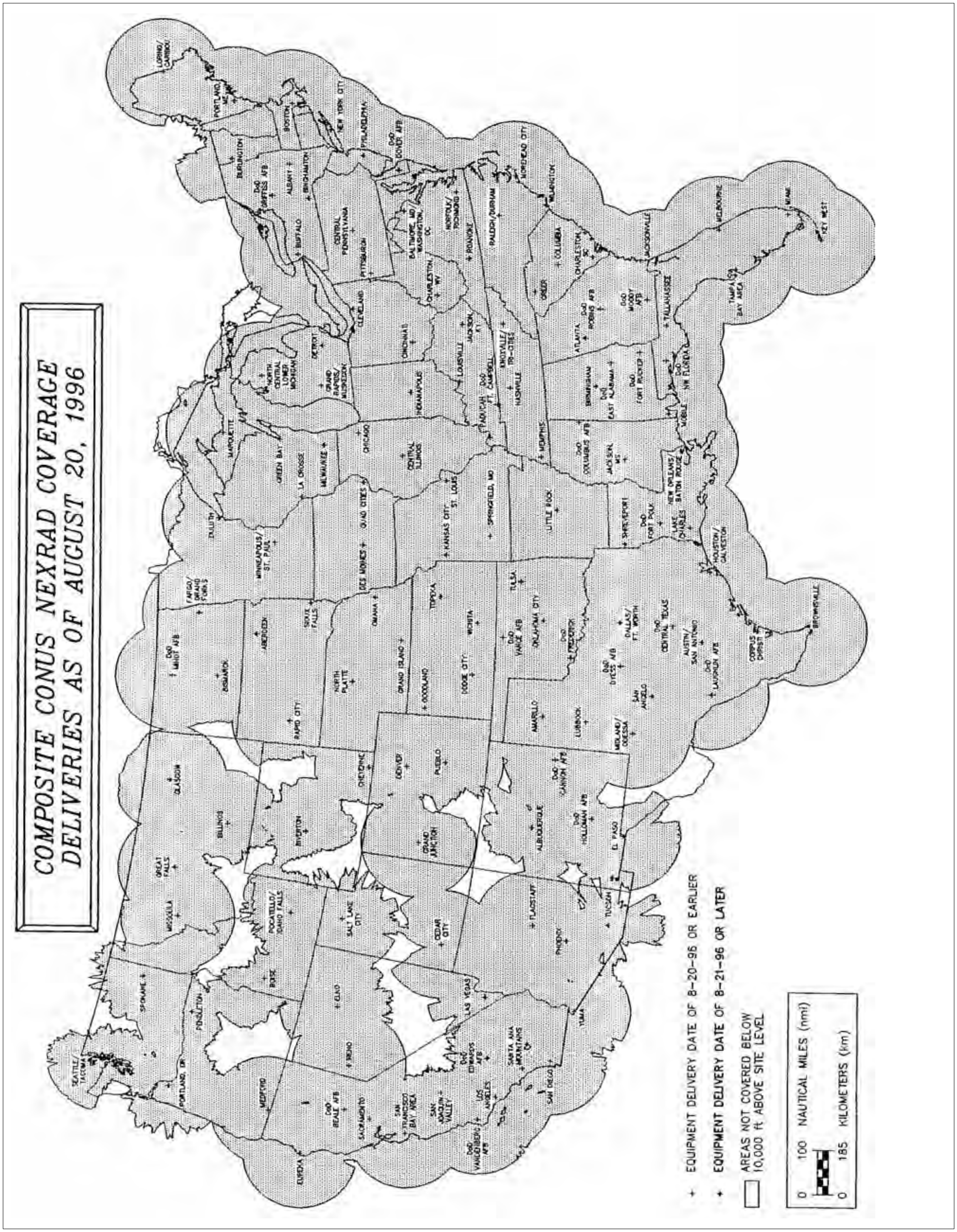


FIG GEN 3.5−29
NEXRAD Coverage

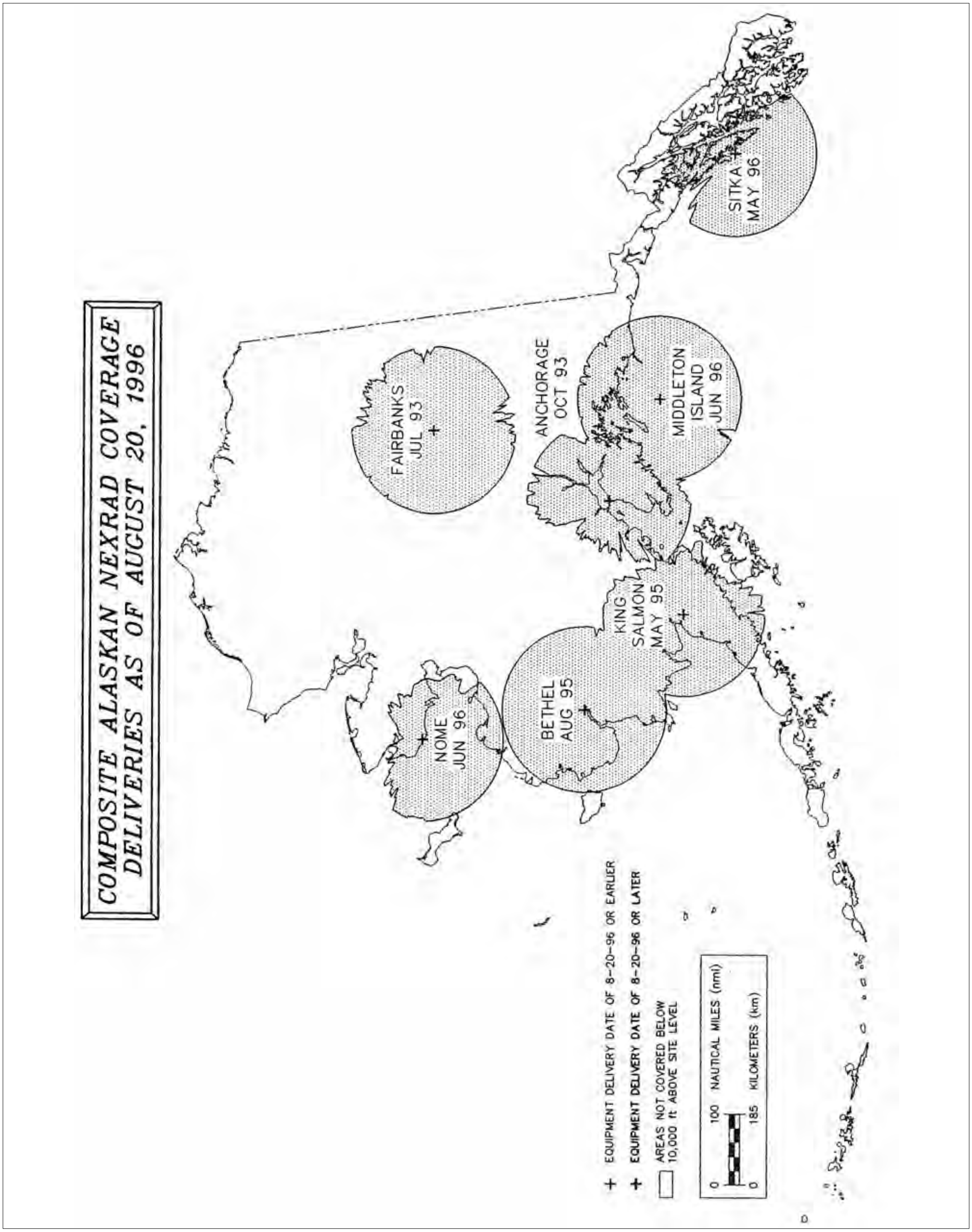


FIG GEN 3.5−30
NEXRAD Coverage

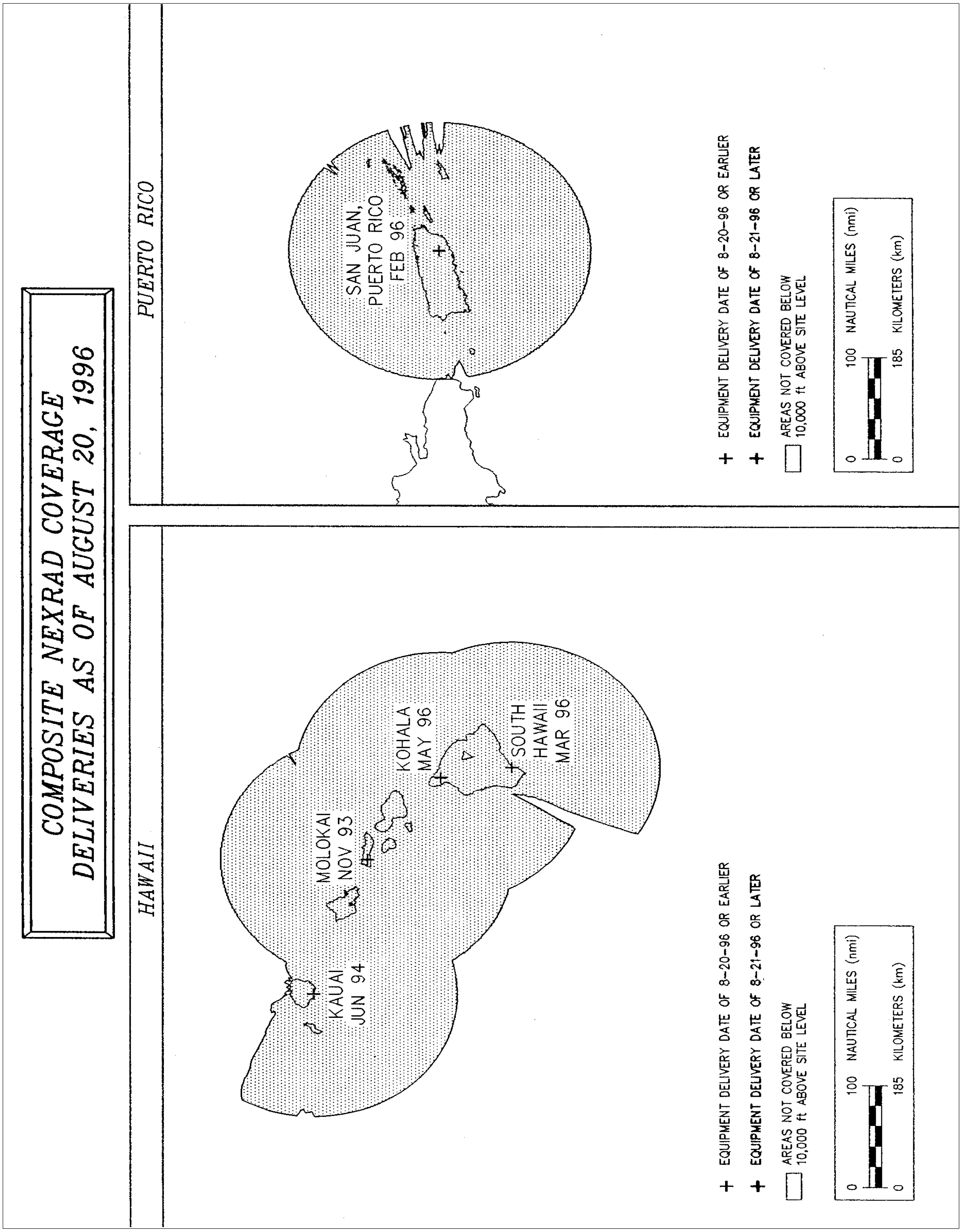


FIG GEN 3.5−31

Volcanic Activity Reporting Form (VAR)

Date ________________

SECTION 1 - Transmit to ATC via radio

1. Aircraft Identification	
2. Position	
3. Time (UTC)	
4. Flight level or altitude	
5. Position/location of volcanic activity or ash cloud	
6. Air temperature	
7. Wind	
8. Supplementary Information (Brief description of activity including vertical and lateral extent of the ash cloud, horizontal movement, rate of growth, etc., as available.)	

SECTION 2 - Complete and forward as directed

Mark the appropriate box(s)

9. *Density of ash cloud*	☐ wispy	☐ moderately dense	☐ very dense
10. *Color of ash*	☐ white ☐ black	☐ light gray	☐ dark gray
11. *Eruption*	☐ continuous	☐ intermittent	☐ not visible
12. *Position of activity*	☐ summit ☐ multiple	☐ side ☐ not observed	☐ single
13. *Other observed features of eruption*	☐ lightning ☐ ash fallout	☐ glow ☐ mushroom cloud	☐ large rocks ☐ none
14. *Effect on aircraft*	☐ communications ☐ pitot static ☐ none	☐ navigation system ☐ windscreen	☐ engines ☐ other windows
15. *Other effects*	☐ turbulence ☐ ash deposits	☐ St. Elmo's fire	☐ fumes
16. *Other information deemed useful*			

Forward completed form via mail to:
Global Volcanism Program
NHB-119
Smithsonian Institution
Washington, DC 20560

Or Fax to:
Global Volcanism Program
(202) 357-2476

PART 2 − EN ROUTE (ENR)

ENR 0.

ENR 0.1 Preface − Not applicable
ENR 0.2 Record of AIP Amendments − See GEN 0.2−1
ENR 0.3 Record of AIP Supplements − Not applicable

ENR 0.4 Checklist of Pages

PAGE	DATE
PART 2 − EN ROUTE (ENR)	
ENR 0	
0.4−1	9 FEB 12
0.4−2	9 FEB 12
0.4−3	9 FEB 12
0.6−1	10 MAR 11
ENR 1	
1.1−1	10 MAR 11
1.1−2	10 MAR 11
1.1−3	10 MAR 11
1.1−4	10 MAR 11
1.1−5	10 MAR 11
1.1−6	10 MAR 11
1.1−7	10 MAR 11
1.1−8	10 MAR 11
1.1−9	10 MAR 11
1.1−10	10 MAR 11
1.1−11	10 MAR 11
1.1−12	10 MAR 11
1.1−13	10 MAR 11
1.1−14	10 MAR 11
1.1−15	9 FEB 12
1.1−16	10 MAR 11
1.1−17	10 MAR 11
1.1−18	10 MAR 11
1.1−19	10 MAR 11
1.1−20	10 MAR 11
1.1−21	9 FEB 12
1.1−22	10 MAR 11
1.1−23	10 MAR 11
1.1−24	10 MAR 11
1.1−25	9 FEB 12
1.1−26	9 FEB 12
1.1−27	9 FEB 12
1.1−28	10 MAR 11
1.1−29	25 AUG 11
1.1−30	9 FEB 12
1.1−31	9 FEB 12
1.1−32	9 FEB 12

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1.1−33	10 MAR 11
1.1−34	10 MAR 11
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1.1−36	10 MAR 11
1.1−37	10 MAR 11
1.1−38	10 MAR 11
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1.1−70	10 MAR 11
1.1−71	10 MAR 11

PAGE	DATE
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1.1−73	10 MAR 11
1.1−74	9 FEB 12
1.1−75	10 MAR 11
1.1−76	10 MAR 11
1.1−77	10 MAR 11
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1.4−2	10 MAR 11
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1.5−4	10 MAR 11
1.5−5	10 MAR 11
1.5−6	9 FEB 12
1.5−7	10 MAR 11
1.5−8	9 FEB 12

PAGE	DATE
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1.5−11	25 AUG 11
1.5−12	9 FEB 12
1.5−13	25 AUG 11
1.5−14	25 AUG 11
1.5−15	25 AUG 11
1.5−16	25 AUG 11
1.5−17	25 AUG 11
1.5−18	10 MAR 11
1.5−19	9 FEB 12
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1.5−22	10 MAR 11
1.5−23	10 MAR 11
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1.5−44	10 MAR 11
1.5−45	10 MAR 11
1.5−46	10 MAR 11
1.5−47	9 FEB 12
1.5−48	10 MAR 11
1.5−49	10 MAR 11
1.5−50	10 MAR 11
1.5−51	10 MAR 11
1.5−52	10 MAR 11
1.5−53	10 MAR 11
1.5−54	9 FEB 12
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1.5−61	10 MAR 11
1.5−62	10 MAR 11
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1.5−66	10 MAR 11
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4.1−42	9 FEB 12
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5.1−3	10 MAR 11
5.1−4	9 FEB 12
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ENR 6	
6.1−1	10 MAR 11
6.1−2	10 MAR 11
6.1−3	10 MAR 11
6.1−4	10 MAR 11
6.1−5	10 MAR 11
6.1−6	10 MAR 11
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ENR 0.5 List of Hand Amendments to the AIP − Not applicable

instructions which include step−by−step routing directions. Progressive instructions may also be issued if the controller deems it necessary due to traffic or field conditions (for example, construction or closed taxiways).

14.3 At those airports where the United States Government operates the control tower and ATC has authorized noncompliance with the requirement for two−way radio communications while operating within Class D airspace, or at those airports where the United States Government does not operate the control tower and radio communications cannot be established, pilots must obtain a clearance by visual light signal prior to taxiing on a runway and prior to takeoff and landing.

14.4 The following phraseologies and procedures are used in radio−telephone communications with aeronautical ground stations.

14.4.1 Request for taxi instructions prior to departure. State your aircraft identification, location, type of operation planned (VFR or IFR), and the point of first intended landing.

EXAMPLE−
Aircraft: *"Washington ground, Beechcraft One Three One Five Niner at hangar eight, ready to taxi, I−F−R to Chicago."*

Tower: *"Beechcraft One Three One Five Niner, Washington ground, runway two seven, taxi via taxiways Charlie and Delta, hold short of runway three three left."*

Aircraft: *"Beechcraft One Three One Five Niner, hold short of runway three three left."*

14.4.2 Receipt of Air Traffic Control Clearance. Air route traffic control clearances are relayed to pilots by airport traffic controllers in the following manner:

EXAMPLE−
Tower: *"Beechcraft One Three One Five Niner, cleared to the Chicago Midway Airport via Victor Eight, maintain eight thousand."*

Aircraft: *"Beechcraft One Three One Five Niner, cleared to the Chicago Midway Airport via Victor Eight, maintain eight thousand."*

NOTE−
Normally, an ATC IFR clearance is relayed to a pilot by the ground controller. At busy locations, however, pilots may be instructed by the ground controller to "contact clearance delivery" on a frequency designated for this purpose. No surveillance or control over the movement of traffic is exercised by this position of operation. (See paragraph 27., ATC Clearances and Aircraft Separation.)

14.4.3 Request for Taxi Instructions After Landing. State your aircraft identification, location, and that you request taxi instructions.

EXAMPLE−
Aircraft: *"Dulles ground, Beechcraft One Four Two Six One clearing runway one right on taxiway echo three, request clearance to Page."*
Tower: *"Beechcraft One Four Two Six One, Dulles ground, taxi to Page via taxiways echo three, echo one, and echo niner."*

or

Aircraft: *"Orlando ground, Beechcraft One Four Two Six One clearing runway one eight left at taxiway bravo three, request clearance to Page."*

Tower: *"Beechcraft One Four Two Six One, Orlando ground, hold short of runway one eight right."*

Aircraft: *"Beechcraft One Four Two Six One, hold short of runway one eight right."*

15. Taxi During Low Visibility

15.1 Pilots and aircraft operators should be constantly aware that during certain low visibility conditions the movement of aircraft and vehicles on airports may not be visible to the tower controller. This may prevent visual confirmation of an aircraft's adherence to taxi instructions.

15.2 Of vital importance is the need for pilots to notify the controller when difficulties are encountered or at the first indication of becoming disoriented. Pilots should proceed with extreme caution when taxiing toward the sun. When vision difficulties are encountered, pilots should immediately inform the controller.

15.3 Advisory Circular 120−57, Surface Movement Guidance and Control System, commonly known as SMGCS (pronounced "SMIGS") requires a low visibility taxi plan for any airport which has takeoff or landing operations in less than 1,200 feet runway visual range (RVR) visibility conditions. These plans, which affect aircrew and vehicle operators, may incorporate additional lighting, markings, and procedures to control airport surface traffic. They will be addressed at two levels: operations less than 1,200 feet RVR to 600 feet RVR and operations less than 600 feet RVR.

NOTE−
Specific lighting systems and surface markings may be found in paragraph 14, Taxiway Lights, and paragraph 18, Taxiway Markings, in Section AD 1.1, Aerodrome Availability.

15.4 When low visibility conditions exist, pilots should focus their entire attention on the safe operation of the aircraft while it is moving. Checklists and nonessential communication should be withheld until the aircraft is stopped and the brakes set.

16. Intersection Takeoffs

16.1 In order to enhance airport capacities, reduce taxiing distances, minimize departure delays, and provide for more efficient movement of air traffic, controllers may initiate intersection takeoffs as well as approve them when the pilot requests. If for ANY reason a pilot prefers to use a different intersection or the full length of the runway or desires to obtain the distance between the intersection and the runway end, THE PILOT IS EXPECTED TO INFORM ATC ACCORDINGLY.

16.2 An aircraft is expected to taxi to (but not onto) the end of the assigned runway unless prior approval for an intersection departure is received from ground control.

16.3 Pilots should state their position on the airport when calling the tower for takeoff from a runway intersection.

EXAMPLE−
Cleveland Tower, Apache Three Seven Two Two Papa, at the intersection of taxiway oscar and runway two three right, ready for departure.

16.4 Controllers are required to separate small aircraft (12,500 pounds or less maximum certificated takeoff weight) departing (same or opposite direction) from an intersection behind a large nonheavy aircraft on the same runway by ensuring that at least a 3−minute interval exists between the time the preceding large aircraft has taken off and the succeeding small aircraft begins takeoff roll. To inform the pilot of the required 3−minute hold, the controller will state, “Hold for wake turbulence.” If after considering wake turbulence hazards, the pilot feels that a lesser time interval is appropriate, the pilot may request a waiver to the 3−minute interval. Pilots must initiate such a request by stating, “Request waiver to 3−minute interval,” or by making a similar statement. Controllers may then issue a takeoff clearance if other traffic permits, since the pilot has accepted the responsibility for wake turbulence separation.

16.5 The 3−minute interval is not required when the intersection is 500 feet or less from the departure point of the preceding aircraft and both aircraft are taking off in the same direction. Controllers may permit the small aircraft to alter course after takeoff to avoid the flight path of the preceding departure.

16.6 The 3−minute interval is mandatory behind a heavy aircraft in all cases.

17. VFR Flights in Terminal Areas

17.1 Use reasonable restraint in exercising the prerogative of VFR flight, especially in terminal areas. The weather minimums and distances from clouds are minimums. Giving yourself a greater margin in specific instances is just good judgment.

17.1.1 Approach Area. Conducting a VFR operation in Class D and E Airspace when the official visibility is 3 or 4 miles is not prohibited, but good judgment would dictate that you keep out of the approach area.

17.1.2 Reduced Visibility. It has always been recognized that precipitation reduces forward visibility. Consequently, although again it may be perfectly legal to cancel your IFR flight plan at any time you can proceed VFR, it is good practice, when precipitation is occurring, to continue IFR operation into a terminal area until you are reasonably close to your destination.

17.1.3 Simulated Instrument Flights. In conducting simulated instrument flights, be sure that the weather is good enough to compensate for the restricted visibility of the safety pilot and your greater concentration on your flight instruments. Give yourself a greater margin when your flight plan lies in or near a busy airway or close to an airport.

18. Low Approach

18.1 A low approach (sometimes referred to as a low pass) is the go−around maneuver following approach.

pilots to maintain visual contact with other aircraft and ground vehicle operations. Pilots should consider the effects of prevailing inflight visibility (such as landing into the sun) and how it may affect overall situational awareness. Additionally, surface vehicles and aircraft being taxied by maintenance personnel may also be participating in LAHSO, especially in those operations that involve crossing an active runway.

23. Exiting the Runway after Landing

23.1 The following procedures must be followed after landing and reaching taxi speed.

23.1.1 Exit the runway without delay at the first available taxiway or on a taxiway as instructed by ATC. Pilots must not exit the landing runway onto another runway unless authorized by ATC. At airports with an operating control tower, pilots should not stop or reverse course on the runway without first obtaining ATC approval.

23.1.2 Taxi clear of the runway unless otherwise directed by ATC. An aircraft is considered clear of the runway when all parts of the aircraft are past the runway edge and there are no restrictions to its continued movement beyond the runway holding position markings. In the absence of ATC instructions, the pilot is expected to taxi clear of the landing runway by taxiing beyond the runway holding position markings associated with the landing runway, even if that requires the aircraft to protrude into or cross another taxiway or ramp area. Once all parts of the aircraft have crossed the runway holding position markings, the pilot must hold unless further instructions have been issued by ATC.

NOTE−
1. *The tower will issue the pilot instructions which will permit the aircraft to enter another taxiway, runway, or ramp area when required.*

2. *Guidance contained in subparagraphs 23.1.1 and 23.1.2 above is considered an integral part of the landing clearance and satisfies the requirement of 14 CFR Section 91.129.*

23.1.3 Immediately change to ground control frequency when advised by the tower and obtain a taxi clearance.

NOTE−
1. *The tower will issue instructions required to resolve any potential conflictions with other ground traffic prior to advising the pilot to contact ground control.*

2. *A clearance from ATC to taxi to the ramp authorizes the aircraft to cross all runways and taxiway intersections. pilots not familiar with the taxi route should request specific taxi instructions from ATC.*

24. Hand Signals

FIG ENR 1.1−9
Signalman Directs Towing

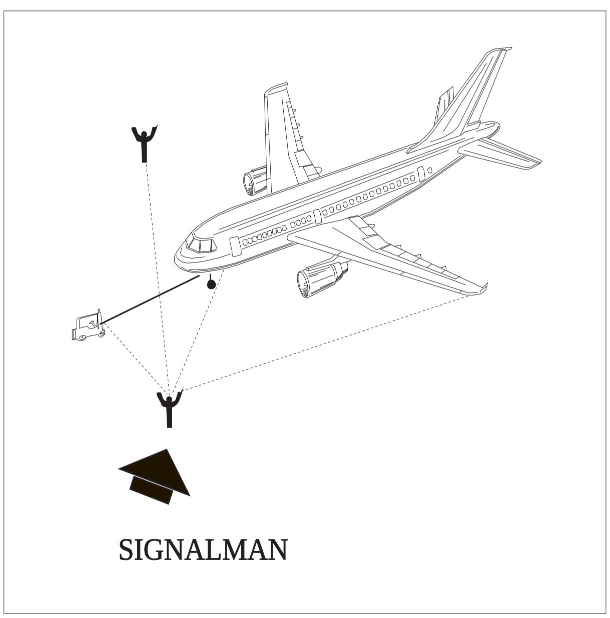


FIG ENR 1.1−10
Signalman's Position

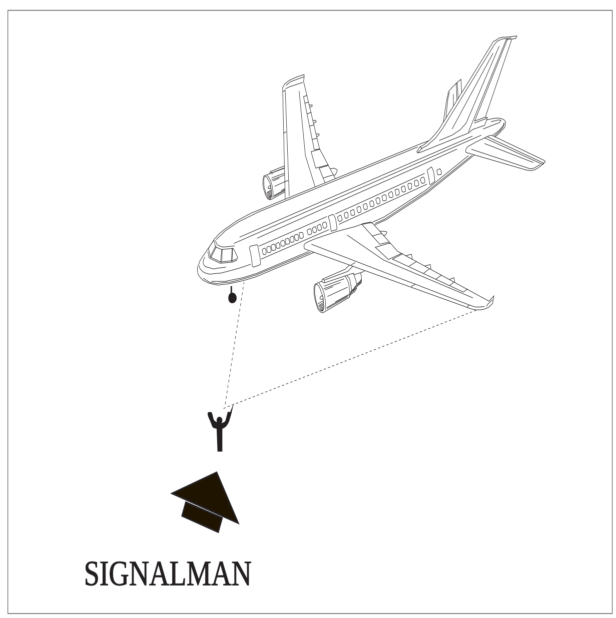


FIG ENR 1.1−11
All Clear (O.K.)

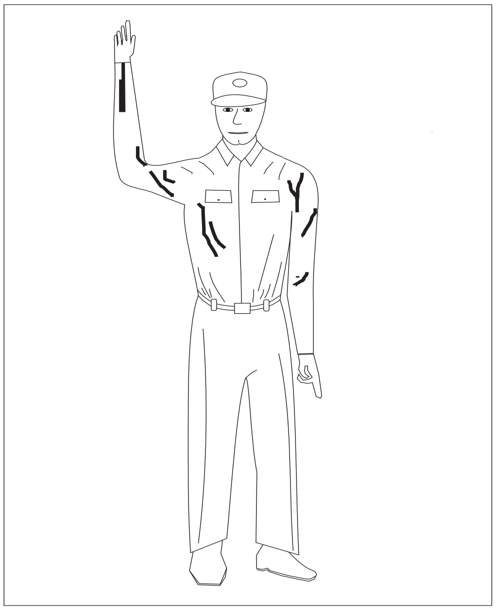


FIG ENR 1.1−13
Pull Chocks

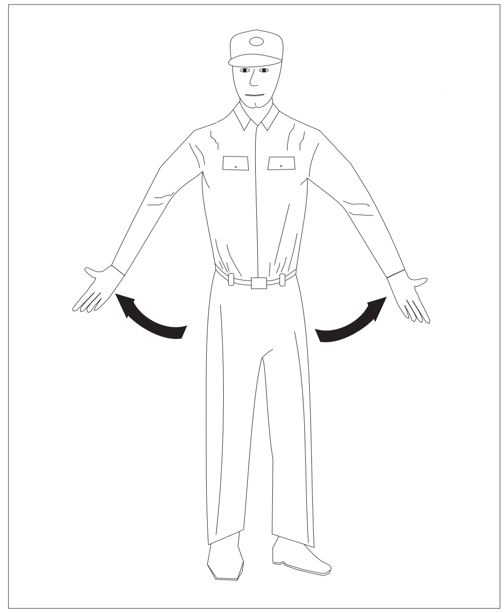


FIG ENR 1.1−12
Start Engine

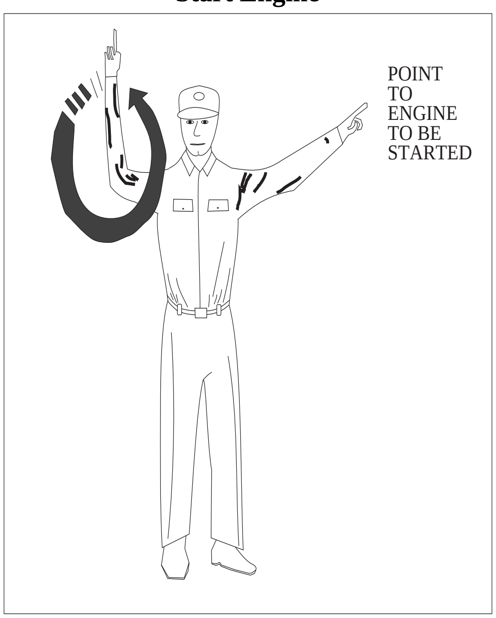
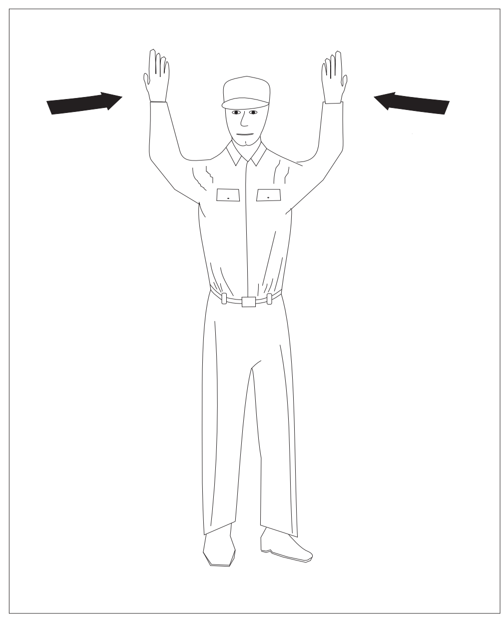


FIG ENR 1.1−14
Proceed Straight Ahead



25. Use of Aircraft Lights

25.1 Aircraft position lights are required to be lighted on aircraft operated on the surface and in flight from sunset to sunrise. In addition, aircraft equipped with an anti−collision light system are required to operate that light system during all types of operations (day and night). However, during any adverse meteorological conditions, the pilot−in−command may determine that the anti−collision lights should be turned off when their light output would constitute a hazard to safety (14 CFR Section 91.209). Supplementary strobe lights should be turned off on the ground when they adversely affect ground personnel or other pilots, and in flight when there are adverse reflection from clouds.

25.2 An aircraft anti−collision light system can use one or more rotating beacons and/or strobe lights, be colored either red or white, and have different (higher than minimum) intensities when compared to other aircraft. Many aircraft have both a rotating beacon and a strobe light system.

25.3 The FAA has a voluntary pilot safety program, *Operation Lights On*, to enhance the see−and−avoid concept. Pilots are encouraged to turn on their landing lights during takeoff; i.e., either after takeoff clearance has been received or when beginning takeoff roll. Pilots are further encouraged to turn on their landing lights when operating below 10,000 feet, day or night, especially when operating within 10 miles of any airport or in conditions of reduced visibility and in areas where flocks of birds may be expected; i.e., coastal areas, lake areas, around refuse dumps, etc. Although turning on aircraft lights does enhance the see−and−avoid concept, pilots should not become complacent about keeping a sharp lookout for other aircraft. Not all aircraft are equipped with lights, and some pilots may not have their lights turned on. Aircraft manufacturers' recommendations for operation of landing lights and electrical systems should be observed.

25.4 Prop and jet blast forces generated by large aircraft have overturned or damaged several smaller aircraft taxiing behind them. To avoid similar results and in the interest of preventing upsets and injuries to ground personnel from such forces, the FAA recommends that air carriers and commercial operators turn on their rotating beacons anytime their aircraft engines are in operation. General aviation pilots using rotating beacon−equipped aircraft are also encouraged to participate in this program which is designed to alert others to the potential hazard. Since this is a voluntary program, exercise caution and do not rely solely on the rotating beacon as an indication that aircraft engines are in operation.

25.5 Prior to commencing taxi, it is recommended to turn on navigation, position, anti-collision, and logo lights (if equipped). To signal intent to other pilots, consider turning on the taxi light when the aircraft is moving or intending to move on the ground, and turning it off when stopped or yielding to other ground traffic. Strobe lights should not be illuminated during taxi if they will adversely affect the vision of other pilots or ground personnel.

25.6 At the discretion of the pilot-in-command, all exterior lights should be illuminated when taxiing on or across any runway. This increases the conspicuity of the aircraft to controllers and other pilots approaching to land, taxiing, or crossing the runway. Pilots should comply with any equipment operating limitations and consider the effects of landing and strobe lights on other aircraft in their vicinity.

25.7 When entering the departure runway for takeoff or to "line up and wait," all lights, except for landing lights, should be illuminated to make the aircraft conspicuous to ATC and other aircraft on approach. Landing lights should be turned on when takeoff clearance is received or when commencing takeoff roll at an airport without an operating control tower.

26. Flight Inspection/"Flight Check" Aircraft in Terminal Areas

26.1 "Flight Check" is a call sign used to alert pilots and air traffic controllers when an FAA aircraft is engaged in flight inspection/certification of NAVAIDs and flight procedures. Flight check aircraft fly preplanned high/low altitude flight patterns such as grids, orbits, DME arcs, and tracks, including low passes along the full length of the runway to verify NAVAID performance.

26.2 Pilots should be especially watchful and avoid the flight paths of any aircraft using the call sign "Flight Check." These flights will normally receive special handling from ATC. Pilot patience and cooperation in allowing uninterrupted recordings can significantly help expedite flight inspections, minimize costly, repetitive runs, and reduce the burden on the U.S. taxpayer.

27. ATC Clearances and Aircraft Separation

27.1 Clearance

27.1.1 A clearance issued by ATC is predicated on known traffic and known physical airport conditions. An ATC clearance means an authorization by ATC, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified conditions within Classes A, B, C, D, and E airspace. IT IS NOT AUTHORIZATION FOR A PILOT TO DEVIATE FROM ANY RULE, REGULATION OR MINIMUM ALTITUDE NOR TO CONDUCT UNSAFE OPERATION OF THE AIRCRAFT.

27.1.2 14 CFR Section 91.3(a) states: "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." If ATC issues a clearance that would cause a pilot to deviate from a rule or regulation, or in the pilot's opinion, would place the aircraft in jeopardy, IT IS THE PILOT'S RESPONSIBILITY TO REQUEST AN AMENDED CLEARANCE. Similarly, if a pilot prefers to follow a different course of action, such as make a 360−degree turn for spacing to follow traffic when established in a landing or approach sequence, land on a different runway, takeoff from a different intersection, takeoff from the threshold instead of an intersection, or delay operation, THE PILOT IS EXPECTED TO INFORM ATC ACCORDINGLY. When the pilot requests a different course of action, however, the pilot is expected to cooperate so as to preclude the disruption of the traffic flow or the creation of conflicting patterns. The pilot is also expected to use the appropriate aircraft call sign to acknowledge all ATC clearances, frequency changes, or advisory information.

27.1.3 Each pilot who deviates from an ATC clearance in response to a traffic alert and collision avoidance system resolution advisory must notify ATC of that deviation as soon as possible.

27.1.4 When weather conditions permit, during the time an IFR flight is operating, it is the direct responsibility of the pilot to avoid other aircraft since VFR flights may be operating in the same area without the knowledge of ATC, and traffic clearances provide standard separation only between IFR flights.

27.2 Clearance Prefix

A clearance, information, or request for information originated by an ATC facility and relayed to the pilot through an air/ground communication station will be prefixed by "ATC CLEARS," "ATC ADVISES," or "ATC REQUESTS."

27.3 Clearance Items

27.3.1 An ATC clearance normally contains the following:

27.3.1.1 Clearance Limit. The traffic clearance issued prior to departure will normally authorize flight to the airport of intended landing. Many airports and associated NAVAIDs are collocated with the same name and/or identifier, so care should be exercised to ensure a clear understanding of the clearance limit. When the clearance limit is the airport of intended landing, the clearance should contain the airport name followed by the word "airport." Under certain conditions, a clearance limit may be a NAVAID or other fix. When the clearance limit is a NAVAID, intersection, or waypoint and the type is known, the clearance should contain type. Under certain conditions at some locations, a short−range clearance procedure is utilized whereby a clearance is issued to a fix within or just outside the terminal area, and pilots are advised of the frequency on which they will receive the long−range clearance direct from the center controller.

27.3.1.2 Departure Procedure. Headings to fly and altitude restrictions may be issued to separate a departure from other air traffic in the terminal area. Where the volume of traffic warrants, instrument departure procedures (DPs) have been developed. (See ENR 1.5.)

27.3.1.3 Route of Flight

a) Clearances are normally issued for the altitude/flight level and route filed by the pilot. However, due to traffic conditions, it is frequently necessary for ATC to specify an altitude/flight level or route different from that requested by the pilot. In addition, flow patterns have been established in certain congested areas, or between congested areas, whereby traffic capacity is increased by routing all traffic on preferred routes. Information on these flow patterns is available in offices where preflight briefing is furnished or where flight plans are accepted.

b) When required, air traffic clearances include data to assist pilots in identifying radio reporting points. It is the responsibility of a pilot to notify ATC immediately if the radio equipment cannot receive the type of signals the pilot must utilize to comply with the clearance.

27.3.1.4 Altitude Data

a) The altitude/flight level instructions in an ATC clearance normally require that a pilot "MAINTAIN" the altitude/flight level to which the flight will operate when in Classes A, B, C, D, and E airspace. Altitude/flight level changes while en route should be requested prior to the time the change is desired.

b) When possible, if the altitude assigned is different than that requested by the pilot, ATC will inform an aircraft when to expect climb or descent clearance or to request altitude change from another facility. If this has not been received prior to crossing the boundary of the ATC facility's area and assignment at a different flight level is still desired, the pilot should reinitiate the request with the next facility.

c) The term "CRUISE" may be used instead of "MAINTAIN" to assign a block of airspace, to a pilot, from the minimum IFR altitude up to and including the altitude specified in the cruise clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, the pilot may not return to that altitude without additional ATC clearance.

27.3.1.5 Holding Instructions

a) Whenever an aircraft is cleared to a fix other than the destination airport and delay is expected, it is the responsibility of the ATC controller to issue complete holding instructions (unless the pattern is charted), an EFC time, and a best estimate of any additional en route/terminal delay.

b) If the holding pattern is charted and the controller doesn't issue complete holding instructions, the pilot is expected to hold as depicted on the appropriate chart. When the pattern is charted, the controller may omit all holding instructions except the charted holding direction and the statement "AS PUBLISHED;" e.g., "HOLD EAST AS PUBLISHED." Controllers must always issue complete holding instructions when pilots request them.

NOTE−
Only those holding patterns depicted on U.S. government or commercially produced charts which meet FAA requirements should be used.

c) If no holding pattern is charted and holding instructions have not been issued, the pilot should ask ATC for holding instructions prior to reaching the fix. This procedure will eliminate the possibility of an aircraft entering a holding pattern other than that desired by ATC. If unable to obtain holding instructions prior to reaching the fix (due to frequency congestion, stuck microphones, etc.), hold in a standard pattern on the course on which you approached the fix and request further clearance as soon as possible. In this event, the altitude/flight level of the aircraft at the clearance limit will be protected so that separation will be provided as required.

d) When an aircraft is 3 minutes or less from a clearance limit and a clearance beyond the fix has not been received, the pilot is expected to start a speed reduction so that the aircraft will cross the fix, initially, at or below the maximum holding airspeed.

e) When no delay is expected, the controller should issue a clearance beyond the fix as soon as possible and, whenever possible, at least 5 minutes before the aircraft reaches the clearance limit.

f) Pilots should report to ATC the time and altitude/flight level at which the aircraft reaches the clearance limit and report leaving the clearance limit.

NOTE−
In the event of two−way communications failure, pilots are required to comply with 14 CFR Section 91.185.

27.4 Amended Clearances

27.4.1 Amendments to the initial clearance will be issued at any time an air traffic controller deems such action necessary to avoid possible confliction between aircraft. Clearances will require that a flight "hold" or change altitude prior to reaching the point where standard separation from other IFR traffic would no longer exist.

NOTE−
Some pilots have questioned this action and requested "traffic information" and were at a loss when the reply indicated "no traffic reported." In such cases the controller has taken action to prevent a traffic confliction which would have occurred at a distant point.

27.4.2 A pilot may wish an explanation of the handling of the flight at the time of occurrence; however, controllers are not able to take time from their immediate control duties, nor can they afford to overload the ATC communications channels to furnish explanations. Pilots may obtain an explanation by directing a letter or telephone call to the chief controller of the facility involved.

27.4.3 Pilots have the privilege of requesting a different clearance from that which has been issued by ATC if they feel that they have information which would make another course of action more practicable or if aircraft equipment limitations or company procedures forbid compliance with the clearance issued.

27.4.4 Pilots should pay particular attention to the clearance and not assume that the route and altitude/flight level are the same as requested in the flight plan. It is suggested that pilots make a written report of clearances at the time they are received, and verify, by a repeat back, any portions that are complex or about which a doubt exists. It will be the responsibility of each pilot to accept or refuse the clearance issued.

27.5 Special VFR Clearance

27.5.1 An ATC clearance must be obtained *prior* to operating within a Class B, Class C, Class D, and Class E surface area when the weather is less than that required for VFR flight. A VFR pilot may request and be given a clearance to enter, leave or operate within most Class D and Class E surface areas and some Class B and Class C surface areas in special VFR conditions, traffic permitting, and providing such flight will not delay IFR operations. All special VFR flights must remain clear of clouds. The visibility requirements for Special VFR aircraft (other than helicopters) are:

27.5.1.1 At least one statute mile flight visibility for operations within Classes B, C, D, and E surface areas.

27.5.1.2 At least one statute mile ground visibility if taking off or landing. If ground visibility is not reported at that airport, the flight visibility must be at least one statute mile.

27.5.1.3 The restrictions in subparagraphs 27.5.1.1 and 27.5.1.2 do not apply to helicopters. Helicopters must remain clear of clouds and may operate in Classes B, C, D, and E surface areas with less than one statute mile visibility.

27.5.2 When a control tower is located within a Class B, Class C, and Class D surface area, requests for clearances should be to the tower. If no tower is located within the surface area, a clearance may be obtained from the nearest tower, FSS or ARTCC.

27.5.3 It is not necessary to file a complete flight plan with the request for clearance, but pilots should state their intentions in sufficient detail to permit ATC to fit their flight into the traffic flow. The clearance will not contain a specific altitude as the pilot must remain clear of clouds. The controller may require the pilot to fly at or below a certain altitude due to other traffic, but the altitude specified will permit flight at or above the minimum safe altitude. In addition, at radar locations, flight may be vectored if necessary for control purposes or on pilot request.

NOTE−
The pilot is responsible for obstacle or terrain clearance (reference 14 CFR Section 91.119).

27.5.4 Special VFR clearances are effective within Classes B, C, D, and E surface areas only. ATC does not provide separation after an aircraft leaves Class D surface area on a special VFR clearance.

27.5.5 Special VFR operations by fixed−wing aircraft are prohibited in some Classes B and C surface areas due to the volume of IFR traffic. A list of these Classes B and C surface areas is contained in 14 CFR Part 91, Appendix D, Section 3 and also depicted on Sectional Aeronautical Charts.

27.5.6 ATC provides separation between special VFR flights and between them and other IFR flights.

27.5.7 Special VFR operations by fixed−wing aircraft are prohibited between sunset and sunrise unless the pilot is instrument rated and the aircraft is equipped for IFR flight.

27.5.8 Pilots arriving or departing an uncontrolled airport that has automated weather broadcast capability (ASOS/AWSS/AWOS) should monitor the broadcast frequency, advise the controller that they have the "one−minute weather," and state intentions prior to operating within the Class B, Class C, Class D, or Class E surface areas.

NOTE−
One−minute weather is the most recent one minute updated weather broadcast received by a pilot from an uncontrolled airport ASOS/AWSS/AWOS.

28. Pilot Responsibilities Upon Clearance Issuance

28.1 Record ATC Clearance. When conducting an IFR operation, make a written record of your ATC clearance. The specified conditions which are a part of your air traffic clearance may be somewhat different from those included in your flight plan. Additionally, ATC may find it necessary to ADD conditions, such as a particular departure route. The very fact that ATC specifies different or additional conditions means that other aircraft are involved in the traffic situation.

28.2 ATC Clearance/Instruction Readback. Pilots of airborne aircraft should read back *those parts* of ATC clearances and instructions containing altitude assignments, vectors, or runway assignments as a means of mutual verification. The read back of the "numbers" serves as a double check between pilots and controllers and reduces the kinds of communications errors that occur when a number is either "misheard" or is incorrect.

28.2.1 Include the aircraft identification in all readbacks and acknowledgments. This aids controllers in determining that the correct aircraft received the clearance or instruction. The requirement to include aircraft identification in all readbacks and acknowledgments becomes more important as frequency congestion increases and when aircraft with similar call signs are on the same frequency.

EXAMPLE−
"Climbing to Flight Level three three zero, United Twelve" or "November Five Charlie Tango, roger, cleared to land runway nine left."

28.2.2 Read back altitudes, altitude restrictions, and vectors in the same sequence as they are given in the clearance/instruction.

28.2.3 Altitudes contained in charted procedures such as DPs, instrument approaches, etc., should not be read back unless they are specifically stated by the controller.

28.2.4 Initial read back of a taxi, departure or landing clearance should include the runway assignment, including left, right, center, etc. if applicable.

28.3 It is the responsibility of the pilot to accept or refuse the clearance issued.

29. IFR Clearance VFR−On−Top

29.1 A pilot on an IFR flight plan operating in VFR weather conditions, may request VFR−on−top in lieu of an assigned altitude. This would permit pilots to select an altitude or flight level of their choice (subject to any ATC restrictions).

29.2 Pilots desiring to climb through a cloud, haze, smoke, or other meteorological formation and then either cancel their IFR flight plan or operate VFR−on−top may request a climb to VFR−on−top. The ATC authorization must contain either a top report or a statement that no top report is available, and a request to report reaching VFR−on−top. Additionally, the ATC authorization may contain a clearance limit, routing and an alternative clearance if VFR−on−top is not reached by a specified altitude.

29.3 A pilot on an IFR flight plan operating in VFR conditions may request to climb/descend in VFR conditions.

29.4 ATC may not authorize VFR−on−top/VFR conditions operations unless the pilot requests the VFR operation or a clearance to operate in VFR conditions will result in noise abatement benefits where part of the IFR departure route does not conform to an FAA approved noise abatement route or altitude.

29.5 When operating in VFR conditions with an ATC authorization to "maintain VFR−on−top" or "maintain VFR conditions," pilots on IFR flight plans must:

29.5.1 Fly at the appropriate VFR altitude as prescribed in 14 CFR Section 91.159.

29.5.2 Comply with the VFR visibility and distance from cloud criteria in 14 CFR Section 91.155 (Basic VFR Weather Minimums).

NOTE−
See AIP, GEN 1.7, Annex 2, Rules of the Air, for a table showing basic VFR weather minimums.

29.5.3 Comply with instrument flight rules that are applicable to this flight; i.e., minimum IFR altitude, position reporting, radio communications, course to be flown, adherence to ATC clearance, etc. Pilots should advise ATC prior to any altitude change to ensure the exchange of accurate traffic information.

29.6 ATC authorization to "maintain VFR−on−top" is not intended to restrict pilots so that they must operate only above an obscuring meteorological formation (layer). Instead, it permits operation above, below, between layers or in areas where there is no meteorological obscuration. It is imperative that clearance to operate "VFR−on−top/VFR conditions" does not imply cancellation of the IFR flight plan.

29.7 Pilots operating VFR−on−top/VFR conditions may receive traffic information from ATC on other pertinent IFR or VFR aircraft. However, aircraft operating in Class B or Class C airspace and TRSAs must be separated as required by FAA Order 7110.65, Air Traffic Control.

NOTE−
When operating in VFR weather conditions, it is the pilot's responsibility to be vigilant so as to see and avoid other aircraft.

30. VFR/IFR Flights

30.1 A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the minimum en route altitude (MEA)/minimum IFR altitude (MIA)/minimum vector altitude (MVA)/off route obstruction clearance altitude (OROCA), pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If the pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions.

NOTE−
OROCA is an off route altitude which provides obstruction clearance with a 1,000 foot buffer in nonmountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground based navigational aids, air traffic control radar, or communications coverage.

31. Adherence to Clearance

31.1 When air traffic clearance has been obtained under either the Visual or Instrument Flight Rules, the pilot in command of the aircraft must not deviate from the provisions thereof unless an amended clearance is obtained. When ATC issues a clearance or instruction, pilots are expected to execute its provisions upon receipt. ATC, in certain situations, will include the word "IMMEDIATELY" in a clearance or instruction to impress urgency of an imminent situation, and expeditious compliance by the pilot is expected and necessary for safety. The addition of a VFR or other restriction; i.e., climb or descent point or time, crossing altitude, etc., does not authorize a pilot to deviate from the route of flight or any other provision of the ATC clearance.

31.2 When a heading is assigned or a turn is requested by ATC, pilots are expected to promptly initiate the turn, to complete the turn, and to maintain the new heading unless issued additional instructions.

31.3 The term "at pilot's discretion" included in the altitude information of an ATC clearance means that ATC has offered the pilot the option to start climb or descent when the pilot wishes, is authorized to conduct the climb or descent at any rate, and to temporarily level off at any intermediate altitude as desired. However, once the aircraft has vacated an altitude, it may not return to that altitude.

31.4 When ATC has not used the term "AT PILOT'S DISCRETION" nor imposed any climb or descent restrictions, pilots should initiate climb or descent promptly on acknowledgement of the clearance. Descend or climb at an optimum rate consistent with the operating characteristics of the aircraft to 1,000 feet above or below the assigned altitude, and then attempt to descend or climb at a rate of between 500 and 1,500 fpm until the assigned altitude is reached. If at anytime the pilot is unable to climb or descend at a rate of at least 500 feet a minute, advise ATC. If it is necessary to level off at an intermediate altitude during climb or descent, advise ATC, except when leveling off at 10,000 feet MSL on descent, or 2,500 feet above airport elevation (prior to entering a Class C or Class D surface area), when required for speed reduction (14 CFR Section 91.117).

NOTE−
Leveling off at 10,000 feet MSL on descent or 2,500 feet above airport elevation (prior to entering a Class C or Class D surface area) to comply with 14 CFR Section 91.117 airspeed restrictions is commonplace. Controllers anticipate this action and plan accordingly. Leveling off at any other time on climb or descent may seriously affect air traffic handling by ATC. Consequently, it is imperative that pilots make every effort to fulfill the above expected actions to aid ATC in safely handling and expediting traffic.

31.5 If the altitude information of an ATC DESCENT clearance includes a provision to "CROSS (fix) AT" or "AT OR ABOVE/BELOW (altitude)," the manner in which the descent is executed to comply with the crossing altitude is at the pilot's discretion. This authorization to descend at pilot's discretion is only applicable to that portion of the flight to which the crossing altitude restriction applies, and the pilot is expected to comply with the crossing altitude as a provision of the clearance. Any other clearance in which pilot execution is optional will so state: "AT PILOT'S DISCRETION."

EXAMPLE−
1. *"United Four Seventeen, descend and maintain six thousand."*

NOTE−
1. *The pilot is expected to commence descent upon receipt of the clearance and to descend at the suggested rates until reaching the assigned altitude of 6,000 feet.*

EXAMPLE−
2. *"United Four Seventeen, descend at pilot's discretion, maintain six thousand."*

NOTE−
2. *The pilot is authorized to conduct descent within the context of the term at pilot's discretion as described above.*

EXAMPLE−
3. *"United Four Seventeen, cross Lakeview V−O−R at or above Flight Level two zero zero, descend and maintain six thousand."*

NOTE−
3. *The pilot is authorized to conduct descent at pilot's discretion until reaching Lakeview VOR and must comply with the clearance provision to cross the Lakeview VOR at or above FL 200. After passing Lakeview VOR, the pilot is expected to descend at the suggested rates until reaching the assigned altitude of 6,000 feet.*

EXAMPLE−
4. *"United Four Seventeen, cross Lakeview V−O−R at six thousand, maintain six thousand."*

NOTE−
4. *The pilot is authorized to conduct descent at pilot's discretion, however, must comply with the clearance provision to cross the Lakeview VOR at 6,000 feet.*

EXAMPLE−
5. *"United Four Seventeen, descend now to Flight Level two seven zero, cross Lakeview V−O−R at or below one zero thousand, descend and maintain six thousand."*

NOTE−
5. *The pilot is expected to promptly execute and complete descent to FL 270 upon receipt of the clearance. After reaching FL 270 the pilot is authorized to descend "at pilot's discretion" until reaching Lakeview VOR. The pilot must comply with the clearance provision to cross Lakeview VOR at or below 10,000 feet. After Lakeview VOR the pilot is expected to descend at the suggested rates until reaching 6,000 feet.*

EXAMPLE−
6. *"United Three Ten, descend now and maintain Flight Level two four zero, pilot's discretion after reaching Flight Level two eight zero."*

NOTE−
6. *The pilot is expected to commence descent upon receipt of the clearance and to descend at the suggested rates until reaching FL 280. At that point, the pilot is authorized to continue descent to FL 240 within the context of the term "at pilot's discretion" as described above.*

31.6 In case emergency authority is used to deviate from the provisions of an ATC clearance, the pilot in command must notify ATC as soon as possible and obtain an amended clearance. In an emergency situation which results in no deviation from the rules prescribed in 14 CFR Part 91 but which requires ATC to give priority to an aircraft, the pilot of such aircraft must, when requested by ATC, make a report within 48 hours of such emergency situation to the manager of that ATC facility.

31.7 The guiding principle is that the last ATC clearance has precedence over the previous ATC clearance. When the route or altitude in a previously issued clearance is amended, the controller will restate applicable altitude restrictions. If altitude to maintain is changed or restated, whether prior to departure or while airborne, and previously issued altitude restrictions are omitted, those altitude restrictions are canceled, including Departure Procedures and Standard Terminal Arrival Route (STAR) altitude restrictions.

EXAMPLE−

1. *A departure flight receives a clearance to destination airport to maintain FL 290. The clearance incorporates a DP which has certain altitude crossing restrictions. Shortly after takeoff, the flight receives a new clearance changing the maintaining FL from 290 to 250. If the altitude restrictions are still applicable, the controller restates them.*

2. *A departing aircraft is cleared to cross Fluky Intersection at or above 3,000 feet, Gordonville VOR at or above 12,000 feet, maintain FL 200. Shortly after departure, the altitude to be maintained is changed to FL 240. If the altitude restrictions are still applicable, the controller issues an amended clearance as follows: "cross Fluky Intersection at or above three thousand, cross Gordonville V−O−R at or above one two thousand, maintain Flight Level two four zero."*

3. *An arriving aircraft is cleared to the destination airport via V45 Delta VOR direct; the aircraft is cleared to cross Delta VOR at 10,000 feet, and then to maintain 6,000 feet. Prior to Delta VOR, the controller issues an amended clearance as follows: "turn right heading one eight zero for vector to runway three six I−L−S approach, maintain six thousand."*

NOTE−

Because the altitude restriction "cross Delta V−O−R at 10,000 feet" was omitted from the amended clearance, it is no longer in effect.

31.8 Pilots of turbojet aircraft equipped with afterburner engines should advise ATC prior to takeoff if they intend to use afterburning during their climb to the en route altitude. Often, the controller may be able to plan traffic to accommodate a high performance climb and allow the aircraft to climb to the planned altitude without restriction.

31.9 If an "expedite" climb or descent clearance is issued by ATC, and the altitude to maintain is subsequently changed or restated without an expedite instruction, the expedite instruction is canceled. Expedite climb/descent normally indicates to the pilot that the approximate best rate of climb/descent should be used without requiring an exceptional change in aircraft handling characteristics. Normally controllers will inform pilots of the reason for an instruction to expedite.

32. IFR Separation Standards

32.1 ATC effects separation of aircraft vertically by assigning different altitudes; longitudinally by providing an interval expressed in time or distance between aircraft on the same, converging, or crossing courses; and laterally by assigning different flight paths.

32.2 Separation will be provided between all aircraft operating on IFR flight plans except during that part of the flight (outside Class B airspace or a TRSA) being conducted on a VFR−on−top/VFR conditions clearance. Under these conditions, ATC may issue traffic advisories, but it is the sole responsibility of the pilot to be vigilant so as to see and avoid other aircraft.

32.3 When radar is employed in the separation of aircraft at the same altitude, a minimum of 3 miles separation is provided between aircraft operating within 40 miles of the radar antenna site, and 5 miles between aircraft operating beyond 40 miles from the antenna site. These minimums may be increased or decreased in certain specific situations.

NOTE−

Certain separation standards are increased in the terminal environment when Center Radar Arts Presentation/Processing (CENRAP) is being utilized.

33. Speed Adjustments

33.1 ATC will issue speed adjustments to pilots of radar−controlled aircraft to achieve or to maintain required or desired spacing.

33.2 ATC will express all speed adjustments in terms of knots based on indicated airspeed (IAS) in 10−knot increments except that at or above FL 240 speeds may be expressed in terms of Mach numbers in .01 increments. The use of Mach numbers is restricted to turbojet aircraft with Mach meters.

33.3 Pilots of aircraft in U.S. domestic Class A, B, C, D, and E airspace complying with speed adjustments should maintain a speed within plus or minus 10 knots or 0.02 Mach number, whichever is less, of the assigned speed.

33.4 Pilots of aircraft in offshore controlled airspace or oceanic controlled airspace must adhere to the ATC assigned airspeed and must request ATC approval before making any change thereto. If it is essential to make an immediate temporary change in the Mach number (e.g., due to turbulence), ATC must be notified as soon as possible. If it is not feasible to maintain the last assigned Mach number during an en route climb or descent due to aircraft performance, advise ATC at the time of the request.

37.6 Radar Availability

37.6.1 FAA radar units operate continuously at the locations shown in the Airport/Facility Directory, and their services are available to all pilots, both civil and military. Contact the associated FAA control tower or ARTCC on any frequency guarded for initial instructions, or in an emergency, any FAA facility for information on the nearest radar service.

37.7 Transponder Operation

37.7.1 General

37.7.1.1 Pilots should be aware that proper application of these procedures will provide both VFR and IFR aircraft with a high degree of safety in the environment where high−speed closure rates are possible. Transponders substantially increase the capability of radar to see an aircraft, and the Mode C feature enables the controller to quickly determine where potential traffic conflicts may exist. Even VFR pilots who are not in contact with ATC will be afforded greater protection from IFR aircraft and VFR aircraft which are receiving traffic advisories. Nevertheless, pilots should never relax their visual scanning vigilance for other aircraft.

37.7.1.2 ATCRBS is similar to and compatible with military coded radar beacon equipment. Civil Mode A is identical to military Mode 3.

37.7.1.3 Civil and military transponders should be turned to the "on" or normal altitude reporting position prior to moving on the airport surface to ensure the aircraft is visible to ATC surveillance systems. IN ALL CASES, WHILE IN CONTROLLED AIRSPACE, EACH PILOT OPERATING AN AIRCRAFT EQUIPPED WITH AN OPERABLE ATC TRANSPONDER, MAINTAINED IN ACCORDANCE WITH 14 CFR. SECTION 91.413, MUST OPERATE THE TRANSPONDER, INCLUDING MODE C IF INSTALLED, ON THE APPROPRIATE CODE OR AS ASSIGNED BY ATC. IN CLASS G AIRSPACE, THE TRANSPONDER SHOULD BE OPERATING WHILE AIRBORNE UNLESS OTHERWISE REQUESTED BY ATC.

37.7.1.4 If a pilot on an IFR flight elects to cancel the IFR flight plan prior to reaching destination, the pilot should adjust the transponder according to VFR operations.

37.7.1.5 If entering U.S. domestic controlled airspace from outside the U.S., the pilot should advise on first radio contact with a U.S. radar ATC facility that such equipment is available by adding "transponder" to the aircraft identification.

37.7.1.6 It should be noted by all users of ATC transponders that the coverage they can expect is limited to "line of sight." Low altitude or aircraft antenna shielding by the aircraft itself may result in reduced range. Range can be improved by climbing to a higher altitude. It may be possible to minimize antenna shielding by locating the antenna where dead spots are only noticed during abnormal flight attitudes.

37.7.1.7 Aircraft equipped with ADS−B (1090 ES or UAT) must operate the equipment in the transmit mode (on position) at all times while on any airport surface.

NOTE−
For a complete description of operating limitations and procedures, pilots of aircraft equipped with ADS−B should refer to AIP, Automatic Dependant Surveillance − Broadcast Services, ENR 1.1 Paragraph 46.

37.7.2 Transponder Code Designation

37.7.2.1 For ATC to utilize one or a combination of the 4096 discrete codes, FOUR DIGIT CODE DESIGNATION will be used; e.g., code 2100 will be expressed as TWO ONE ZERO ZERO. Due to the operational characteristics of the rapidly expanding automated ATC system, THE LAST TWO DIGITS OF THE SELECTED TRANSPONDER CODE SHOULD ALWAYS READ '00' UNLESS SPECIFICALLY REQUESTED BY ATC TO BE OTHERWISE.

37.7.3 Automatic Altitude Reporting (Mode C)

37.7.3.1 Some transponders are equipped with a Mode C automatic altitude reporting capability. This system converts aircraft altitude in 100 foot increments to coded digital information which is transmitted together with Mode C framing pulses to the interrogating radar facility. The manner in which transponder panels are designed differs, therefore, a pilot should be thoroughly familiar with the operation of the transponder so that ATC may realize its full capabilities.

37.7.3.2 Adjust transponder to reply on the Mode A/3 code specified by ATC and, if equipped, to reply on Mode C with altitude reporting capability activated unless deactivation is directed by ATC or unless the installed aircraft equipment has not been tested and calibrated as required by 14 CFR Section 91.217. If deactivation is required by ATC, run off the altitude reporting feature of your transponder. An instruction by ATC to "STOP ALTITUDE SQUAWK, ALTITUDE DIFFERS (number of feet) FEET," may be an indication that your transponder is transmitting incorrect altitude information or that you have an incorrect altimeter setting. While an incorrect altimeter setting has no effect on the Mode C altitude information transmitted by your transponder (transponders are preset at 29.92), it would cause you to fly at an actual altitude different from your assigned altitude. When a controller indicates that an altitude readout is invalid, the pilot should initiate a check to verify that the aircraft altimeter is set correctly.

37.7.3.3 Pilots of aircraft with operating Mode C altitude reporting transponders should exact altitude/ flight level to the nearest hundred foot increment when establishing initial contact with an ATC. Exact altitude/flight level reports on initial contact provide ATC with information that is required prior to using Mode C altitude information for separation purposes. This will significantly reduce altitude verification requests.

37.7.4 Transponder IDENT Feature

37.7.4.1 The transponder must be operated only as specified by ATC. Activate the "IDENT" feature only upon request of the ATC controller.

37.7.5 Code Changes

37.7.5.1 When making routine code changes, pilots should avoid inadvertent selection of Codes 7500, 7600, or 7700 thereby causing momentary false alarms at automated ground facilities. For example when switching from Code 2700 to Code 7200, switch first to 2200 then 7200, NOT to 7700 and then 7200. This procedure applies to nondiscrete Code 7500 and all discrete codes in the 7600 and 7700 series (i.e., 7600−7677, 7700−7777) which will trigger special indicators in automated facilities. Only nondiscrete Code 7500 will be decoded as the hijack code.

37.7.5.2 Under no circumstances should a pilot of a civil aircraft operate the transponder on Code 7777. This code is reserved for military interceptor operations.

37.7.5.3 Military pilots operating VFR or IFR within restricted/warning areas should adjust their transponders to Code 4000, unless another code has been assigned by ATC.

37.7.6 Mode C Transponder Requirements

37.7.6.1 Specific details concerning requirements to carry and operate Mode C transponders, as well as exceptions and ATC authorized deviations from the requirements are found in 14 CFR Sections 91.215 and 99.12.

37.7.6.2 In general, the CFR requires aircraft to be equipped with Mode C transponders when operating:

a) At or above 10,000 feet MSL over the 48 contiguous states or the District of Columbia, excluding that airspace below 2,500 feet AGL.

b) Within 30 miles of a Class B airspace primary airport, below 10,000 feet MSL. Balloons, gliders, and aircraft not equipped with an engine driven electrical system are excepted from the above requirements when operating below the floor of Class A airspace and/or; outside of Class B airspace and below the ceiling of the Class B airspace (or 10,000 feet MSL, whichever is lower).

c) Within and above all Class C airspace up to 10,000 feet MSL.

d) Within 10 miles of certain designated airports from the surface to 10,000 feet MSL, excluding that airspace which is both outside Class D airspace and below 1,200 feet AGL. Balloons, gliders and aircraft not equipped with an engine driven electrical system are excepted from this requirement.

37.7.6.3 14 CFR Section 99.12 requires all aircraft flying into, within, or across the contiguous U.S. ADIZ be equipped with a Mode C or Mode S transponder. Balloons, gliders, and aircraft not equipped with an engine driven electrical system are excepted from this requirement.

37.7.6.4 Pilots must ensure that their aircraft transponder is operating on an appropriate ATC assigned VFR/IFR code and Mode C when operating in such airspace. If in doubt about the operational status of either feature of your transponder while airborne, contact the nearest ATC facility or FSS and they will advise you what facility you should contact for determining the status of your equipment.

37.7.6.5 Inflight requests for "immediate" deviation from the transponder requirements may be approved by controllers only when the flight will continue IFR or when weather conditions prevent VFR descent and continued VFR flight in airspace not affected by the CFR. All other requests for deviation should be made by contacting the nearest FSS or air traffic facility in person or by telephone. The nearest ARTCC will normally be the controlling agency and is responsible for coordinating requests involving deviations in other ARTCC's areas.

37.7.7 Transponder Operation Under Visual Flight Rules (VFR)

37.7.7.1 Unless otherwise instructed by an ATC Facility, adjust transponder to reply on Mode 3/A Code 1200 regardless of altitude.

37.7.7.2 Adjust transponder to reply on Mode C, with altitude reporting capability activated if the aircraft is so equipped, unless deactivation is directed by ATC or unless the installed equipment has not been tested and calibrated as required by 14 CFR Section 91.217. If deactivation is required and your transponder is so designed, turn off the altitude reporting switch and continue to transmit Mode C framing pulses. If this capability does not exist, turn off Mode C.

37.7.8 Radar Beacon Phraseology

37.7.8.1 Air traffic controllers, both civil and military, will use the following phraseology when referring to operation of the ATCRBS. Instructions by ATC refer only to Mode A/3 or Mode C operations and do not affect the operation of the transponder on other modes.

a) SQUAWK (number). Operate radar beacon transponder on designated code in Mode A/3.

b) IDENT. Engage the "IDENT" feature (military I/P) of the transponder.

c) SQUAWK (number) AND IDENT. Operate transponder on specified code in Mode A/3 and engage the "IDENT" (military I/P) feature.

d) SQUAWK STANDBY. Switch transponder to standby position.

e) SQUAWK LOW/NORMAL. Operate transponder on low or normal sensitivity as specified. Transponder is operated in "NORMAL" position unless ATC specified "LOW." ("ON" is used instead of "NORMAL" as a master control label on some types of transponders.)

f) SQUAWK ALTITUDE. Activate Mode C with automatic altitude reporting.

g) STOP ALTITUDE SQUAWK. Turn off altitude reporting switch and continue transmitting Mode C framing pulses. If your equipment does not have this capability, turn off Mode C.

h) STOP SQUAWK (mode in use). Switch off specified mode. (Use for military aircraft when the controller is unaware if a military service requires the aircraft to continue operating on another mode.)

i) STOP SQUAWK. Switch off transponder.

j) SQUAWK MAYDAY. Operate transponder in the emergency position. (Mode A Code 7700 for civil transponder. Mode 3 Code 7700 and emergency feature for military transponder.)

k) SQUAWK VFR. Operate radar beacon transponder on code 1200 in the MODE A/3, or other appropriate VFR code.

37.8 Emergency Operation

37.8.1 When an emergency occurs, the pilot of an aircraft equipped with a coded radar beacon transponder who desires to alert a ground radar facility to an emergency condition and who cannot establish communications without delay with an ATC facility may adjust the transponder to reply on Mode A/3, Code 7700.

37.8.2 Pilots should understand that they may not be within a radar coverage area and that, even if they are, certain radar facilities are not yet equipped to automatically recognize Code 7700 as an emergency signal. Therefore, they should establish radio communications with an ATC facility as soon as possible.

37.9 Radio Failure Operation

37.9.1 Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two−way radio capability the pilot should:

37.9.1.1 Adjust the transponder to reply on MODE A/3, Code 7600.

37.9.1.2 Understand that the aircraft may not be in an area of radar coverage.

37.9.2 Pilots should understand that they may not be in an area of radar coverage. Also, many radar facilities are not presently equipped to automatically display Code 7600 and will interrogate 7600 only when the aircraft is under direct radar control at the time of radio failure. However, replying on Code 7700 first, increases the probability of early detection of a radio failure condition.

37.10 Radar Services

37.10.1 Safety Alert

37.10.1.1 A safety alert will be issued to pilots of aircraft being controlled by ATC if the controller is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The provision of this service is contingent upon the capability of the controller to have an awareness of situations involving unsafe proximity to terrain, obstructions, and uncontrolled aircraft. The issuance of a safety alert cannot be mandated, but it can be expected on a reasonable, though intermittent, basis. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, will be taken. This procedure is intended for use in time critical situations where aircraft safety is in question. Noncritical situations should be handled via the normal traffic alert procedures.

37.10.2 Terrain/Obstruction Alert

37.10.2.1 Controllers will immediately issue an alert to the pilots of aircraft under their control when they recognize that the aircraft is at an altitude which, in their judgment, may be in unsafe proximity to terrain/obstructions. The primary method of detecting unsafe proximity is through Mode C automatic altitude reports.

EXAMPLE−
Low altitude alert, check your altitude immediately. The, as appropriate, MEA/MVA/MOCA in your area is (altitude) or, if past the final approach fix (nonprecision approach) or the outer marker or fix used in lieu of the outer marker (precision approach), the, as appropriate, MDA/DH (if known) is (altitude).

37.10.2.2 Terminal Automated Radar Terminal System (ARTS) IIIA, Common ARTS (to include ARTS IIIE and ARTS IIE) (CARTS), Micro En Route Automated Radar Tracking System (MEARTS), and Standard Terminal Automation Replacement System (STARS) facilities have an automated function which, if operating, alerts controllers when a tracked Mode C equipped aircraft under their control is below or is predicted to be below a predetermined minimum safe altitude. This function, called Minimum Safe Altitude Warning (MSAW), is designed solely as a controller aid in detecting potentially unsafe aircraft proximity to terrain/obstructions. The ARTS IIIA, CARTS, MEARTS, and STARS facility will, when MSAW is operating, provide MSAW monitoring for all aircraft with an operating Mode C altitude encoding transponder that are tracked by the system and are:

a) Operating on a IFR flight plan.

b) Operating VFR and have requested MSAW monitoring.

37.10.2.3 Terminal AN/TPX−42A (number beacon decoder system) facilities have an automated function called Low Altitude Alert System (LAAS). Although not as sophisticated as MSAW, LAAS alerts the controller when a Mode C transponder equipped aircraft operating on a IFR flight plan is below a predetermined minimum safe altitude.

NOTE−
Pilots operating VFR may request MSAW or LAAS monitoring if their aircraft are equipped with Mode C transponders.

EXAMPLE−
Apache Three Three Papa requests MSAW/LAAS.

37.10.3 Aircraft Conflict Alert

37.10.3.1 Controllers will immediately issue an alert to the pilots of aircraft under their control if they are aware of an aircraft that is not under their control at an altitude which, in the controller's judgment, places both aircraft in unsafe proximity to each other. With the alert, when feasible, the controller will offer the pilot the position of the traffic if time permits and an alternate course(s) of action. Any alternate course of action the controller may recommend to the pilot will be predicated only on other traffic in the controller's jurisdiction.

EXAMPLE−
American Three, traffic alert, (position of traffic, if time permits), advise you turn right/left heading (degrees) and/or climb/descend to (altitude) immediately.

37.10.4 Radar Traffic Information Service (RTIS)

37.10.4.1 This is a service provided by radar ATC facilities. Pilots receiving this service are advised of any radar target observed on the radar display which may be in such proximity to the position of their aircraft or its intended route of flight that it warrants their attention. This service is not intended to relieve the pilot of the responsibility for continual vigilance to see and avoid other aircraft.

a) Purpose of this Service

1) The issuance of traffic information as observed on a radar display is based on the principle of assisting and advising a pilot that a particular radar target's position and track indicates it may intersect or pass in such proximity to the intended flight path that it warrants the pilot's attention. This is to alert the pilot to the traffic, to be on the lookout for it, and thereby be in a better position to take appropriate action should the need arise.

2) Pilots are reminded that the surveillance radar used by ATC does not provide altitude information unless the aircraft is equipped with Mode C and the radar facility is capable of displaying altitude information.

b) Provisions of the Service

1) Many factors, such as limitations of the radar, volume of traffic, controller workload, and communications frequency congestion could prevent the controller from providing this service. Controllers possess complete discretion for determining whether they are able to provide or continue to provide this service in a specific case. The controller's reason against providing or continuing to provide the service in a particular case is not subject to question nor need it be communicated to the pilot. In other words, the provision of this service is entirely dependent upon whether controllers believe they are in a position to provide it. Traffic information is routinely provided to all aircraft operating on IFR flight plans except when the pilot declines the service, or the pilot is operating within Class A airspace. Traffic information may be provided to flights not operating on IFR Flight Plans when requested by pilots of such flights.

NOTE−
Radar ATC facilities normally display and monitor both primary and secondary radar when it is available, except that secondary radar may be used as the sole display source in Class A airspace, and under some circumstances outside of Class A airspace (beyond primary coverage and in en route areas where only secondary is available). Secondary radar may also be used outside Class A airspace as the sole display source when the primary radar is temporarily unusable or out of service. Pilots in contact with the affected ATC facility are normally advised when a temporary outage occurs; i.e., "primary radar out of service; traffic advisories available on transponder aircraft only." This means simply that only the aircraft which have transponders installed and in use will be depicted on ATC radar indicators when the primary radar is temporarily out of service.

2) When receiving VFR radar advisory service, pilots should monitor the assigned frequency at all times. This is to preclude controllers' concern for radio failure of emergency assistance to aircraft under the controller's jurisdiction. VFR radar advisory service does not include vectors away from conflicting traffic unless requested by the pilot. When advisory service is no longer desired, advise the controller before changing frequencies, then change your transponder code to 1200 if applicable. THE, as appropriate, MEA/MVA/MOCA IN YOUR AREA IS (altitude) or if past the final approach fix, THE, as appropriate, MDA/DH (if known) is (altitude). Except in programs where radar service is automatically terminated, the controller will advise the aircraft when radar is terminated.

NOTE−
Participation by VFR pilots in formal programs implemented at certain terminal locations constitutes pilot request. This also applies to participating pilots at those locations where arriving VFR flights are encouraged to make their first contact with the tower on the approach control frequency.

c) Issuance of Traffic Information. Traffic information will include the following concerning a target which may constitute traffic for an aircraft that is:

1) Radar identified.

(a) Azimuth from the aircraft in terms of the twelve hour clock.

(b) When rapidly maneuvering civil test or military aircraft prevent accurate issuance of traffic as in a) above, specify the direction from an aircraft's position in terms of the eight cardinal compass points (N, NE, E, SE, S, SW, W, NW). This method must be terminated at the pilot's request.

(c) Distance from the aircraft in nautical miles.

(d) Direction in which the target is proceeding.

(e) Type of aircraft and altitude if known.

EXAMPLE−
Traffic 10 o'clock, 3 miles, west−bound (type aircraft and altitude, if known, of the observed traffic). The altitude may be known, by means of Mode C, but not verified with the pilot for accuracy. (To be valid for separation purposes by

ATC, the accuracy of Mode C readouts must be verified. This is usually accomplished upon initial entry into the radar system by a comparison of the readout to pilot stated altitude, or the field elevation in the case of continuous readout being received from an aircraft on the airport.) When necessary to issue traffic advisories containing unverified altitude information, the controller will issue the advisory in the same manner as if it were verified due to the accuracy of these readouts. The pilot may, upon receipt of traffic information, request a vector (heading) to avoid such traffic. The vector will be provided to the extent possible as determined by the controller provided the aircraft to be vectored is within the airspace under the jurisdiction of the controller.

2) Not radar identified

(a) Distance and direction with respect to a fix.

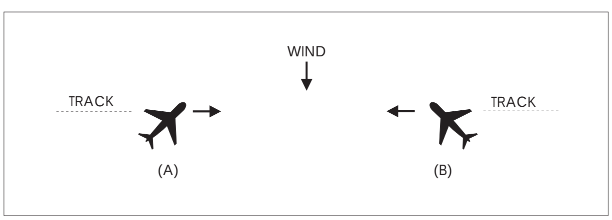
(b) Direction in which the target is proceeding.

(c) Type of aircraft and altitude if known.

EXAMPLE−
Traffic 8 miles south of the airport northeastbound, (type aircraft and altitude if known).

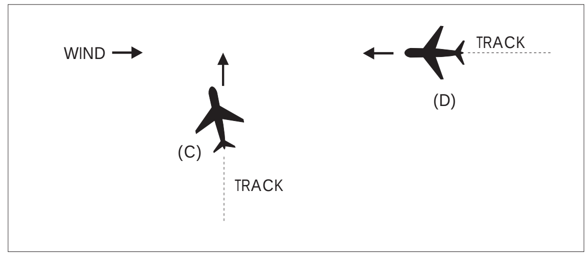
(d) The examples depicted in FIG ENR 1.1−26 and FIG ENR 1.1−27 point out the possible error in the position of this traffic when it is necessary for a pilot to apply drift correction to maintain this track. This error could also occur in the event a change in course is made at the time radar traffic information is issued.

FIG ENR 1.1−26
Induced Error in Position of Traffic



EXAMPLE−
In FIG ENR 1.1−26, traffic information would be issued to the pilot of aircraft "A" as 12 o'clock. The actual position of the traffic as seen by the pilot of aircraft "A" would be one o'clock. Traffic information issued to aircraft "B" would also be given as 12 o'clock, but in this case, the pilot of "B" would see the traffic at 11 o'clock.

FIG ENR 1.1−27
Induced Error in Position of Traffic



EXAMPLE−
In FIG ENR 1.1−27, traffic information would be issued to the pilot of aircraft "C" as two o'clock. The actual position of the traffic as seen by the pilot of aircraft "C" would be three o'clock. Traffic information issued to aircraft "D" would be at an 11 o'clock position. Since it is not necessary for the pilot of aircraft "D" to apply wind correction (CRAB) to remain on track, the actual position of the traffic issued would be correct. Since the radar controller can only observe aircraft track (course) on the radar display, traffic advisories are issued accordingly, and pilots should give due consideration to this fact when looking for reported traffic.

37.11 Radar Assistance to VFR Aircraft

37.11.1 Radar equipped FAA ATC facilities provide radar assistance and navigation service (vectors) to VFR aircraft provided the aircraft can communicate with the facility, are within radar coverage, and can be radar identified.

37.11.2 Pilots should clearly understand that authorization to proceed in accordance with such radar navigational assistance does not constitute authorization for the pilot to violate Federal Aviation Regulations. In effect, assistance provided is on the basis that navigational guidance information issued is advisory in nature and the job of flying the aircraft safely remains with the pilot.

37.11.3 In many cases, controllers will be unable to determine if flight into instrument conditions will result from their instructions. To avoid possible hazards resulting from being vectored into IFR conditions, pilots should keep controllers advised of the weather conditions in which they are operating and along the course ahead.

37.11.4 Radar navigation assistance (vectors) may be initiated by the controller when one of the following conditions exist:

37.11.4.1 The controller suggests the vector and the pilot concurs.

37.11.4.2 A special program has been established and vectoring service has been advertised.

37.11.4.3 In the controller's judgment the vector is necessary for air safety.

37.11.5 Radar navigation assistance (vectors) and other radar derived information may be provided in response to pilot requests. Many factors, such as limitations of radar, volume of traffic, communications frequency, congestion, and controller workload could prevent the controller from providing it. Controllers have complete discretion for determining if they are able to provide the service in a particular case. Their decision not to provide the service in a particular case is not subject to question.

38. Operational Policy/Procedures for Reduced Vertical Separation Minimum (RVSM) in the Domestic U.S., Alaska, Offshore Airspace and the San Juan FIR

38.1 Applicability and RVSM Mandate (Date/Time and Area)

38.1.1 Applicability. The policies, guidance and direction in this section apply to RVSM operations in the airspace over the lower 48 states, Alaska, Atlantic and Gulf of Mexico High Offshore Airspace and airspace in the San Juan FIR where VHF or UHF voice direct controller−pilot communication (DCPC) is normally available. Policies, guidance and direction for RVSM operations in oceanic airspace where VHF or UHF voice DCPC is not available and the airspace of other countries are posted on the FAA "RVSM Documentation" Webpage described in paragraph 38.3, Aircraft and Operator Approval Policy/Procedures, RVSM Monitoring and Databases for Aircraft and Operator Approval.

38.1.2 Mandate. At 0901 UTC on January 20, 2005, the FAA implemented RVSM between flight level (FL) 290−410 (inclusive) in the following airspace: the airspace of the lower 48 states of the United States, Alaska, Atlantic and Gulf of Mexico High Offshore Airspace and the San Juan FIR. (A chart showing the location of offshore airspace is posted on the Domestic U.S. RVSM (DRVSM) Webpage. See paragraph 38.3.) On the same time and date, RVSM was also introduced into the adjoining airspace of Canada and Mexico to provide a seamless environment for aircraft traversing those borders. In addition, RVSM was implemented on the same date in the Caribbean and South American regions.

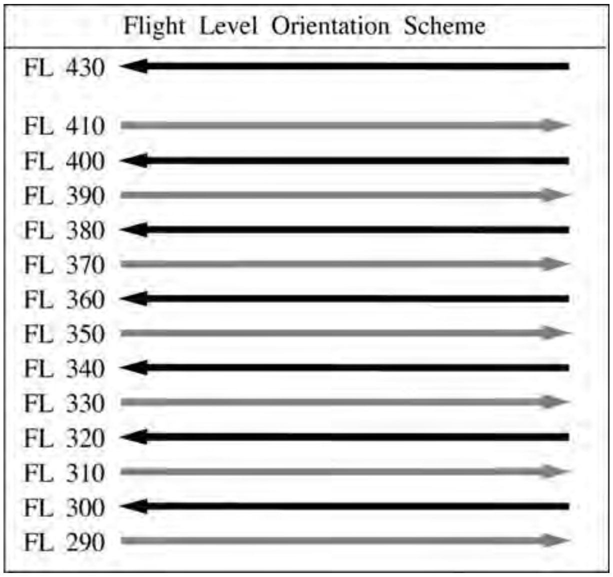
38.1.3 RVSM Authorization. In accordance with 14 CFR Section 91.180, with only limited exceptions, prior to operating in RVSM airspace, operators and aircraft must have received RVSM authorization from the responsible civil aviation authority. (See paragraph 38.10, Procedures for Accommodation of Non−RVSM Aircraft.) If the operator or aircraft or both have not been authorized for RVSM operations, the aircraft will be referred to as a "non−RVSM" aircraft. Paragraph 38.10 discusses ATC policies for accommodation of non−RVSM aircraft flown by the Department of Defense, Air Ambulance (Lifeguard) operators, foreign State governments and aircraft flown for certification and development. Paragraph 38.11, Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off, contains policies for non−RVSM aircraft climbing and descending through RVSM airspace to/from flight levels above RVSM airspace.

38.1.4 Benefits. RVSM enhances ATC flexibility, mitigates conflict points, enhances sector throughput, reduces controller workload and enables crossing traffic. Operators gain fuel savings and operating efficiency benefits by flying at more fuel efficient flight levels and on more user preferred routings.

38.2 Flight Level Orientation Scheme

Altitude assignments for direction of flight follow a scheme of odd altitude assignment for magnetic courses 000−179 degrees and even altitudes for magnetic courses 180−359 degrees for flights up to and including FL 410, as indicated in FIG ENR 1.1−28.

FIG ENR 1.1−28
Flight Level Orientation Scheme



NOTE−
Odd Flight Levels: Magnetic Course 000−179 Degrees
Even Flight Levels: Magnetic Course 180−359 Degrees.

38.3 Aircraft and Operator Approval Policy/ Procedures, RVSM Monitoring and Databases for Aircraft and Operator Approval

38.3.1 RVSM Authority. 14 CFR Section 91.180 applies to RVSM operations within the U.S. 14 CFR Section 91.706 applies to RVSM operations outside the U.S. Both sections require that the operator obtain authorization prior to operating in RVSM airspace. 14 CFR Section 91.180 requires that, prior to conducting RVSM operations within the U.S., the operator obtain authorization from the FAA or from the responsible authority, as appropriate. In addition, it requires that the operator and the operator's aircraft comply with the standards of 14 CFR Part 91 Appendix G (Operations in RVSM Airspace).

38.3.2 Sources of Information. The FAA RVSM Website Homepage can be accessed at: **http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/rvsm/**. The "RVSM Documentation" and "Domestic RVSM" webpages are linked to the RVSM Homepage. "RVSM Documentation" contains guidance and direction for an operator to obtain aircraft and operator approval to conduct RVSM operations. It provides information for DRVSM and oceanic and international RVSM airspace. It is recommended that operators planning to operate in Domestic U.S. RVSM airspace first review the following documents to orient themselves to the approval process.

38.3.2.1 Under "Area of Operations Specific Information," the document, "Basic Operator Information on DRVSM Programs," provides an overview of the DRVSM program and the related aircraft and operator approval programs.

38.3.2.2 In the "Getting Started" section, review the "RVSM Approval Checklist − U.S. Operators" or "RVSM Approval Checklist − Non−U.S. Operators" (as applicable). These are job aids or checklists that show aircraft/operator approval process events with references to related RVSM documents published on the website.

38.3.2.3 Under "Documents Applicable to All RVSM Approvals," review "RVSM Area New to the Operator." This document provides a guide for operators that are conducting RVSM operations in one or more areas of operation, but are planning to conduct RVSM operations in an area where they have not previously conducted RVSM operations, such as the U.S.

38.3.3 TCAS Equipage. TCAS equipage requirements are contained in 14 CFR Sections 121.356, 125.224, 129.18 and 135.189. Part 91 Appendix G does not contain TCAS equipage requirements specific to RVSM, however, Appendix G does require that aircraft equipped with TCAS II and flown in RVSM airspace be modified to incorporate TCAS II Version 7.0 or a later version.

38.3.4 Aircraft Monitoring. Operators are required to participate in the RVSM aircraft monitoring program. The "Monitoring Requirements and Procedures" section of the RVSM Documentation Webpage contains policies and procedures for participation in the monitoring program. Ground−based and GPS−based monitoring systems are available for the Domestic RVSM program. Monitoring is a quality control program that enables the FAA and other civil aviation authorities to assess the in−service altitude−keeping performance of aircraft and operators.

38.3.5 Registration on RVSM Approvals Databases. The "Registration on RVSM Approvals Database" section of the RVSM Documentation Webpage provides policies/procedures for operator and aircraft registration on RVSM approvals databases.

38.3.5.1 Purpose of RVSM Approvals Databases. ATC does not use RVSM approvals databases to determine whether or not a clearance can be issued into RVSM airspace. RVSM program managers do regularly review the operators and aircraft that operate in RVSM airspace to identify and investigate those aircraft and operators flying in RVSM airspace, but not listed on the RVSM approvals databases.

38.3.5.2 Registration of U.S. Operators. When U.S. operators and aircraft are granted RVSM authority, the FAA Flight Standards office makes an input to the FAA Program Tracking and Reporting Subsystem (PTRS). The Separation Standards Group at the FAA Technical Center obtains PTRS operator and aircraft information to update the FAA maintained U.S. Operator/Aircraft RVSM Approvals Database. Basic database operator and aircraft information can be viewed on the RVSM Documentation Webpage by clicking on the appropriate database icon.

38.3.5.3 Registration of Non−U.S. Operators. Non−U.S. operators can find policy/procedures for registration on the North American Approvals Registry and Monitoring Organization (NAARMO) database in the "Registration on RVSM Approvals Database" section of RVSM Documentation.

38.4 Flight Planning into RVSM Airspace

38.4.1 Operators that do not file the correct aircraft equipment suffix on the FAA or ICAO Flight Plan may be denied clearance into RVSM airspace. Policies for the FAA Flight Plan are detailed in subparagraph 38.4.3 below. Policies for the ICAO Flight Plan are detailed in subparagraph 38.4.4.

38.4.2 The operator will annotate the equipment block of the FAA or ICAO Flight Plan with an aircraft equipment suffix indicating RVSM capability only after the responsible civil aviation authority has determined that both the operator and its aircraft are RVSM−compliant and has issued RVSM authorization to the operator.

38.4.3 General Policies for FAA Flight Plan Equipment Suffix. TBL ENR 1.10−2, Aircraft Suffixes, allows operators to indicate that the aircraft has both RVSM and Advanced Area Navigation (RNAV) capabilities or has only RVSM capability.

38.4.3.1 The operator will annotate the equipment block of the FAA Flight Plan with the appropriate aircraft equipment suffix from TBL ENR 1.10−2.

38.4.3.2 Operators can only file one equipment suffix in block 3 of the FAA Flight Plan. Only this equipment suffix is displayed directly to the controller.

38.4.3.3 Aircraft with RNAV Capability. For flight in RVSM airspace, aircraft with RNAV capability, but not Advanced RNAV capability, will file "/W". Filing "/W" will not preclude such aircraft from filing and flying direct routes in en route airspace.

38.4.4 Policy for ICAO Flight Plan Equipment Suffixes.

38.4.4.1 Operators/aircraft that are RVSM−compliant and that file ICAO flight plans will file "/W" in block 10 (Equipment) to indicate RVSM authorization and will also file the appropriate ICAO Flight Plan suffixes to indicate navigation and communication capabilities. The equipment suffixes in TBL ENR 1.10−2 are for use only in an FAA Flight Plan (FAA Form 7233−1).

38.4.4.2 Operators/aircraft that file ICAO flight plans that include flight in Domestic U.S. RVSM airspace must file "/W" in block 10 to indicate RVSM authorization.

38.4.5 Importance of Flight Plan Equipment Suffixes. The operator must file the appropriate equipment suffix in the equipment block of the FAA Flight Plan (FAA Form 7233−1) or the ICAO Flight Plan. The equipment suffix informs ATC:

38.4.5.1 Whether or not the operator and aircraft are authorized to fly in RVSM airspace.

38.4.5.2 The navigation and/or transponder capability of the aircraft (e.g., advanced RNAV, Transponder with Mode C).

38.4.6 Significant ATC uses of the flight plan equipment suffix information are:

38.4.6.1 To issue or deny clearance into RVSM airspace.

38.4.6.2 To apply a 2,000 foot vertical separation minimum in RVSM airspace to aircraft that are not authorized for RVSM, but are in one of the limited categories that the FAA has agreed to accommodate. (See paragraphs 38.10, Procedures for Accommodation of Non−RVSM Aircraft, and 38.11, Non−RVSM

Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off, for policy on limited operation of unapproved aircraft in RVSM airspace).

38.4.6.3 To determine if the aircraft has "Advanced RNAV" capabilities and can be cleared to fly procedures for which that capability is required.

38.5 Pilot RVSM Operating Practices and Procedures

38.5.1 RVSM Mandate. If either the operator or the aircraft or both have not received RVSM authorization (non−RVSM aircraft), the pilot will neither request nor accept a clearance into RVSM airspace unless:

38.5.1.1 The flight is conducted by a non−RVSM DOD, Lifeguard, certification/development or foreign State (government) aircraft in accordance with paragraph 38.10, Procedures for Accommodation of Non−RVSM Aircraft.

38.5.1.2 The pilot intends to climb to or descend from FL 430 or above in accordance with paragraph 38.11, Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off.

38.5.1.3 An emergency situation exists.

38.5.2 Basic RVSM Operating Practices and Procedures. Appendix 4 of AC 91−85, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum Airspace contains pilot practices and procedures for RVSM. Operators must incorporate Appendix 4 practices and procedures, as supplemented by the applicable paragraphs of this section, into operator training or pilot knowledge programs and operator documents containing RVSM operational policies.

38.5.3 Appendix 4 contains practices and procedures for flight planning, preflight procedures at the aircraft, procedures prior to RVSM airspace entry, inflight (en route) procedures, contingency procedures and post flight.

38.5.4 The following paragraphs either clarify or supplement Appendix 4 practices and procedures.

38.6 Guidance on Severe Turbulence and Mountain Wave Activity (MWA)

38.6.1 Introduction/Explanation

38.6.1.1 The information and practices in this paragraph are provided to emphasize to pilots and controllers the importance of taking appropriate action in RVSM airspace when aircraft experience severe turbulence and/or MWA that is of sufficient magnitude to significantly affect altitude−keeping.

38.6.1.2 Severe Turbulence. Severe turbulence causes large, abrupt changes in altitude and/or attitude usually accompanied by large variations in indicated airspeed. Aircraft may be momentarily out of control. Encounters with severe turbulence must be remedied immediately in any phase of flight. Severe turbulence may be associated with MWA.

38.6.1.3 Mountain Wave Activity (MWA)

a) Significant MWA occurs both below and above the floor of RVSM airspace, FL 290. MWA often occurs in western states in the vicinity of mountain ranges. It may occur when strong winds blow perpendicular to mountain ranges resulting in up and down or wave motions in the atmosphere. Wave action can produce altitude excursions and airspeed fluctuations accompanied by only light turbulence. With sufficient amplitude, however, wave action can induce altitude and airspeed fluctuations accompanied by severe turbulence. MWA is difficult to forecast and can be highly localized and short lived.

b) Wave activity is not necessarily limited to the vicinity of mountain ranges. Pilots experiencing wave activity anywhere that significantly affects altitude−keeping can follow the guidance provided below.

c) Inflight MWA Indicators (Including Turbulence). Indicators that the aircraft is being subjected to MWA are:

1) Altitude excursions and/or airspeed fluctuations with or without associated turbulence.

2) Pitch and trim changes required to maintain altitude with accompanying airspeed fluctuations.

3) Light to severe turbulence depending on the magnitude of the MWA.

Mountain Wave Activity (MWA) Encounters − General	
Pilot actions:	**Controller actions:**
•Contact ATC and report experiencing MWA •If so desired, pilot may request a FL change or re−route •Report location and magnitude of MWA to ATC	•Advise pilot of conflicting traffic at adjacent FL •If pilot requests, vector aircraft to avoid merging target with traffic at adjacent RVSM flight levels, traffic permitting •Issue FL change or re−route, traffic permitting •Issue PIREP to other aircraft
See paragraph 38.6 for guidance on MWA.	Paragraph 38.6 explains "traffic permitting."
NOTE− *MWA encounters do not necessarily result in altitude deviations on the order of 200 feet. The guidance below is intended to address less significant MWA encounters.*	

Wake Turbulence Encounters	
Pilot should:	**Controller should:**
•Contact ATC and request vector, FL change or, if capable, a lateral offset	•Issue vector, FL change or lateral offset clearance, traffic permitting
See paragraph 38.7, Guidance on Wake Turbulence.	Paragraph 38.6 explains "traffic permitting."

"Unable RVSM Due Equipment" Failure of Automatic Altitude Control System, Altitude Alerter or All Primary Altimeters	
Pilot will:	**Controller will:**
•Contact ATC and state "Unable RVSM Due Equipment" •Request clearance out of RVSM airspace unless operational situation dictates otherwise	•Provide 2,000 feet vertical separation or appropriate horizontal separation •Clear aircraft out of RVSM airspace unless operational situation dictates otherwise

One Primary Altimeter Remains Operational	
Pilot will:	**Controller will:**
•Cross check stand−by altimeter •Notify ATC of operation with single primary altimeter •If unable to confirm primary altimeter accuracy, follow actions for failure of all primary altimeters	•Acknowledge operation with single primary altimeter

Transponder Failure	
Pilot will: •Contact ATC and request authority to continue to operate at cleared flight level •Comply with revised ATC clearance, if issued	**Controller will:** •Consider request to continue to operate at cleared flight level •Issue revised clearance, if necessary
NOTE− *14 CFR Section 91.215 (ATC transponder and altitude reporting equipment and use) regulates operation with the transponder inoperative.*	

38.10 Procedures for Accommodation of Non−RVSM Aircraft

38.10.1 General Policies for Accommodation of Non−RVSM Aircraft

38.10.1.1 The RVSM mandate calls for only RVSM authorized aircraft/operators to fly in designated RVSM airspace with limited exceptions. The policies detailed below are intended exclusively for use by aircraft that the FAA has agreed to accommodate. They are not intended to provide other operators a means to circumvent the normal RVSM approval process.

38.10.1.2 If either the operator or aircraft or both have not been authorized to conduct RVSM operations, the aircraft will be referred to as a "non−RVSM" aircraft. 14 CFR Section 91.180 and Part 91 Appendix G enable the FAA to authorize a deviation to operate a non−RVSM aircraft in RVSM airspace.

38.10.1.3 Non−RVSM aircraft flights will be handled on a workload permitting basis. The vertical separation standard applied between aircraft not approved for RVSM and all other aircraft must be 2,000 feet.

38.10.1.4 Required Pilot Calls. The pilot of non−RVSM aircraft will inform the controller of the lack of RVSM approval in accordance with the direction provided in paragraph 38.8, Pilot/Controller Phraseology.

38.10.2 Categories of Non−RVSM Aircraft that may be Accommodated

Subject to FAA approval and clearance, the following categories of non−RVSM aircraft may operate in domestic U.S. RVSM airspace provided they have an operational transponder.

38.10.2.1 Department of Defense (DOD) aircraft.

38.10.2.2 Flights conducted for aircraft certification and development purposes.

38.10.2.3 Active air ambulance flights utilizing a "Lifeguard" call sign.

38.10.2.4 Aircraft climbing/descending through RVSM flight levels (without intermediate level off) to/from FLs above RVSM airspace (Policies for these flights are detailed in paragraph 38.11, Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off.

38.10.2.5 Foreign State (government) aircraft.

38.10.3 Methods for operators of non−RVSM aircraft to request access to RVSM Airspace. Operators may:

38.10.3.1 LOA/MOU. Enter into a Letter of Agreement (LOA)/Memorandum of Understanding (MOU) with the RVSM facility (the Air Traffic facility that provides air traffic services in RVSM airspace). Operators must comply with LOA/MOU.

38.10.3.2 File−and−Fly. File a flight plan to notify the FAA of their intention to request access to RVSM airspace.

NOTE−
Priority for access to RVSM airspace will be afforded to RVSM compliant aircraft, then File−and−Fly flights.

38.10.4 Center Phone Numbers. Center phone numbers are posted on the RVSM Documentation Webpage, North American RVSM, Domestic U.S. RVSM section. This address provides direct access to the phone number listing:

http://www.faa.gov/ats/ato/150_docs/Center_Phone_No._Non−RVSM_Acft.doc

38.11 Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off

38.11.1 File−and−Fly. Operators of Non−RVSM aircraft climbing to and descending from RVSM flight levels should just file a flight plan.

38.11.2 Non−RVSM aircraft climbing to and descending from flight levels above RVSM airspace will be handled on a workload permitting basis. The vertical separation standard applied in RVSM airspace between non−RVSM aircraft and all other aircraft must be 2,000 feet.

38.11.3 Non−RVSM aircraft climbing to/descending from RVSM airspace can only be considered for accommodation provided:

38.11.3.1 Aircraft is capable of a continuous climb/descent and does not need to level off at an intermediate altitude for any operational considerations and

38.11.3.2 Aircraft is capable of climb/descent at the normal rate for the aircraft.

38.11.4 Required Pilot Calls. The pilot of non−RVSM aircraft will inform the controller of the lack of RVSM approval in accordance with the direction provided in paragraph 38.8, Pilot/Controller Phraseology.

39. Terminal Radar Services for VFR Aircraft

39.1 Basic Radar Service

39.1.1 In addition to the use of radar for the control of IFR aircraft, all commissioned radar facilities provide the following basic radar services for VFR aircraft:

39.1.1.1 Safety alerts.

39.1.1.2 Traffic advisories.

39.1.1.3 Limited radar vectoring (on a workload permitting basis).

39.1.1.4 Sequencing at locations where procedures have been established for this purpose and/or when covered by a letter of agreement.

NOTE−
When the stage services were developed, two basic radar services (traffic advisories and limited vectoring) were identified as "Stage I." This definition became unnecessary and the term "Stage I" was eliminated from use. The term "Stage II" has been eliminated in conjunction with the airspace reclassification, and sequencing services to locations with local procedures and/or letters of agreement to provide this service have been included in basic services to VFR aircraft. These basic services will still be provided by all terminal radar facilities whether they include Class B, C, D, or E airspace. "Stage III" services have been replaced with "Class B" and "Terminal Radar Service Area" service where applicable.

39.1.2 Vectoring service may be provided when requested by the pilot or with pilot concurrence when suggested by ATC.

39.1.3 Pilots of arriving aircraft should contact approach control on the publicized frequency and give their position, altitude, aircraft call sign, type aircraft, radar beacon code (if transponder equipped), destination, and should request traffic information.

39.1.4 Approach control will issue wind and runway, except when the pilot states "have numbers" or this information is contained in the ATIS broadcast and the pilot states that the current ATIS information has been received. Traffic information is provided on a workload permitting basis. Approach control will specify the time or place at which the pilot is to contact the tower on local control frequency for further landing information. Radar service is automatically terminated and the aircraft need not be advised of termination when an arriving VFR aircraft receiving radar services to a tower−controlled airport where basic radar service is provided has landed, or to all other airports, is instructed to change to tower or advisory frequency.

39.1.5 Sequencing for VFR aircraft is available at certain terminal locations (see locations listed in the Airport/Facility Directory). The purpose of the service is to adjust the flow of arriving VFR and IFR aircraft into the traffic pattern in a safe and orderly manner and to provide radar traffic information to departing VFR aircraft. Pilot participation is urged but is not mandatory. Traffic information is provided on a workload permitting basis. Standard radar separation between VFR or between VFR and IFR aircraft is not provided.

39.1.5.1 Pilots of arriving VFR aircraft should initiate radio contact on the publicized frequency with approach control when approximately 25 miles from the airport at which sequencing services are being provided. On initial contact by VFR aircraft, approach control will assume that sequencing service is requested. After radar contact is established, the pilot may use pilot navigation to enter the traffic pattern or, depending on traffic conditions, approach control may provide the pilot with routings or vectors necessary for proper sequencing with other participating VFR and IFR traffic en route to the airport. When a flight is positioned behind a preceding aircraft and the pilot reports having that aircraft in sight, the pilot will be instructed to follow the preceding aircraft. THE ATC INSTRUCTION TO FOLLOW THE PRECEDING AIRCRAFT DOES NOT AUTHORIZE THE PILOT TO COMPLY WITH ANY ATC CLEARANCE OR INSTRUCTION ISSUED TO THE PRECEDING AIRCRAFT. If other “nonparticipating” or “local” aircraft are in the traffic pattern, the tower will issue a landing sequence. If an arriving aircraft does not want radar service, the pilot should state “NEGATIVE RADAR SERVICE” or make a similar comment, on initial contact with approach control.

39.1.5.2 Pilots of departing VFR aircraft are encouraged to request radar traffic information by notifying ground control on initial contact with their request and proposed direction of flight.

EXAMPLE−
Xray ground control, November One Eight Six, Cessna One Seventy Two, ready to taxi, VFR southbound at 2,500, have information bravo and request radar traffic information.

NOTE−
Following takeoff, the tower will advise when to contact departure control.

39.1.5.3 Pilots of aircraft transiting the area and in radar contact/communication with approach control will receive traffic information on a controller workload permitting basis. Pilots of such aircraft should give their position, altitude, aircraft call sign, aircraft type, radar beacon code (if transponder equipped), destination, and/or route of flight.

39.2 Terminal Radar Service Area (TRSA) Service (Radar Sequencing and Separation Service for VFR Aircraft in a TRSA).

39.2.1 This service has been implemented at certain terminal locations. The service is advertised in the Airport/Facility Directory. The purpose of this service is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the airspace defined as the TRSA. Pilot participation is urged but is not mandatory.

39.2.2 If any aircraft does not want the service, the pilot should state “NEGATIVE TRSA SERVICE” or make a similar comment, on initial contact with approach control or ground control, as appropriate.

39.2.3 TRSAs are depicted on sectional aeronautical charts and listed in the Airport/Facility Directory.

39.2.4 While operating within a TRSA, pilots are provided TRSA service and separation as prescribed in this paragraph. In the event of a radar outage, separation and sequencing of VFR aircraft will be suspended as this service is dependent on radar. The pilot will be advised that the service is not available and will be issued wind, runway information, and the time or place to contact the tower. Traffic information will be provided on a workload permitting basis.

39.2.5 Visual separation is used when prevailing conditions permit and it will be applied as follows:

39.2.5.1 When a VFR flight is positioned behind a preceding aircraft and the pilot reports having that aircraft in sight, the pilot will be instructed by ATC to follow the preceding aircraft. THE ATC INSTRUCTION TO FOLLOW THE PRECEDING AIRCRAFT DOES NOT AUTHORIZE THE PILOT TO COMPLY WITH ANY ATC CLEARANCE OR INSTRUCTION ISSUED TO THE PRECEDING AIRCRAFT. Radar service will be continued to the runway.

42.5.2.2 May vector a radar identified aircraft executing a missed approach when operationally advantageous to the pilot or the controller.

42.5.2.3 In response to the pilot's stated intentions, issues a clearance to an alternate airport, to a holding fix, or for reentry into the approach sequence, as traffic conditions permit.

42.6 Radar Vectors

42.6.1 Pilot

42.6.1.1 Promptly complies with headings and altitudes assigned to you by the controller.

42.6.1.2 Questions any assigned heading or altitude believed to be incorrect.

42.6.1.3 If operating VFR and compliance with any radar vector or altitude would cause a violation of any Federal Aviation Regulation, advises ATC and obtain a revised clearance or instruction.

42.6.2 Controller

42.6.2.1 Vectors aircraft in Class A, B, C, D, and E airspace:

a) For separation.

b) For noise abatement.

c) To obtain an operational advantage for the pilot or the controller.

42.6.2.2 Vectors aircraft in Class A, B, C, D, E, and G airspace when requested by the pilot.

42.6.2.3 Vectors IFR aircraft at or above minimum vectoring altitudes.

42.6.2.4 May vector VFR aircraft, not at an ATC assigned altitude, at any altitude. In these cases, terrain separation is the pilot's responsibility.

42.7 Speed Adjustments

42.7.1 Pilot (In U.S. Domestic Class A, B, C, D, and E airspace)

42.7.2 Except as stated in paragraphs 42.7.5 and 42.7.6, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by plus or minus 10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

42.7.3 Complies with speed adjustments from ATC unless:

42.7.3.1 Except as stated in paragraphs 42.7.5 and 42.7.6, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by plus or minus 10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

42.7.3.2 Complies with speed adjustments from ATC unless:

a) The minimum or maximum safe airspeed for any particular operation is greater or less than the requested airspeed. In such cases, advises ATC.

b) Operating at or above 10,000 feet MSL on an ATC assigned SPEED ADJUSTMENT of more than 250 knots IAS and subsequent clearance is received for descent below 10,000 feet MSL. In such cases, pilots are expected to comply with 14 CFR Section 97.117(a).

42.7.4 Controller (In U.S. Domestic Class A, B, C, D, and E Airspaces)

42.7.4.1 Assigns aircraft to speed adjustments when necessary, but not as a substitute for good vectoring technique.

42.7.4.2 Adheres to the restrictions of FAA Order 7110.65, Air Traffic Control, as to when speed adjustment procedures may be applied.

42.7.4.3 Avoids speed adjustments requiring alternate decreases and increases.

42.7.4.4 Assigns speed adjustments to a specified IAS knots/Mach number or to increase or decrease speed utilizing increments of 10 knots or multiples thereof.

42.7.4.5 Advises pilots to resume normal speed when speed adjustments are no longer required.

42.7.4.6 Gives due consideration to aircraft capabilities to reduce speed while descending.

42.7.5 Pilot (In Oceanic Class A and E Airspace)

42.7.5.1 If ATC has not assigned an airspeed, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by ±10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

42.7.5.2 If ATC has assigned an airspeed, aircraft must adhere to the ATC assigned airspeed and must request ATC approval before making any change thereto. If it is essential to make an immediate temporary change in the Mach number (e.g., due to turbulence), ATC must be notified as soon as possible. If it is not feasible, due to aircraft performance, to maintain the last assigned Mach number during an en route climb or descent, advises ATC at the time of the request.

42.7.6 Controller (In Oceanic Class A and E Airspace)

42.7.6.1 Assigns airspeed when necessary for separation of aircraft to comply with 14 CFR, ICAO regulations and procedures, or letters of agreement.

42.8 Traffic Advisories (Traffic Information)

42.8.1 Pilot

42.8.1.1 Acknowledges receipt of traffic advisories.

42.8.1.2 Informs controller if traffic is in sight.

42.8.1.3 Advises ATC if a vector to avoid traffic is desired.

42.8.1.4 Does not expect to receive radar traffic advisories on all traffic. Some aircraft may not appear on the radar display. Be aware that the controller may be occupied with high priority duties and unable to issue traffic information for a variety of reasons.

42.8.1.5 Advises controller if service is not desired.

42.8.2 Controller

42.8.2.1 Issues radar traffic to the maximum extent consistent with higher priority duties except in Class A airspace.

42.8.2.2 Provides vectors to assist aircraft to avoid observed traffic when requested by the pilot.

42.8.2.3 Issues traffic information to aircraft in Class D airspace for sequencing purposes.

42.8.2.4 Controllers are required to issue to each aircraft operating on intersecting or nonintersecting converging runways where projected flight paths will cross.

42.9 Safety Alert

42.9.1 Pilot

42.9.1.1 Initiates appropriate action if a safety alert is received from ATC.

42.9.1.2 Be aware that this service is not always available and that many factors affect the ability of the controller to be aware of a situation in which unsafe proximity to terrain, obstructions, or another aircraft may be developing.

42.9.2 Controller

42.9.2.1 Issues a safety alert if aware an aircraft under their control is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or another aircraft. Types of safety alerts are:

a) Terrain/Obstruction Alerts. Immediately issued to an aircraft under their control if aware the aircraft is at an altitude believed to place the aircraft in unsafe proximity to terrain/obstruction.

b) Aircraft Conflict Alerts. Immediately issued to an aircraft under their control if aware of an aircraft not under their control at an altitude believed to place the aircraft in unsafe proximity to each other. With the alert, they offer the pilot an alternative if feasible.

42.9.2.2 Discontinues further alerts if informed by the pilot action is being taken to correct the situation or that the other aircraft is in sight.

42.10 See and Avoid

42.10.1 Pilot

42.10.1.1 When meteorological conditions permit, regardless of type of flight plan or whether or not under control of a radar facility, the pilot is responsible to see and avoid other traffic, terrain, or obstacles.

42.10.2 Controller

42.10.2.1 Provides radar traffic information to radar identified aircraft operating outside positive control airspace on a workload permitting basis.

42.10.2.2 Issues a safety advisory to an aircraft under their control if aware the aircraft is at an altitude believed to place the aircraft in unsafe proximity to terrain, obstructions or other aircraft.

42.15.1.3 On initial contact the term "minimum fuel" should be used after stating call sign.

EXAMPLE−
Salt Lake Approach, United 621, "minimum fuel."

42.15.1.4 Be aware a minimum fuel advisory does not imply a need for traffic priority.

42.15.1.5 If the remaining usable fuel supply suggests the need for traffic priority to ensure a safe landing, you should declare an emergency due to low fuel, and report the fuel remaining in minutes.

42.15.2 Controller

42.15.2.1 When an aircraft declares a state of "minimum fuel," relay this information to the facility to whom control jurisdiction is transferred.

42.15.2.2 Be alert for any occurrence which might delay the aircraft.

43. Traffic Alert and Collision Avoidance System (TCAS I & II)

43.1 TCAS I provides proximity warning only, to assist the pilot in the visual acquisition of intruder aircraft. No recommended avoidance maneuvers are provided nor authorized as a direct result of a TCAS I warning. It is intended for use by smaller commuter aircraft holding 10 to 30 passenger seats, and general aviation aircraft.

43.2 TCAS II provides traffic advisories (TAs) and resolution advisories (RAs). RAs provide recommended maneuvers in a vertical direction (climb or descend only) to avoid conflicting traffic. Airline aircraft, and larger commuter and business aircraft holding 31 passenger seats or more, use TCAS II equipment.

43.3 Each pilot who deviates from an ATC clearance in response to a TCAS II RA must notify ATC of that deviation as soon as practicable and expeditiously return to the current ATC clearance when the traffic conflict is resolved.

43.4 Deviations from rules, policies, or clearances should be kept to the minimum necessary to satisfy a TCAS II RA.

43.5 The serving IFR air traffic facility is not responsible for providing approved standard IFR separation to an aircraft after a TCAS II RA maneuver until one of the following conditions exists:

43.5.1 The aircraft has returned to its assigned altitude and course.

43.5.2 Alternate ATC instructions have been issued.

43.6 TCAS does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. Since TCAS does not respond to aircraft which are not transponder equipped or aircraft with a transponder failure, TCAS alone does not ensure safe separation in every case.

43.7 At this time, no air traffic service nor handling is predicated on the availability of TCAS equipment in the aircraft.

44. Strategic Lateral Offset Procedure (SLOP) While within Oceanic Airspace

44.1 These procedures have been developed in accordance with the ICAO PANS−ATM, 15.2.4.

44.2 It has been determined that allowing aircraft conducting oceanic flight to fly lateral offsets, not to exceed 2 NM right of center line, will provide an additional safety margin and mitigate the risk of conflict when non−normal events, such as aircraft navigation errors, altitude deviation errors and turbulence−induced altitude−keeping errors, occur.

44.3 These procedures are authorized in US−controlled Oceanic Airspace and also the airspace surrounding the island of Bermuda, the airspace controlled by Honolulu Control Facility (CF) and the airspace controlled by Guam Combined Center Radar Approach Control (CERAP).

44.4 These procedures provide for offsets within the following guidelines: Along a route or track there will be three positions that an aircraft may fly; center line or one or two miles right of center line. Offsets will not exceed 2 NM right of center line. The intent of this procedure is to reduce risk (add safety margin) by distributing aircraft laterally across the three available positions.

44.4.1 Aircraft without automatic offset programming capability must fly the center line.

44.4.2 An aircraft overtaking another aircraft should offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken.

44.4.3 Pilots should also fly one of the three positions shown above to avoid wake turbulence.

44.4.4 Pilots should use whatever means available to determine the best flight path to fly.

44.4.5 Aircraft should not offset to the left of center line nor offset more than 2 NM right of center line. Pilots may contact other aircraft on VHF frequency 123.45, as necessary, to coordinate the best wake turbulence offset option.

NOTE−
It is recognized that pilots will use their judgment to determine the action most appropriate to any given situation and have the final authority and responsibility for the safe operations of the aircraft.

44.4.6 Pilots may apply an offset outbound after the oceanic entry point. Aircraft transiting Bermuda airspace, Honolulu CF airspace or Guam CERAP airspace may remain on their established offset.

44.4.7 There is no ATC clearance required for this procedure and it is not necessary that ATC be advised.

45. Traffic Information Service (TIS)

45.1 Introduction

The Traffic Information Service (TIS) provides information to the cockpit via data link, that is similar to VFR radar traffic advisories normally received over voice radio. Among the first FAA−provided data services, TIS is intended to improve the safety and efficiency of "see and avoid" flight through an automatic display that informs the pilot of nearby traffic and potential conflict situations. This traffic display is intended to assist the pilot in visual acquisition of these aircraft. TIS employs an enhanced capability of the terminal Mode S radar system, which contains the surveillance data, as well as the data link required to "uplink" this information to suitably−equipped aircraft (known as a TIS "client"). TIS provides estimated position, altitude, altitude trend, and ground track information for up to 8 intruder aircraft within 7 NM horizontally, +3,500 and −3,000 feet vertically of the client aircraft (see FIG ENR 1.1−29, TIS Proximity Coverage Volume). The range of a target reported at a distance greater than 7 NM only indicates that this target will be a threat within 34 seconds and does not display a precise distance. TIS will alert the pilot to aircraft (under surveillance of the Mode S radar) that are estimated to be within 34 seconds of potential collision, regardless of distance of altitude. TIS surveillance data is derived from the same radar used by ATC; this data is uplinked to the client aircraft on each radar scan (nominally every 5 seconds).

45.2 Requirements

45.2.1 In order to use TIS, the client and any intruder aircraft must be equipped with the appropriate cockpit equipment and fly within the radar coverage of a Mode S radar capable of providing TIS. Typically, this will be within 55 NM of the sites depicted in FIG ENR 1.1−30, Terminal Mode S Radar Sites. ATC communication is not a requirement to receive TIS, although it may be required by the particular airspace or flight operations in which TIS is being used.

45.2.2 The cockpit equipment functionality required by a TIS client aircraft to receive the service consists of the following (refer to FIG ENR 1.1−31):

45.2.2.1 Mode S data link transponder with altitude encoder.

45.2.2.2 Data link applications processor with TIS software installed.

45.2.2.3 Control−display unit.

45.2.2.4 Optional equipment includes a digital heading source to correct display errors caused by "crab angle" and turning maneuvers.

NOTE−
Some of the above functions will likely be combined into single pieces of avionics, such as subparagraphs 45.2.2.1 and 45.2.2.2.

45.2.3 To be visible to the TIS client, the intruder aircraft must, at a minimum, have an operating transponder (Mode A, C or S). All altitude information provided by TIS from intruder aircraft is derived from Mode C reports, if appropriately equipped.

45.2.4 TIS will initially be provided by the terminal Mode S systems that are paired with ASR−9 digital primary radars. These systems are in locations with the greatest traffic densities, thus will provide the greatest initial benefit. The remaining terminal Mode S sensors, which are paired with ASR−7 or ASR−8 analog primary radars, will provide TIS pending modification or relocation of these sites. See FIG ENR 1.1−30, Terminal Mode S Radar Sites, for site locations. There is no mechanism in place, such as NOTAMs, to provide status update on individual radar sites since TIS is a nonessential, supplemental information service.

The FAA also operates en route Mode S radars (not illustrated) that rotate once every 12 seconds. These sites will require additional development of TIS before any possible implementation. There are no plans to implement TIS in the en route Mode S radars at the present time.

45.3 Capabilities

45.3.1 TIS provides ground−based surveillance information over the Mode S data link to properly equipped client aircraft to aid in visual acquisition of proximate air traffic. The actual avionics capability of each installation will vary and the supplemental handbook material must be consulted prior to using TIS. A maximum of eight (8) intruder aircraft may be displayed; if more than eight aircraft match intruder parameters, the eight "most significant" intruders are uplinked. These "most significant" intruders are usually the ones in closest proximity and/or the greatest threat to the TIS client.

45.3.2 TIS, through the Mode S ground sensor, provides the following data on each intruder aircraft:

45.3.2.1 Relative bearing information in 6−degree increments.

45.3.2.2 Relative range information in 1/8 NM to 1 NM increments (depending on range).

45.3.2.3 Relative altitude in 100−foot increments (within 1,000 feet) or 500−foot increments (from 1,000−3,500 feet) if the intruder aircraft has operating altitude reporting capability.

45.3.2.4 Estimated intruder ground track in 45−degree increments.

45.3.2.5 Altitude trend data (level within 500 fpm or climbing/descending >500 fpm) if the intruder aircraft has operating altitude reporting capability.

45.3.2.6 Intruder priority as either a "traffic advisory" or "proximate" intruder.

45.3.3 When flying from surveillance coverage of one Mode S sensor to another, the transfer of TIS is an automatic function of the avionics system and requires no action from the pilot.

45.3.4 There are a variety of status messages that are provided by either the airborne system or ground equipment to alert the pilot of high priority intruders and data link system status. These messages include the following:

45.3.4.1 **Alert.** Identifies a potential collision hazard within 34 seconds. This alert may be visual and/or audible, such as a flashing display symbol or a headset tone. A target is a threat if the time to the closest approach in vertical and horizontal coordinates is less than 30 seconds and the closest approach is expected to be within 500 feet vertically and 0.5 nautical miles laterally.

45.3.4.2 TIS Traffic. TIS traffic data is displayed.

45.3.4.3 Coasting. The TIS display is more than 6 seconds old. This indicates a missing uplink from the ground system. When the TIS display information is more than 12 seconds old, the "No Traffic" status will be indicated.

45.3.4.4 No Traffic. No intruders meet proximate or alert criteria. This condition may exist when the TIS system is fully functional or may indicate "coasting" between 12 and 59 seconds old (see paragraph 45.3.4.3 above).

45.3.4.5 TIS Unavailable. The pilot has requested TIS, but no ground system is available. This condition will also be displayed when TIS uplinks are missing for 60 seconds or more.

45.3.4.6 TIS Disabled. The pilot has not requested TIS or has disconnected from TIS.

45.3.4.7 Good−bye. The client aircraft has flown outside of TIS coverage.

NOTE−
Depending on the avionics manufacturer implementation, it is possible that some of these messages will not be directly available to the pilot.

45.3.5 Depending on avionics system design, TIS may be presented to the pilot in a variety of different displays, including text and/or graphics. Voice annunciation may also be used, either alone or in combination with a visual display. FIG ENR 1.1−31, Traffic Information Service (TIS), Avionics Block Diagram, shows an example of a TIS display using symbology similar to the Traffic Alert and Collision Avoidance System (TCAS) installed on most passenger air carrier/commuter aircraft in the U.S. The small symbol in the center represents the client aircraft and the display is oriented "track up," with the 12 o'clock position at the top. The range rings indicate 2 and 5 NM. Each intruder is depicted by a symbol positioned at the approximate relative bearing and range from the client aircraft. The circular symbol near the center indicates an "alert" intruder and the diamond symbols indicate "proximate" intruders.

45.3.6 The inset in the lower right corner of FIG ENR 1.1−31, Traffic Information Service (TIS), Avionics Block Diagram, shows a possible TIS data block display. The following information is contained in this data block:

45.3.6.1 The intruder, located approximately four o'clock, three miles, is a "proximate" aircraft and currently not a collision threat to the client aircraft. This is indicated by the diamond symbol used in this example.

45.3.6.2 The intruder ground track diverges to the right of the client aircraft, indicated by the small arrow.

45.3.6.3 The intruder altitude is 700 feet less than or below the client aircraft, indicated by the "−07" located under the symbol.

45.3.6.4 The intruder is descending >500 fpm, indicated by the downward arrow next to the "−07" relative altitude information. The absence of this arrow when an altitude tag is present indicates level flight or a climb/descent rate less than 500 fpm.

NOTE−
If the intruder did not have an operating altitude encoder (Mode C), the altitude and altitude trend "tags" would have been omitted.

45.4 Limitations

45.4.1 TIS is **NOT** intended to be used as a collision avoidance system and does not relieve the pilot responsibility to "see and avoid" other aircraft (see paragraph 42.10, See and Avoid). TIS must not be for avoidance maneuvers during IMC or other times when there is no visual contact with the intruder aircraft. TIS provides proximity warning only, to assist the pilot in the visual acquisition of intruder aircraft. It is intended for use by aircraft in which TCAS is not required. **No recommended avoidance maneuvers are provided for, nor authorized, as a direct result of a TIS intruder display or TIS alert.**

45.4.2 TIS does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. Since TIS does not respond to aircraft which are not transponder equipped, aircraft with a transponder failure, or aircraft out of radar coverage, TIS alone does not ensure safe separation in every case.

45.4.3 At this time, no air traffic service nor handling is predicated on the availability of TIS equipment in the aircraft.

46. Automatic Dependent Surveillance−Broadcast (ADS−B) Services

46.1 Introduction

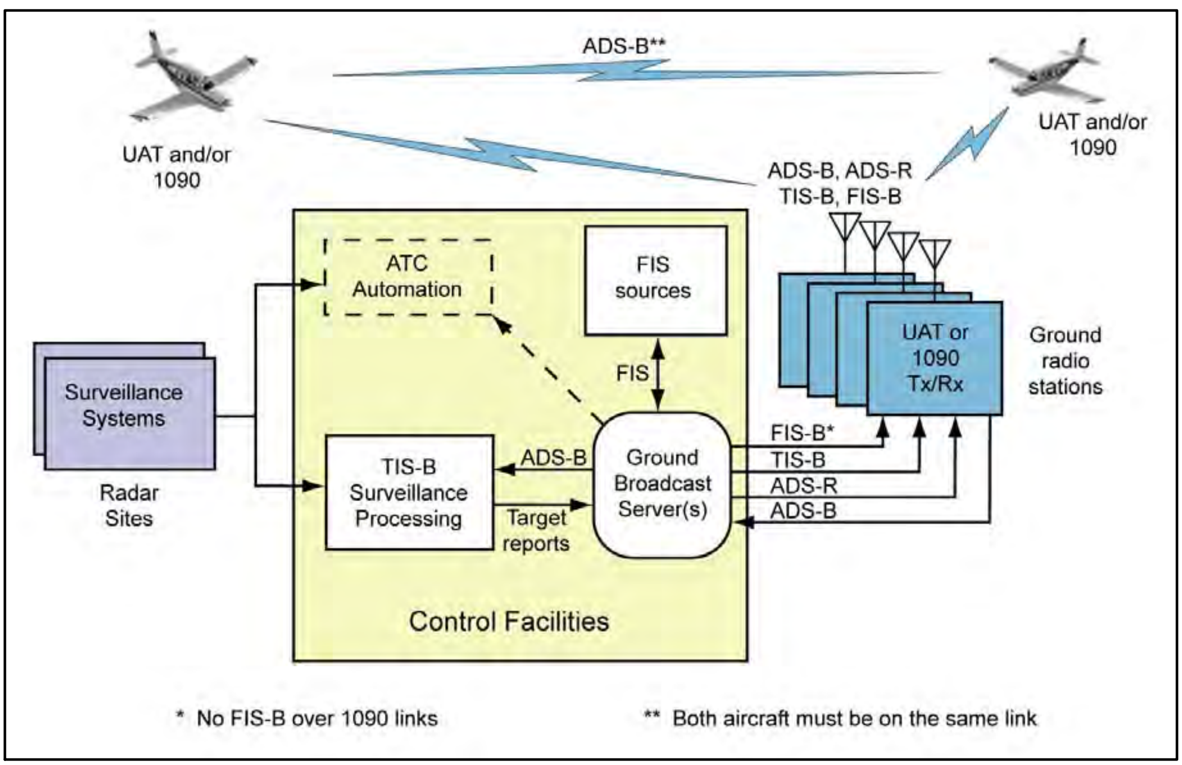
46.1.1 Automatic Dependent Surveillance−Broadcast (ADS−B) is a surveillance technology being deployed throughout the NAS (see FIG ENR 1.1−32). The ADS−B system is composed of aircraft avionics and a ground infrastructure. Onboard avionics determine the position of the aircraft by using the GNSS and transmit its position along with additional information about the aircraft to ground stations for use by ATC and other ADS−B services. This information is transmitted at a rate of approximately once per second.

46.1.2 In the United States, ADS−B equipped aircraft exchange information is on one of two frequencies: 978 or 1090 MHz. The 1090 MHz frequency is associated with Mode A, C, and S transponder operations. 1090 MHz transponders with integrated ADS−B functionality extend the transponder message sets with additional ADS−B information. This additional information is known as an "extended squitter" message and referred to as 1090ES. ADS−B equipment operating on 978 MHz is known as the Universal Access Transceiver (UAT).

46.1.3 ADS B avionics can have the ability to both transmit and receive information. The transmission of ADS−B information from an aircraft is known as ADS−B Out. The receipt of ADS−B information by an aircraft is known as ADS−B In. On January 1, 2020, all aircraft operating within the airspace defined in 14 CFR part 91, § 91.225 will be required to transmit the information defined in § 91.227 using ADS−B Out avionics.

46.1.4 In general, operators flying at 18,000 feet and above will require equipment which uses 1090 ES. Those that do not fly above 18,000 may use either UAT or 1090ES equipment. (Refer to 14 CFR 91.225 and 91.227.) While the regulation will not require it, operators equipped with ADS−B In will realize additional benefits from ADS−B broadcast services: Traffic Information Service – Broadcast (TIS−B) and Flight Information Service − Broadcast (FIS−B).

FIG ENR 1.1−32
ADS−B, TIS−B, and FIS−B:
Broadcast Services Architecture



46.2 ADS−B Certification and Performance Requirements

ADS−B equipment may be certified as a surveillance source for air traffic separation services using ADS−B Out. ADS−B equipment may also be certified for use with ADS−B In advisory services that enable appropriately equipped aircraft to display traffic and flight information. Refer to the aircraft's flight manual supplement or Pilot Operating Handbook for the capabilities of a specific aircraft installation.

46.3 ADS−B Capabilities

46.3.1 ADS−B enables improved surveillance services, both air−to−air and air−to−ground, especially in areas where radar is ineffective due to terrain or where it is impractical or cost prohibitive. Initial NAS applications of air−to−air ADS−B are for "advisory" use only, enhancing a pilot's visual acquisition of other nearby equipped aircraft either when airborne or on the airport surface. Additionally, ADS−B will enable ATC and fleet operators to monitor aircraft throughout the available ground station coverage area.

46.3.2 ADS−B avionics typically allow pilots to enter the aircraft's call sign and Air Traffic Control (ATC)−assigned transponder code, which will be transmitted to other aircraft and ground receivers. Pilots are cautioned to use care when selecting and entering the aircraft's identification and transponder codes. Some installations may require separate entries of this information into both the ADS−B system and the transponder. Therefore, it is **extremely important to ensure that the transponder and ADS−B codes being transmitted are identical to avoid false conflict alerts within the ATC system.**

46.3.3 ADS B systems integrated with the transponder will automatically set the applicable emergency status when 7500, 7600, or 7700 are entered into the transponder. ADS B systems not integrated with the transponder, or systems with optional emergency codes, will require that the appropriate emergency code is entered through a pilot interface. **ADS−B is intended for in−flight and airport surface use. ADS−B systems should be turned "on" −− and remain "on" −− whenever operating in the air and moving on the airport surface. Civil and military Mode A/C transponders and ADS−B systems should be adjusted to the "on" or normal operating position as soon as practical**, unless the change to "standby" has been accomplished previously at the request of ATC. Mode S transponders should be left on whenever power is applied to the aircraft.

46.4 ATC Surveillance Services using ADS−B − Procedures and Recommended Phraseology − For Use In Alaska Only

Radar procedures, with the exceptions found in this paragraph, are identical to those procedures prescribed for radar in the AIP.

46.4.1 Preflight:

If a request for ATC services is predicated on ADS−B and such services are anticipated when either a VFR or IFR flight plan is filed, the aircraft's "N" number or call−sign as filed in "Block 2" of the Flight Plan must be entered in the ADS−B avionics as the aircraft's flight ID.

46.4.2 Inflight:

When requesting ADS−B services while airborne, pilots should ensure that their ADS−B equipment is transmitting their aircraft's "N" number or call sign prior to contacting ATC. To accomplish this, the pilot must select the ADS−B "broadcast flight ID" function.

NOTE−
The broadcast "VFR" or "Standby" mode built into some ADS−B systems will not provide ATC with the appropriate aircraft identification information. This function should first be disabled before contacting ATC.

46.4.3 Aircraft with an Inoperative/Malfunctioning ADS−B Transmitter or in the Event of an Inoperative Ground Broadcast Transceiver (GBT).

46.4.3.1 ATC will inform the flight crew when the aircraft's ADS−B transmitter appears to be inoperative or malfunctioning:

PHRASEOLOGY−
YOUR ADS−B TRANSMITTER APPEARS TO BE INOPERATIVE/MALFUNCTIONING. STOP ADS−B TRANSMISSIONS.

46.4.3.2 ATC will inform the flight crew when the GBT transceiver becomes inoperative or malfunctioning, as follows:

PHRASEOLOGY−
(Name of facility) GROUND BASED TRANSCEIVER INOPERATIVE/MALFUNCTIONING.
(And if appropriate) RADAR CONTACT LOST.

NOTE−
An inoperative or malfunctioning GBT may also cause a loss of ATC surveillance services.

46.4.3.3 ATC will inform the flight crew if it becomes necessary to turn off the aircraft's ADS−B transmitter.

PHRASEOLOGY−
STOP ADS−B TRANSMISSIONS.

46.4.3.4 Other malfunctions and considerations: Loss of automatic altitude reporting capabilities (encoder failure) will result in loss of ATC altitude advisory services.

46.5 ADS−B Limitations

46.5.1 The ADS−B cockpit display of traffic is NOT intended to be used as a collision avoidance system and does not relieve the pilot's responsibility to "see and avoid" other aircraft. (See paragraph 42.10, See and Avoid). ADS−B provides proximity warning only to assist the pilot in the visual acquisition of other aircraft. ADS−B must not be used for avoidance maneuvers during IMC or other times when there is no visual contact with the intruder aircraft. ADS−B is intended only to assist in visual acquisition of other aircraft. No avoidance maneuvers are provided nor authorized, as a direct result of an ADS−B display or an ADS−B alert.

46.5.2 ADS−B does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. ADS−B only displays aircraft that are ADS−B equipped; therefore, aircraft that are not ADS−B equipped or aircraft that are experiencing an ADS−B failure will not be displayed. ADS−B alone does not ensure safe separation.

46.5.3 Presently, no air traffic services or handling is predicated on the availability of an ADS−B cockpit display. A "traffic−in−sight" reply to ATC must be based on seeing an aircraft out−the−window, NOT on the cockpit display.

46.5.4 Use of ADS−B radar services is limited to the service volume of the GBT.

NOTE−
The coverage volume of GBTs are limited to line−of−sight.

46.6 Reports of ADS−B Malfunctions

Users of ADS−B can provide valuable assistance in the correction of malfunctions by reporting instances of undesirable system performance. Reports should identify the time of observation, location, type and identity of aircraft, and describe the condition observed; the type of avionics system and its software version in use should also be included. Since ADS−B performance is monitored by maintenance personnel rather than ATC, it is suggested that malfunctions be reported in any one of the following ways:

46.6.1 By radio or telephone to the nearest Flight Service Station (FSS) facility.

46.6.2 By FAA Form 8740−5, Safety Improvement Report, a postage−paid card is designed for this purpose. These cards may be obtained from FAA FSSs, Flight Standards District Offices, and general aviation fixed−based operators.

46.6.3 By reporting the failure directly to the FAA Safe Flight 21 program at 1−877−FLYADSB or **http://www.adsb.gov**.

47. Traffic Information Service−Broadcast (TIS−B)

47.1 Introduction

TIS−B is the broadcast of ATC derived traffic information to ADS−B equipped (1090ES or UAT) aircraft from ground radio stations. The source of this traffic information is derived from ground−based air traffic surveillance radar sensors. TIS−B service will be available throughout the NAS where there are both adequate surveillance coverage (radar) from ground sensors and adequate broadcast coverage from ADS−B ground radio stations. The quality level of traffic information provided by TIS−B is dependent upon the number and type of ground sensors available as TIS−B sources and the timeliness of the reported data.

47.2 TIS−B Requirements

In order to receive TIS−B service, the following conditions must exist:

47.2.1 Aircraft must be equipped with an ADS−B transmitter/receiver or transceiver, and a cockpit display of traffic information (CDTI).

47.2.2 Aircraft must fly within the coverage volume of a compatible ground radio station that is configured for TIS−B uplinks. (Not all ground radio stations provide TIS−B due to a lack of radar coverage or because a radar feed is not available).

47.2.3 Aircraft must be within the coverage of and detected by at least one ATC radar serving the ground radio station in use.

47.3 TIS−B Capabilities

47.3.1 TIS−B is intended to provide ADS−B equipped aircraft with a more complete traffic picture in situations where not all nearby aircraft are equipped with ADS−B Out. This advisory−only application is intended to enhance a pilot's visual acquisition of other traffic.

47.3.2 Only transponder−equipped targets (i.e., Mode A/C or Mode S transponders) are transmitted through the ATC ground system architecture. Current radar siting may result in limited radar surveillance coverage at lower altitudes near some airports, with subsequently limited TIS−B service volume coverage. If there is no radar coverage in a given area, then there will be no TIS−B coverage in that area.

47.4 TIS−B Limitations

47.4.1 TIS−B is NOT intended to be used as a collision avoidance system and does not relieve the pilot's responsibility to "see and avoid" other aircraft, in accordance with 14CFR §91.113b. TIS−B must not be used for avoidance maneuvers during times when there is no visual contact with the intruder aircraft. TIS−B is intended only to assist in the visual acquisition of other aircraft.

NOTE−
No aircraft avoidance maneuvers are authorized as a direct result of a TIS−B target being displayed in the cockpit.

47.4.2 While TIS−B is a useful aid to visual traffic avoidance, its inherent system limitations must be understood to ensure proper use.

47.4.2.1 A pilot may receive an intermittent TIS−B target of themselves, typically when maneuvering (e.g., climbing turns) due to the radar not tracking the aircraft as quickly as ADS−B.

47.4.2.2 The ADS−B−to−radar association process within the ground system may at times have difficulty correlating an ADS−B report with corresponding radar returns from the same aircraft. When this happens the pilot may see duplicate traffic symbols (i.e., "TIS−B shadows") on the cockpit display.

47.4.2.3 Updates of TIS−B traffic reports will occur less often than ADS−B traffic updates. TIS−B position updates will occur approximately once every 3−13 seconds depending on the type of radar system in use within the coverage area. In comparison, the update rate for ADS−B is nominally once per second.

47.4.2.4 The TIS−B system only uplinks data pertaining to transponder−equipped aircraft. Aircraft without a transponder will not be displayed as TIS−B traffic.

47.4.2.5 There is no indication provided when any aircraft is operating inside or outside the TIS−B service volume, therefore it is difficult to know if one is receiving uplinked TIS−B traffic information.

47.4.3 Pilots and operators are reminded that the airborne equipment that displays TIS−B targets is for pilot situational awareness only and is not approved as a collision avoidance tool. Unless there is an imminent emergency requiring immediate action, any deviation from an air traffic control clearance in response to perceived converging traffic appearing on a TIS−B display must be approved by the controlling ATC facility before commencing the maneuver, except as permitted under certain conditions in 14CFR §91.123. Uncoordinated deviations may place an aircraft in close proximity to other aircraft under ATC control not seen on the airborne equipment and may result in a pilot deviation or other incident.

47.5 Reports of TIS−B Malfunctions

Users of TIS−B can provide valuable assistance in the correction of malfunctions by reporting instances of undesirable system performance. Reporters should identify the time of observation, location, type and identity of the aircraft, and describe the condition observed; the type of avionics system and its software version used. Since TIS−B performance is monitored by maintenance personnel rather than ATC, it is suggested that malfunctions be reported in any one of the following ways:

47.5.1 By radio or telephone to the nearest Flight Service Station (FSS) facility.

47.5.2 By FAA Form 8740−5, Safety Improvement Report, a postage−paid card is designed for this purpose. These cards may be obtained from FAA FSSs, Flight Standards District Offices, and general aviation fixed−based operators.

47.5.3 By reporting the failure directly to the FAA Surveillance and Broadcast Services Program Office at 1−877−FLYADSB or **http://www.adsb.gov**.

48. Heavy Traffic Around Military Fields

48.1 Pilots are advised to exercise vigilance when in close proximity to most military airports. These airports may have jet aircraft traffic patterns extending up to 2,500 feet above the surface. In addition, they may have an unusually heavy concentration of jet aircraft operating within a 25−nautical mile radius and from the surface to all altitudes. The precautionary note also applies to the larger civil airports.

49. Operational Policy/Procedures for the Gulf of Mexico 50 NM Lateral Separation Initiative

49.1 Introduction and Background

49.1.1 Introduction. On 20 October 2011 at 0900 UTC, the Federal Aviation Administration (FAA), Serviciós a la Navegacion en el Espacio Aéreo Mexicano (SENEAM) and the Direccion General de Aeronautica Civil (DGAC) Mexico implemented 50 Nautical Mile (NM) lateral separation between aircraft authorized Required Navigation Performance 10 (RNP 10) or RNP 4 operating in the Gulf of Mexico (GoMex) Oceanic Control Areas (CTA). Existing Air Traffic Services (ATS) routes and route operating policies did not change for this implementation.

49.1.2 RNP 10 Versus RNAV 10 Terminology. "RNP 10" has the same meaning and application as "RNAV 10". The ICAO Performance-based Navigation (PBN) Manual (ICAO Doc 9613), Volume II, Part B, Chapter 1 (Implementing RNAV 10, Designated and Authorized as RNP 10) explains that the term "RNP 10" was in use before the publication of the ICAO PBN Manual and the manual has "grandfathered in" its continued use when implementing an "RNAV 10" navigation specification.

49.1.3 Background. 50 NM lateral separation was first applied between aircraft authorized for RNP 10 operations on the North Pacific Route System in April 1998. Since that time, 50 NM lateral separation has been expanded throughout the Pacific Flight Information Regions (FIRs) and is currently applied in other airspaces, including, starting in June 2008, the West Atlantic Route System. GoMex 50 NM lateral separation implementation will apply the experience gained in those operations.

49.1.4 Project Objectives. The project objectives were to:

49.1.4.1 Reduce lateral separation to 50 NM between aircraft authorized RNP 10 or RNP 4.

49.1.4.2 Leave existing ATS routes and operating policies in place.

49.1.4.3 Have approximately 90% of flights conducted by operators/aircraft over the Gulf of Mexico authorized for RNP 10 or RNP 4 operations by the appropriate State authority.

49.1.4.4 Accommodate the operation of the small percentage of flights not authorized RNP 10.

49.1.4.5 Establish a policy that aircraft equipped with a Single Long-Range Navigation System (S-LRNS) can qualify for RNP 10 operations in the Gulf of Mexico in accordance with the ICAO PBN Manual and the appropriate FAA and DGAC documents. (See paragraph 49.7.5.)

49.1.5 Control Areas (CTA) Affected. 50 NM lateral separation is implemented in the following CTAs/FIRs/Upper Control Areas (UTA).

49.1.5.1 The Houston Oceanic CTA/FIR and the Gulf of Mexico portion of the Miami Oceanic CTA/FIR.

49.1.5.2 The Monterrey CTA and Merida High CTA within the Mexico FIR/UTA

49.1.6 Policy and Procedures Coordination with SENEAM and the DGAC. The policies and procedures were coordinated with SENEAM and the Mexico DGAC. They are applied in the GoMex CTA's where the FAA and SENEAM provide Air Traffic Control.

49.2 Gulf of Mexico 50 NM Lateral Separation Initiative Web Page: Policy, Procedures and Guidance for Operators and Regulators

Information on plans, policies and procedures for 50 NM lateral separation is posted on the "Gulf of Mexico 50 NM Lateral Separation Web Page":

http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/oceanic/gomex/

The web page contains detailed guidance on operator and aircraft authorization for RNP 10 or RNP 4 and includes Job Aids with FAA and ICAO document references.

49.3 Lateral Separation Minima Applied

49.3.1 50 NM lateral separation is applied in the GoMex CTA's between aircraft authorized RNP 10 or RNP 4 at all altitudes above the floor of controlled airspace.

49.3.2 The current lateral separation minima of 100 NM in the Houston, Monterrey and Merida CTAs, and 90 NM in the Miami Oceanic CTA will continues to be applied between aircraft not authorized RNP 10 or RNP 4.

49.4 Operation on Routes on the periphery of the Gulf of Mexico CTAs

Operations on certain routes that fall within the boundaries of affected CTAs are not affected by the introduction of 50 NM lateral separation. Operation on the following routes is not affected:

49.4.1 Routes that are flown by reference to ICAO standard ground-based navigation aids (VOR, VOR/DME, NDB).

49.4.2 Special Area Navigation (RNAV) routes Q100, Q102 and Q105 in the Houston, Jacksonville and Miami CTAs.

49.5 Provisions for Accommodation of Non-RNP10 Aircraft (Aircraft Not Authorized RNP 10 or RNP 4)

49.5.1 Operators of NonRNP10 aircraft must annotate ICAO flight plan Item 18 as follows:

"STS/NONRNP10" (no space between letters and numbers).

49.5.2 Pilots of NonRNP10 aircraft that operate in GoMex CTA's must report the lack of authorization by stating "Negative RNP 10":

49.5.2.1 On initial call to ATC in a GoMex CTA:

49.5.2.2 In read back of a clearance to climb to or descend from cruise altitude. (See paragraph 49.5.5.); and

49.5.2.3 When approval status is requested by the controller. (See paragraph 49.9.5.)

49.5.3 Operators of NonRNP10 aircraft must not annotate ICAO flight plan Item 18 (Other Information) with "NAV/RNP10" or "NAV/RNP4", as shown in paragraph 49.8, if they have not obtained RNP 10 or RNP 4 authorization.

49.5.4 NonRNP10 operators/aircraft may file any route at any altitude in a GoMex CTA. They will be cleared to operate on their preferred routes and altitudes as traffic permits. 50 NM lateral separation will not be applied to NonRNP10 aircraft.

49.5.5 NonRNP10 aircraft are encouraged to operate at altitudes above those where traffic is most dense (i.e., at/above FL 380), if possible. NonRNP10 aircraft should plan on completing their climb to or descent from higher FLs within radar coverage, if possible.

49.6 Operator Action

In order to maximize operational flexibility provided by 50 NM lateral separation, operators capable of meeting RNP 10 or RNP 4 that operate on oceanic routes or areas in the GoMex CTA's should obtain authorization for RNP 10 or RNP 4 and annotate the ICAO flight plan accordingly.

NOTE−
1. *RNP 10 is the minimum "Navigation Specification (NavSpec)" required for the application of 50 NM lateral separation. RNP 4 is an operator option. Operators/aircraft authorized RNP 4 are not required to also obtain RNP 10 authorization.*

2. *"RNP navigation specification" (e.g., RNP 10) is the term adopted in the ICAO Performance-based Navigation (PBN) Manual (Doc 9613). It replaces the term "RNP type".*

49.7 RNP 10 or RNP 4 Authorization: Policy and Procedures for Aircraft and Operators

49.7.1 RNP NavSpecs Applicable To Oceanic Operations. In accordance with ICAO guidance, RNP 10 and RNP 4 are the only NavSpecs applicable to oceanic and remote area operations. Other RNAV and RNP NavSpecs are applicable to continental en route, terminal area and approach operations.

49.7.2 FAA Documents. The guidance and direction of FAA Order 8400.12 (as amended) (RNP 10 Operational Authorization) is used to grant RNP 10 authorization to operators and aircraft for which the FAA is responsible. FAA Order 8400.33 (as amended) (Procedures for Obtaining Authorization for RNP 4 Oceanic/Remote Area Operations) is used to authorize RNP 4. The FAA RNP 10 and RNP 4 orders are consistent with the ICAO PBN Manual guidance discussed below. FAA and ICAO documents are posted on the FAA Gulf of Mexico 50 NM Lateral Separation Initiative Web Page.

49.7.3 ICAO Performance-based Navigation (PBN) Manual (ICAO Doc 9613). Guidance for authorization of RNP 10 and RNP 4 is provided in ICAO Doc 9613. RNP 10 is addressed in Volume II, Part B; Chapter 1. RNP 4 is addressed in Volume II, Part C; Chapter 1.

49.7.4 RNP 10 and RNP 4 Job Aids. Operators and authorities are encouraged to use the RNP 10 or RNP 4 Job Aids posted on the FAA Gulf of Mexico 50 NM Lateral Separation Initiative Web Page. For U.S. operators, one set of RNP 10 and RNP 4 Job Aids provides references to FAA documents. For international operators, a second set of Job Aids provide references to the ICAO PBN Manual. These Job Aids address the operational and airworthiness elements of aircraft and operator authorization and provide references to appropriate document paragraphs. The Job Aids provide a method for operators to develop and authorities to track the operator/aircraft program elements required for RNP 10 or RNP 4 authorization.

49.7.5 Qualification of Aircraft Equipped With a Single Long-Range Navigation System (S-LRNS) For RNP 10 Operations In GoMex CTA's.

49.7.5.1 Background. S-LRNS operations in the Gulf of Mexico, the Caribbean Sea and the other designated areas have been conducted for at least 25 years. Provisions allowing aircraft equipage with a S-LRNS for operations in specified oceanic and off-shore areas are contained in the following sections of 14 Code Of Federal Regulations (CFR): 91.511, 121.351, 125.203 and 135.165.

49.7.5.2 ICAO PBN Manual Reference. In reference to RNP 10 authorization, the ICAO PBN Manual, Volume II, Part B, Chapter 1, paragraph 1.3.6.2 states that: "A State authority may approve the use of a single LRNS in specific circumstances (e.g., North Atlantic MNPS and 14 CFR 121.351 (c) refer). An RNP 10 approval is still required."

49.7.5.3 Policy Development. The FAA worked with the ICAO NACC Office (North American, Central American and Caribbean), State regulators and ATS providers in the GoMex and Caribbean areas to implement a policy for S-LRNS equipped aircraft to qualify for RNP 10 for GoMex operations. Allowing S-LRNS equipped aircraft to qualify for RNP 10 enables more operator aircraft to be authorized RNP 10, thereby creating a more uniform operating environment for the application of 50 NM lateral separation. The factors considered were: the shortness of the legs outside the range of ground navigation aids, the availability of radar and VHF coverage in a large portion of GoMex airspace and the absence of events attributed to S-LRNS in GoMex operations.

49.7.5.4 Document Revision. The following documents were revised or created to enable implementation of the S-LRNS/RNP 10 qualification policy:

a) FAA Order (FAAO) 8400.12

b) FAA Order 8900.1 (Flight Standards Information Management System (FSIMS))

c) Paragraph B054 of FAA Operations Specifications and Management Specifications (Class II Navigation Using Single Long-Range Navigation System)

d) LOA B054 (Class II Navigation Using Single Long-Range Navigation System (S-LRNS) Equipped Airplane Authorized RNP 10) (LOA's are applicable to International General Aviation operators.)

e) FAA RNP 10 Job Aid with FAAO 8400.12 references

f) RNP 10 Job Aid with ICAO PBN Manual references

49.7.5.5 S-LRNS/RNP 10 Authorization Limited To GoMex. At this time, S-LRNS qualification for RNP 10 only applies to GoMex operations. Any expansion of this provision will require assessment and agreement by the appropriate State authorities.

49.7.6 RNP 10 Time Limit for INS or IRU Only Equipped Aircraft. Operators should review their Airplane Flight Manual (AFM), AFM Supplement or other appropriate documents and/or contact the airplane or avionics manufacturer to determine the RNP 10 time limit applicable to their aircraft. They will then need to determine its effect, if any, on their operation. Unless otherwise approved, the basic RNP 10 time limit is 6.2 hours between position updates for aircraft on which Inertial Navigation Systems (INS) or Inertial Reference Units (IRU) provide the only source of long range navigation. Extended RNP 10 time limits of 10 hours and greater are already approved for many IRU systems. FAA Order 8400.12

contains provisions for extending RNP 10 time limits.

49.8 Flight Planning Requirements

Operators must make ICAO flight plan annotations in accordance with this paragraph and, if applicable, paragraph 49.5, Provisions for Accommodation of NonRNP10 Aircraft (Aircraft Not Authorized RNP 10 or RNP 4).

49.8.1 ICAO Flight Plan Requirement. ICAO flight plans must be filed for operation on oceanic routes and areas in the Houston Oceanic CTA/FIR, the Gulf of Mexico portion of the Miami CTA/FIR, the Monterrey CTA and Merida High CTA.

49.8.2 To inform ATC that they have obtained RNP 10 or RNP 4 authorization and are eligible for 50 NM lateral separation, operators must:

49.8.2.1 Annotate ICAO Flight Plan Item 10 (Equipment) with the letters "R" and "Z", and

49.8.2.2 Annotate Item 18 (Other Information) with, as appropriate, "NAV/RNP10" or "NAV/RNP4" (no space between letters and numbers).

NOTE−
1. *See paragraph 49.8.5. It provides recommended filing practices for domestic U.S. RNAV operations and filing with EUROCONTROL.*

2. *On the ICAO Flight Plan, the letter "R" in Item 10 indicates that the aircraft will maintain the appropriate RNP navigation specification for the entire flight through airspace where RNP is prescribed. Letter "Z" in Item 10 indicates that information explaining aircraft navigation and/or communication capability is found in Item 18.*

49.8.3 50 NM lateral separation will only be applied to operators/aircraft that annotate the ICAO flight plan in accordance with this policy. (See 49.8.2.)

49.8.4 Operators that have not obtained RNP 10 or RNP 4 authorization must not annotate ICAO flight plan Item 18 (Other information) with "NAV/RNP10" or "NAV/RNP4", but must follow the practices detailed in paragraph 49.5.

49.8.5 Recommendation for Filing to Show Domestic U.S. RNAV and Oceanic RNP Capabilities.

49.8.5.1 Explanation. The FAA program to enhance operators' capability to communicate their domestic U.S. RNAV capabilities to ATC has been in place for over three years. It requires an entry following the NAV/ indicator in Item 18 of the ICAO flight plan. The initiative has provisions for including RNAV capabilities for departure ("D"), enroute ("E") and arrival ("A") with RNAV accuracy values. Detailed instructions are available on the following web page: http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/flight_plan_filing/

EXAMPLE−
An example Item 18 entry is: NAV/RNVD1E2A1. The characters in the example indicate RNAV 1 and RNAV 2 accuracy.

49.8.5.2 Recommendation. It is recommended that operators provide their RNAV capability for domestic U.S. and capabilities for oceanic operations (RNP 10 or RNP 4) by filing: "NAV/", then the domestic U.S. alphanumeric sequence, then a mandatory space and then "RNP10" or "RNP4", as appropriate.

EXAMPLE−
"NAV/RNVD1E2A1 RNP10"

49.8.5.3 Multiple NAV/ Entries. Operators should be aware that if they make multiple "NAV/" entries in a flight plan filed with EUROCONTROL, only the last "NAV/" entry will be forwarded to the next ATC facility. For example, if "NAV/RNVD1E2A1" and "NAV/RNP10" are entered, only "NAV/RNP10" will be forwarded. Multiple "NAV/" entries should, therefore, be consolidated following a single "NAV/" indicator.

49.8.5.4 Recommendation. Item 18 entries made in accordance with paragraph 49.8.5.2. will limit the number of characters needed to show domestic U.S. RNAV and oceanic RNP capabilities and mitigate the chance that one or the other will not be forwarded for use by FAA domestic and oceanic automation systems.

49.8.6 Implementation of ICAO Doc 4444, Revised Appendix 2 (Flight Plan). ICAO Doc 4444, Amendment 1 revises Appendix 2 (Flight Plan). Specifically, Amendment 1 revises the flight plan annotations in Item 10 (Equipment) and Item 18 (Other Information) that show aircraft communications, navigation and surveillance capabilities. The new Appendix 2 flight plan annotations will be required on 15 November 2012. The following Websites provide information on implementation planning:

49.8.6.1 FAA Website: http://www.faa.gov/go/fpl2012.

49.8.6.2 ICAO Flight Plan Implementation Tracking System (FITS): http://www2.icao.int/en/FITS/Pages/home.aspx.

49.9 Pilot and Dispatcher Procedures: Basic and In-flight Contingency Procedures

49.9.1 Basic Pilot Procedures. The RNP 10 and RNP 4 Job Aids contain references to pilot and, if applicable, dispatcher procedures contained in:

49.9.1.1 FAA Order 8400.12C (RNP 10), Appendix D (Training Programs and Operating Practices and Procedures)

49.9.1.2 FAA Order 8400.33 (RNP 4): paragraph 9 (Operational Requirements) and paragraph 10 (Training Programs, Operating Practices and Procedures)

49.9.1.3 ICAO PBN Manual, Volume II, Part B, Chapter 1 (RNP 10)

49.9.1.4 ICAO PBN Manual, Volume II, Part C, Chapter 1 (RNP 4)

49.9.2 ICAO Doc 4444, Chapter 15, In-flight Contingency Procedures. Doc 4444 Chapter 15 contains important guidance for pilot training programs. For ease of reference, significant Chapter 15 paragraphs are posted on the Gulf of Mexico 50 NM Lateral Separation Web Page. Chapter 15 paragraphs posted on the website include:

49.9.2.1 Paragraph 15.2 (Special Procedures for In-Flight Contingencies in Oceanic Airspace). Paragraph 15.2.2 (General Procedures) provides guidance for in-flight diversions, turn-backs and for loss of, or significant reduction in, required navigation capability when operating in an airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations.

49.9.2.2 Paragraph 15.2.3 (Weather Deviation Procedures). Paragraph 15.2.3 provides guidance for events where the pilot is able to obtain a clearance prior to deviating from track to avoid convective weather and for events where the pilot is unable to obtain clearance prior to deviating.

49.9.3 Strategic Lateral Offset Procedures (SLOP). Pilots should use SLOP procedures in the course of regular oceanic operations. SLOP procedures are published in ICAO Document 4444, 15th Edition, Amendment 2, paragraph 16.5 and FAA Notices. They are posted on the Gulf of Mexico 50 NM Lateral Separation Web Page and are addressed in the RNP 10 and RNP 4 Job Aids.

49.9.4 Pilot Report of NonRNP10 Status. The pilot must report the lack of RNP 10 or RNP 4 status in accordance with the following:

49.9.4.1 When the operator/aircraft is not authorized RNP 10 or RNP 4. See paragraph 49.5.

49.9.4.2 If approval status is requested by the controller in accordance with paragraph 49.9.5.

49.9.5 Pilot Statement of RNP 10 or RNP 4 Approval Status, If Requested. If requested by the controller, the pilot must communicate approval status using the following phraseology:

Controller Request:
(Call sign) confirm RNP 10 or 4 approved
Pilot Response:
“Affirm RNP 10 approved” or “Affirm RNP 4 approved,” as appropriate, or “Negative RNP 10” (See paragraph 49.5 for NonRNP10 aircraft procedures.)

49.9.6 Pilot action when navigation system malfunctions. In addition to the actions suggested in ICAO Doc. 4444, Chapter 15, when pilots suspect a navigation system malfunction, the following actions should be taken:

49.9.6.1 Immediately inform ATC of navigation system malfunction or failure.

49.9.6.2 Accounting for wind drift, fly magnetic compass heading to maintain track.

49.9.6.3 Request radar vectors from ATC, when available

l) San Francisco Intl. Airport, CA.

2.3.2.3 No person may take off or land a civil aircraft at an airport within Class B airspace or operate a civil aircraft within Class B airspace unless:

a) The pilot in command holds at least a private pilot certificate; or,

b) The aircraft is operated by a student pilot or recreational pilot who seeks private pilot certification and has met the requirements of 14 CFR Section 61.95.

2.3.2.4 Unless otherwise authorized by ATC, each person operating a large turbine engine−powered airplane to or from a primary airport must operate at or above the designated floors while within the lateral limits of Class B airspace.

2.3.2.5 Unless otherwise authorized by ATC, each aircraft must be equipped as follows:

a) For IFR operations, an operable VOR or TACAN receiver.

b) For all operations, a two−way radio capable of communications with ATC on appropriate frequencies for that area.

c) Unless otherwise authorized by ATC, an operable radar beacon transponder with automatic altitude reporting equipment.

NOTE−
ATC may, upon notification, immediately authorize deviations from the altitude reporting equipment requirement; however, a request for deviation from the 4096 transponder equipment requirement must be submitted to the controlling ATC facility at least one hour before the proposed operation. (See ENR 1.1, paragraph 37.7, Transponder Operation).

2.3.2.6 Mode C Veil

a) The airspace within 30 nautical miles of an airport listed in Appendix D, Section 1 of 14 CFR Part 91 (generally primary airports within Class B airspace areas), from the surface upward to 10,000 feet mean seal level (MSL). Unless otherwise authorized by air traffic control, aircraft operating within this airspace must be equipped with automatic pressure altitude reporting equipment having Mode C capability.

b) However, aircraft that was not originally certificated with an engine−driven electrical system or which has not subsequently been certified with a system installed, may conduct operations within a Mode C veil provided the aircraft remains outside Class A, B, or C airspace; and below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport or 10,000 feet MSL, whichever is lower.

2.3.3 Charts. Class B airspace is charted on Sectional Charts, IFR En Route Low Altitude Charts, and Terminal Area Charts.

2.3.4 Flight Procedures

2.3.4.1 Flights. Aircraft within Class B airspace are required to operate in accordance with current IFR procedures. A clearance for a visual approach to a primary airport is not authorization for turbine powered airplanes to operate below the designated floors of the Class B airspace.

2.3.4.2 VFR Flights

a) Arriving aircraft must obtain an ATC clearance prior to entering Class B airspace and must contact ATC on the appropriate frequency, and in relation to geographical fixes shown on local charts. Although a pilot may be operating beneath the floor of the Class B airspace on initial contact, communications with ATC should be established in relation to the points indicated for spacing and sequencing purposes.

b) Departing aircraft require a clearance to depart Class B airspace and should advise the clearance delivery position of their intended altitude and route of flight. ATC will normally advise VFR aircraft when leaving the geographical limits of the Class B airspace. Radar service is not automatically terminated with this advisory unless specifically stated by the controller.

c) Aircraft not landing or departing the primary airport may obtain an ATC clearance to transit the Class B airspace when traffic conditions permit and provided the requirements of 14 CFR Section 91.131 are met. Such VFR aircraft are encouraged, to the extent possible, to operate at altitudes above or below the Class B airspace or transit through established VFR corridors. Pilots operating in VFR corridors are urged to use frequency 122.750 MHz for the exchange of aircraft position information.

2.3.5 ATC Clearances and Separation. An ATC clearance is required to enter and operate within Class B airspace. VFR pilots are provided sequencing and separation from other aircraft while operating within Class B airspace. (See ENR 1.1, paragraph 39., Terminal Radar Service for VFR Aircraft.)

NOTE−
1. *Separation and sequencing of VFR will be suspended in the event of a power outage as this service is dependent on radar. The pilot will be advised that the service is not available and issued wind, runway information, and the time or place to contact the tower.*

2. S*eparation of VFR aircraft will be suspended during Center Radar Presentation (CENRAP) Operations. Traffic advisories and sequencing to the primary airport will be provided on a workload permitting basis. The pilot will be advised when CENRAP is in use.*

2.3.5.1 VFR aircraft are separated from all VFR/IFR aircraft which weigh 19,000 pounds or less by a minimum of:

a) Target resolution; or

b) 500 feet vertical separation; or

c) Visual separation.

2.3.5.2 VFR aircraft are separated from all VFR/IFR aircraft which weigh more than 19,000 and turbojets by no less than:

a) 1 $^{1}/_{2}$ miles lateral separation; or

b) 500 feet vertical separation; or

c) Visual separation.

2.3.5.3 This program is not to be interpreted as relieving pilots of their responsibilities to see and avoid other traffic operating in basic VFR weather conditions, to adjust their operations and flight path as necessary to preclude serious wake encounters, to maintain appropriate terrain and obstruction clearance, or to remain in weather conditions equal to or better than the minimums required by 14 CFR Section 91.155. Approach control should be advised and a revised clearance or instruction obtained when compliance with an assigned route, heading, and/or altitude is likely to compromise pilot responsibility with respect to terrain and obstruction clearance, vortex exposure, and weather minimums.

2.3.5.4 ATC may assign altitudes to VFR aircraft that do not conform to 14 CFR Section 91.159. "RESUME APPROPRIATE VFR ALTITUDES" will be broadcast when the altitude assignment is no longer needed for separation or when leaving Class B airspace. Pilots must return to an altitude that conforms to 14 CFR Section 91.159.

2.3.5.5 Proximity Operations. VFR aircraft operating in proximity to Class B airspace are cautioned against operating too closely to the boundaries, especially where the floor of the Class B airspace is 3,000 feet or less above the surface or where VFR cruise altitudes are at or near the floor of higher levels. Observance of this precaution will reduce the potential for encountering an aircraft operating at the altitudes of Class B floors. Additionally, VFR aircraft are encouraged to utilize the VFR Planning Chart as a tool for planning flight in proximity to Class B airspace. Charted VFR Flyway Planning charts are published on the back of the existing VFR Terminal Area Charts.

2.4 Class C Airspace

2.4.1 Definition. Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, and an outer area with a 10 NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation.

2.4.2 Outer Area. Class C airspace areas have a procedural (nonregulatory) Outer Area. Normally this area is 20 NM from the primary Class C airspace airport. Its vertical limit extends from the lower limits of radio/radar coverage up to the ceiling of the approach control's delegated airspace, excluding the Class C airspace itself, and other airspace as appropriate. (This outer area is not charted.)

2.4.3 Charts. Class C airspace is charted on Sectional Charts, IFR En Route Low Altitude, and Terminal Area Charts where appropriate.

1.3.2.5 Pilot Action

a) Start speed reduction when 3 minutes or less from the holding fix. Cross the holding fix, initially, at or below the maximum holding airspeed.

b) Make all turns during entry and while holding at:

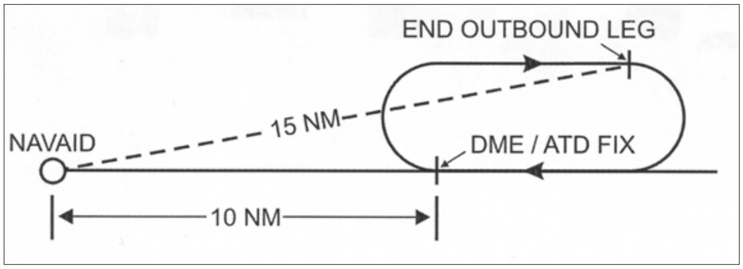
1) 3 degrees per second.

2) 30 degree bank angle.

3) 25 degree bank angle provided a flight director system is used.

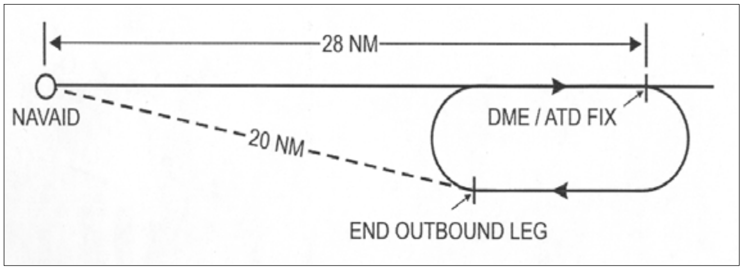
NOTE−
Use whichever requires the least bank angle.

FIG ENR 1.5−4
Inbound Toward NAVAID



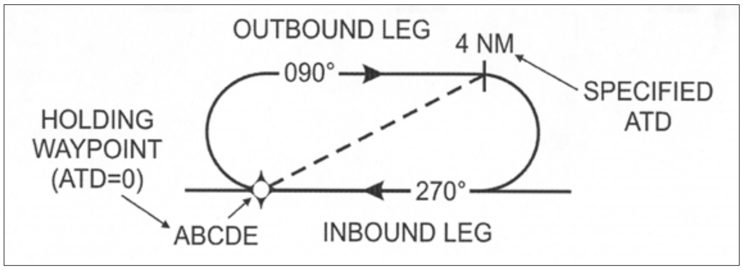
NOTE−
When the inbound course is toward the NAVAID, the fix distance is 10 NM, and the leg length is 5 NM, then the end of the outbound leg will be reached when the DME/ATD reads 15 NM.

FIG ENR 1.5−5
Inbound Leg Away from NAVAID



NOTE−
When the inbound course is away from the NAVAID and the fix distance is 28 NM, and the leg length is 8 NM, then the end of the outbound leg will be reached when the DME/ATD reads 20 NM.

FIG ENR 1.5−6
GPS/RNAV Holding



NOTE−
The inbound course is always toward the waypoint and the ATD is zero at the waypoint. The end of the outbound leg of the holding pattern is reached when the ATD reads the specified distance.

c) Compensate for wind effect primarily by drift correction on the inbound and outbound legs. When outbound, triple the inbound drift correction to avoid major turning adjustments; e.g., if correcting left by 8 degrees when inbound, correct right by 24 degrees when outbound.

d) Determine entry turn from aircraft heading upon arrival at the holding fix. Plus or minus 5° in heading is considered to be within allowable good operating limits for determining entry.

e) Advise ATC immediately what increased airspeed is necessary, if any, due to turbulence, icing, etc., or if unable to accomplish any part of the holding procedures. After such higher speeds are no longer necessary, operate according to the appropriate published holding speed and notify ATC.

NOTE−
Airspace protection for holding in turbulent air is based on a maximum of 280 KIAS or Mach 0.8, whichever is lower. Considerable impact on traffic flow will result when turbulent air holding patterns are used; thus, pilot discretion will ensure their use is limited to bona fide conditions/requirements.

1.3.2.6 Nonstandard Holding Pattern

a) Fix end and outbound end turns are made to the left. Entry procedures to a nonstandard pattern are oriented in relation to the 70 degree line on the holding side just as in the standard pattern.

b) When holding at a fix and instructions are received specifying the time of departure from the fix, the pilot should adjust the aircraft's flight path within the limits of the established holding pattern in order to leave the fix at the exact time specified. After departing the holding fix, normal speed is to be resumed with respect to other governing speed requirements such as terminal area speed limits, specific ATC requests, etc. Where the fix is associated with an instrument approach, and timed approaches are in effect, a procedure turn must not be executed unless the pilot advises ATC, since aircraft holding are expected to proceed inbound on final approach directly from the holding pattern when approach clearance is received.

c) If an aircraft is established in a published holding pattern at an assigned altitude above the published minimum holding altitude and subsequently cleared for the approach, the pilot may descend to the published minimum holding altitude. The holding pattern would only be a segment of the instrument approach procedure if it is published on the instrument procedure chart and is used in lieu of a procedure turn.

d) For those holding patterns where there are no published minimum holding altitudes, the pilot, upon receiving an approach clearance, must maintain the last assigned altitude until leaving the holding pattern and established on the inbound course. Thereafter, the published minimum altitude of the route segment being flown will apply. It is expected that the pilot will be assigned a holding altitude that will permit a normal descent on the inbound course.

1.4 Radar Surveillance of Outer−Fix Holding Pattern Airspace Areas

1.4.1 Whenever aircraft are holding at an outer fix, ATC will usually provide radar surveillance of the outer fix holding pattern airspace area, or any portion of it, if it is shown on the controller's radar scope.

1.4.2 The controller will attempt to detect any holding aircraft that stray outside the holding pattern airspace area and will assist any detected aircraft to return to the assigned airspace area.

1.4.3 Many factors could prevent ATC from providing this additional service, such as workload, number of targets, precipitation, ground clutter, and radar system capability. These circumstances may make it unfeasible to maintain radar identification of aircraft or to detect aircraft straying from the holding pattern. The provision of this service depends entirely upon whether the controller is in a position to provide it and does not relieve a pilot of the responsibility to adhere to an accepted ATC clearance.

2. Approach Procedures

2.1 Approach Control

2.1.1 Approach control is responsible for controlling all instrument flight operating within its area of responsibility. Approach control may serve one or more airfields, and control is exercised primarily by direct pilot/controller communications. Prior to arriving at the destination radio facility, instructions will be received from ARTCC to contact approach control on a specified frequency.

2.2 Radar Approach Control

2.2.1 Where radar is approved for approach control service, it is used not only for radar approaches (Airport Surveillance Radar (ASR) and Precision Approach Radar (PAR)) but is also used to provide vectors in conjunction with published nonradar approaches based on radio NAVAIDs (ILS, MLS, VOR, NDB, TACAN). Radar vectors can provide course guidance and expedite traffic to the final approach course of any established instrument approach procedure or to the traffic pattern for a visual approach. Approach control facilities that provide this radar service will operate in the following manner:

2.2.1.1 Arriving aircraft are either cleared to an outer fix most appropriate to the route being flown with vertical separation and, if required, given holding information or, when radar handoffs are effected between the ARTCC and approach control, or between two approach control facilities, aircraft are cleared to the airport or to a fix so located that the handoff will be completed prior to the time the aircraft reaches the fix. When radar handoffs are utilized, successive arriving flights may be handed off to approach control with radar separation in lieu of vertical separation.

2.2.1.2 After release to approach control, aircraft are vectored to the appropriate final approach course (ILS, MLS, VOR, ADF, etc.). Radar vectors and altitude or flight levels will be issued as required for spacing and separating aircraft. *Therefore, pilots must not deviate from the headings issued by approach control.* Aircraft will normally be informed when it is necessary to vector across the final approach course for spacing or other reasons. If approach course crossing is imminent and the pilot has not been informed that the aircraft will be vectored across the final approach course, the pilot should query the controller.

2.2.1.3 The pilot is not expected to turn inbound on the final approach course unless an approach clearance has been issued. This clearance will normally be issued with the final vector for interception of the final approach course, and the vector will be such as to enable the pilot to establish the aircraft on the final approach course prior to reaching the final approach fix.

2.2.1.4 In the case of aircraft already inbound on the final approach course, approach clearance will be issued prior to the aircraft reaching the final approach fix. When established inbound on the final approach course, radar separation will be maintained, and the pilot will be expected to complete the approach utilizing the approach aid designated in the clearance (ILS, MLS, VOR, radio beacons, etc.) as the primary means of navigation. Therefore, once established on the final approach course, pilots must not deviate from it unless a clearance to do so is received from ATC.

2.2.1.5 After passing the final approach fix on final approach, aircraft are expected to continue inbound on the final approach course and complete the approach or effect the missed approach procedure published for that airport.

2.2.2 ARTCCs are approved for and may provide approach control services to specific airports. The radar systems used by these centers do not provide the same precision as an ASR/PAR used by approach control facilities and towers, and the update rate is not as fast. Therefore, pilots may be requested to report established on the final approach course.

2.2.3 Whether aircraft are vectored to the appropriate final approach course or provide their own navigation on published routes to it, radar service is automatically terminated when the landing is completed or when instructed to change to advisory frequency at uncontrolled airports, whichever occurs first.

3. Standard Terminal Arrival (STAR), Area Navigation (RNAV) STAR, and Flight Management System Procedures (FMSP) for Arrivals

3.1 A STAR is an ATC coded IFR arrival route established for application to arriving IFR aircraft destined for certain airports. RNAV STAR/FMSP procedures for arrivals serve the same purpose but are only used by aircraft equipped with FMS or GPS. The purpose of both is to simplify clearance delivery procedures and facilitate transition between en route and instrument approach procedures.

3.1.1 STAR/RNAV STAR/FMSP procedures may have mandatory speeds and/or crossing altitudes published. Other STARs may have planning information depicted to inform pilots what clearances or restrictions to "**expect**." "**Expect**" altitudes/speeds are not considered STAR/RNAV STAR/FMSP procedures crossing restrictions unless verbally issued by ATC.

NOTE−
*The "**expect**" altitudes/speeds are published so that pilots may have the information for planning purposes. These altitudes/speeds must not be used in the event of lost communications unless ATC has specifically advised the pilot to expect these altitudes/speeds as part of a further clearance.*

REFERENCE−
14 CFR Section 91.185c(2)(iii).

3.1.2 Pilots navigating on STAR/RNAV STAR/ FMSP procedures must maintain last assigned altitude until receiving authorization to descend so as to comply with all published/issued restrictions. This authorization will contain the phraseology "DESCEND VIA."

3.1.2.1 Clearance to "descend via" authorizes pilots to:

a) Vertically and laterally navigate on a STAR/ RNAV STAR/FMSP.

b) When cleared to a waypoint depicted on a STAR/RNAV STAR/FMSP, to descend from a previously assigned altitude at pilot's discretion to the altitude depicted for that waypoint, and once established on the depicted arrival, to navigate laterally and vertically to meet all published restrictions.

NOTE−
1. *Air traffic is responsible for obstacle clearance when issuing a "descend via" instruction to the pilot. The descend via is used in conjunction with STARs/RNAV STARs/FMSPs to reduce phraseology by not requiring the controller to restate the altitude at the next waypoint/fix to which the pilot has been cleared.*

2. *Air traffic will assign an altitude to cross the waypoint/fix, if no altitude is depicted at the waypoint/fix, for aircraft on a direct routing to a STAR/RNAV STAR/FMSP.*

3. *Minimum en route altitudes (MEA) are not considered restrictions; however, pilots are expected to remain above MEAs.*

EXAMPLE−
1. ***Lateral/routing clearance only.***
"Cleared Hadly One arrival."

2. ***Routing with assigned altitude:***
"Cleared Hadly One arrival, descend and maintain Flight Level two four zero."

"Cleared Hadly One arrival, descend at pilot's discretion, maintain Flight Level two four zero."

3. ***Lateral/routing and vertical navigation clearance.***
"Descend via the Civit One arrival."
"Descend via the Civit One arrival, except, cross Arnes at or above one one thousand."

4. ***Lateral/routing and vertical navigation clearance when assigning altitude not published on procedure.***
"Descend via the Haris One arrival, except after Bruno, maintain one zero thousand."
"Descend via the Haris One arrival, except cross Bruno at one three thousand then maintain one zero thousand."

5. ***Direct routing to intercept a STAR/RNAV STAR/ FMSP and vertical navigation clearance.***
"Proceed direct Mahem, descend via Mahem One arrival."
"Proceed direct Luxor, cross Luxor at or above flight level two zero zero, then descend via the Ksino One Arrival."

NOTE−
1. *In Example 2, pilots are expected to descend to FL 240 as directed, and maintain FL 240 until cleared for further vertical navigation with a newly assigned altitude or a "descend via" clearance.*

2. *In Example 4, the aircraft should track laterally and vertically on the Haris One arrival and should descend so as to comply with all speed and altitude restrictions until reaching Bruno and then maintain 10,000. Upon reaching 10,000, aircraft should maintain 10,000 until cleared by ATC to continue to descend.*

3.1.2.2 Pilots cleared for vertical navigation using the phraseology "DESCEND VIA" must inform ATC upon initial contact with a new frequency.

EXAMPLE−
"Delta One Twenty One leaving FL 240, descending via the Civit One arrival."

3.1.2.3 Pilots of IFR aircraft destined to locations for which STARs have been published may be issued a clearance containing a STAR whenever ATC deems it appropriate.

3.2 Use of STARs requires pilot possession of at least the approved chart. RNAV STARs must be retrievable by the procedure name from the aircraft database and conform to charted procedure. As with any ATC clearance or portion thereof, it is the responsibility of each pilot to accept or refuse an issued STAR. Pilots should notify ATC if they do not wish to use a STAR by placing "NO STAR" in the remarks section of the flight plan or by the less desirable method of verbally stating the same to ATC.

NOTE−
Refer to 14 CFR 91.175 (i).

7. Landing Priority

7.1 A clearance for a specific type of approach (ILS, MLS, ADF, VOR, or straight−in approach) to an aircraft operating on an IFR flight plan does not mean that landing priority will be given over other traffic. Traffic control towers handle all aircraft, regardless of the type of flight plan, on a "first−come, first−served" basis. Therefore, because of local traffic or runway in use, it may be necessary for the controller, in the interest of safety, to provide a different landing sequence. In any case, a landing sequence will be issued to each aircraft as soon as possible to enable the pilot to properly adjust the aircraft's flight path.

8. Procedure Turn and Hold−in−lieu of Procedure Turn

8.1 A procedure turn is the maneuver prescribed when it is necessary to reverse direction to establish the aircraft inbound on an intermediate or final approach course. The procedure turn or hold−in−lieu−of−PT is a required maneuver when it is depicted on the approach chart, unless cleared by ATC for a straight−in approach. Additionally, the procedure turn or hold−in−lieu−of−PT is not permitted when the symbol "No PT" is depicted on the initial segment being used, when a RADAR VECTOR to the final approach course is provided, or when conducting a timed approach from a holding fix. The altitude prescribed for the procedure turn is a minimum altitude until the aircraft is established on the inbound course. The maneuver must be completed within the distance specified in the profile view. For a hold−in−lieu−of−PT, the holding pattern should be flown as depicted and the specified leg length/timing must not be exceeded.

NOTE−
The pilot may elect to use the procedure turn or hold−in−lieu−of−PT when it is not required by the procedure, but must first receive an amended clearance from ATC. If the pilot is uncertain whether the ATC clearance intends for a procedure turn to be conducted or to allow for a straight−in approach, the pilot must immediately request clarification from ATC (14 CFR Section 91.123).

8.1.1 On U.S. Government charts, a barbed arrow indicates the maneuvering side of the outbound course on which the procedure turn is made. Headings are provided for course reversal using the 45 degree type procedure turn. However, the point at which the turn may be commenced and the type and rate of turn is left to the discretion of the pilot (limited by the charted remain within xx NM distance). Some of the options are the 45 degree procedure turn, the racetrack pattern, the teardrop procedure turn, or the 80 degree ↔ 260 degree course reversal. Racetrack entries should be conducted on the maneuvering side where the majority of protected airspace resides. If an entry places the pilot on the non−maneuvering side of the PT, correction to intercept the outbound course ensures remaining within protected airspace. Some procedure turns are specified by procedural track. These turns must be flown exactly as depicted.

8.1.2 Descent to the procedure turn (PT) completion altitude from the PT fix altitude (when one has been published or assigned by ATC) must not begin until crossing over the PT fix or abeam and proceeding outbound. Some procedures contain a note in the chart profile view that says "Maintain (altitude) or above until established outbound for procedure turn" (See FIG ENR 1.5−7). Newer procedures will simply depict an "at or above" altitude at the PT fix without a chart note (See FIG ENR 1.5−8). Both are there to ensure required obstacle clearance is provided in the procedure turn entry zone (See FIG ENR 1.5−9). Absence of a chart note or specified minimum altitude adjacent to the PT fix is an indication that descent to the procedure turn altitude can commence immediately upon crossing over the PT fix, regardless of the direction of flight. This is because the minimum altitudes in the PT entry zone and the PT maneuvering zone are the same.

8.1.3 When the approach procedure involves a procedure turn, a maximum speed of not greater than 200 knots (IAS) should be observed from first overheading the course reversal IAF through the procedure turn maneuver to ensure containment within the obstruction clearance area. Pilots should begin the outbound turn immediately after passing the procedure turn fix. The procedure turn maneuver must be executed within the distance specified in the profile view. The normal procedure turn distance is 10 miles. This may be reduced to a minimum of 5 miles where only Category A or helicopter aircraft are to be operated or increased to as much as 15 miles to accommodate high performance aircraft.

8.1.4 A teardrop procedure or penetration turn may be specified in some procedures for a required course reversal. The teardrop procedure consists of departure from an initial approach fix on an outbound course followed by a turn toward and intercepting the inbound course at or prior to the intermediate fix or point. Its purpose is to permit an aircraft to reverse direction and lose considerable altitude within reasonably limited airspace. Where no fix is available to mark the beginning of the intermediate segment, it must be assumed to commence at a point 10 miles prior to the final approach fix. When the facility is located on the airport, an aircraft is considered to be on final approach upon completion of the penetration turn. However, the final approach segment begins on the final approach course 10 miles from the facility.

FIG ENR 1.5−7

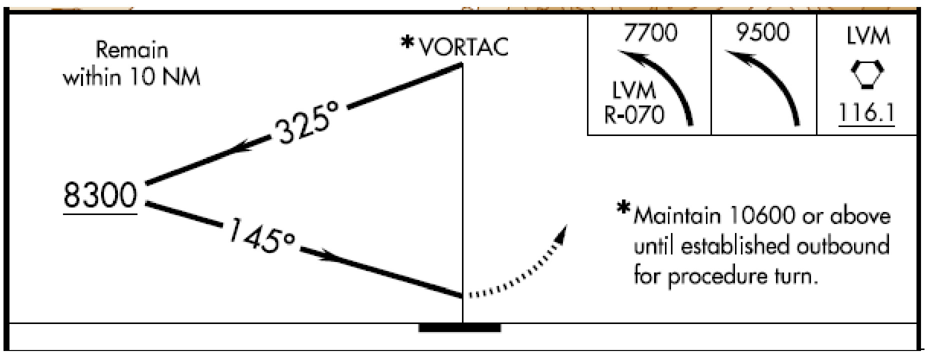
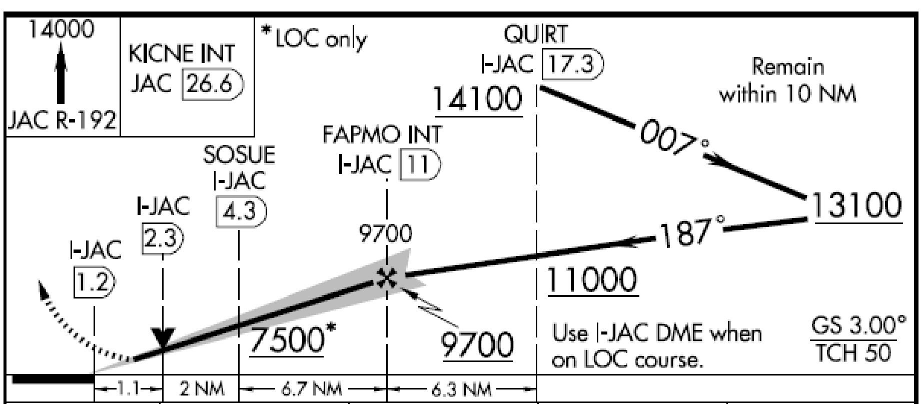


FIG ENR 1.5−8



8.1.5 A holding pattern in lieu of procedure turn may be specified for course reversal in some procedures. In such cases, the holding pattern is established over an intermediate fix or a final approach fix. The holding pattern distance or time specified in the profile view must be observed. For a hold−in−lieu−of−PT, the holding pattern direction must be flown as depicted and the specified leg length/timing must not be exceeded. Maximum holding airspeed limitations as set forth for all holding patterns apply. The holding pattern maneuver is completed when the aircraft is established on the inbound course after executing the appropriate entry. If cleared for the approach prior to returning to the holding fix, and the aircraft is at the prescribed altitude, additional circuits of the holding pattern are not necessary nor expected by ATC. If pilots elect to make additional circuits to lose excessive altitude or to become better established on course, it is their responsibility to so advise ATC upon receipt of their approach clearance.

minimums provide obstacle clearance when pilots remain within the appropriate area of protection. Pilots should remain at or above the circling altitude until the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers. Circling may require maneuvers at low altitude, at low airspeed, and in marginal weather conditions. Pilots must use sound judgment, have an in−depth knowledge of their capabilities, and fully understand the aircraft performance to determine the exact circling maneuver since weather, unique airport design, and the aircraft position, altitude, and airspeed must all be considered. The following basic rules apply:

11.6.1 Maneuver the shortest path to the base or downwind leg, as appropriate, considering existing weather conditions. There is no restriction from passing over the airport or other runways.

11.6.2 It should be recognized that circling maneuvers may be made while VFR or other flying is in progress at the airport. Standard left turns or specific instruction from the controller for maneuvering must be considered when circling to land.

11.6.3 At airports without a control tower, it may be desirable to fly over the airport to observe wind and turn indicators and other traffic which may be on the runway or flying in the vicinity of the airport.

REFERENCE−
AC 90−66A, Recommended Standards Traffic patterns for Aeronautical Operations at Airports without Operating Control Towers.

11.6.4 The missed approach point (MAP) varies depending upon the approach flown. For vertically guided approaches, the MAP is at the decision altitude/decision height. Non−vertically guided and circling procedures share the same MAP and the pilot determines this MAP by timing from the final approach fix, by a fix, a NAVAID, or a waypoint. Circling from a GLS, an ILS without a localizer line of minima or an RNAV (GPS) approach without an LNAV line of minima is prohibited.

11.7 Instrument Approaches at a Military Field. When instrument approaches are conducted by civil aircraft at military airports, they must be conducted in accordance with the procedures and minimums approved by the military agency having jurisdiction over the airport.

12. Instrument Approach Procedure Charts

12.1 14 CFR Section 91.175(a), Instrument approaches to civil airports, requires the use of SIAP's prescribed for the airport in 14 CFR Part 97 unless otherwise authorized by the Administrator (including ATC). If there are military procedures published at a civil airport, aircraft operating under 14 CFR Part 91 must use the civil procedure(s). Civil procedures are defined with "FAA" in parenthesis; e.g., (FAA), at the top, center of the procedure chart. DOD procedures are defined using the abbreviation of the applicable military service in parenthesis; e.g., (USAF), (USN), (USA). 14 CFR Section 91.175(g), Military airports, requires civil pilots flying into or out of military airports to comply with the IAP's and takeoff and landing minimums prescribed by the authority having jurisdiction at those airports. Unless an emergency exists, civil aircraft operating at military airports normally require advance authorization, commonly referred to as "Prior Permission Required" or "PPR." Information on obtaining a PPR for a particular military airport can be found in the Airport/Facility Directory.

NOTE−
Civil aircraft may conduct practice VFR approaches using DOD instrument approach procedures when approved by the air traffic controller.

12.1.1 IAPs (standard and special, civil and military) are based on joint civil and military criteria contained in the U.S. Standard for TERPS. The design of IAPs based on criteria contained in TERPS, takes into account the interrelationship between airports, facilities, and the surrounding environment, terrain, obstacles, noise sensitivity, etc. Appropriate altitudes, courses, headings, distances, and other limitations are specified and, once approved, the procedures are published and distributed by government and commercial cartographers as instrument approach charts.

12.1.2 Not all IAPs are published in chart form. Radar IAPs are established where requirements and facilities exist but they are printed in tabular form in appropriate U.S. Government Flight Information Publications.

12.1.3 The navigation equipment required to join and fly an instrument approach procedure is indicated by the title of the procedure and notes on the chart.

12.1.3.1 Straight−in IAPs are identified by the navigational system providing the final approach guidance and the runway to which the approach is aligned (e.g., VOR RWY 13). Circling only approaches are identified by the navigational system providing final approach guidance and a letter (e.g., VOR A). More than one navigational system separated by a slash indicates that more than one type of equipment must be used to execute the **final approach** (e.g., VOR/DME RWY 31). More than one navigational system separated by the word "or" indicates either type of equipment may be used to execute the **final approach** (e.g., VOR or GPS RWY 15).

12.1.3.2 In some cases, other types of navigation systems including radar may be required to execute other portions of the approach or to navigate to the IAF (e.g., an NDB procedure turn to an ILS, an NDB in the missed approach, or radar required to join the procedure or identify a fix). When radar or other equipment is required for procedure entry from the en route environment, a note will be charted in the **planview** of the approach procedure chart (e.g., RADAR REQUIRED or ADF REQUIRED). When radar or other equipment is required on portions of the procedure outside the final approach segment, including the missed approach, a note will be charted in the **notes box** of the pilot briefing portion of the approach chart (e.g., RADAR REQUIRED or DME REQUIRED). Notes are not charted when VOR is required outside the final approach segment. Pilots should ensure that the aircraft is equipped with the required NAVAID(s) in order to execute the approach, including the missed approach.

NOTE−
Some military (i.e., U.S. Air Force and U.S. Navy) IAPs have these "additional equipment required" notes charted only in the planview of the approach procedure and do not conform to the same application standards used by the FAA.

12.1.3.3 The FAA has initiated a program to provide a new notation for LOC approaches when charted on an ILS approach requiring other navigational aids to fly the final approach course. The LOC minimums will be annotated with the NAVAID required (e.g., "DME Required" or "RADAR Required"). During the transition period, ILS approaches will still exist without the annotation.

12.1.3.4 Many ILS approaches having minima based on RVR are eligible for a landing minimum of RVR 1800. Some of these approaches are to runways that have touchdown zone and centerline lights. For many runways that do not have touchdown and centerline lights, it is still possible to allow a landing minimum of RVR 1800. For these runways, the normal ILS minimum of RVR 2400 can be annotated with a single or double asterisk or the dagger symbol "†"; for example "** 696/24 200 (200/1/2)." A note is included on the chart stating "**RVR 1800 authorized with use of FD or AP or HUD to DA." The pilot must use the flight director, or autopilot with an approved approach coupler, or head up display to decision altitude or to the initiation of a missed approach. In the interest of safety, single pilot operators should not fly approaches to 1800 RVR minimums on runways without touchdown and centerline lights using only a flight director, unless accompanied by the use of an autopilot with an approach coupler.

12.1.3.5 The naming of multiple approaches of the same type to the same runway is also changing. Multiple approaches with the same guidance will be annotated with an alphabetical suffix beginning at the end of the alphabet and working backwards for subsequent procedures (e.g., ILS Z RWY 28, ILS Y RWY 28, etc.). The existing annotations such as ILS 2 RWY 28 or Silver ILS RWY 28 will be phased out and replaced with the new designation. The Cat II and Cat III designations are used to differentiate between multiple ILSs to the same runway unless there are multiples of the same type.

12.1.3.6 RNAV (GPS) approaches to LNAV, LP, LNAV/VNAV and LPV lines of minima using WAAS and RNAV (GPS) approaches to LNAV and LNAV/VNAV lines of minima using GPS are charted as RNAV (GPS) RWY (Number) (e.g., RNAV (GPS) RWY 21). VOR/DME RNAV approaches will continue to be identified as VOR/DME RNAV RWY (Number) (e.g., VOR/DME RNAV RWY 21). VOR/DME RNAV procedures which can be flown by GPS will be annotated with "or GPS" (e.g., VOR/DME RNAV or GPS RWY 31).

12.1.4 Approach minimums are based on the local altimeter setting for that airport, unless annotated otherwise; e.g., Oklahoma City/Will Rogers World approaches are based on having a Will Rogers World altimeter setting. When a different altimeter source is required, or more than one source is authorized, it will be annotated on the approach chart; e.g., use Sidney altimeter setting, if not received, use Scottsbluff altimeter setting. Approach minimums may be raised for a “normal” glidepath, due to its location down the runway.

12.10.3 Accordingly, pilots are advised to carefully review approach procedures, prior to initiating the approach, to identify the optimum position(s), and any unacceptable positions, from which a descent to landing can be initiated (in accordance with 14 CFR Section 91.175(c)).

12.11 Area Navigation (RNAV) Instrument Approach Charts. Reliance on RNAV systems for instrument operations is becoming more commonplace as new systems such as GPS and augmented GPS such as the Wide Area Augmentation System (WAAS) are developed and deployed. In order to support full integration of RNAV procedures into the National Airspace System (NAS), the FAA developed a new charting format for IAPs (See FIG ENR 1.5−23). This format avoids unnecessary duplication and proliferation of instrument approach charts. The original stand alone GPS charts, titled simply “GPS,” are being converted to the newer format as the procedures are revised. One reason for the revision is the addition of WAAS based minima to the approach chart. The reformatted approach chart is titled “RNAV (GPS) RWY XX.” Up to four lines of minima are included on these charts. GLS (Ground Based Augmentation System (GBAS) Landing System) was a placeholder for future WAAS and LAAS minima, and the minima was always listed as N/A. The GLS minima line has now been replaced by the WAAS LPV (Localizer Performance with Vertical Guidance) minima on most RNAV (GPS) charts. LNAV/VNAV (lateral navigation/vertical navigation) was added to support both WAAS electronic vertical guidance and Barometric VNAV. LPV and LNAV/VNAV are both APV procedures as described in paragraph 12.1.7. The original GPS minima, titled “S−XX,” for straight in runway XX, is retitled LNAV (lateral navigation). Circling minima may also be published. A new type of nonprecision WAAS minima will also be published on this chart and titled LP (localizer performance). LP will be published in locations where vertically guided minima cannot be provided due to terrain and obstacles and therefore, no LPV or LNAV/VNAV minima will be published. Current plans call for LAAS based procedures to be published on a separate chart and for the GLS minima line to be used only for LAAS. ATC clearance for the RNAV procedure authorizes a properly certified pilot to utilize any minimums for which the aircraft is certified: e.g. a WAAS equipped aircraft utilize the LPV or LP minima but a GPS only aircraft may not. The RNAV chart includes information formatted for quick reference by the pilot or flight crew at the top of the chart. This portion of the chart, developed based on a study by the Department of Transportation, Volpe National Transportation System Center, is commonly referred to as the pilot briefing.

12.11.1 The minima lines are:

12.11.1.1 GLS. “GLS” is the acronym for Ground Based Augmentation System (GBAS) Landing System. GBAS is the ICAO term for Local Area Augmentation System (LAAS). This line was originally published as a placeholder for both WAAS and LAAS minima and marked as N/A since no minima was published. As the concepts for LAAS and WAAS procedure publication have evolved, GLS will now be used only for LAAS minima, which will be on a separate approach chart. Most RNAV(GPS) approach charts have had the GLS minima line replaced by a WAAS LPV line of minima.

12.11.1.2 LPV. “LPV” is the acronym for localizer performance with vertical guidance. RNAV (GPS) approaches to LPV lines of minima take advantage of the improved accuracy of WAAS lateral and vertical guidance to provide an approach that is very similar to a Category I Instrument Landing System (ILS). The approach to LPV line of minima is designed for angular guidance with increasing sensitivity as the aircraft gets closer to the runway. The sensitivities are nearly identical to those of the ILS at similar distances. This was done intentionally to allow the skills required to proficiently fly an ILS to readily transfer to flying RNAV (GPS) approaches to the LPV line of minima. Just as with an ILS, the LPV has vertical guidance and is flown to a DA. Aircraft can fly this minima line with a statement in the Aircraft Flight Manual that the installed equipment supports LPV approaches. This includes Class 3 and 4 TSO−C146 WAAS equipment.

12.11.1.3 LNAV/VNAV. LNAV/VNAV identifies APV minimums developed to accommodate an RNAV IAP with vertical guidance, usually provided by approach certified Baro−VNAV, but with lateral and vertical integrity limits larger than a precision approach or LPV. LNAV stands for Lateral Navigation; VNAV stands for Vertical Navigation. This minima line can be flown by aircraft with a statement in the Aircraft Flight Manual that the installed equipment supports GPS approaches and has an approach−approved barometric VNAV, or if the aircraft has been demonstrated to support LNAV/VNAV approaches. This includes Class 2, 3 and 4 TSO−C146 WAAS equipment. Aircraft using LNAV/VNAV minimums will descend to landing via an internally generated descent path based on satellite or other approach approved VNAV systems. Since electronic vertical guidance is provided, the minima will be published as a DA. Other navigation systems may be specifically authorized to use this line of minima, see Section A, Terms/Landing Minima Data, of the U.S. Terminal Procedures books.

12.11.1.4 LP. "LP" is the acronym for localizer performance. Approaches to LP lines of minima take advantage of the improved accuracy of WAAS to provide approaches, with lateral guidance and angular guidance. Angular guidance does not refer to a glideslope angle but rather to the increased lateral sensitivity as the aircraft gets closer to the runway, similar to localizer approaches. However, the LP line of minima is a Minimum Descent Altitude (MDA) rather than a DA (H). Procedures with LP lines of minima will not be published with another approach that contains approved vertical guidance (LNAV/VNAV or LPV). It is possible to have LP and LNAV published on the same approach chart but LP will only be published if it provides lower minima than an LNAV line of minima. LP is not a fail−down mode for LPV. LP will only be published if terrain, obstructions, or some other reason prevent publishing a vertically guided procedure. WAAS avionics may provide GNSS−based advisory vertical guidance during an approach to an LP line of minima (reference section 9.b for further information on advisory vertical guidance). Barometric altimeter information remains the primary altitude reference for complying with any altitude restrictions. WAAS equipment may not support LP, even if it supports LPV, if it was approved before TSO C−145B and TSO C−146B. Receivers approved under previous TSOs may require an upgrade by the manufacturer in order to be used to fly to LP minima. Receivers approved for LP must have a statement in the approved Flight Manual or Supplemental Flight Manual including LP as one of the approved approach types.

12.11.1.5 LNAV. This minima is for lateral navigation only, and the approach minimum altitude will be published as a minimum descent altitude (MDA). LNAV provides the same level of service as the present GPS stand alone approaches. LNAV minimums support the following navigation systems: WAAS, when the navigation solution will not support vertical navigation; and, GPS navigation systems which are presently authorized to conduct GPS approaches. Existing GPS approaches continue to be converted to the RNAV (GPS) format as they are revised or reviewed.

NOTE−
GPS receivers approved for approach operations in accordance with: AC 20−138, Airworthiness Approval of Global Positioning System (GPS) Navigation Equipment for Use as a VFR and IFR Supplemental Navigation System, for stand−alone Technical Standard Order (TSO) TSO−C129 Class A(1) systems; or AC 20−130A, Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors, for GPS as part of a multi−sensor system, qualify for this minima. WAAS navigation equipment must be approved in accordance with the requirements specified in TSO−C145 or TSO−C146 and installed in accordance with Advisory Circular AC 20−138A, Airworthiness Approval of Global Navigation Satellite System (GNSS) Equipment.

12.11.2 Other systems may be authorized to utilize these approaches. See the description in Section A of the U.S. Terminal Procedures books for details. Operational approval must also be obtained for Baro−VNAV systems to operate to the LNAV/VNAV minimums. Baro−VNAV may not be authorized on some approaches due to other factors, such as no local altimeter source being available. Baro−VNAV is not authorized on LPV procedures. Pilots are directed to their local Flight Standards District Office (FSDO) for additional information.

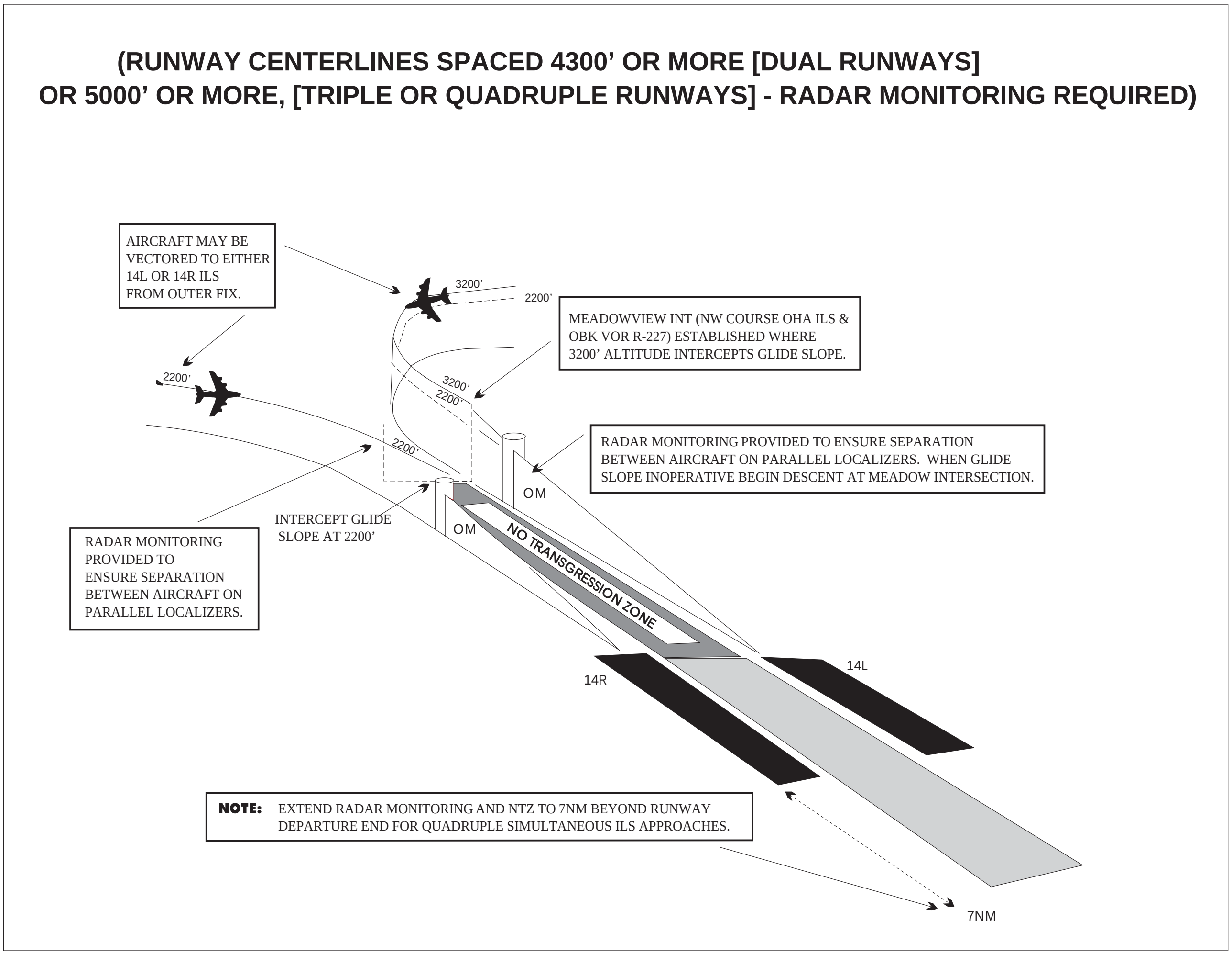
NOTE−
RNAV and Baro−VNAV systems must have a manufacturer supplied electronic database which must include the waypoints, altitudes, and vertical data for the procedure to be flown. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints.

12.11.3 ILS or RNAV (GPS) charts.

12.11.3.1 Some RNAV (GPS) charts will also contain an ILS line of minima to make use of the ILS precision final in conjunction with the RNAV GPS capabilities for the portions of the procedure prior to the final approach segment and for the missed approach. Obstacle clearance for the portions of the procedure other than the final approach segment is still based on GPS criteria.

FIG ENR 1.5−30

Simultaneous Parallel ILS Approaches



18.4 Whenever parallel ILS/MLS approaches are in progress, pilots are informed that approaches to both runways are in use. In addition, the radar controller will have the interphone capability of communicating with the tower controller where separation responsibility has not been delegated to the tower.

19. Simultaneous Parallel ILS/MLS Approaches (Independent) (See FIG ENR 1.5−30)

19.1 System. This approach system permits simultaneous ILS/MLS approaches to parallel runways with centerlines separated by 4,300 to 9,000 feet, and equipped with final monitor controllers. Simultaneous parallel ILS/MLS approaches require radar monitoring to ensure separation between aircraft on the adjacent parallel approach course. Aircraft position is tracked by final monitor controllers who will issue instructions to aircraft observed deviating from the assigned localizer course. Staggered radar separation procedures are not utilized. Integral parts of a total system are ILS/MLS, radar, communications, ATC procedures, and required airborne equipment. The Approach Procedure Chart permitting simultaneous parallel ILS/MLS approaches will contain the note "simultaneous approaches authorized RWYS 14L and 14R," identifying the appropriate runways as the case may be. When advised that simultaneous parallel ILS/MLS approaches are in progress, pilots must advise approach control immediately of malfunctioning or inoperative receivers, or if a simultaneous parallel ILS/MLS approach is not desired.

19.2 Radar Monitoring. This service is provided for each simultaneous parallel ILS/MLS approach to ensure aircraft do not deviate from the final approach course. Radar monitoring includes instructions if an aircraft nears or penetrates the prescribed NTZ (an area 2,000 feet wide located equidistant between parallel final approach courses). This service will be provided as follows:

19.2.1 During turn on to parallel final approach, aircraft will be provided 3 miles radar separation or a minimum or 1,000 feet vertical separation. The assigned altitude must be maintained until intercepting the glide path, unless cleared otherwise by ATC. Aircraft will not be vectored to intercept the final approach course at an angle greater than thirty degrees.

19.2.2 The final monitor controller will have the capability of overriding the tower controller on the tower frequency.

19.2.3 Pilots will be instructed to monitor the tower frequency to receive advisories and instructions.

19.2.4 Aircraft observed to overshoot the turn−on or to continue on a track which will penetrate the NTZ will be instructed to return to the correct final approach course immediately. The final monitor controller may also issue missed approach or breakout instructions to the deviating aircraft.

PHRASEOLOGY−
"(Aircraft call sign) YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE LOCALIZER/AZIMUTH COURSE."

or

"(Aircraft call sign) TURN (left/right) AND RETURN TO THE LOCALIZER/AZIMUTH COURSE."

19.2.5 If a deviating aircraft fails to respond to such instructions or is observed penetrating the NTZ, the aircraft on the adjacent final approach course may be instructed to alter course.

PHRASEOLOGY−
"TRAFFIC ALERT (aircraft call sign) TURN (left/right) IMMEDIATELY HEADING (degrees), (climb/descend) AND MAINTAIN (altitude)."

19.2.6 Radar monitoring will automatically be terminated when visual separation is applied, the aircraft reports the approach lights or runway in sight, or the aircraft is 1 mile or less from the runway threshold (for runway centerlines spaced 4,300 feet or greater). Final monitor controllers will not advise pilots when radar monitoring is terminated.

precedence over the general information presented in this paragraph. Refer to the AAUP for applicable procedures at specific airports.

20.4.2.3 Breakouts. Breakouts differ from other types of abandoned approaches in that they can happen anywhere and unexpectedly. Pilots directed by ATC to break off an approach must assume that an aircraft is blundering toward them and a breakout must be initiated **immediately**.

a) Hand−fly breakouts. All breakouts are to be hand−flown to ensure the maneuver is accomplished in the shortest amount of time.

b) ATC Directed "Breakouts." ATC directed breakouts will consist of a turn and a climb or descent. Pilots must always initiate the breakout in response to an air traffic controller's instruction. Controllers will give a descending breakout only when there are no other reasonable options available, but in no case will the descent be below the minimum vectoring altitude (MVA) which provides at least 1,000 feet required obstruction clearance. The AAUP provides the MVA in the final approach segment as X,XXX feet at (Name) Airport.

NOTE−
"TRAFFIC ALERT." If an aircraft enters the "NO TRANSGRESSION ZONE" (NTZ), the controller will breakout the threatened aircraft on the adjacent approach. The phraseology for the breakout will be:

PHRASEOLOGY−
TRAFFIC ALERT, (aircraft call sign) TURN (left/right) IMMEDIATELY, HEADING (degrees), CLIMB/DESCEND AND MAINTAIN (altitude).

20.4.2.4 ILS/PRM Navigation. The pilot may find crossing altitudes along the final approach course. The pilot is advised that descending on the ILS glideslope ensures complying with any charted crossing restrictions.

20.4.2.5 SOIA AAUP differences from ILS PRM AAUP

a) ILS/PRM LDA Traffic (only published on ILS/PRM AAUP when the ILS PRM approach is used in conjunctions with an LDA/PRM approach to the adjacent runway). To provide better situational awareness, and because traffic on the LDA may be visible on the ILS aircraft's TCAS, pilots are reminded of the fact that aircraft will be maneuvering behind them to align with the adjacent runway. While conducting the ILS/PRM approach to Runway XXX, other aircraft may be conducting the offset LDA/PRM approach to Runway XXX. These aircraft will approach from the (left/right)−rear and will realign with runway XXX after making visual contact with the ILS traffic. Under normal circumstances these aircraft will not pass the ILS traffic.

b) SOIA LDA/PRM AAUP Items. The AAUP for the SOIA LDA/PRM approach contains most information found on ILS/PRM AAUPs. It replaces certain information as seen below and provides pilots with the procedures to be used in the visual segment of the LDA/PRM approach, from the time the ILS aircraft is visually acquired until landing.

c) SOIA LDA/PRM Navigation (replaces ILS/PRM 20.4.2.4 and 20.4.2.5 a) above). The pilot may find crossing altitudes along the final approach course. The pilot is advised that descending on the LDA glideslope ensures complying with any charted crossing restrictions. Remain on the LDA course until passing XXXXX (LDA MAP name) intersection prior to maneuvering to align with the centerline of runway XXX.

d) SOIA (Name) Airport Visual Segment (replaces ILS/PRM 20.4.2.5 a) above). Pilot procedures for navigating beyond the LDA MAP are spelled out. If ATC advises that there is traffic on the adjacent ILS, pilots are authorized to continue past the LDA MAP to align with runway centerline when:

1) the ILS traffic is in sight and is expected to remain in sight,

2) ATC has been advised that "traffic is in sight."

3) the runway environment is in sight.

Otherwise, a missed approach must be executed. Between the LDA MAP and the runway threshold, pilots of the LDA aircraft are responsible for separating themselves visually from traffic on the ILS approach, which means maneuvering the aircraft as necessary to avoid the ILS traffic until landing, and providing wake turbulence avoidance, if applicable. Pilots should advise ATC, as soon as practical, if visual contact with the ILS traffic is lost and execute a missed approach unless otherwise instructed by ATC.

20.5 SOIA LDA Approach Wake Turbulence. Pilots are responsible for wake turbulence avoidance when maneuvering between the LDA missed approach point and the runway threshold.

20.6 Differences between ILS and ILS/PRM approaches of importance to the pilot.

20.6.1 Runway Spacing. Prior to ILS/PRM and LDA/PRM approaches, most ATC directed breakouts were the result of two aircraft in−trail on the same final approach course getting too close together. Two aircraft going in the same direction did not mandate quick reaction times. With PRM approaches, two aircraft could be along side each other, navigating on courses that are separated by less than 4,300 feet. In the unlikely event that an aircraft "blunders" off its course and makes a worst case turn of 30 degrees toward the adjacent final approach course, closing speeds of 135 feet per second could occur that constitute the need for quick reaction. A blunder has to be recognized by the monitor controller, and breakout instructions issued to the endangered aircraft. The pilot will not have any warning that a breakout is eminent because the blundering aircraft will be on another frequency. It is important that, when a pilot receives breakout instructions, he/she assumes that a blundering aircraft is about to or has penetrated the NTZ and is heading toward his/her approach course. The pilot must initiate a breakout as soon as safety allows. While conducting PRM approaches, pilots must maintain an increased sense of awareness in order to immediately react to an ATC instruction (**breakout**) and maneuver as instructed by ATC, away from a blundering aircraft.

20.6.2 Communications. To help in avoiding communication problems caused by stuck microphones and two parties talking at the same time, two frequencies for each runway will be in use during ILS/PRM and LDA/PRM approach operations, the primary tower frequency and the PRM monitor frequency. The tower controller transmits and receives in a normal fashion on the primary frequency and also transmits on the PRM monitor frequency. The monitor controller's transmissions override on both frequencies. The pilots flying the approach will listen to both frequencies but only transmit on the primary tower frequency. If the PRM monitor controller initiates a breakout and the primary frequency is blocked by another transmission, the breakout instruction will still be heard on the PRM monitor frequency.

20.6.3 Hand−flown Breakouts. The use of the autopilot is encouraged while flying an ILS/PRM or LDA/PRM approach, but the autopilot must be disengaged in the rare event that a breakout is issued. Simulation studies of breakouts have shown that a hand−flown breakout can be initiated consistently faster than a breakout performed using the autopilot.

20.6.4 TCAS. The ATC breakout instruction is the primary means of conflict resolution. TCAS, if installed, provides another form of conflict resolution in the unlikely event other separation standards would fail. TCAS is not required to conduct a closely spaced approach.

The TCAS provides only vertical resolution of aircraft conflicts, while the ATC breakout instruction provides both vertical and horizontal guidance for conflict resolutions. Pilots should always immediately follow the TCAS Resolution Advisory (RA), whenever it is received. Should a TCAS RA be received before, during, or after an ATC breakout instruction is issued, the pilot should follow the RA, even if it conflicts with the climb/descent portion of the breakout maneuver. If following an RA requires deviating from an ATC clearance, the pilot must advise ATC as soon as practical. While following an RA, it is <u>extremely important</u> that the pilot also comply with the turn portion of the ATC breakout instruction unless the pilot determines safety to be factor. Adhering to these procedures assures the pilot that acceptable "breakout" separation margins will always be provided, even in the face of a normal procedural or system failure.

20.6.5 Breakouts. The probability is extremely low that an aircraft will "blunder" from its assigned approach course and enter the NTZ, causing ATC to "breakout" the aircraft approaching on the adjacent ILS course. However, because of the close proximity of the final approach courses, it is essential that pilots follow the ATC breakout instructions precisely and expeditiously. The controller's "breakout" instructions provide conflict resolution for the threatened aircraft, with the turn portion of the "breakout" being the single most important element in achieving maximum protection. A descending breakout will only be issued when it is the only controller option. In no case will the controller descend an aircraft below the MVA, which will provide at least 1,000 feet clearance above obstacles. The pilot is not expected to exceed 1,000 feet per minute rate of descent in the event a descending breakout is issued.

21. Simultaneous Converging Instrument Approaches

21.1 ATC may conduct instrument approaches simultaneously to converging runways; i.e., runways having an included angle from 15 to 100 degrees, at airports where a program has been specifically approved to do so.

21.2 The basic concept requires that dedicated, separate standard instrument approach procedures be developed for each converging runway included. Missed approach points must be at least 3 miles apart and missed approach procedures ensure that missed approach protected airspace does not overlap.

21.3 Other requirements are: radar availability, nonintersecting final approach courses, precision (ILS/MLS) approach systems on each runway, and if runways intersect, controllers must be able to apply visual separation as well as intersecting runway separation criteria. Intersecting runways also require minimums of at least 700−foot ceilings and 2 miles visibility. Straight−in approaches and landings must be made.

21.4 Whenever simultaneous converging approaches are in progress, aircraft will be informed by the controller as soon as feasible after initial contact or via ATIS. Additionally, the radar controller will have direct communications capability with the tower controller where separation responsibility has not been delegated to the tower.

22. Timed Approaches From a Holding Fix

22.1 Timed approaches may be conducted when the following conditions are met:

22.1.1 A control tower is in operation at the airport where the approaches are conducted.

22.1.2 Direct communications are maintained between the pilot and the center/approach controller until the pilot is instructed to contact the tower.

22.1.3 If more than one missed approach procedure is available, none requires a course reversal.

22.1.4 If only one missed approach procedure is available, the following conditions are met.

22.1.4.1 Course reversal is not required.

22.1.4.2 Reported ceiling and visibility are equal to or greater than the highest prescribed circling minimums for the instrument approach procedure.

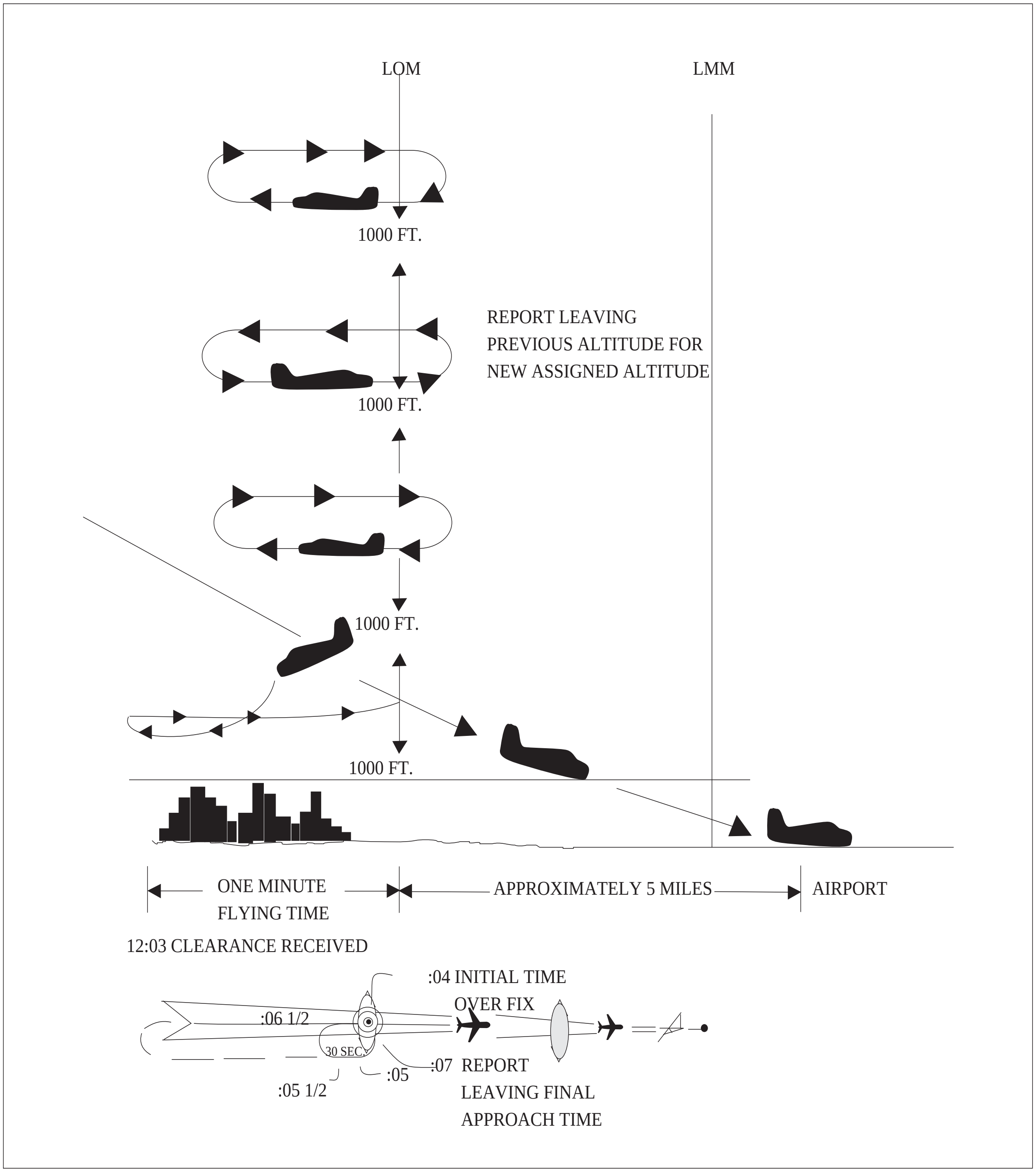
22.1.5 When cleared for the approach, pilots must not execute a procedure turn. (See 14 CFR Section 91.175j.)

22.2 Although the controller will not specifically state that "timed approaches are in progress," the assigning a time to depart the final approach fix inbound (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker inbound (precision approach) is indicative that timed approach procedures are being utilized, or in lieu of holding, the controller may use radar vectors to the final approach course to establish a mileage interval between aircraft that will insure the appropriate time sequence between the final approach fix/outer marker or the fix used in lieu of the outer marker and the airport.

22.3 Each pilot in an approach sequence will be given advance notice as to the time he/she should leave the holding point on approach to the airport. When a time to leave the holding point has been received, the pilot should adjust his/her flight path to leave the fix as closely as possible to the designated time. (See FIG ENR 1.5−33.)

FIG ENR 1.5−33

Timed Approaches from a Holding Fix



EXAMPLE−

At 12:03 local time, in the example shown, a pilot holding, receives instructions to leave the fix inbound at 12:07. These instructions are received just as the pilot has completed turn at the outbound end of the holding pattern and is proceeding inbound toward the fix. Arriving back over the fix, the pilot notes that the time is 12:04 and that there are 3 minutes to lose in order to leave the fix at the assigned time. Since the time remaining is more than two minutes, the pilot plans to fly a race track pattern rather than a 360 degree turn, which would use up 2 minutes. The turns at the ends of the race track pattern will consume approximately 2 minutes. Three minutes to go, minus 2 minutes required for the turns, leaves 1 minute for level flight. Since two portions of level flight will be required to get back to the fix inbound, the pilot halves the 1 minute remaining *and plans to fly level for 30 seconds outbound before starting the turn back to the fix on final approach. If the winds were negligible at flight altitude, this procedure would bring the pilot inbound across the fix precisely at the specified time of 12:07. However, if expecting headwind on final approach, the pilot should shorten the 30 second outbound course somewhat, knowing that the wind will carry the aircraft away from the fix faster while outbound and decrease the ground speed while returning to the fix. On the other hand, compensating for a tailwind on final approach, the pilot should lengthen the calculated 30 second outbound heading somewhat, knowing that the wind would tend to hold the aircraft closer to the fix while outbound and increase the ground speed while returning to the fix.*

23. Contact Approach

23.1 Pilots operating in accordance with an IFR flight plan, provided they are clear of clouds and have at least 1 mile flight visibility and can reasonably expect to continue to the destination airport in those conditions, may request ATC authorization for a "contact approach."

23.2 Controllers may authorize a "contact approach" provided:

23.2.1 The contact approach is specifically requested by the pilot. ATC cannot initiate this approach.

EXAMPLE−
Request contact approach.

23.2.2 The reported ground visibility at the destination airport is at least 1 statute mile.

23.2.3 The contact approach will be made to an airport having a standard or special instrument approach procedure.

23.2.4 Approved separation is applied between aircraft so cleared and between these aircraft and other IFR or special VFR aircraft.

EXAMPLE−
Cleared contact approach (and if required) at or below (altitude) (routing) if not possible (alternative procedures) and advise.

23.3 A contact approach is an approach procedure that may be used by a pilot (with prior authorization from ATC) in lieu of conducting a standard or special instrument approach procedure (IAP) to an airport. It is not intended for use by a pilot on an IFR flight clearance to operate to an airport not having a published and functioning IAP. Nor is it intended for an aircraft to conduct an instrument approach to one airport and then, when "in the clear," discontinue that approach and proceed to another airport. In the execution of a contact approach, the pilot assumes the responsibility for obstruction clearance. If radar service is being received, it will automatically terminate when the pilot is instructed to change to advisory frequency.

24. Use of Enhanced Flight Vision Systems (EFVS) on Instrument Approaches

24.1 An EFVS is an installed airborne system which uses an electronic means to provide a display of the forward external scene topography (the applicable natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as forward looking infrared, millimeter wave radiometry, millimeter wave radar, and/or low light level image intensifying. The EFVS imagery is displayed along with the additional flight information and aircraft flight symbology required by 14 CFR 91.175 (m) on a head−up display (HUD), or an equivalent display, in the same scale and alignment as the external view and includes the display element, sensors, computers and power supplies, indications, and controls. The display is typically presented to the pilot by means of an approved HUD.

24.2 Basic Strategy Using EFVS. When flying an instrument approach procedure (IAP), if the runway environment cannot be visually acquired at decision altitude (DA) or minimum descent altitude (MDA) using natural vision, then a pilot may use an EFVS to continue descending down to 100 feet above the Touchdown Zone Elevation (TDZE), provided all of the visibility requirements of 14 CFR part 91.175 (l) are met. The primary reference for maneuvering the aircraft is based on what the pilot sees through the EFVS. At 100 feet above the TDZE, a pilot can continue to descend only when the visual reference requirements for descent below 100 feet can be seen using natural vision (without the aid of the EFVS). In other words, a pilot may not continue to rely on the EFVS sensor image to identify the required visual references below 100 feet above the TDZE. Supporting information is provided by the flight path vector (FPV), flight path angle (FPA) reference cue, onboard navigation system, and other imagery and flight symbology displayed on the EFVS. The FPV and FPA reference cue, along with the EFVS imagery of the Touchdown Zone (TDZ), provide the primary vertical path reference for the pilot when vertical guidance from a precision approach or approach with vertical guidance is not available.

24.2.1 Straight−In Instrument Approach Procedures. An EFVS may be used to descend below DA or MDA from any straight−in IAP, other than Category II or Category III approaches, provided all of the requirements of 14 CFR part 91.175 (l) are met. This includes straight−in precision approaches, approaches with vertical guidance (for example, LPV or LNAV/VNAV), and non−precision approaches (for example, VOR, NDB, LOC, RNAV, GPS, LDA, SDF, etc.).

24.2.2 Circling Approach Procedure. An IAP with a circle−to−land maneuver or circle−to−land minimums does not meet criteria for straight−in landing minimums. While the regulations do not prohibit EFVS from being used during any phase of flight, they do prohibit it from being used for operational credit on anything but a straight−in IAP with straight−in landing minima. EFVS must only be used during a circle−to−land maneuver provided the visual references required throughout the circling maneuver are distinctly visible using natural vision. An EFVS cannot be used to satisfy the requirement that an identifiable part of the airport be distinctly visible to the pilot during a circling maneuver at or above MDA or while descending below MDA from a circling maneuver.

24.2.3 Enhanced Flight Visibility. Flight visibility is determined by using natural vision, and enhanced flight visibility (EFV) is determined by using an EFVS. 14 CFR part 91.175 (l) requires that the EFV observed by using an EFVS cannot be less than the visibility prescribed in the IAP to be used in order to continue to descend below the DA or MDA.

24.3 EFVS Operations At or Below DA or MDA Down to 100 Feet Above the TDZE. The visual segment of an IAP begins at DA or MDA and continues to the runway. There are two means of operating in the visual segment−−one is by using natural vision and the other is by using an EFVS. If the pilot determines that the EFV observed by using the EFVS is not less than the minimum visibility prescribed in the IAP being flown, and the pilot acquires the required visual references prescribed in 14 CFR part 91.175 (l)(3) using the EFVS, then the pilot can continue the approach to 100 feet above the TDZE. To continue the approach, the pilot uses the EFVS image to visually acquire the runway environment (the approach light system (ALS), if installed, or both the runway threshold and the TDZ), confirm lateral alignment, maneuver to the extended runway centerline earlier than would otherwise be possible, and continue a normal descent from the DA or MDA to 100 feet above the TDZE.

24.3.1 Required Visual References. In order to descend below DA or MDA, the following visual references (specified in 14 CFR part 91.175 (l)(3)) for the runway of intended landing must be distinctly visible and identifiable to the pilot using the EFVS:

24.3.1.1 The ALS (if installed), or

24.3.1.2 The following visual references in both (b)(1) and (b)(2) below:

a) The runway threshold, identified by at least one of the following: the beginning of the runway landing surface, the threshold lights, or the runway end identifier lights (REIL).

b) The TDZ, identified by at least one of the following: the runway TDZ landing surface, the TDZ lights, the TDZ markings, or the runway lights.

24.3.2 Comparison of Visual Reference Requirements for EFVS and Natural Vision. The EFVS visual reference requirements of 14 CFR part 91.175 (l)(3) comprise a more stringent standard than the visual reference requirements prescribed under 14 CFR part 91.175 (c)(3) when using natural vision. The more stringent standard is needed because an EFVS might not display the color of the lights used to identify specific portions of the runway or might not be able to consistently display the runway markings. The main differences for EFVS operations are that the visual glide slope indicator (VGSI) lights cannot be used as a visual reference, and specific visual references from both the threshold and TDZ must be distinctly visible and identifiable. However, when using natural vision, only one of the specified visual references must be visible and identifiable.

24.3.3 Visual References and Offset Approaches. Pilots must be especially knowledgeable of the approach conditions and approach course alignment when considering whether to rely on EFVS during a non−precision approach with an offset final approach course. Depending upon the combination of

NOTE−
When used by the controller during departure, the term "radar contact" should not be interpreted as relieving pilots of their responsibility to maintain appropriate terrain and obstruction clearance which may include flying the obstacle DP.

36.4.3 Pilots must preplan to determine if the aircraft can meet the climb gradient (expressed in feet per nautical mile) required by the departure procedure, and be aware that flying at a higher than anticipated ground speed increases the climb rate requirement in feet per minute. Higher than standard climb gradients are specified by a note on the departure procedure chart for graphic DPs, or in the Take−Off Minimums and (Obstacle) Departure Procedures section of the U.S. Terminal Procedures booklet for textual ODPs. The required climb gradient, or higher, must be maintained to the specified altitude or fix, then the standard climb gradient of 200 ft/NM can be resumed. A table for the conversion of climb gradient (feet per nautical mile) to climb rate (feet per minute), at a given ground speed, is included on page D1 of the U.S. Terminal Procedures booklets.

36.5 Where are DPs located? DPs will be listed by airport in the IFR Takeoff Minimums and (Obstacle) Departure Procedures Section, Section C, of the Terminal Procedures Publications (TPPs). If the DP is textual, it will be described in TPP Section C. SIDs and complex ODPs will be published graphically and named. The name will be listed by airport name and runway in Section C. Graphic ODPs will also have the term "(OBSTACLE)" printed in the charted procedure title, differentiating them from SIDs.

36.5.1 An ODP that has been developed solely for obstacle avoidance will be indicated with the symbol "T" on appropriate Instrument Approach Procedure (IAP) charts and DP charts for that airport. The "T" symbol will continue to refer users to TPP Section C. In the case of a graphic ODP, the TPP Section C will only contain the name of the ODP. Since there may be both a textual and a graphic DP, Section C should still be checked for additional information. The nonstandard minimums and minimum climb gradients found in TPP Section C also apply to charted DPs and radar vector departures unless different minimums are specified on the charted DP. Takeoff minimums and departure procedures apply to all runways unless otherwise specified. New graphic DPs will have all the information printed on the graphic depiction. As a general rule, ATC will only assign an ODP from a nontowered airport when compliance with the ODP is necessary for aircraft to aircraft separation. Pilots may use the ODP to help ensure separation from terrain and obstacles.

36.6 Responsibilities

36.6.1 Each pilot, prior to departing an airport on an IFR flight should:

36.6.1.1 Consider the type of terrain and other obstacles on or in the vicinity of the departure airport;

36.6.1.2 Determine whether an ODP is available;

36.6.1.3 Determine if obstacle avoidance can be maintained visually or if the ODP should be flown; and

36.6.1.4 Consider the effect of degraded climb performance and the actions to take in the event of an engine loss during the departure. Pilots should notify ATC as soon as possible of reduced climb capability in that circumstance.

NOTE−
Guidance concerning contingency procedures that address an engine failure on takeoff after V_1 speed on a large or turbine−powered transport category airplane may be found in AC 120−91, Airport Obstacle Analysis.

36.6.2 After an aircraft is established on an SID and subsequently vectored or cleared off of the SID or SID transition, pilots must consider the SID canceled, unless the controller adds "expect to resume SID." Aircraft may not be vectored off of an ODP until at or above the MVA/MIA, at which time the ODP is canceled.

36.6.3 Aircraft instructed to resume a SID that contains ATC altitude restrictions, must be issued/ reissued all applicable restrictions or must be advised to comply with those restrictions.

36.6.4 If prior to or after takeoff an altitude restriction is issued by ATC, all previously issued "ATC" altitude restrictions are cancelled including those published on a SID.

36.6.5 ATC crossing altitude restrictions published on SIDs are identified on the chart with "(ATC)" following the altitude restriction. This will indicate to the pilot and the controller that this restriction is for ATC purposes and may be deleted by ATC. When an ATC crossing altitude has been established prior to the beginning of a transition route, a minimum altitude for obstruction clearance or other design constraints will also be published at the same fix adjacent/below the "(ATC)" altitude. The absence of "(ATC)" at a "minimum altitude" indicates the restriction is there to support obstacle clearance, airspace restrictions, Navaid reception, and/or other reason(s) that mandate compliance. These altitudes CANNOT be lowered or cancelled by ATC. A standalone "(ATC)" altitude restriction may also be located on a transition route; however, it must never be lower than the published Minimum Enroute Altitude (MEA).

36.6.6 Altitude restrictions published on an ODP are necessary for obstacle clearance and/or design constraints. Compliance with these restrictions is mandatory and CANNOT be lowered or cancelled by ATC.

36.7 RNAV Departure Procedures

36.7.1 All public RNAV SIDs and graphic ODPs are RNAV 1. These procedures generally start with an initial RNAV or heading leg near the departure runway end. In addition, these procedures require system performance currently met by GPS or DME/DME/IRU RNAV systems that satisfy the criteria discussed in AC 90−100A, U.S. Terminal and En Route Area Navigation (RNAV) Operations. RNAV 1 procedures require the aircraft's total system error remain bounded by ± 1 NM for 95% of the total flight time.

ENR 1.7 Altimeter Setting Procedures

1. General

1.1 The accuracy of aircraft altimeters is subject to the following factors:

1.1.1 Nonstandard temperature of the atmosphere.

1.1.2 Nonstandard atmospheric pressure.

1.1.3 Aircraft static pressure systems (position error).

1.1.4 Instrument error.

1.2 EXTREME CAUTION SHOULD BE EXERCISED WHEN FLYING IN PROXIMITY TO OBSTRUCTIONS OR TERRAIN IN LOW TEMPERATURES AND PRESSURES. This is especially true in extremely cold temperatures that cause a large differential between the Standard Day temperature and actual temperature. This circumstance can cause serious errors that result in the aircraft being significantly lower than the indicated altitude.

NOTE−
Standard temperature at sea level is 15 degrees Celsius (59 degrees Fahrenheit). The temperature gradient from sea level is minus 2 degrees Celsius (3.6 degrees Fahrenheit) per 1,000 feet. Pilots should apply corrections for static pressure systems and/or instruments, if appreciable errors exist.

1.3 The adoption of a standard altimeter setting at the higher altitudes eliminates station barometer errors, some altimeter instrument errors, and errors caused by altimeter settings derived from different geographical sources.

2. Procedures

2.1 The cruising altitude or flight level of aircraft must be maintained by reference to an altimeter which must be set, when operating:

2.1.1 Below 18,000 feet MSL.

2.1.1.1 When the barometric pressure is 31.00 inches Hg. or less: to the current reported altimeter setting of a station along the route and within 100 NM of the aircraft, or if there is no station within this area, the current reported altimeter setting of an appropriate available station. When an aircraft is en route on an instrument flight plan, air traffic controllers will furnish this information to the pilot at least once while the aircraft is in the controller's area of jurisdiction. In the case of an aircraft not equipped with a radio, set to the elevation of the departure airport or use an appropriate altimeter setting available prior to departure.

2.1.1.2 When the barometric pressure exceeds 31.00 inches Hg.: the following procedures will be placed in effect by NOTAM defining the geographic area affected:

a) For all aircraft. Set 31.00 inches for en route operations below 18,000 feet MSL. Maintain this setting until beyond the affected area or until reaching final approach segment. At the beginning of the final approach segment, the current altimeter setting will be set, if possible. If not possible, 31.00 inches will remain set throughout the approach. Aircraft on departure or missed approach will set 31.00 inches prior to reaching any mandatory/crossing altitude or 1,500 feet AGL, whichever is lower. (Air traffic control will issue actual altimeter settings and advise pilots to set 31.00 inches in their altimeters for en route operations below 18,000 feet MSL in affected areas.)

b) During preflight, barometric altimeters must be checked for normal operation to the extent possible.

c) For aircraft with the capability of setting the current altimeter setting and operating into airports with the capability of measuring the current altimeter setting, no additional restrictions apply.

d) For aircraft operating VFR, there are no additional restrictions; however, extra diligence in flight planning and in operating in these conditions is essential.

e) Airports unable to accurately measure barometric pressures above 31.00 inches of Hg. will report the barometric pressure as "missing" or "in excess of 31.00 inches of Hg." Flight operations to and from those airports are restricted to VFR weather conditions.

f) For aircraft operating IFR and unable to set the current altimeter setting, the following restrictions apply:

1) To determine the suitability of departure alternate airports, destination airports, and destination alternate airports, increase ceiling requirements by 100 feet and visibility requirements by $^1/_4$ statute mile for each $^1/_{10}$ of an inch of Hg., or any portion thereof, over 31.00 inches. These adjusted values are then applied in accordance with the requirements of the applicable operating regulations and operations specifications.

EXAMPLE−
Destination altimeter is 31.28 inches, ILS DH 250 feet (200−$^1/_2$). When flight planning, add 300−$^3/_4$ to the weather requirements which would become 500−1 $^1/_4$.

2) On approach, 31.00 inches will remain set. Decision height or minimum descent altitude must be deemed to have been reached when the published altitude is displayed on the altimeter.

NOTE−
Although visibility is normally the limiting factor on an approach, pilots should be aware that when reaching DH the aircraft will be higher than indicated. Using the example above the aircraft would be approximately 300 feet higher.

3) These restrictions do not apply to authorized Category II and III ILS operations nor do they apply to certificate holders using approved QFE altimetry systems.

2.1.1.3 The FAA Regional Flight Standards Division Manager of the affected area is authorized to approve temporary waivers to permit emergency resupply or emergency medical service operation.

2.1.2 At or above 18,000 feet MSL: to 29.92′ Hg (standard setting). The lowest usable flight level is determined by the atmospheric pressure in the area of operation, as shown in TBL ENR 1.7−1.

TBL ENR 1.7−1
Lowest Usable Flight Level

Altimeter Setting (Current Reported)	Lowest Usable Flight Level
29.92 or higher	180
29.91 to 29.42	185
29.41 to 28.92	190
28.91 to 28.42	195
28.41 to 27.92	200

2.1.3 Where the minimum altitude, as prescribed in 14 CFR Sections 91.159 and 91.119, is above 18,000 feet MSL the lowest usable flight level must be the flight level equivalent of the minimum altitude plus the number of feet specified in TBL ENR 1.7−2.

TBL ENR 1.7−2
Lowest Flight Level Correction Factor

Altimeter Setting	Correction Factor
29.92 or higher	none
29.91 to 29.42	500 feet
29.41 to 28.92	1000 feet
28.91 to 28.42	1500 feet
28.41 to 27.92	2000 feet
27.91 to 27.42	2500 feet

EXAMPLE−
The minimum safe altitude of a route is 19,000 feet MSL and the altimeter setting is reported between 29.92 and 29.42 inches of mercury. The lowest usable flight level will be 195, which is the flight level equivalent of 19,500 feet MSL (minimum altitude plus 500 feet).

2.1.4 Aircraft operating in an offshore CONTROL AREA should use altimeter setting procedures as described above, unless directed otherwise by ATC.

NOTE−
Aircraft exiting the oceanic CTA/FIR destined for the U.S. or transitioning through U.S. offshore control areas should use the current reported altimeter of a station nearest to the route being flown. When entering an oceanic CTA/FIR from U.S. offshore control areas, pilots should change to the standard altimeter setting 29.92.

3. Altimeter Errors

3.1 Most pressure altimeters are subject to mechanical, elastic, temperature, and installation errors. (Detailed information regarding the use of pressure altimeters is found in the Instrument Flying Handbook, Chapter IV.) Although manufacturing and installation specification, as well as the periodic test and inspections required by regulations (14 CFR Part 43, Appendix E), act to reduce these errors−−any scale error may be observed in the following manner:

3.1.1 Set the current reported altimeter setting on the altimeter setting scale.

3.1.2 Altimeter should now read field elevation if you are located on the same reference level used to establish the altimeter setting.

3.1.3 Note the variation between the known field elevation and the altimeter indication. If this variation is in the order of plus or minus 75 feet, the accuracy of the altimeter is questionable and the problem should be referred to an appropriately rated repair station for evaluation and possible correction.

TBL ENR 1.10−1

NOTAM CONTRACTIONS

	A
AADC	Approach and Departure Control
ABV	Above
A/C	Approach Control
ACCUM	Accumulate
ACFT	Aircraft
ACR	Air Carrier
ACTV/ACTVT	Active/Activate
ADF	Automatic Direction Finder
ADJ	Adjacent
ADZ/ADZD	Advise/Advised
AFD	Airport/Facility Directory
ALS	Approach Light System
ALTM	Altimeter
ALTN/ALTNLY	Alternate/Alternately
ALSTG	Altimeter Setting
AMDT	Amendment
APCH	Approach
APL	Airport Lights
ARFF	Aircraft Rescue & Fire Fighting
ARPT	Airport
ARSR	Air Route Surveillance Radar
ASDE	Airport Surface Detection Equipment
ASOS	Automated Surface Observing System
ASPH	Asphalt
ASR	Airport Surveillance Radar
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
ATIS	Automated Terminal Information Service
AVBL	Available
AWOS	Automatic Weather Observing System
AWSS	Automatic Weather Sensor System
AZM	Azimuth
	B
BC	Back Course
BCN	Beacon
BERM	Snowbank/s Containing Earth/Gravel
BLO	Below
BND	Bound
BRAF	Braking Action Fair
BRAG	Braking Action Good
BRAN	Braking Action Nil
BRAP	Braking Action Poor
BYD	Beyond
	C
CAAS	Class A Airspace
CAT	Category
CBAS	Class B Airspace
CBSA	Class B Surface Area
CCAS	Class C Airspace
CCLKWS	Counterclockwise
CCSA	Class C Surface Area
CD	Clearance Delivery
CDAS	Class D Airspace
CDSA	Class D Surface Area
CEAS	Class E Airspace
CESA	Class E Surface Area
CFA	Controlled Firing Area
CGAS	Class G Airspace
CHG	Change
CLKWS	Clockwise
CLNC	Clearance
CLSD	Closed
CMSN/CMSND	Commission/Commissioned
CNCL/CNCLD/ CNL	Cancel/Canceled/Cancel
CNTRLN	Centerline
CONC	Concrete
CONT	Continue/Continuously
CRS	Course
CTAF	Common Traffic Advisory Frequency
CTLZ	Control Zone
	D
DALGT	Daylight
DCMS/DCMSND	Decommission/Decommissioned
DCT	Direct
DEP	Depart/Departure
DEPT	Department
DH	Decision Height
DISABLD	Disabled
DLA/DLAD	Delay/Delayed
DLT/DLTD	Delete/Deleted
DLY	Daily
DME	Distance Measuring Equipment
DMSTN	Demonstration
DP	Instrument Departure Procedure
DPCR	Departure Procedure
DRCT	Direct
DRFT/DRFTD	Drift/Drifted Snowbank/s Caused By Wind Action
DSPLCD	Displaced
DSTC	Distance
DWPNT	Dew Point
	E
E	East
EBND	Eastbound
EFAS	En Route Flight Advisory Service
EFF	Effective
ELEV	Elevate/Elevation
ENG	Engine
ENTR	Entire
EXCP	Except
	F
FA	Final Approach
FAC	Facility
FAF	Final Approach Fix
FDC	Flight Data Center
FM	Fan Marker

FREQ	Frequency
FRH	Fly Runway Heading
FRZN	Frozen
FRNZ SLR	Frozen Slush on Runway/s
FSS	Flight Service Station
	G
GC	Ground Control
GCA	Ground Controlled Approach
GOVT	Government
GP	Glide Path
GPS	Global Positioning System
GRVL	Gravel
GS	Glide Slope
	H
HAA	Height Above Airport
HAT	Height Above Touchdown
HAZ	Hazard
HEL	Helicopter
HELI	Heliport
HF	High Frequency
HIRL	High Intensity Runway Lights
HIWAS	Hazardous Inflight Weather Advisory Service
HOL	Holiday
HP	Holding Pattern
	I
IAP	Instrument Approach Procedure
IBND	Inbound
ID	Identification
IDENT	Identify/Identifier/Identification
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IM	Inner Marker
IN	Inch/Inches
INDEFLY	Indefinitely
INOP	Inoperative
INST	Instrument
INT	Intersection
INTST	Intensity
IR	Ice On Runway/s
	L
L	Left
LAA	Local Airport Advisory
LAT	Latitude
LAWRS	Limited Aviation Weather Reporting Station
LB	Pound/Pounds
LC	Local Control
LCL	Local
LCTD	Located
LDA	Localizer Type Directional Aid
LGT/LGTD/ LGTS	Light/Lighted/Lights
LIRL	Low Intensity Runway Edge Lights
LLWAS	Low Level Wind Shear Alert System
LMM	Compass Locator at ILS Middle Marker
LNDG	Landing

LOC	Localizer
LOM	Compass Locator at ILS Outer Marker
LONG	Longitude
LRN	LORAN
LSR	Loose Snow on Runway/s
LT	Left Turn After Take-off
	M
MALS	Medium Intensity Approach Lighting System
MALSF	Medium Intensity Approach Lighting System with Sequenced Flashers
MALSR	Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
MAP	Missed Approach Point
MCA	Minimum Crossing Altitude
MDA	Minimum Descent Altitude
MEA	Minimum En Route Altitude
MED	Medium
MIN	Minute
MIRL	Medium Intensity Runway Edge Lights
MLS	Microwave Landing System
MM	Middle Marker
MNM	Minimum
MOCA	Minimum Obstruction Clearance Altitude
MONTR	Monitor
MSA	Minimum Safe Altitude/Minimum Sector Altitude
MSAW	Minimum Safe Altitude Warning
MSL	Mean Sea Level
MU	Designate a Friction Value Representing Runway Surface Conditions
MUD	Mud
MUNI	Municipal
	N
N	North
NA	Not Authorized
NBND	Northbound
NDB	Nondirectional Radio Beacon
NE	Northeast
NGT	Night
NM	Nautical Mile/s
NMR	Nautical Mile Radius
NOPT	No Procedure Turn Required
NTAP	Notice To Airmen Publication
NW	Northwest
	O
OBSC	Obscured
OBSTN	Obstruction
OM	Outer Marker
OPER	Operate
OPN	Operation
ORIG	Original
OTS	Out of Service
OVR	Over
	P

PAEW	Personnel and Equipment Working
PAJA	Parachute Jumping Activities
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PARL	Parallel
PAT	Pattern
PCL	Pilot Controlled Lighting
PERM/PERMLY	Permanent/Permanently
PLA	Practice Low Approach
PLW	Plow/Plowed
PN	Prior Notice Required
PPR	Prior Permission Required
PREV	Previous
PRIRA	Primary Radar
PROC	Procedure
PROP	Propeller
PSGR	Passenger/s
PSR	Packed Snow on Runway/s
PT/PTN	Procedure Turn
PVT	Private
	R
RAIL	Runway Alignment Indicator Lights
RCAG	Remote Communication Air/Ground Facility
RCL	Runway Centerline
RCLS	Runway Centerline Light System
RCO	Remote Communication Outlet
RCV/RCVR	Receive/Receiver
REF	Reference
REIL	Runway End Identifier Lights
RELCTD	Relocated
RLLS	Runway Lead−in Light System
RMDR	Remainder
RNAV	Area Navigation
RPRT	Report
RQRD	Required
RRL	Runway Remaining Lights
RSVN	Reservation
RT	Right Turn after Take-off
RTE	Route
RTR	Remote Transmitter/Receiver
RTS	Return to Service
RUF	Rough
RVR	Runway Visual Range
RVRM	RVR Midpoint
RVRR	RVR Rollout
RVRT	RVR Touchdown
RVV	Runway Visibility Value
RY/RWY	Runway
	S
S	South
SAA	Special Activity Airspace
SBND	Southbound
SDF	Simplified Directional Facility
SE	Southeast
SECRA	Secondary Radar
SFL	Sequenced Flashing Lights
SI	Straight-In Approach

SIR	Packed or Compacted Snow and Ice on Runway/s
SKED	Scheduled
SLR	Slush on Runway/s
SNBNK	Snowbank/s Caused by Plowing
SND	Sand/Sanded
SNGL	Single
SNW	Snow
SPD	Speed
SR	Sunrise
SS	Sunset
SSALF	Simplified Short Approach Lighting System with Sequenced Flashers
SSALR	Simplified Short Approach Lighting System with Runway Alignment Indicator Lights
SSALS	Simplified Short Approach Lighting System
STAR	Standard Terminal Arrival
SUA	Special Use Airspace
SVC	Service
SW	Southwest
SWEPT	Swept or Broom/Broomed
	T
TACAN	Tactical Air Navigational Aid
TDZ/TDZL	Touchdown Zone/Touchdown Zone Lights
TFC	Traffic
TFR	Temporary Flight Restriction
TGL	Touch and Go Landings
THN	Thin
THR	Threshold
THRU	Through
TIL	Until
TKOF	Takeoff
TMPRY	Temporary
TRML	Terminal
TRNG	Training
TRSA	Terminal Radar Service Area
TRSN	Transition
TSNT	Transient
TWEB	Transcribed Weather Broadcast
TWR	Tower
TWY	Taxiway
	U
UNAVBL	Unavailable
UNLGTD	Unlighted
UNMKD	Unmarked
UNMON	Unmonitored
UNRELBL	Unreliable
UNUSBL	Unusable
	V
VASI	Visual Approach Slope Indicator
VDP	Visual Descent Point
VFR	Visual Flight Rules
VIA	By Way Of
VICE	Instead/Versus
VIS/VSBY	Visibility

VMC	Visual Meteorological Conditions
VOL	Volume
VOLMET	Meteorlogical Information for Aircraft in Flight
VOR	VHF Omni-Directional Radio Range
VORTAC	VOR and TACAN (collocated)
VOT	VOR Test Signal
	W
W	West
WBND	Westbound
WEA/WX	Weather
WI	Within
WKDAYS	Monday through Friday
WKEND	Saturday and Sunday
WND	Wind
WP	Waypoint
WSR	Wet Snow on Runway/s
WTR	Water on Runway/s
WX	Weather
/	And
+	In Addition/Also

3.2.1 NOTAM (D)

3.2.1.1 NOTAM (D) information is disseminated for all navigational facilities that are part of the National Airspace System (NAS), all public use airports, seaplane bases, and heliports listed in the Airport/Facility Directory (A/FD). This category of information is distributed automatically via Service A telecommunications systems. These NOTAMs remain available via Service A for the duration of their validity or until published.

All NOTAM Ds must have one of the following keywords as the first part of the text after the location identifier:

Keyword	Definition
RWY . . . . *Example*	**Runway** ABC XX/XXX ABC <u>RWY</u> 3/21 CLSD
TWY . . . . *Example*	**Taxiway** ABC XX/XXX ABC <u>TWY</u> F LGTS OTS
RAMP . . . . . . *Example*	**Ramp** ABC XX/XXX ABC <u>RAMP</u> TERMINAL EAST SIDE CONSTRUCTION
APRON . . . . . *Example*	**Apron** ABC XX/XXX ABC <u>APRON</u> SW TWY C NEAR HANGARS CLSD
AD . . . . *Example*	**Aerodrome** ABC XX/XXX ABC <u>AD</u> ABN OTS

Keyword	Definition
OBST . . . . *Example*	**Obstruction** ABC XX/XXX ABC <u>OBST</u> TOWER 283 (246 AGL) 2.2 S LGTS OTS (ASR 1065881) TIL 1003282300
Keyword	**Definition**
NAV . . . . *Example*	**Navigation** ABC XX/XXX ABC <u>NAV</u> VOR OTS
COM . . . . *Example*	**Communications** ABC XX/XXX ABC <u>COM</u> ATIS OTS
SVC . . . . *Example*	**Services** XX/XXX ABC <u>SVC</u> JET FUEL UNAVBL TIL 1003291600
AIRSPACE . . *Example*	**Airspace** ABC XX/XXX ABC <u>AIRSPACE</u> AIRSHOW ACFT 5000/BLW 5 NMR AIRPORT AVOIDANCE ADZD TIL 1003152200
U	**Unverified Aeronautical Information** (*for use only where authorized by Letter of Agreement*)*
O	**Other Aeronautical Information****

* **Unverified Aeronautical Information** can be movement area or other information received that meets NOTAM criteria and has not been confirmed by the Airport Manager (AMGR) or their designee. If Flight Service is unable to contact airport management, Flight Service must forward (U) NOTAM information to the United States NOTAM System (USNS). Subsequent toUSNS distribution of a (U) NOTAM, Flight Service will inform airport management of the action taken as soon as practical. Any such NOTAM will be prefaced with “(U)” as the keyword and followed by the appropriate keyword contraction, following the location identifier.

** **Other Aeronautical Information** is that which is received from any authorized source that may be beneficial to aircraft operations and does not meet defined NOTAM criteria. Any such NOTAM will be prefaced with “(O)” as the keyword following the location identifier.

3.2.1.2 NOTAM Ds that crossover into International NOTAMs

These NOTAMs contain the same data as NOTAM Ds, only they are referenced differently. They are categorized, stored, and issued with a series letter preceding them and are distributed via Service A to countries requesting NOTAMs for that airport. The FAA currently uses the Series A (and may use Series K) for this type of NOTAM.

identifier in order to clarify to ATC the exact location of the intended airport of departure.

5.1.2 When filing an IFR flight plan, include as a prefix to the aircraft type, the number of aircraft when more than one and/or heavy aircraft indicator "H/" if appropriate.

EXAMPLE−
H/DC10/A
2/F15/A

5.1.3 When filing an IFR flight plan, identify the equipment capability by adding a suffix, preceded by a slant, to the AIRCRAFT TYPE, as shown in TBL ENR 1.10−2, Aircraft Suffixes.

NOTE−
1. *ATC issues clearances based on filed suffixes. Pilots should determine the appropriate suffix based upon desired services and/or routing. For example, if a desired route/procedure requires GPS, a pilot should file /G even if the aircraft also qualifies for other suffixes.*

2. *For procedures requiring GPS, if the navigation system does not automatically alert the flight crew of a loss of GPS, the operator must develop procedures to verify correct GPS operation.*

3. *The suffix is not to be added to the aircraft identification or be transmitted by radio as part of the aircraft identification.*

5.1.4 It is recommended that pilots file the maximum transponder or navigation capability of their aircraft in the equipment suffix. This will provide ATC with the necessary information to utilize all facets of navigational equipment and transponder capabilities available.

5.1.5 When filing an IFR flight plan via telephone or radio, it is highly recommended that the departure airport be clearly identified by stating the city name and state and/or airport location identifier. With cell phone use and flight service specialists covering larger areas of the country, clearly identifying the departure airport can prevent confusing your airport of departure with those of identical or similar names in other states.

5.2 Airways/Jet Routes Depiction on Flight Plan

5.2.1 It is vitally important that the route of flight be accurately and completely described in the flight plan. To simplify definition of the proposed route, and to facilitate air traffic control, pilots are requested to file via airways or jet routes established for use at the altitude or flight level planned.

5.2.2 If flight is to be conducted via designated airways or jet routes, describe the route by indicating the type and number designators of the airway(s) or jet route(s) requested. If more than one airway or jet route is to be used, clearly indicate points of transition. If the transition is made at an unnamed intersection, show the next succeeding NAVAID or named intersection on the intended route and the complete route from that point. Reporting points should be identified by using authorized name/code as depicted on appropriate aeronautical charts. The following two examples illustrate the need to specify the transition point when two routes share more than one transition fix.

EXAMPLE−
1. *ALB J37 BUMPY J14 BHM*
Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at BUMPY intersection, thence via Jet Route 14 to Birmingham, Alabama.

2. *ALB J37 ENO J14 BHM*
Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at Smyrna VORTAC (ENO) thence via Jet Route 14 to Birmingham, Alabama.

5.2.3 The route of flight may also be described by naming the reporting points or NAVAIDs over which the flight will pass, provided the points named are established for use at the altitude or flight level planned.

EXAMPLE−
BWI V44 SWANN V433 DQO
Spelled out: from Baltimore-Washington International, via Victor 44 to Swann intersection, transitioning to Victor 433 at Swann, thence via Victor 433 to Dupont.

5.2.4 When the route of flight is defined by named reporting points, whether alone or in combination with airways or jet routes, and the navigational aids (VOR, VORTAC, TACAN, LF, RBN) to be used for the flight are a combination of different types of aids, enough information should be included to clearly indicate the route requested.

EXAMPLE−
LAX J5 LKV J3 GEG YXC FL 330 J500 VLR J515 YWG
Spelled out: from Los Angeles International via Jet Route 5 Lakeview, Jet Route 3 Spokane, direct Cranbrook, British Columbia VOR/DME, Flight Level 330 Jet Route 500 to Langruth, Manitoba VORTAC, Jet Route 515 to Winnepeg, Manitoba.

5.2.5 When filing IFR, it is to the pilot's advantage to file a "preferred route."

NOTE−
Preferred IFR routes are described and tabulated in the Airport/Facility Directory.

5.2.6 ATC may issue a SID or a STAR as appropriate (See ENR 1.5, paragraph 3.).

NOTE−
Pilots not desiring a SID or STAR should so indicate in the remarks section of the flight plan as "no SID" or "no STAR."

5.3 Direct Flights

5.3.1 All or any portions of the route which will not be flown on the radials or courses of established airways or routes, such as direct route flights, must be defined by indicating the radio fixes over which the flight will pass. Fixes selected to define the route must be those over which the position of the aircraft can be accurately determined. Such fixes automatically become compulsory reporting points for the flight, unless advised otherwise by ATC. Only those navigational aids established for use in a particular structure; i.e., in the low or high structures, may be used to define the en route phase of a direct flight within that structure.

5.3.2 The azimuth feature of VOR aids and the azimuth and distance (DME) features of VORTAC and TACAN aids are assigned certain frequency protected areas of airspace which are intended for application to established airway and route use, and to provide guidance for planning flights outside of established airways or routes. These areas of airspace are expressed in terms of cylindrical service volumes of specified dimensions called "class limits" or "categories."

5.3.3 An operational service volume has been established for each class in which adequate signal coverage and frequency protection can be assured. To facilitate use of VOR, VORTAC, or TACAN aids, consistent with their operational service volume limits, pilot use of such aids for defining a direct route of flight in Class A, B, C, D, and E airspace should not exceed the following:

5.3.3.1 Operations above Flight Level 450. Use aids not more than 200 nautical miles apart. These aids are depicted on En Route High Altitude Charts.

5.3.3.2 Operation off established routes from 18,000 feet MSL to Flight Level 450. Use aids not more than 260 nautical miles apart. These aids are depicted on En Route High Altitude Charts.

5.3.3.3 Operation off established airways below 18,000 feet MSL. Use aids not more than 80 nautical miles apart. These aids are depicted on En Route Low Altitude Charts.

5.3.3.4 Operation off established airways between 14,500 feet MSL and 17,999 feet MSL in the conterminous United States. (H) facilities not more than 200 NM apart may be used.

5.3.4 Increasing use of self−contained airborne navigational systems which do not rely on the VOR/VORTAC/TACAN system has resulted in pilot requests for direct routes which exceed NAVAID service volume limits. These direct route requests will be approved only in a radar environment, with approval based on pilot responsibility for navigation on the authorized direct route. "Radar flight following" will be provided by ATC for air traffic control purposes.

5.3.5 At times, ATC will initiate a direct route in a radar environment which exceeds NAVAID service volume limits. In such cases ATC will provide radar monitoring and navigational assistance as necessary.

5.3.6 Airway or jet route numbers, appropriate to the stratum in which operation will be conducted, may also be included to describe portions of the route to be flown.

EXAMPLE−
MDW V262 BDF V10 BRL STJ SLN GCK
Spelled out: from Chicago Midway Airport via Victor 262 to Bradford, Victor 10 to Burlington, Iowa, direct St. Joseph, Missouri, direct Salina, Kansas, direct Garden City, Kansas.

NOTE−
When route of flight is described by radio fixes, the pilot will be expected to fly a direct course between the points named.

5.3.7 Pilots are reminded that they are responsible for adhering to obstruction clearance requirements on those segments of direct routes that are outside of Class A, B, C, D, and E airspace. The MEAs and other altitudes shown on Low Altitude IFR En Route Charts pertain to those route segments within Class A, B, C, D, and E airspace, and those altitudes may not meet obstruction clearance criteria when operating off those routes.

5.4 Area Navigation (RNAV)

5.4.1 Random RNAV routes can only be approved in a radar environment. Factors that will be considered by ATC in approving random RNAV routes include

5.5.1.14 Block 14. Enter the complete name, address, and telephone number of pilot−in−command or, in the case of a formation flight, the formation commander. Enter sufficient information to identify home base, airport, or operator.

NOTE−
This information would be essential in the event of a search and rescue operation.

5.5.1.15 Block 15. Enter the total number of persons on board including crew.

5.5.1.16 Block 16. Enter the predominant colors.

NOTE−
Close IFR flight plans with tower, approach control, ARTCCs, or if unable, with FSS. When landing at an airport with a functioning control tower, IFR flight plans are automatically canceled.

5.5.2 The information transmitted to the ARTCC for IFR Flight Plans will consist of only flight plan blocks 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11.

5.5.3 A description of the International Flight Plan Form is contained in the International Flight Information Manual (IFIM).

6. IFR Operations to High Altitude Destinations

6.1 Pilots planning IFR flights to airports located in mountainous terrain are cautioned to consider the necessity for an alternate airport even when the forecast weather conditions would technically relieve them from the requirement to file one.

6.2 The FAA has identified three possible situations where the failure to plan for an alternate airport when flying IFR to such destination airport could result in a critical situation if the weather is less than forecast and sufficient fuel is not available to proceed to a suitable airport.

6.2.1 An IFR flight to an airport where the Minimum Descent Altitudes (MDAs) or landing visibility minimums for *all instrument approaches* are higher than the forecast weather minimums specified in 14 CFR Section 91.167(b). For example, there are 3 high altitude airports in the U.S. with approved instrument approach procedures where all of the MDAs are greater than 2,000 feet and/or the landing visibility minimums are greater than 3 miles (Bishop, California; South Lake Tahoe, California; and Aspen−Pitkin Co/Sardy Field, Colorado). In the case of these airports, it is possible for a pilot to elect, on the basis of forecasts, not to carry sufficient fuel to get to an alternate when the ceiling and/or visibility is actually lower than that necessary to complete the approach.

6.2.2 A small number of other airports in mountainous terrain have MDAs which are slightly (100 to 300 feet) below 2,000 feet AGL. In situations where there is an option as to whether to plan for an alternate, pilots should bear in mind that just a slight worsening of the weather conditions from those forecast could place the airport below the published IFR landing minimums.

6.2.3 An IFR flight to an airport which requires special equipment; i.e., DME, glide slope, etc., in order to make the available approaches to the lowest minimums. Pilots should be aware that all other minimums on the approach charts may require weather conditions better than those specified in 14 CFR Section 91.167(b). An inflight equipment malfunction could result in the inability to comply with the published approach procedures or, again, in the position of having the airport below the published IFR landing minimums for all remaining instrument approach alternatives.

7. Composite Flight Plan (VFR/IFR Flights)

7.1 Flight plans which specify VFR operation for one portion of a flight, and IFR for another portion, will be accepted by the FSS at the point of departure. If VFR flight is conducted for the first portion of the flight, the pilot should report his/her departure time to the FSS with which he/she filed his/her VFR/IFR flight plan; and, subsequently, close the VFR portion and request ATC clearance from the FSS nearest the point at which change from VFR to IFR is proposed. Regardless of the type facility you are communicating with (FSS, center, or tower), it is the pilot's responsibility to request that facility to "CLOSE VFR FLIGHT PLAN." The pilot must remain in VFR weather conditions until operating in accordance with the IFR clearance.

7.2 When a flight plan indicates IFR for the first portion of flight and VFR for the latter portion, the pilot will normally be cleared to the point at which the change is proposed. Once the pilot has reported over the clearance limit and does not desire further IFR clearance, he/she should advise air traffic control to cancel the IFR portion of his/her flight plan. Then, he/she should contact the nearest FSS to activate the VFR portion of his/her flight plan. If the pilot desires to continue his/her IFR flight plan beyond the clearance limit, he/she should contact air traffic control at least five minutes prior to the clearance limit and request further IFR clearance. If the requested clearance is not received prior to reaching the clearance limit fix, the pilot will be expected to establish himself/herself in a standard holding pattern on the radial/course to the fix unless a holding pattern for the clearance limit fix is depicted on a U.S. Government or commercially produced (meeting FAA requirements) Low/High Altitude En Route, Area, or STAR chart. In this case the pilot will hold according to the depicted pattern.

8. Initiating a Change to Flight Plans on File

8.1 Changes to proposed flight plans should be initiated through the FSS with which the flight plan was originally filed. If this is not possible, initiate changes through the nearest FSS or ATC facility. All changes should be initiated at least 30 minutes prior to departure to insure that the change can be effected prior to the ATC clearance delivery.

9. Change in Proposed Departure Time

9.1 To prevent computer saturation in the en route environment, parameters have been established to delete proposed departure flight plans which have not been activated. Most centers have this parameter set so as to delete these flight plans a minimum of 1 hour after the proposed departure time. To ensure that a flight plan remains active, pilots whose actual departure time will be delayed 1 hour or more beyond their filed departure time, are requested to notify ATC of their departure time.

9.2 Due to traffic saturation, control personnel frequently will be unable to accept these revisions via radio. It is recommended that you forward these revisions to the nearest FSS.

10. Other Changes

10.1 In addition to altitude/flight level, destination, and/or route changes, increasing or decreasing the speed of an aircraft constitutes a change in a flight plan. Therefore, at any time the average true airspeed at cruising altitude between reporting points varies or is expected to vary from that given in the flight plan by plus or minus 5 percent, or 10 knots, whichever is greater, air traffic control should be advised.

11. Canceling Flight Plans

11.1 Closing VFR and DVFR Flight Plans

11.1.1 A pilot is responsible for ensuring that his/her VFR or DVFR flight plan is canceled. You should close your flight plan with the nearest FSS, or if one is not available, you may request any ATC facility to relay your cancellation to the FSS. Control towers do not automatically close VFR or DVFR flight plans as they may not be aware that a particular VFR aircraft is on a flight plan. If you fail to report or cancel your flight plan within $^{1}/_{2}$ hour after your ETA, search and rescue procedures are started.

11.2 Canceling IFR Flight Plan

11.2.1 14 CFR Section 91.153 includes the statement "When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, must notify an FAA Flight Service Station or ATC facility."

11.2.2 An IFR flight plan may be canceled at any time the flight is operating in VFR conditions outside Class A airspace by the pilot stating "CANCEL MY IFR FLIGHT PLAN" to the controller or air/ground station with which he/she is communicating. Immediately after canceling an IFR flight plan, a pilot should take necessary action to change to the appropriate air/ground frequency, VFR radar beacon code, and VFR altitude or flight level.

11.2.3 ATC separation and information services will be discontinued, including radar services (where applicable). Consequently, if the canceling flight desires VFR radar advisory service, the pilot must specifically request it.

NOTE−
Pilots must be aware that other procedures may be applicable to a flight that cancels an IFR flight plan within an area where a special program, such as a designated terminal radar service area, Class C airspace or Class B airspace, has been established.

11.2.4 If a DVFR flight plan requirement exists, the pilot is responsible for filing this flight plan to replace the canceled IFR flight plan. If a subsequent IFR operation becomes necessary, a new IFR flight plan must be filed and an ATC clearance obtained before operating in IFR conditions.

11.2.5 If operating on an IFR flight plan to an airport with a functioning control tower, the flight plan is automatically closed upon landing.

11.2.6 If operating on an IFR flight plan to an airport where there is no functioning control tower, the pilot must initiate cancellation of the IFR flight plan. This can be done after landing if there is a functioning FSS or other means of direct communications with ATC. In the event there is no FSS and air/ground communications with ATC is not possible below a certain altitude, the pilot would, weather conditions permitting, cancel his/her IFR flight plan while still airborne and able to communicate with ATC by radio. This will not only save the time and expense of canceling the flight plan by telephone but will quickly release the airspace for use by other aircraft.

11.3 RNAV and RNP Operations

11.3.1 During the pre−flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non−RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed.

11.3.2 If a pilot determines a specified RNP level cannot be achieved, revise the route or delay the operation until appropriate RNP level can be ensured.

11.3.3 The onboard navigation database must be current and appropriate for the region of intended operation and must include the navigation aids, waypoints, and coded terminal airspace procedures for the departure, arrival and alternate airfields.

11.3.4 During system initialization, pilots of aircraft equipped with a Flight Management System or other RNAV−certified system, must confirm that the navigation database is current, and verify that the aircraft position has been entered correctly. Flight crews should crosscheck the cleared flight plan against charts or other applicable resources, as well as the navigation system textual display and the aircraft map display. This process includes confirmation of the waypoints sequence, reasonableness of track angles and distances, any altitude or speed constraints, and identification of fly−by or fly−over waypoints. A procedure must not be used if validity of the navigation database is in doubt.

11.3.5 Prior to commencing takeoff, the flight crew must verify that the RNAV system is operating correctly and the correct airport and runway data have been loaded.

11.3.6 During the pre−flight planning phase RAIM prediction must be performed if TSO−C129() equipment is used to solely satisfy the RNAV and RNP requirement. GPS RAIM availability must be confirmed for the intended route of flight (route and time) using current GPS satellite information. In the event of a predicted, continuous loss of RAIM of more than five (5) minutes for any part of the intended flight, the flight should be delayed, canceled, or re−routed where RAIM requirements can be met. Operators may satisfy the predictive RAIM requirement through any one of the following methods:

11.3.6.1 Operators may monitor the status of each satellite in its plane/slot position, by accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs), and compute RAIM availability using model−specific RAIM prediction software;

11.3.6.2 Operators may use the FAA en route and terminal RAIM prediction website: www.raimprediction.net;

11.3.6.3 Operators may contact a Flight Service Station (not DUATS) to obtain non−precision approach RAIM;

11.3.6.4 Operators may use a third party interface, incorporating FAA/VOLPE RAIM prediction data without altering performance values, to predict RAIM outages for the aircraft's predicted flight path and times;

11.3.6.5 Operators may use the receiver's installed RAIM prediction capability (for TSO−C129a/Class A1/B1/C1 equipment) to provide non−precision approach RAIM, accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs). Receiver non−precision approach RAIM should be checked at airports spaced at intervals not to exceed 60 NM along the RNAV 1 procedure's flight track. "Terminal" or "Approach" RAIM must be available at the ETA over each airport checked; or,

11.3.6.6 Operators not using model−specific software or FAA/VOLPE RAIM data will need FAA operational approval.

NOTE−
If TSO−C145/C146 equipment is used to satisfy the RNAV and RNP requirement, the pilot/operator need not perform the prediction if WAAS coverage is confirmed to be available along the entire route of flight. Outside the U.S. or in areas where WAAS coverage is not available, operators using TSO−C145/C146 receivers are required to check GPS RAIM availability.

12. International Flight Plan (FAA Form 7233−4) − IFR Flights (For Domestic or International Flights)

12.1 FAA Form 7233−4, also known as the International Civil Aviation Organization (ICAO) FPL (Filed Flight Plan), is recommended for domestic IFR flights, and is mandatory for all IFR flights that will depart U.S. domestic airspace.

12.2 ICAO flight plans are to be filed according to ICAO Doc 4444, Procedures for Air Navigation Services — Air Traffic Management (PANS−ATM).

12.3 ICAO flight plans are required whenever the flight intends to cross an international boundary or an oceanic CTA/FIR boundary. For flights departing U.S. airports and operating over U.S. domestic airspace and/or offshore control areas, but do not penetrate the oceanic CTA/FIR boundary or borders, a U.S. domestic flight plan can be filed, but an **ICAO is always preferred.**

12.4 If the pilot intends to fly an RNAV arrival and/or departure, then an ICAO FPL must be filed using the qualifier “Z” in addition to the RNAV capabilities in Item 18. Operators should file their maximum capabilities in order to qualify for the most advanced procedures.

12.5 The pilot must file in accordance with (IAW) FAA Form 7233−4 for automatic assignment of RNAV Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs), and/or Point to Point (PTP) in U.S. domestic airspace and include additional information per the below guidance:

12.5.1 If you are RNAV 1 and/or RNAV 2 capable:

12.5.1.1 Item 10, Equipment
In addition to identifying all available and serviceable communication, navigation, approach aid, and surveillance equipment carried on your aircraft, **insert the character “Z”**.

12.5.1.2 Item 18, Other Information
Insert “NAV/RNV” followed by the appropriate RNAV accuracy value(s) per the following: To be assigned an RNAV 1 SID, **insert the characters “D1”**. To be assigned an RNAV 1 STAR, **insert the characters “A1”**. To be assigned en route extensions and/or RNAV PTP, **insert the characters “E2”**. To prevent assignment of an RNAV route or procedure, insert a numeric value of “0” for the segment of the flight. Alternatively, you may simply remove the segment of the flight indicator and numeric value from the character string.

EXAMPLE−
1. *NAV/RNVD1 or NAV/RNVD1E0A0 (Same meaning)*

2. *NAV/RNVA1 or NAV/RNVD0E0A1 (Same meaning)*

3. *NAV/RNVE2 or NAV/RNVD0E2A0 (Same meaning)*

4. *NAV/RNVD1A1 or NAV/RNVD1E0A1 (Same meaning),*

5. *NAV/RNVD1E2A1.*

12.5.2 If you are RNAV PTP capable, but <u>not</u> RNAV 1 and/or RNAV 2 capable:

12.5.2.1 Item 10, Equipment
In addition to identifying all available and serviceable communication, navigation, approach aid, and surveillance equipment carried on your aircraft, **insert the character “Z”**.

12.5.2.2 Item 18, Other Information
Insert “RMK/PTP” and **“NAV/RNVE99”**.

EXAMPLE−
RMK/PTP NAV/RNVE99

12.5.2.3 The following variations will be accepted in ERAS for automatic assignment of RNAV routes: One or more spaces may follow “NAV/.”

EXAMPLE−
NAV/ RNVD1A1. The “D”, “E”, and “A” characters may appear in any order following “NAV/RNV”.

EXAMPLE−
NAV/RNVD1A1E2 NAV/RNVA1D1E2.

Additional items required by other automation systems may be filed after “NAV/” in any order.

EXAMPLE−
NAV/RNP10 RNVD1E2A1, NAV/RNVD1E2A1 RNP4 NAV/RNAV1 RNAV5 RNVD1E2A1.

ENR 1.12 Interception of Civil Aircraft, National Security, and Interception Procedures

1. National Security

1.1 National security in the control of air traffic is governed by 14 CFR Part 99.

1.2 All aircraft entering domestic U.S. airspace from points outside, must provide for identification prior to entry. To facilitate early aircraft identification of all aircraft in the vicinity of U.S. and international airspace boundaries, Air Defense Identification Zones (ADIZ) have been established. (See FIG ENR 1.12−1).

1.3 Operational requirements for aircraft operations associated with an ADIZ are as follows:

1.3.1 Flight Plan. Except as specified in subparagraphs 1.5 and 1.6 below, an IFR or DVFR flight plan must be filed with an appropriate aeronautical facility as follows:

1.3.1.1 Generally, for all operations that enter an ADIZ.

1.3.1.2 For operations that will enter or exit the U.S. and which will operate into, within or across the contiguous U.S. ADIZ regardless of true airspeed.

1.3.1.3 The flight plan must be filed before departure except for operations associated with the Alaskan ADIZ when the airport of departure has no facility for filing a flight plan, in which case the flight plan may be filed immediately after takeoff or when within range of the aeronautical facility.

1.3.2 Two−way Radio. For the majority of operations associated with an ADIZ, an operating two−way radio is required. See 14 CFR Section 99.1 for exceptions.

1.3.3 Transponder Requirements. Unless otherwise authorized by ATC, each aircraft conducting operations into, within, or across the contiguous U.S. ADIZ must be equipped with an operable radar beacon transponder having altitude reporting capability (Mode C), and that transponder must be turned on and set to reply on the appropriate code or as assigned by ATC.

1.3.4 Position Reporting

1.3.4.1 For IFR flight. Normal IFR position reporting.

1.3.4.2 For DVFR flights. The estimated time of ADIZ penetration must be filed with the aeronautical facility at least 15 minutes prior to penetration except for flight in the Alaskan ADIZ, in which case report prior to penetration.

1.3.4.3 For inbound aircraft of foreign registry. The pilot must report to the aeronautical facility at least 1 hour prior to ADIZ penetration.

1.3.5 Aircraft Position Tolerances

1.3.5.1 Over land, the tolerance is within plus or minus 5 minutes from the estimated time over a reporting point or point of penetration and within 10 NM from the centerline of an intended track over an estimated reporting point or penetration point.

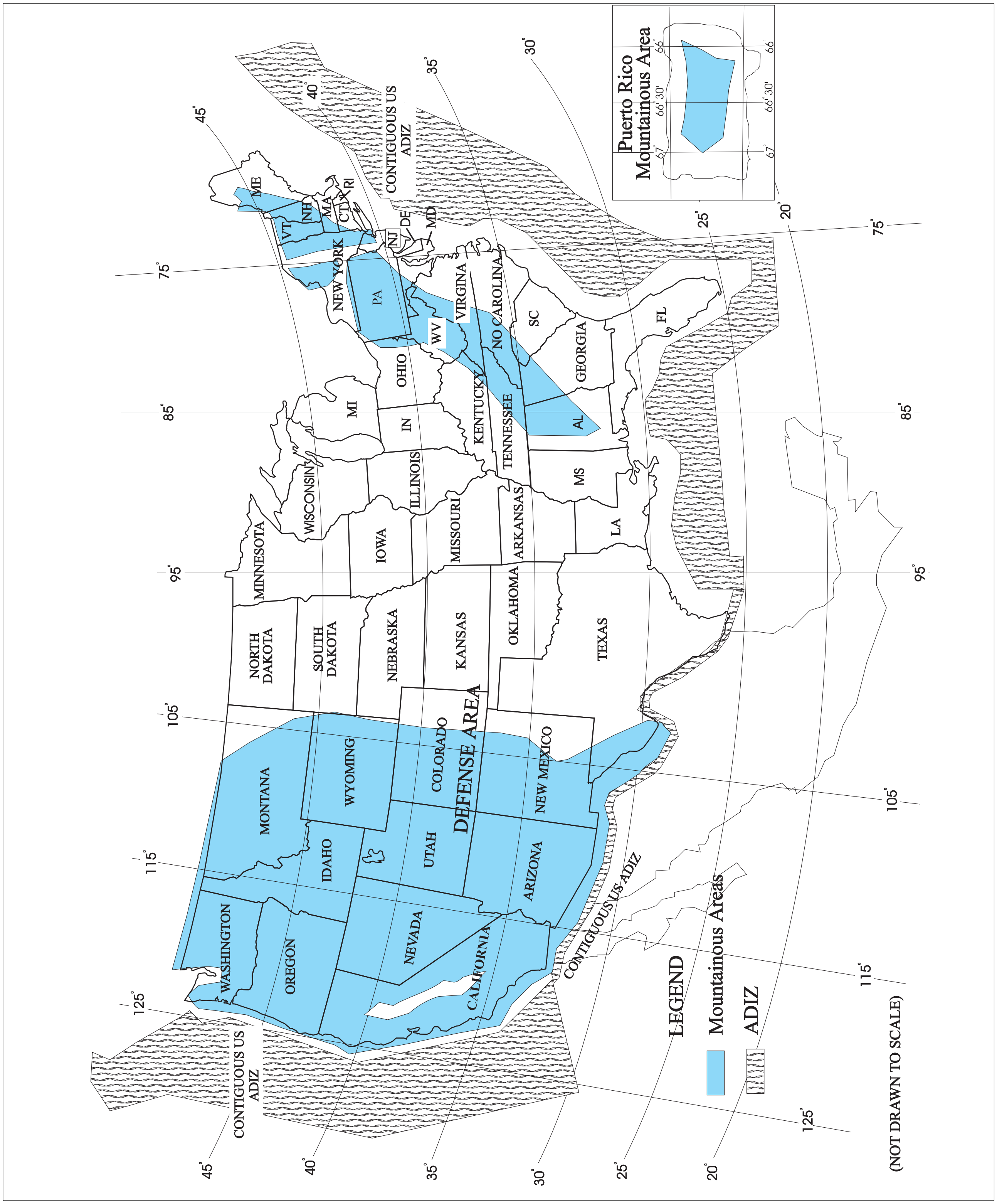
1.3.5.2 Over water, the tolerance is plus or minus 5 minutes from the estimated time over a reporting point or point of penetration and within 20 NM from the centerline of the intended track over an estimated reporting point or point of penetration (to include the Aleutian Islands).

1.3.6 Land−Based ADIZ. Land−Based ADIZ are activated and deactivated over U.S. metropolitan areas as needed, with dimensions, activation dates and other relevant information disseminated via NOTAM.

1.3.6.1 In addition to requirements outlined in subparagaphs 1.3.1 through 1.3.3, pilots operating within a Land−Based ADIZ must report landing or leaving the Land−Based ADIZ if flying too low for radar coverage.

1.3.6.2 Pilots unable to comply with all requirements must remain clear of Land−Based ADIZ. Pilots entering a Land−Based ADIZ without authorization or who fail to follow all requirements risk interception by military fighter aircraft.

FIG ENR 1.12−1
Air Defense Identification Zone Boundaries
Designated Mountainous Areas



ENR 1.16 Safety, Hazard, and Accident Reports

1. Aviation Safety Reporting Program

1.1 The FAA has established a voluntary program designed to stimulate the free and unrestricted flow of information concerning deficiencies and discrepancies in the aviation system. This is a positive program intended to ensure the safest possible system by identifying and correcting unsafe conditions before they lead to accidents. The primary objective of the program is to obtain information to evaluate and enhance the safety and efficiency of the present system.

1.2 This cooperative safety reporting program invites pilots, controllers, flight attendants, maintenance personnel and other users of the airspace system, or any other person, to file written reports of actual or potential discrepancies and deficiencies involving the safety of aviation operations. The operations covered by the program include departure, en route, approach, and landing operations and procedures, air traffic control procedures and equipment, crew and air traffic control communications, aircraft cabin operations, aircraft movement on the airport, near midair collisions, aircraft maintenance and record keeping, and airport conditions or services.

1.3 The report should give the date, time, location, persons and aircraft involved (if applicable), nature of the event, and all pertinent details.

1.4 To ensure receipt of this information, the program provides for the waiver of certain disciplinary actions against persons, including pilots and air traffic controllers, who file timely written reports concerning potentially unsafe incidents. To be considered timely, reports must be delivered or postmarked within 10 days of the incident unless that period is extended for good cause. Reports should be submitted on National Aeronautics and Space Administration (NASA) ARC Forms 277, which are available free of charge, postage prepaid, at FAA Flight Standards District Offices and Flight Service Stations, and from NASA, ASRS, P.O. Box 189, Moffet Field, CA 94035.

1.5 The FAA utilizes NASA to act as an independent third party to receive and analyze reports submitted under the program. This program is described in Advisory Circular 00−46.

2. Aircraft Accident and Incident Reporting

2.1 Occurrences Requiring Notification

2.1.1 The operator of an aircraft must immediately, and by the most expeditious means available, notify the nearest National Transportation Safety Board (NTSB) Field Office when:

2.1.1.1 An aircraft accident or any of the following listed incidents occur:

a) Flight control system malfunction or failure.

b) Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness.

c) Failure of structural components of a turbine engine excluding compressor and turbine blades and vanes.

d) Inflight fire.

e) Aircraft collide in flight.

f) Damage to property, other than the aircraft, estimated to exceed $25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less.

g) For large multi−engine aircraft (more than 12,500 pounds maximum certificated takeoff weight):

1) Inflight failure of electrical systems which requires the sustained use of an emergency bus powered by a back−up source such as a battery, auxiliary power unit, or air−driven generator to retain flight control or essential instruments.

2) Inflight failure of hydraulic systems that results in sustained reliance on the sole remaining hydraulic or mechanical system for movement of flight control surfaces.

3) Sustained loss of the power or thrust produced by two or more engines.

4) An evacuation of aircraft in which an emergency egress system is utilized.

2.1.1.2 An aircraft is overdue and is believed to have been involved in an accident.

2.2 Manner of Notification

2.2.1 The most expeditious method of notification to the NTSB by the operator will be determined by the circumstances existing at the time. The NTSB has advised that any of the following would be considered examples of the type of notification that would be acceptable:

2.2.1.1 Direct telephone notification.

2.2.1.2 Telegraphic notification.

2.2.1.3 Notification to the FAA who would in turn notify the NTSB by direct communication; i.e., dispatch or telephone.

2.3 Items to be Reported

2.3.1 The notification required above must contain the following information, if available:

2.3.1.1 Type, nationality, and registration marks of the aircraft.

2.3.1.2 Name of owner and operator of the aircraft.

2.3.1.3 Name of the pilot−in−command.

2.3.1.4 Date and time of the accident.

2.3.1.5 Last point of departure and point of intended landing of the aircraft.

2.3.1.6 Position of the aircraft with reference to some easily defined geographical point.

2.3.1.7 Number of persons aboard, number killed, and number seriously injured.

2.3.1.8 Nature of the accident or incident, the weather, and the extent of damage to the aircraft, so far as is known.

2.3.1.9 A description of any explosives, radioactive materials, or other dangerous articles carried.

2.4 Follow−up Reports

2.4.1 The operator must file a report on NTSB Form 6120.1 or 6120.2, available from the NTSB Field Offices, or the NTSB, Washington, D.C. 20594:

2.4.1.1 Within ten days after an accident.

2.4.1.2 When, after seven days, an overdue aircraft is still missing.

2.4.1.3 A report on an incident for which notification is required as described in paragraph 2.1 must be filed only as requested by an authorized representative of the NTSB.

2.4.2 Each crewmember, if physically able at the time the report is submitted, must attach a statement setting forth the facts, conditions and circumstances relating to the accident or occurrence as they appeared. If the crewmember is incapacitated, the statement must be submitted as soon as physically possible.

2.5 Where to File the Reports

2.5.1 The operator of an aircraft must file with the field office of the NTSB nearest the accident or incident any report required by this section.

2.5.2 The NTSB field offices are listed under U.S. Government in the telephone directories in the following cities: Anchorage, Alaska; Atlanta, Georgia; Chicago, Illinois; Denver, Colorado; Fort Worth, Texas; Los Angeles, California; Miami, Florida; Parsippany, New Jersey; and Seattle, Washington.

3. Near Midair Collision Reporting

3.1 Purpose and Data Uses. The primary purpose of the Near Midair Collision (NMAC) Reporting Program is to provide information for use in enhancing the safety and efficiency of the National Airspace System. Data obtained from NMAC reports are used by the FAA to improve the quality of FAA services to users and to develop programs, policies, and procedures aimed at the reduction of NMAC occurrences. All NMAC reports are thoroughly investigated by Flight Standards Facilities in coordination with Air Traffic Facilities. Data from these investigations are transmitted to FAA Headquarters in Washington, D.C., where they are compiled and analyzed, and where safety programs and recommendations are developed.

3.2 Definition. A near midair collision is defined as an incident associated with the operation of an aircraft in which a possibility of collision occurs as a result of proximity of less than 500 feet to another aircraft, or a report is received from a pilot or a flight crewmember stating that a collision hazard existed between two or more aircraft.

3.3 Reporting Responsibility. It is the responsibility of the pilot and/or flight crew to determine whether a near midair collision did actually occur and, if so, to initiate a NMAC report. Be specific, as ATC will not interpret a casual remark to mean that a NMAC is being reported. The pilot should state "I wish to report a near midair collision."

ENR 1.17 North Atlantic (NAT) Timekeeping Procedures

1. Prior to entry into NAT minimum navigation performance specifications (MNPS) airspace, the time reference system(s) to be used during the flight for calculation of waypoint estimated times of arrival (ETAs) and waypoint actual times of arrival (ATAs) must be synchronized to universal coordinated time (UTC). All ETAs and ATAs passed to air traffic control must be based on a time reference that has been synchronized to UTC or equivalent. Acceptable sources of UTC include:

1.1 WWV − National Institute of Standards and Technology (Fort Collins, Colorado). WWV operates 24 hours a day on 2500, 5000, 10000, 15000, 20000 kHz (AM/single sideband (SSB)) and provides UTC voice every minute.

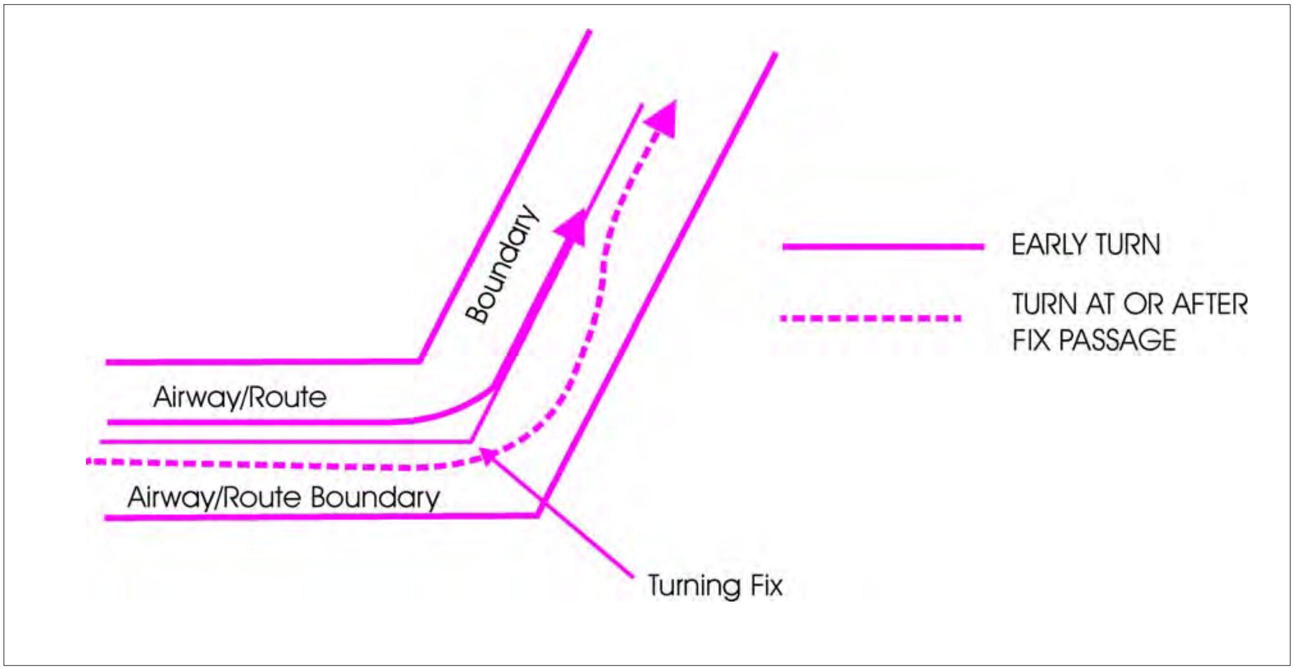
1.2 GPS (corrected to UTC) − Available 24 hours a day to those pilots who can access the time signal over their shipboard GPS equipment.

1.3 CHU − National Research Council (NRC) − Available 24 hours a day on 3330, 7335, and 14670 kHz (SSB). In the final 10−second period of each minute, a bilingual station identification and time announcement is made. Since April 1990, the announced time is UTC.

1.4 BBC − British Broadcasting Corporation (United Kingdom). The BBC transmits on a number of domestic and world−wide frequencies and transmits the Greenwich time signal (referenced to UTC) once every hour on most frequencies, although there are some exceptions.

1.5 Any other source shown to the State of Registry or State of Operator (as appropriate) to be an equivalent source of UTC.

FIG ENR 3.5−1
Adhering to Airways or Routes



6.3 Without such actions, as leading a turn, aircraft operating in excess of 290 knots true airspeed (TAS) can exceed the normal airway/route boundaries depending on the amount of course change required, wind direction and velocity, the character of the turn fix, (DME, overhead navigation aid, or intersection), and the pilot's technique in making a course change. For example, a flight operating at 17,000 feet MSL with a TAS of 400 knots, a 25 degree bank, and a course change of more than 40 degrees would exceed the width of the airway/route; i.e., 4 nautical miles each side of centerline. However, in the airspace below 18,000 feet MSL, operations in excess of 290 knots TAS are not prevalent and the provision of additional IFR separation in all course change situations for the occasional aircraft making a turn in excess of 290 knots TAS creates an unacceptable waste of airspace and imposes a penalty upon the preponderance of traffic which operates at low speeds. Consequently, the FAA expects pilots to lead turns and take other actions they consider necessary during the course changes to adhere as closely as possible to the airways or route being flown.

7. Minimum Turning Altitude (MTA)

7.1 Due to increased airspeeds at 10,000 ft MSL or above, the published minimum enroute altitude (MEA) may not be sufficient for obstacle clearance when a turn is required over a fix, NAVAID, or waypoint. In these instances, an expanded area in the vicinity of the turn point is examined to determine whether the published MEA is sufficient for obstacle clearance. In some locations (normally mountainous), terrain/obstacles in the expanded search area may necessitate a higher minimum altitude while conducting the turning maneuver. Turning fixes requiring a higher minimum turning altitude (MTA) will be denoted on government charts by the minimum crossing altitude (MCA) icon ("x" flag) and an accompanying note describing the MTA restriction. An MTA restriction will normally consist of the air traffic service (ATS) route leading to the turn point, the ATS route leading from the turn point, and the required altitude; e.g., MTA V330 E TO V520 W 16000. When an MTA is applicable for the intended route of flight, pilots must ensure they are at or above the charted MTA not later than the turn point and maintain at or above the MTA until joining the centerline of the ATS route following the turn point. Once established on the centerline following the turning fix, the MEA/MOCA determines the minimum altitude available for assignment. An MTA may also preclude the use of a specific altitude or a range of altitudes during a turn. For example, the MTA may restrict the use of 10,000 through 11,000 ft MSL. In this case, any altitude greater than 11,000 ft MSL is unrestricted, as are altitudes less than 10,000 ft MSL provided MEA/MOCA requirements are satisfied.

4.5 Airborne and ground check points consist of certified radials that should be received at specific points on the airport surface, or over specific landmarks while airborne in the immediate vicinity of the airport.

4.5.1 Should an error in excess of plus or minus 4 degrees be indicated through use of a ground check, or plus or minus 6 degrees using the airborne check, IFR flight must not be attempted without first correcting the source of the error.

CAUTION−
No correction other than the "correction card" figures supplied by the manufacturer should be applied in making these VOR receiver checks.

4.5.2 Locations of airborne check points, ground check points and VOTs are published in the A/FD.

4.5.3 If a dual system VOR (units independent of each other except for the antenna) is installed in the aircraft, one system may be checked against the other. Turn both systems to the same VOR ground facility and note the indicated bearing to that station. The maximum permissible variations between the two indicated bearings is 4 degrees.

5. Distance Measuring Equipment (DME)

5.1 In the operation of DME, paired pulses at a specific spacing are sent out from the aircraft (this is the interrogation) and are received at the ground station. The ground station (transponder) then transmits paired pulses back to the aircraft at the same pulse spacing but on a different frequency. The time required for the round trip of this signal exchange is measured in the airborne DME unit and is translated into distance (nautical miles (NM)) from the aircraft to the ground station.

5.2 Operating on the line−of−sight principle, DME furnishes distance information with a very high degree of accuracy. Reliable signals may be received at distances up to 199 NM at line−of−sight altitude with an accuracy of better than $^1/_2$ mile or 3% of the distance, whichever is greater. Distance information received from DME equipment is SLANT RANGE distance and not actual horizontal distance.

5.3 Operating frequency range of a DME according to ICAO Annex 10 is from 960 MHz to 1215 MHz. Aircraft equipped with TACAN equipment will receive distance information from a VORTAC automatically, while aircraft equipped with VOR must have a separate DME airborne unit.

5.4 VOR/DME, VORTAC, ILS/DME, and LOC/DME navigation facilities established by the FAA provide course and distance information from collocated components under a frequency pairing plan. Aircraft receiving equipment which provides for automatic DME selection assures reception of azimuth and distance information from a common source whenever designated VOR/DME, VORTAC, ILS/DME, and LOC/DME are selected.

5.5 Due to the limited number of available frequencies, assignment of paired frequencies is required for certain military noncollocated VOR and TACAN facilities which serve the same area but which may be separated by distances up to a few miles.

5.6 VOR/DME, VORTAC, ILS/DME, and LOC/DME facilities are identified by synchronized identifications which are transmitted on a time share basis. The VOR or localizer portion of the facility is identified by a coded tone modulated at 1020 Hz or by a combination of code and voice. The TACAN or DME is identified by a coded tone modulated at 1350 Hz. The DME or TACAN coded identification is transmitted one time for each three or four times that the VOR or localizer coded identification is transmitted. When either the VOR or the DME is inoperative, it is important to recognize which identifier is retained for the operative facility. A signal coded identification with a repetition interval of approximately 30 seconds indicates that the DME is operative.

5.7 Aircraft equipment which provides for automatic DME selection assures reception of azimuth and distance information from a common source whenever designated VOR/DME, VORTAC, and ILS/DME navigation facilities are selected. Pilots are cautioned to disregard any distance displays from automatically selected DME equipment when VOR or ILS facilities, which do not have the DME feature installed, are being used for position determination.

6. Tactical Air Navigation (TACAN)

6.1 For reasons peculiar to military or naval operations (unusual siting conditions, the pitching and rolling of a naval vessel, etc.) the civil VOR/DME system of air navigation was considered unsuitable for military or naval use. A new navigational system, Tactical Air Navigation (TACAN), was therefore developed by the military and naval forces to more readily lend itself to military and naval requirements. As a result, the FAA has integrated TACAN facilities with the civil VOR/DME program. Although the theoretical, or technical principles of operation of TACAN equipment are quite different from those of VOR/DME facilities, the end result, as far as the navigating pilot is concerned, is the same. These integrated facilities are called VORTACs.

6.2 TACAN ground equipment consists of either a fixed or mobile transmitting unit. The airborne unit in conjunction with the ground unit reduces the transmitted signal to a visual presentation of both azimuth and distance information. TACAN is a pulse system and operates in the UHF band of frequencies. Its use requires TACAN airborne equipment and does not operate through conventional VOR equipment.

6.3 A VORTAC is a facility consisting of two components, VOR and TACAN, which provides three individual services: VOR azimuth, TACAN azimuth, and TACAN distance (DME) at one site. Although consisting of more than one component, incorporating more than one operating frequency, and using more than one antenna system, a VORTAC is considered to be a unified navigational aid. Both components of a VORTAC are envisioned as operating simultaneously and providing the three services at all times.

6.4 Transmitted signals of VOR and TACAN are each identified by three−letter code transmission and are interlocked so that pilots using VOR azimuth and TACAN distance can be assured that both signals being received are definitely from the same ground station. The frequency channels of the VOR and the TACAN at each VORTAC facility are "paired" in accordance with a national plan to simplify airborne operation.

7. Instrument Landing System (ILS)

7.1 General

7.1.1 The ILS is designed to provide an approach path for exact alignment and descent of an aircraft on final approach to a runway.

7.1.2 The ground equipment consists of two highly directional transmitting systems and, along the approach, three (or fewer) marker beacons. The directional transmitters are known as the localizer and glide slope transmitters.

7.1.3 The system may be divided functionally into three parts:

7.1.3.1 Guidance information: localizer, glide slope.

7.1.3.2 Range information: marker beacon, DME.

7.1.3.3 Visual information: approach lights, touchdown and centerline lights, runway lights.

7.1.4 Precision radar, or compass locators located at the Outer Marker (OM) or Middle Marker (MM), may be substituted for marker beacons. DME, when specified in the procedure, may be substituted for the OM.

7.1.5 Where a complete ILS system is installed on each end of a runway (i.e., the approach end of runway 4 and the approach end of runway 22), the ILS systems are not in service simultaneously.

7.2 Localizer

7.2.1 The localizer transmitter, operates on one of 40 ILS channels within the frequency range of 108.10 MHz to 111.95 MHz. Signals provide the pilot with course guidance to the runway centerline.

7.2.2 The approach course of the localizer is called the front course and is used with other functional parts; e.g., glide slope, marker beacons, etc. The localizer signal is transmitted at the far end of the runway. It is adjusted for a course width (full scale fly−left to a full scale fly−right) of 700 feet at the runway threshold.

7.2.3 The course line along the extended centerline of a runway, in the opposite direction to the front course, is called the back course.

CAUTION−
Unless your aircraft's ILS equipment includes reverse sensing capability, when flying inbound on the back course it is necessary to steer the aircraft in the direction

Just a few minutes of preparation and planning on the ground will make a great difference in the air.

18.2.4.5 Another way to minimize head−down time is to become very familiar with your receiver's operation. Most receivers are not intuitive. The pilot must take the time to learn the various keystrokes, knob functions, and displays that are used in the operation of the receiver. Some manufacturers provide computer−based tutorials or simulations of their receivers. Take the time to learn about your particular unit before you try to use it in flight.

18.2.5 In summary, be careful not to rely on GPS to solve all your VFR navigational problems. Unless an IFR receiver is installed in accordance with IFR requirements, no standard of accuracy or integrity has been assured. While the practicality of GPS is compelling, the fact remains that only the pilot can navigate the aircraft, and GPS is just one of the pilot's tools to do the job.

18.3 VFR Waypoints

18.3.1 VFR waypoints provide VFR pilots with a supplementary tool to assist with position awareness while navigating visually in aircraft equipped with area navigation receivers. VFR waypoints should be used as a tool to supplement current navigation procedures. The uses of VFR waypoints include providing navigational aids for pilots unfamiliar with an area, waypoint definition of existing reporting points, enhanced navigation in and around Class B and Class C airspace, and enhanced navigation around Special Use Airspace. VFR pilots should rely on appropriate and current aeronautical charts published specifically for visual navigation. If operating in a terminal area, pilots should take advantage of the Terminal Area Chart available for that area, if published. The use of VFR waypoints does not relieve the pilot of any responsibility to comply with the operational requirements of 14 CFR Part 91.

18.3.2 VFR waypoint names (for computer−entry and flight plans) consist of five letters beginning with the letters "VP" and are retrievable from navigation databases. The VFR waypoint names are not intended to be pronounceable, and they are not for use in ATC communications. On VFR charts, stand−alone VFR waypoints will be portrayed using the same four−point star symbol used for IFR waypoints. VFR waypoints collocated with visual check points on the chart will be identified by small magenta flag symbols. VFR waypoints collocated with visual check points will be pronounceable based on the name of the visual check point and may be used for ATC communications. Each VFR waypoint name will appear in parentheses adjacent to the geographic location on the chart. Latitude/longitude data for all established VFR waypoints may be found in the appropriate regional Airport/Facility Directory (A/FD).

18.3.3 VFR waypoints must not be used to plan flights under IFR. VFR waypoints will not be recognized by the IFR system and will be rejected for IFR routing purposes.

18.3.4 When filing VFR flight plans, pilots may use the five letter identifier as a waypoint in the route of flight section if there is an intended course change at that point or if used to describe the planned route of flight. This VFR filing would be similar to how a VOR would be used in a route of flight. Pilots must use the VFR waypoints only when operating under VFR conditions.

18.3.5 Any VFR waypoints intended for use during a flight should be loaded into the receiver while on the ground and prior to departure. Once airborne, pilots should avoid programming routes or VFR waypoint chains into their receivers.

18.3.6 Pilots should be especially vigilant for other traffic while operating near VFR waypoints. The same effort to see and avoid other aircraft near VFR waypoints will be necessary, as was the case with VORs and NDBs in the past. In fact, the increased accuracy of navigation through the use of GPS will demand even greater vigilance, as off−course deviations among different pilots and receivers will be less. When operating near a VFR waypoint, use whatever ATC services are available, even if outside a class of airspace where communications are required. Regardless of the class of airspace, monitor the available ATC frequency closely for information on other aircraft operating in the vicinity. It is also a good idea to turn on your landing light(s) when operating near a VFR waypoint to make your aircraft more conspicuous to other pilots, especially when visibility is reduced. See paragraph 2., VFR in Congested Areas, in , for more information.

18.4 General Requirements

18.4.1 Authorization to conduct any GPS operation under IFR requires that:

18.4.1.1 GPS navigation equipment used must be approved in accordance with the requirements specified in TSO−C−129, or equivalent, and the installation must be done in accordance with Notice 8110.47 or 8110.48, or equivalent. Equipment approved in accordance with TSO−C−115a does not meet the requirements of TSO−C−129. VFR and hand−held GPS systems are not authorized for IFR navigation, instrument approaches, or as a principal instrument flight reference. During IFR operations they may be considered only an aid to situational awareness.

18.4.1.2 Aircraft using GPS navigation equipment under IFR must be equipped with an approved and operational alternate means of navigation appropriate to the flight. Active monitoring of alternative navigation equipment is not required if the GPS receiver uses RAIM for integrity monitoring. Active monitoring of an alternate means of navigation is required when the RAIM capability of the GPS equipment is lost.

18.4.1.3 Procedures must be established for use in the event that the loss of RAIM capability is predicted to occur. In situations where this is encountered, the flight must rely on other approved equipment, delay departure, or cancel the flight.

18.4.1.4 The GPS operation must be conducted in accordance with the FAA−approved aircraft flight manual (AFM) or flight manual supplement. Flight crew members must be thoroughly familiar with the particular GPS equipment installed in the aircraft, the receiver operation manual, and the AFM or flight manual supplement. Unlike ILS and VOR, the basic operation, receiver presentation to the pilot, and some capabilities of the equipment can vary greatly. Due to these differences, operation of different brands, or even models of the same brand, of GPS receiver under IFR should not be attempted without thorough study of the operation of that particular receiver and installation. Most receivers have a built−in simulator mode which will allow the pilot to become familiar with operation prior to attempting operation in the aircraft. Using the equipment in flight under VFR conditions prior to attempting IFR operation will allow further familiarization.

18.4.1.5 Aircraft navigating by IFR approved GPS are considered to be RNAV aircraft and have special equipment suffixes. File the appropriate equipment suffix in accordance with TBL ENR 4.1−4, on the ATC flight plan. If GPS avionics become inoperative, the pilot should advise ATC and amend the equipment suffix.

18.4.1.6 Prior to any GPS IFR operation, the pilot must review appropriate NOTAMs and aeronautical information. (See GPS NOTAMs/Aeronautical Information.)

18.4.1.7 Air carrier and commercial operators must meet the appropriate provisions of their approved operations specifications.

18.5 Use of GPS for IFR Oceanic, Domestic En Route, and Terminal Area Operations

18.5.1 GPS IFR operations in oceanic areas can be conducted as soon as the proper avionics systems are installed, provided all general requirements are met. A GPS installation with TSO−C−129 authorization in class A1, A2, B1, B2, C1, or C2 may be used to replace one of the other approved means of long−range navigation, such as dual INS. (See TBL ENR 4.1−4 and TBL ENR 4.1−5.) A single GPS installation with these classes of equipment which provide RAIM for integrity monitoring may also be used on short oceanic routes which have only required one means of long−range navigation.

18.5.2 GPS domestic en route and terminal IFR operations can be conducted as soon as proper avionics systems are installed, provided all general requirements are met. The avionics necessary to receive all of the ground−based facilities appropriate for the route to the destination airport and any required alternate airport must be installed and operational. Ground−based facilities necessary for these routes must also be operational.

18.5.2.1 GPS en route IFR RNAV operations may be conducted in Alaska outside the operational service volume of ground−based navigation aids when a TSO−C145a or TSO−C146a GPS/WAAS system is installed and operating. Ground−based navigation equipment is not required to be installed and operating for en route IFR RNAV operations when using GPS WAAS navigation systems. All operators should ensure that an alternate means of navigation is available in the unlikely event the GPS WAAS navigation system becomes inoperative.

concept to oceanic operations. For example, RNP−10 routes have been established in the northern Pacific (NOPAC) which has increased capacity and efficiency by reducing the distance between tracks to 50 NM. Additionally, the FAA has assisted those U.S. air carriers operating in Europe where the routes have been designated as RNP−5. TBL ENR 4.1−7 below, shows examples of current and future RNP levels of airspace.

TBL ENR 4.1−7

RNP Levels Supported for International Operations

RNP Level	Typical Application
4	Projected for oceanic/remote areas where 30 NM horizontal separation is applied
5	European Basic RNAV (B−RNAV)
10	Oceanic/remote areas where 50 NM horizontal separation is applied

22.7 RNAV and RNP Operations

22.7.1 Pilot

22.7.1.1 If unable to comply with the requirements of an RNAV or RNP procedure, pilots must advise air traffic control as soon as possible. For example, "N1234, failure of GPS system, unable RNAV, request amended clearance."

22.7.1.2 Pilots are not authorized to fly a published RNAV or RNP procedure (instrument approach, departure, or arrival procedure) unless it is retrievable by the procedure name from the current aircraft navigation database and conforms to the charted procedure. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints.

22.7.1.3 Whenever possible, RNAV routes (Q− or T−route) should be extracted from the database in their entirety, rather than loading RNAV route waypoints from the database into the flight plan individually. However, selecting and inserting individual, named fixes from the database is permitted, provided all fixes along the published route to be flown are inserted.

22.7.1.4 Pilots must not change any database waypoint type from a fly−by to fly−over, or vice versa. No other modification of database waypoints or the creation of user−defined waypoints on published RNAV or RNP procedures is permitted, except to:

a) Change altitude and/or airspeed waypoint constraints to comply with an ATC clearance/ instruction.

b) Insert a waypoint along the published route to assist in complying with ATC instruction, example, "Descend via the WILMS arrival except cross 30 north of BRUCE at/or below FL 210." This is limited only to systems that allow along−track waypoint construction.

22.7.1.5 Pilots of FMS−equipped aircraft, who are assigned an RNAV DP or STAR procedure and subsequently receive a change of runway, transition or procedure, must verify that the appropriate changes are loaded and available for navigation.

22.7.1.6 For RNAV 1 DPs and STARs, pilots must use a CDI, flight director and/or autopilot, in lateral navigation mode. Other methods providing an equivalent level of performance may also be acceptable.

22.7.1.7 For RNAV 1 DPs and STARs, pilots of aircraft without GPS, using DME/DME/IRU, must ensure the aircraft navigation system position is confirmed, within 1,000 feet, at the start point of take−off roll. The use of an automatic or manual runway update is an acceptable means of compliance with this requirement. Other methods providing an equivalent level of performance may also be acceptable.

22.7.1.8 For procedures or routes requiring the use of GPS, if the navigation system does not automatically alert the flight crew of a loss of GPS, the operator must develop procedures to verify correct GPS operation.

22.7.1.9 RNAV terminal procedures (DP and STAR) may be amended by ATC issuing radar vectors and/or clearances direct to a waypoint. Pilots should avoid premature manual deletion of waypoints from their active "legs" page to allow for rejoining procedures.

22.7.1.10 RAIM Prediction: If TSO−C129 equipment is used to solely satisfy the RNAV and RNP requirement, GPS RAIM availability must be confirmed for the intended route of flight (route and time). If RAIM is not available, pilots need an approved alternate means of navigation.

REFERENCE−
AIP, RNAV and RNP Operations, ENR 1.10 para 11.3.

22.7.1.11 Definition of "established" for RNAV and RNP operations: An aircraft is considered to be established on-course during RNAV and RNP operations anytime it is within 1 times the required accuracy for the segment being flown. For example, while operating on a Q-Route (RNAV 2), the aircraft is considered to be established on-course when it is within 2 nm of the course centerline.

NOTE−
Pilots must be aware of how their navigation system operates, along with any AFM limitations, and confirm that the aircraft's lateral deviation display (or map display if being used as an allowed alternate means) is suitable for the accuracy of the segment being flown. Automatic scaling and alerting changes are appropriate for some operations. For example, TSO-C129 systems change within 30 miles of destination and within 2 miles of FAF to support approach operations. For some navigation systems and operations, manual selection of scaling will be necessary.
(a) *Pilots flying FMS equipped aircraft with barometric vertical navigation (Baro-VNAV) may descend when the aircraft is established on-course following FMS leg transition to the next segment. Leg transition normally occurs at the turn bisector for a fly-by waypoint (reference paragraph 1-2-1 for more on waypoints). When using full automation, pilots should monitor the aircraft to ensure the aircraft is turning at appropriate lead times and descending once established on-course.*

(b) *Pilots flying TSO-C129 navigation system equipped aircraft without full automation should use normal lead points to begin the turn. Pilots may descend when established on-course on the next segment of the approach.*

23. NAVAID Identifier Removal During Maintenance

23.1 During periods of routine or emergency maintenance, coded identification (or code and voice, where applicable) is removed from certain FAA NAVAIDs. Removal of the identification serves as warning to pilots that the facility is officially off the air for tune−up or repair and may be unreliable even though intermittent or constant signals are received.

NOTE−
During periods of maintenance, VHF ranges may radiate a T−E−S−T code (– ● ●●● –).

NOTE−
DO NOT attempt to fly a procedure that is NOTAMed out of service even if the identification is present. In certain cases, the identification may be transmitted for short periods as part of the testing.

24. User Reports on NAVAID Performance

24.1 Users of the National Airspace System can render valuable assistance in the early correction of NAVAID malfunctions by reporting their observation of undesirable performance. Although NAVAIDs are monitored by electronic detectors adverse effects of electronic interference, new obstructions or changes in terrain near the NAVAID can exist without detection by the ground monitors. Some of the characteristics of malfunction or deteriorating performance which should be reported are: erratic course or bearing indications; intermittent, or full, flag alarm; garbled, missing or obviously improper coded identification; poor quality communications reception; or, in the case of frequency interference, an audible hum or tone accompanying radio communications or navaid identification.

24.2 Reporters should identify the NAVAID, location of the aircraft, time of the observation, type of aircraft and describe the condition observed; the type of receivers in use will also be useful information. Reports can be made in any of the following ways:

24.2.1 Immediately, by radio communication to the controlling Air Route Traffic Control Center, Control Tower, or Flight Service Station. This provides the quickest result.

24.2.2 By telephone to the nearest FAA facility.

24.2.3 By FAA Form 8740−5, Safety Improvement Report, a postage−paid card designed for this purpose. These cards may be obtained at FAA Flight Service Stations, Flight Standards District Offices, and General Aviation Fixed Base Operations.

24.3 In aircraft that have more than one receiver, there are many combinations of possible interference between units. This can cause either erroneous navigation indications or, complete or partial blanking out of the communications. Pilots should be familiar enough with the radio installation of particular airplanes they fly to recognize this type of interference.

25. Radio Communications and Navigation Facilities

25.1 A complete listing of air traffic radio communications facilities and frequencies and radio navigation facilities and frequencies are contained in the Airport/Facility Directory. Similar information for the Pacific and Alaskan areas is contained in the Pacific and Alaskan Supplements.

and State aeronautical agencies). Appropriate authorities for a temporary flight restrictions establishment under 14 CFR Section 91.137(a)(3) are any of those listed above or by State, county, or city government entities.

2.2.5 The type of restrictions issued will be kept to a minimum by the FAA consistent with achievement of the necessary objective. Situations which warrant the extreme restrictions of 14 CFR Section 91.137(a)(1) include, but are not limited to: toxic gas leaks or spills, flammable agents, or fumes which if fanned by rotor or propeller wash could endanger persons or property on the surface, or if entered by an aircraft could endanger persons or property in the air; imminent volcano eruptions which could endanger airborne aircraft and occupants; nuclear accident or incident; and hijackings. Situations which warrant the restrictions associated with 14 CFR Section 91.137(a)(2) include: forest fires which are being fought by releasing fire retardants from aircraft; and aircraft relief activities following a disaster (earthquake, tidal wave, flood, etc.). 14 CFR Section 91.137 (a)(3) restrictions are established for events and incidents that would attract an unsafe congestion of sightseeing aircraft.

2.2.6 The amount of airspace needed to protect persons and property or provide a safe environment for rescue/relief aircraft operations is normally limited to within 2,000 feet above the surface and within a 3−nautical−mile radius. Incidents occurring within Class B, Class C, or Class D airspace will normally be handled through existing procedures and should not require the issuance of a temporary flight restrictions NOTAM. Temporary flight restrictions affecting airspace outside of the U.S. and its territories and possessions are issued with verbiage excluding that airspace outside of the 12−mile coastal limits.

2.2.7 The FSS nearest the incident site is normally the "coordination facility." When FAA communications assistance is required, the designated FSS will function as the primary communications facility for coordination between emergency control authorities and affected aircraft. The ARTCC may act as liaison for the emergency control authorities if adequate communications cannot be established between the designated FSS and the relief organization. For example, the coordination facility may relay authorizations from the on-scene emergency response official in cases where news media aircraft operations are approved at the altitudes used by relief aircraft.

2.2.8 ATC may authorize operations in a temporary flight restrictions area under its own authority only when flight restrictions are established under 14 CFR Section 91.137(a)(2) and (a)(3). The appropriate ARTCC/airport traffic control tower manager will, however, ensure that such authorized flights do not hamper activities or interfere with the event for which restrictions were implemented. However, ATC will not authorize local IFR flights into the temporary flight restrictions area.

2.2.9 To preclude misunderstanding, the implementing NOTAM will contain specific and formatted information. The facility establishing a temporary flight restrictions area will format a NOTAM beginning with the phrase "FLIGHT RESTRICTIONS" followed by: the location of the temporary flight restrictions area; the effective period; the area defined in statute miles; the altitudes affected; the FAA coordination facility and commercial telephone number; the reason for the temporary flight restrictions; the agency directing any relief activities and its commercial telephone number; and other information considered appropriate by the issuing authority.

EXAMPLE−

1. *14 CFR Section 91.137(a)(1):*
The following NOTAM prohibits all aircraft operations except those specified in the NOTAM.

FLIGHT RESTRICTIONS MATTHEWS, VIRGINIA, EFFECTIVE IMMEDIATELY UNTIL 9610211200. PURSUANT TO 14 CFR SECTION 91.137(A)(1) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT. RESCUE OPERATIONS IN PROGRESS. ONLY RELIEF AIRCRAFT OPERATIONS UNDER THE DIRECTION OF THE DEPARTMENT OF DEFENSE ARE AUTHORIZED IN THE AIRSPACE AT AND BELOW 5,000 FEET MSL WITHIN A 2−NAUTICAL−MILE RADIUS OF LASER AFB, MATTHEWS, VIRGINIA. COMMANDER, LASER AFB, IN CHARGE (897) 946−5543 (122.4). STEENSON FSS (792) 555−6141 (123.1) IS THE FAA COORDINATION FACILITY .

2. *14 CFR Section 91.137(a)(2):*
The following NOTAM permits flight operations in accordance with 14 CFR Section 91.137(a)(2). The on-site emergency response official to authorize media aircraft operations below the altitudes used by the relief aircraft.

FLIGHT RESTRICTIONS 25 MILES EAST OF BRANSOME, IDAHO, EFFECTIVE IMMEDIATELY UNTIL 9601202359 UTC. PURSUANT TO 14 CFR SECTION 91.137(A)(2) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 4−NAUTICAL−MILE RADIUS OF THE INTERSECTION OF COUNTY ROADS 564 AND 315 AT AND BELOW 3,500 FEET MSL TO PROVIDE A SAFE ENVIRONMENT FOR FIRE FIGHTING AIRCRAFT OPERATIONS. DAVIS COUNTY SHERIFF'S DEPARTMENT (792) 555−8122 (122.9) IS IN CHARGE OF ON-SCENE EMERGENCY RESPONSE ACTIVITIES. GLIVINGS FSS (792) 555−1618 (122.2) IS THE FAA COORDINATION FACILITY.

3. *14 CFR Section 91.137(a)(3):*
The following NOTAM prohibits sightseeing aircraft operations.

FLIGHT RESTRICTIONS BROWN, TENNESSEE, DUE TO OLYMPIC ACTIVITY. EFFECTIVE 9606181100 UTC UNTIL 9607190200 UTC. PURSUANT TO 14 CFR SECTION 91.137(A)(3) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 3−NAUTICAL−MILE RADIUS OF N355783/W835242 AND VOLUNTEER VORTAC 019 DEGREE RADIAL 3.7 DME FIX AT AND BELOW 2,500 FEET MSL. NORTON FSS (423) 555−6742 (126.6) IS THE FAA COORDINATION FACILITY.

4. *14 CFR Section 91.138:*
The following NOTAM prohibits all aircraft except those operating under the authorization of the official in charge of associated emergency or disaster relief response activities, aircraft carrying law enforcement officials, aircraft carrying personnel involved in an emergency or legitimate scientific purposes, carrying properly accredited news media, and aircraft operating in accordance with an ATC clearance or instruction.

FLIGHT RESTRICTIONS KAPALUA, HAWAII, EFFECTIVE 9605101200 UTC UNTIL 9605151500 UTC. PURSUANT TO 14 CFR SECTION 91.138 TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 3−NAUTICAL−MILERADIUS OF N205778/W1564038 AND MAUI /OGG/ VORTAC 275 DEGREE RADIAL AT 14.1 NAUTICAL MILES. JOHN DOE 808−757−4469 OR 122.4 IS IN CHARGE OF THE OPERATION. HONOLULU /HNL/ 808− 757−4470 (123.6) FSS IS THE FAA COORDINATION FACILITY.

5. *14 CFR Section 91.141:*

The following NOTAM prohibits all aircraft.

FLIGHT RESTRICTIONS STILLWATER, OKLAHOMA, JUNE 21, 1996. PURSUANT TO 14 CFR SECTION 91.141 AIRCRAFT FLIGHT OPERATIONS ARE PROHIBITED WITHIN A 3−NAUTICAL−MILE RADIUS, BELOW 2000 FEET AGL OF N360962/ W970515 AND THE STILLWATER /SWO/ VOR/DME 176 DEGREE RADIAL 3.8−NAUTICAL−MILE FIX FROM 1400 LOCAL TIME TO 1700 LOCAL TIME JUNE 21, 1996 UNLESS OTHERWISE AUTHORIZED BY ATC.

6. *14 CFR Section 91.143:*

The following NOTAM prohibits any aircraft of U.S. registry, or pilot of any aircraft under the authority of an airman certificate issued by the FAA.

KENNEDY SPACE CENTER SPACE OPERATIONS AREA EFFECTIVE IMMEDIATELY UNTIL 9610152100 UTC. PURSUANT TO SECTION 91.143, FLIGHT OPERATIONS CONDUCTED BY FAA CERTIFICATED PILOTS OR CONDUCTED IN AIRCRAFT OF U.S. REGISTRY ARE PROHIBITED AT ANY ALTITUDE FROM SURFACE TO UNLIMITED, WITHIN THE FOLLOWING AREA 30−NAUTICAL−MILE RADIUS OF THE MELBOURNE /MLB/ VORTAC 010 DEGREE RADIAL 21−NAUTICAL−MILE FIX. ST. PETERSBURG, FLORIDA, /PIE/ FSS 813−545−1645 (122.2) IS THE FAA COORDINATION FACILITY AND SHOULD BE CONTACTED FOR THE CURRENT STATUS OF ANY AIRSPACE ASSOCIATED WITH THE SPACE SHUTTLE OPERATIONS. THIS AIRSPACE ENCOMPASSES R2933, R2932, R2931, R2934, R2935, W497A AND W158A. ADDITIONAL WARNING AND RESTRICTED AREAS WILL BE ACTIVE IN CONJUNCTION WITH THE OPERATIONS. PILOTS MUST CONSULT ALL NOTAMS REGARDING THIS OPERATION.

2.3 Parachute Jump Aircraft Operations

2.3.1 Procedures relating to parachute jump areas are contained in 14 CFR Part 105. Tabulations of parachute jump areas in the U.S. are contained in the Airport/Facility Directory.

2.3.2 Pilots of aircraft engaged in parachute jump operations are reminded that all reported altitudes must be with reference to mean sea level, or flight level, as appropriate, to enable ATC to provide meaningful traffic information.

2.3.3 Parachute Operations in the Vicinity of an Airport Without an Operating Control Tower. There is no substitute for alertness while in the vicinity of an airport. It is essential that pilots conducting parachute operations be alert, look for other traffic, and exchange traffic information as recommended in GEN 3.3, paragraph 9.2, Traffic Advisory Practices at Airports Without Operating Control Towers. In addition, pilots should avoid releasing parachutes while in an airport traffic pattern when there are other aircraft in that pattern. Pilots should make appropriate broadcasts on the designated Common Traffic Advisory Frequency (CTAF), and monitor that CTAF until all parachute activity has terminated or the aircraft has left the area. Prior to commencing a jump operation, the pilot should broadcast the aircraft's altitude and position in relation to the airport, the approximate relative time when the jump will commence and terminate, and listen to the position reports of other aircraft in the area.

ENR 5.2 Military Exercise and Training Areas

1. Military Operations Area (MOA)

1.1 MOAs consist of airspace of defined vertical and lateral limits established for the purpose of separating certain military training activities from IFR traffic. Whenever a MOA is being used, nonparticipating IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC. Otherwise, ATC will reroute or restrict nonparticipating IFR traffic.

1.2 Examples of activities conducted in MOAs include, but are not limited to: air combat tactics, air intercepts, aerobatics, formation training, and low−altitude tactics. Military pilots flying in an active MOA are exempted from the provisions of 14 CFR Section 91.303(c) and (d) which prohibits aerobatic flight within Class D and Class E surface areas, and within Federal airways. Additionally, the Department of Defense has been issued an authorization to operate aircraft at indicated airspeeds in excess of 250 knots below 10,000 feet MSL within active MOAs.

1.3 Pilots operating under VFR should exercise extreme caution while flying within a MOA when military activity is being conducted. The activity status (active/inactive) of MOAs may change frequently. Therefore, pilots should contact any FSS within 100 miles of the area to obtain accurate real−time information concerning the MOA hours of operation. Prior to entering an active MOA, pilots should contact the controlling agency for traffic advisories.

1.4 MOAs are depicted on Sectional, VFR Terminal Area, and En Route Low Altitude Charts.

2. Alert Areas

2.1 Alert Areas are depicted on aeronautical charts to inform nonparticipating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. Pilots should be particularly alert when flying in these areas. All activity within an Alert Area must be conducted in accordance with FAA regulations, without waiver, and pilots of participating aircraft as well as pilots transiting the area must be equally responsible for collision avoidance.

3. Controlled Firing Area (CFA)

3.1 CFAs contain activities which, if not conducted in a controlled environment, could be hazardous to nonparticipating aircraft. The distinguishing feature of the CFA, as compared to other special use airspace, is that its activities are suspended immediately when spotter aircraft, radar, or ground lookout positions indicate an aircraft might be approaching the area. There is no need to chart CFAs since they do not cause a nonparticipating aircraft to change its flight path.

4. Military Training Route (MTR)

4.1 National security depends largely on the deterrent effect of our airborne military forces. To be proficient, the military services must train in a wide range of airborne tactics. One phase of this training involves "low level" combat tactics. The required maneuvers and high speeds are such that they may occasionally make the see−and−avoid aspect of VFR flight more difficult without increased vigilance in areas containing such operations. In an effort to ensure the greatest practical level of safety for all flight operations, the MTR program was conceived.

4.2 The MTR program is a joint venture by the FAA and the DOD. MTRs are mutually developed for use by the military for the purpose of conducting low−altitude, high−speed training. The routes above 1,500 feet above ground level (AGL) are developed to be flown, to the maximum extent possible, under IFR. The routes at 1,500 feet AGL and below are generally developed to be flown under VFR.

4.3 Generally, MTRs are established below 10,000 feet MSL for operations at speeds in excess of 250 knots. However, route segments may be defined at higher altitudes for purposes of route continuity. For example, route segments may be defined for descent, climbout, and mountainous terrain. There are IFR and VFR routes as follows:

4.3.1 IFR Military Training Routes−IR. Operations on these routes are conducted in accordance with IFR regardless of weather conditions.

4.3.2 VFR Military Training Routes−VR. Operations on these routes are conducted in accordance with VFR except flight visibility must be 5 miles or more; and flights must not be conducted below a ceiling of less than 3,000 feet AGL.

4.4 MTRs will be identified and charted as follows:

4.4.1 Route Identification

4.4.1.1 MTRs with no segment above 1,500 feet AGL must be identified by four number characters; e.g., IR1206, VR1207.

4.4.1.2 MTRs that include one or more segments above 1,500 feet AGL must be identified by three number characters; e.g., IR206, VR207.

4.4.1.3 Alternate IR/VR routes or route segments are identified by using the basic/principal route designation followed by a letter suffix, e.g., IR008A, VR1007B, etc.

4.4.2 Route Charting

4.4.2.1 IFR Low Altitude En Route Chart. This chart will depict all IR routes and all VR routes that accommodate operations above 1,500 feet AGL.

4.4.2.2 VFR Sectional Charts. These charts will depict military training activities such as IR, VR, MOA, restricted area, warning area, and alert area information.

4.4.2.3 Area Planning (AP/1B) Chart (DOD Flight Information Publication−FLIP). This chart is published by the DOD primarily for military users and contains detailed information on both IR and VR routes.

4.5 The FLIP contains charts and narrative descriptions of these routes. This publication is available to the general public by single copy or annual subscription from:

Aeronautical Navigation Products (AeroNav)
Logistics Group, AJV−372
Federal Aviation Administration
10201 Good Luck Road
Glenn Dale, MD 20769−9700
Telephone: 1−800−638−8972 (Toll free within U.S.)
301−436−8301
301−436−6829 (FAX)
e−mail: 9−AMC−Chartsales@faa.gov

4.5.1 This DOD FLIP is available for pilot briefings at FSSs and many airports.

4.6 Nonparticipating aircraft are not prohibited from flying within an MTR; however, extreme vigilance should be exercised when conducting flight through or near these routes. Pilots should contact FSSs within 100 NM of a particular MTR to obtain current information or route usage in their vicinity. Information available includes times of scheduled activity, altitudes in use on each route segment, and actual route width. Route width varies for each MTR and can extend several miles on either side of the charted MTR centerline. Route width information for IR and VR MTRs is also available in the FLIP AP/1B along with additional MTR (SR/AR) information. When requesting MTR information, pilots should give the FSS their position, route of flight, and destination in order to reduce frequency congestion and permit the FSS specialist to identify the MTR which could be a factor.

provide "see−and−avoid" capability to the UAS crew and to provide the necessary compliance with 14 CFR Section 91.113. For UAS operations approved at or above FL180, UAS operate under the same requirements as that of manned aircraft (i.e., flights are operated under instrument flight rules, are in communication with ATC, and are appropriately equipped).

5.3 UAS operations may be approved at either controlled or uncontrolled airports and are typically disseminated by NOTAM. In all cases, approved UAS operations must comply with all applicable regulations and/or special provisions specified in the COA or in the operating limitations of the special airworthiness certificate. At uncontrolled airports, UAS operations are advised to operate well clear of all known manned aircraft operations. Pilots of manned aircraft are advised to follow normal operating procedures and are urged to monitor the CTAF for any potential UAS activity. At controlled airports, local ATC procedures may be in place to handle UAS operations and should not require any special procedures from manned aircraft entering or departing the traffic pattern or operating in the vicinity of the airport.

5.4 In addition to approved UAS operations described above, a recently approved agreement between the FAA and the Department of Defense authorizes small UAS operations wholly contained within Class G airspace, and in no instance, greater than 1200 feet AGL over military owned or leased property. These operations do not require any special authorization as long as the UA remains within the lateral boundaries of the military installation as well as other provisions including the issuance of a NOTAM. Unlike special use airspace, these areas may not be depicted on an aeronautical chart.

5.5 There are several factors a pilot should consider regarding UAS activity in an effort to reduce potential flight hazards. Pilots are urged to exercise increased vigilance when operating in the vicinity of restricted or other special use airspace, military operations areas, and any military installation. Areas with a preponderance of UAS activity are typically noted on sectional charts advising pilots of this activity. Since the size of a UA can be very small, they may be difficult to see and track. If a UA is encountered during flight, as with manned aircraft, never assume that the pilot or crew of the UAS can see you, maintain increased vigilance with the UA and always be prepared for evasive action if necessary. Always check NOTAMs for potential UAS activity along the intended route of flight and exercise increased vigilance in areas specified in the NOTAM.

6. Mountain Flying

6.1 Your first experience of flying over mountainous terrain (particularly if most of your flight time has been over the flatlands of the midwest) could be a *never-to-be-forgotten nightmare* if proper planning is not done and if you are not aware of the potential hazards awaiting. Those familiar section lines are not present in the mountains; those flat, level fields for forced landings are practically nonexistent; abrupt changes in wind direction and velocity occur; severe updrafts and downdrafts are common, particularly near or above abrupt changes of terrain such as cliffs or rugged areas; even the clouds look different and can build up with startling rapidity. Mountain flying need not be hazardous if you follow the recommendations below:

6.1.1 File a Flight Plan. Plan your route to avoid topography which would prevent a safe forced landing. The route should be over populated areas and well known mountain passes. Sufficient altitude should be maintained to permit gliding to a safe landing in the event of engine failure.

6.1.2 Don't fly a light aircraft when the winds aloft, at your proposed altitude, exceed 35 miles per hour. Expect the winds to be of much greater velocity over mountain passes than reported a few miles from them. Approach mountain passes with as much altitude as possible. Downdrafts of from 1,500 to 2,000 feet per minute are not uncommon on the leeward side.

6.1.3 Don't fly near or above abrupt changes in terrain. Severe turbulence can be expected, especially in high wind conditions.

6.1.4 Understand Mountain Obscuration. The term Mountain Obscuration (MTOS) is used to describe a visibility condition that is distinguished from IFR because ceilings, by definition, are described as "above ground level" (AGL). In mountainous terrain clouds can form at altitudes significantly higher than the weather reporting station and at the same time nearby mountaintops may be obscured by low visibility. In these areas the ground level can also vary greatly over a small area.

Beware if operating VFR−on−top. You could be operating closer to the terrain than you think because the tops of mountains are hidden in a cloud deck below. MTOS areas are identified daily on The Aviation Weather Center located at:
http://www.aviationweather.gov.

6.2 Some canyons run into a dead end. Don't fly so far up a canyon that you get trapped. ALWAYS BE ABLE TO MAKE A 180 DEGREE TURN.

6.3 VFR flight operations may be conducted at night in mountainous terrain with the application of sound judgment and common sense. Proper pre−flight planning, giving ample consideration to winds and weather, knowledge of the terrain and pilot experience in mountain flying are prerequisites for safety of flight. Continuous visual contact with the surface and obstructions is a major concern and flight operations under an overcast or in the vicinity of clouds should be approached with extreme caution.

6.4 When landing at a high altitude field, the same indicated airspeed should be used as at low elevation fields. Remember: that due to the less dense air at altitude, this same indicated airspeed actually results in a higher true airspeed, a faster landing speed, and more important, a longer landing distance. During gusty wind conditions which often prevail at high altitude fields, a power approach and power landing is recommended. Additionally, due to the faster groundspeed, your takeoff distance will increase considerably over that required at low altitudes.

6.5 Effects of Density Altitude. Performance figures in the aircraft owner's handbook for length of takeoff run, horsepower, rate of climb, etc., are generally based on standard atmosphere conditions (59°F, pressure 29.92 inches of mercury) at sea level. However, inexperienced pilots as well as experienced pilots may run into trouble when they encounter an altogether different set of conditions. This is particularly true in hot weather and at higher elevations. Aircraft operations at altitudes above sea level and at higher than standard temperatures are commonplace in mountainous area. Such operations quite often result in a drastic reduction of aircraft performance capabilities because of the changing air density. Density altitude is a measure of air density. It is not to be confused with pressure altitude − true altitude or absolute altitude. It is not to be used as a height reference, but as a determining criteria in the performance capability of an aircraft. Air density decreases with altitude. As air density decreases, density altitude increases. The further effects of high temperature and high humidity are cumulative, resulting in an increasing high density altitude condition. High density altitude reduces all aircraft performance parameters. To the pilot, this means that the normal horsepower output is reduced, propeller efficiency is reduced and a higher true airspeed is required to sustain the aircraft throughout its operating parameters. It means an increase in runway length requirements for takeoff and landings, and a decreased rate of climb. An average small airplane, for example, requiring 1,000 feet for takeoff at sea level under standard atmospheric conditions will require a takeoff run of approximately 2,000 at an operational altitude of 5,000 feet.

NOTE−
A turbo−charged aircraft engine provides some slight advantage in that it provides sea level horsepower up to a specified altitude above sea level.

6.6 Density Altitude Advisories. At airports with elevations of 2,000 feet and higher, control towers and FSSs will broadcast the advisory "Check Density Altitude" when the temperature reaches a predetermined level. These advisories will be broadcast on appropriate tower frequencies or, where available, ATIS. FSSs will broadcast these advisories as a part of Airport Advisory Service, and on TWEB.

6.6.1 These advisories are provided by air traffic facilities, as a reminder to pilots that high temperatures and high field elevations will cause significant changes in aircraft characteristics. The pilot retains the responsibility to compute density altitude, when appropriate, as a part of preflight duties.

NOTE−
All FSSs will compute the current density altitude upon request.

7. Use of Runway Half−way Signs at Unimproved Airports

7.1 When installed, runway half−way signs provide the pilot with a reference point to judge takeoff acceleration trends. Assuming that the runway length is appropriate for takeoff (considering runway condition and slope, elevation, aircraft weight, wind, and temperature), typical takeoff acceleration should allow the airplane to reach 70 percent of lift−off airspeed by the midpoint of the runway. The "rule of thumb" is that should airplane acceleration not allow the airspeed to reach this value by the midpoint, the takeoff should be aborted, as it may not be possible to liftoff in the remaining runway.

7.2 Several points are important when considering using this “rule of thumb”:

7.2.1 Airspeed indicators in small airplanes are not required to be evaluated at speeds below stalling, and may not be usable at 70 percent of liftoff airspeed.

7.2.2 This “rule of thumb” is based on a uniform surface condition. Puddles, soft spots, areas of tall and/or wet grass, loose gravel, etc., may impede acceleration or even cause deceleration. Even if the airplane achieves 70 percent of liftoff airspeed by the midpoint, the condition of the remainder of the runway may not allow further acceleration. The entire length of the runway should be inspected prior to takeoff to ensure a usable surface.

7.2.3 This “rule of thumb” applies only to runway required for actual liftoff. In the event that obstacles affect the takeoff climb path, appropriate distance must be available after liftoff to accelerate to best angle of climb speed and to clear the obstacles. This will, in effect, require the airplane to accelerate to a higher speed by midpoint, particularly if the obstacles are close to the end of the runway. In addition, this technique does not take into account the effects of upslope or tailwinds on takeoff performance. These factors will also require greater acceleration than normal and, under some circumstances, prevent takeoff entirely.

7.2.4 Use of this “rule of thumb” does not alleviate the pilot’s responsibility to comply with applicable Federal Aviation Regulations, the limitations and performance data provided in the FAA approved Airplane Flight Manual (AFM), or, in the absence of an FAA approved AFM, other data provided by the aircraft manufacturer.

7.3 In addition to their use during takeoff, runway half−way signs offer the pilot increased awareness of his or her position along the runway during landing operations.

NOTE−
No FAA standard exists for the appearance of the runway half−way sign. FIG ENR 5.7−1 shows a graphical depiction of a typical runway half−way sign.

FIG ENR 5.7−1
Typical Runway Half−way Sign

8. Mountain Wave

8.1 Many pilots go all their lives without understanding what a mountain wave is. Quite a few have lost their lives because of this lack of understanding. One need not be a licensed meteorologist to understand the mountain wave phenomenon.

8.2 Mountain waves occur when air is being blown over a mountain range or even the ridge of a sharp bluff area. As the air hits the upwind side of the range, it starts to climb, thus creating what is generally a smooth updraft which turns into a turbulent downdraft as the air passes the crest of the ridge. From this point, for many miles downwind, there will be a series of downdrafts and updrafts. Satellite photos of the Rockies have shown mountain waves extending as far as 700 miles downwind of the range. Along the east coast area, such photos of the Appalachian chain have picked up the mountain wave phenomenon over a hundred miles eastward. All it takes to form a mountain wave is wind blowing across the range at 15 knots or better at an intersection angle of not less than 30 degrees.

8.3 Pilots from flatland areas should understand a few things about mountain waves in order to stay out of trouble. Approaching a mountain range from the upwind side (generally the west), there will usually be a smooth updraft; therefore, it is not quite as dangerous an area as the lee of the range. From the leeward side, it is always a good idea to add an extra thousand feet or so of altitude because downdrafts can exceed the climb capability of the aircraft. Never expect an updraft when approaching a mountain chain from the leeward. Always be prepared to cope with a downdraft and turbulence.

8.4 When approaching a mountain ridge from the downwind side, it is recommended that the ridge be approached at approximately a 45° angle to the horizontal direction of the ridge. This permits a safer retreat from the ridge with less stress on the aircraft should severe turbulence and downdraft be experienced. If severe turbulence is encountered, simultaneously reduce power and adjust pitch until aircraft approaches maneuvering speed, then adjust power and trim to maintain maneuvering speed and fly away from the turbulent area.

9. Seaplane Safety

9.1 Acquiring a seaplane class rating affords access to many areas not available to landplane pilots. Adding a seaplane class rating to your pilot certificate can be relatively uncomplicated and inexpensive. However, more effort is required to become a safe, efficient, competent "bush" pilot. The natural hazards of the backwoods have given way to modern man−made hazards. Except for the far north, the available bodies of water are no longer the exclusive domain of the airman. Seaplane pilots must be vigilant for hazards such as electric power lines, power, sail and rowboats, rafts, mooring lines, water skiers, swimmers, etc.

9.2 Seaplane pilots must have a thorough understanding of the right−of−way rules as they apply to aircraft versus other vessels. Seaplane pilots are expected to know and adhere to both the United States Coast Guard's (USCG) Navigation Rules, International−Inland, and Title 14 Code of Federal Regulations (CFR) Section 91.115, Right of Way Rules; Water Operations. The navigation rules of the road are a set of collision avoidance rules as they apply to aircraft on the water. A seaplane is considered a vessel when on the water for the purposes of these collision avoidance rules. In general, a seaplane on the water must keep well clear of all vessels and avoid impeding their navigation. The CFR requires, in part, that aircraft operating on the water ". . . shall, insofar as possible, keep clear of all vessels and avoid impeding their navigation and shall give way to any vessel or other aircraft that is given the right of way . . . ." This means that a seaplane should avoid boats and commercial shipping when on the water. If on a collision course, the seaplane should slow, stop, or maneuver to the right, away from the bow of the oncoming vessel. Also, while on the surface with an engine running, an aircraft must give way to all nonpowered vessels. Since a seaplane in the water may not be as maneuverable as one in the air, the aircraft on the water has right−of−way over one in the air, and one taking off has right−of−way over one landing. A seaplane is exempt from the USCG safety equipment requirements, including the requirements for Personal Floatation Devices (PFD). Requiring seaplanes on the water to comply with USCG equipment requirements in addition to the FAA equipment requirements would be an unnecessary burden on seaplane owners and operators.

9.3 Unless they are under Federal jurisdiction, navigable bodies of water are under the jurisdiction of the state, or in a few cases, privately owned. Unless they are specifically restricted, aircraft have as much right to operate on these bodies of water as other vessels. To avoid problems, check with Federal or local officials in advance of operating on unfamiliar waters. In addition to the agencies listed in TBL ENR 5.7−1, the nearest Flight Standards District Office can usually offer some practical suggestions as well as regulatory information. If you land on a restricted body of water because of an inflight emergency, or in ignorance of the restrictions you have violated, report as quickly as practical to the nearest local official having jurisdiction and explain your situation.

ENR 6.2 Special Operations

1. Offshore Helicopter Operations

1.1 Introduction

1.1.1 The offshore environment offers unique applications and challenges for helicopter pilots. The mission demands, the nature of oil and gas exploration and production facilities, and the flight environment (weather, terrain, obstacles, traffic), demand special practices, techniques and procedures not found in other flight operations. Several industry organizations have risen to the task of reducing risks in offshore operations, including the Helicopter Safety Advisory Conference (HSAC) (**http://www.hsac.org**), and the Offshore Committee of the Helicopter Association International (HAI) (**http://www.rotor.com**). The following recommended practices for offshore helicopter operations are based on guidance developed by HSAC for use in the Gulf of Mexico, and provided here with their permission. While not regulatory, these recommended practices provide aviation and oil and gas industry operators with useful information in developing procedures to avoid certain hazards of offshore helicopter operations.

NOTE−
*Like all aviation practices, these recommended practices are under constant review. Any questions or feedback concerning these recommended procedures may be directed to the HSAC through the feedback feature of the HSAC web site (**http://www.hsac.org**).*

1.2 Passenger Management on and about Heliport Facilities

1.2.1 Background. Several incidents involving offshore helicopter passengers have highlighted the potential for incidents and accidents on and about the heliport area. The following practices will minimize risks to passengers and others involved in heliport operations.

1.2.2 Recommended Practices

1.2.2.1 Heliport facilities should have a designated and posted passenger waiting area which is clear of the heliport, heliport access points, and stairways.

1.2.2.2 Arriving passengers and cargo should be unloaded and cleared from the heliport and access route prior to loading departing passengers and cargo.

1.2.2.3 Where a flight crew consists of more than one pilot, one crewmember should supervise the unloading/loading process from outside the aircraft.

1.2.2.4 Where practical, a designated facility employee should assist with loading/unloading, etc.

1.3 Crane−Helicopter Operational Procedures

1.3.1 Background. Historical experience has shown that catastrophic consequences can occur when industry safe practices for crane/helicopter operations are not observed. The following recommended practices are designed to minimize risks during crane and helicopter operations.

1.3.2 Recommended Practices

1.3.2.1 Personnel awareness

a) Crane operators and pilots should develop a mutual understanding and respect of the others' operational limitations and cooperate in the spirit of safety;

b) Pilots need to be aware that crane operators sometimes cannot release the load to cradle the crane boom, such as when attached to wire line lubricators or supporting diving bells; and

c) Crane operators need to be aware that helicopters require warm up before takeoff, a two−minute cool down before shutdown, and cannot circle for extended lengths of time because of fuel consumption.

1.3.2.2 It is recommended that when helicopters are approaching, maneuvering, taking off, or running on the heliport, cranes be shutdown and the operator leave the cab. Cranes not in use must have their booms cradled, if feasible. If in use, the crane's boom(s) are to be pointed away from the heliport and the crane shutdown for helicopter operations.

1.3.2.3 Pilots will not approach, land on, takeoff, or have rotor blades turning on heliports of structures not complying with the above practice.

1.3.2.4 It is recommended that cranes on offshore platforms, rigs, vessels, or any other facility, which could interfere with helicopter operations (including approach/departure paths):

a) Be equipped with a red rotating beacon or red high intensity strobe light connected to the system powering the crane, indicating the crane is under power;

b) Be designed to allow the operator a maximum view of the helideck area and should be equipped with wide−angle mirrors to eliminate blind spots; and

c) Have their boom tips, headache balls, and hooks painted with high visibility international orange.

1.4 Helicopter/Tanker Operations

1.4.1 Background. The interface of helicopters and tankers during shipboard helicopter operations is complex and may be hazardous unless appropriate procedures are coordinated among all parties. The following recommended practices are designed to minimize risks during helicopter/tanker operations.

1.4.2 Recommended Practices

1.4.2.1 Management, flight operations personnel, and pilots should be familiar with and apply the operating safety standards set forth in "Guide to Helicopter/Ship Operations", International Chamber of Shipping, Third Edition, 5−89 (as amended), establishing operational guidelines/standards and safe practices sufficient to safeguard helicopter/tanker operations.

1.4.2.2 Appropriate plans, approvals, and communications must be accomplished prior to reaching the vessel, allowing tanker crews sufficient time to perform required safety preparations and position crew members to receive or dispatch a helicopter safely.

1.4.2.3 Appropriate approvals and direct communications with the bridge of the tanker must be maintained throughout all helicopter/tanker operations.

1.4.2.4 Helicopter/tanker operations, including landings/departures, must not be conducted until the helicopter pilot−in−command has received and acknowledged permission from the bridge of the tanker.

1.4.2.5 Helicopter/tanker operations must not be conducted during product/cargo transfer.

1.4.2.6 Generally, permission will not be granted to land on tankers during mooring operations or while maneuvering alongside another tanker.

1.5 Helideck/Heliport Operational Hazard Warning(s) Procedures

1.5.1 Background

1.5.1.1 A number of operational hazards can develop on or near offshore helidecks or onshore heliports that can be minimized through procedures for proper notification or visual warning to pilots. Examples of hazards include but are not limited to:

a) Perforating operations: subparagraph 1.6.

b) H_2S gas presence: subparagraph 1.7.

c) Gas venting: subparagraph 1.8; or,

d) Closed helidecks or heliports: subparagraph 1.9 (unspecified cause).

1.5.1.2 These and other operational hazards are currently minimized through timely dissemination of a written Notice to Airmen (NOTAM) for pilots by helicopter companies and operators. A NOTAM provides a written description of the hazard, time and duration of occurrence, and other pertinent information. ANY POTENTIAL HAZARD should be communicated to helicopter operators or company aviation departments as early as possible to allow the NOTAM to be activated.

1.5.1.3 To supplement the existing NOTAM procedure and further assist in reducing these hazards, a standardized visual signal(s) on the helideck/heliport will provide a positive indication to an approaching helicopter of the status of the landing area. Recommended Practice(s) have been developed to reinforce the NOTAM procedures and standardize visual signals.

PART 3 − AERODROMES (AD)

AD 0.

AD 0.1 Preface − Not applicable
AD 0.2 Record of AIP Amendments − See GEN 0.2−1
AD 0.3 Record of AIP Supplements − Not applicable

AD 0.4 Checklist of Pages

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AD 0.5 List of Hand Amendments to the AIP − Not applicable

AD 1. AERODROMES − INTRODUCTION

AD 1.1 Aerodrome Availability

1. General Regulations Concerning Airport Use

1.1 International arrivals with scheduled passenger service are not permitted to land at any aerodrome not listed in this AIP except in cases of real emergency or where special permission has been granted.

1.2 The conditions under which aircraft may land, be parked, housed or otherwise dealt with at U.S. aerodromes is under the control of the aerodrome owner/operator. Conditions and fees pertaining to landing, parking, or storing are variable from aerodrome to aerodrome and are not published in the U.S. AIP.

2. Landings Made Elsewhere Than at International Aerodromes

2.1 Permission to land at airports other than "international" and "landing rights" airports may be obtained in some limited cases; however, advance arrangements (preferably in writing) must be made with the U.S. Customs office nearest the airport of intended arrival (see GEN 1). Advance notice of arrival is required as usual. Pilots should be aware that mileage and per diem costs may be accrued in addition to any overtime charges if applicable.

2.2 If an emergency landing is made elsewhere than at an international aerodrome or a designated alternate aerodrome, the pilot in command must report the landing as promptly as possible by telephone or the most convenient means to the nearest Customs office. He/she should keep all merchandise or baggage in a segregated place and should not permit any passenger or crewmember to depart the place of arrival or mingle with the public without official permission, unless it is necessary for preservation of life, health, or property.

3. Traffic of Persons and Vehicles on Aerodromes

3.1 The grounds of each aerodrome are divided into two zones:

3.1.1 A public zone comprising the part of the aerodrome open to the public; and

3.1.2 A restricted zone comprising the rest of the aerodrome.

3.2 Movement of Persons

3.2.1 Access to the restricted zone is authorized only under conditions prescribed by the rules governing the aerodrome as established by the officials responsible for aerodrome security.

3.2.2 The customs, security, immigration and health inspection offices and areas, and the premises assigned to transit traffic are normally accessible only to passengers, to staff members of the responsible authorities or airlines, and to authorized persons in pursuit of their duties.

3.2.3 The movement of persons having access to the restricted zone of the aerodrome is subject to the conditions prescribed by applicable air traffic and by the security regulations laid down by the person responsible for the management of the aerodrome.

3.3 Movement of Vehicles

3.3.1 The movement of vehicles in the restricted zone is strictly limited to vehicles driven or used by persons having official permission.

3.3.2 Drivers of vehicles, of whatever type, driving within the confines of the aerodrome, must respect the direction of traffic, the traffic signs, and the posted speed limits and generally comply with the provisions of the highway code and with instructions given by the competent authorities.

4. General Information and Aerodrome Lighting and Marking

4.1 Aerodrome lighting information is contained in paragraphs 12. through 16. Information on aerodrome marking aids and signs is contained in paragraph 17.

4.2 Designated international U.S. aerodromes with scheduled passenger service in large aircraft and certain airports designated as alternate service aerodromes are listed in , Aerodromes.

5. Aerodrome Administration

5.1 The administration of all airports is the responsibility of the aerodrome owner.

5.2 Ownership of aerodromes in the U.S. is vested in three different groups: the Federal Government, non−Federal governments, and private organizations or individuals. It is the policy of the U.S. Federal Government to have its aerodromes comply with ICAO Standards and Recommended Practices. Exceptions are noted as differences below and in GEN 1.7. Aerodromes owned by non−Federal governments and private organizations or individuals are encouraged to comply with International Standards and Recommended Practices in part through the regulation of aircraft operations into the aerodromes and in part through agreements under which Federal aid is made available for aerodrome development or improvement. Further compliance is by voluntary action on the part of the aerodrome owner.

6. Conditions of Availability

6.1 An aerodrome which is open for public use may be used by a particular aircraft upon consideration of the meteorological conditions existing at the time and provided that the aircraft's performance and load classification (runway weight−bearing classification) is consistent with the physical characteristics of the aerodrome.

6.2 Civil Use of Military Fields

6.2.1 Except at joint−use airfields, U.S. Army, Air Force, Navy, Marine Corps, and Coast Guard airfields are available for use by civil aircraft only with prior permission or in an emergency. An approved civil aircraft landing permit is required for use at all except Coast Guard airfields. With minor exceptions, authority to use military airfields is granted only to aircraft on official government business.

6.2.2 An application for a permit must be submitted to the appropriate military department a minimum of 30 days prior to the first intended landing. A permit application consists of Department of Defense Forms DD Form 2400, Civil Aircraft Certificate of Insurance; DD Form 2401, Civil Aircraft Landing Permit; and DD Form 2402, Hold Harmless Agreement.

6.2.3 Forms and instructions can be obtained from the following addresses.

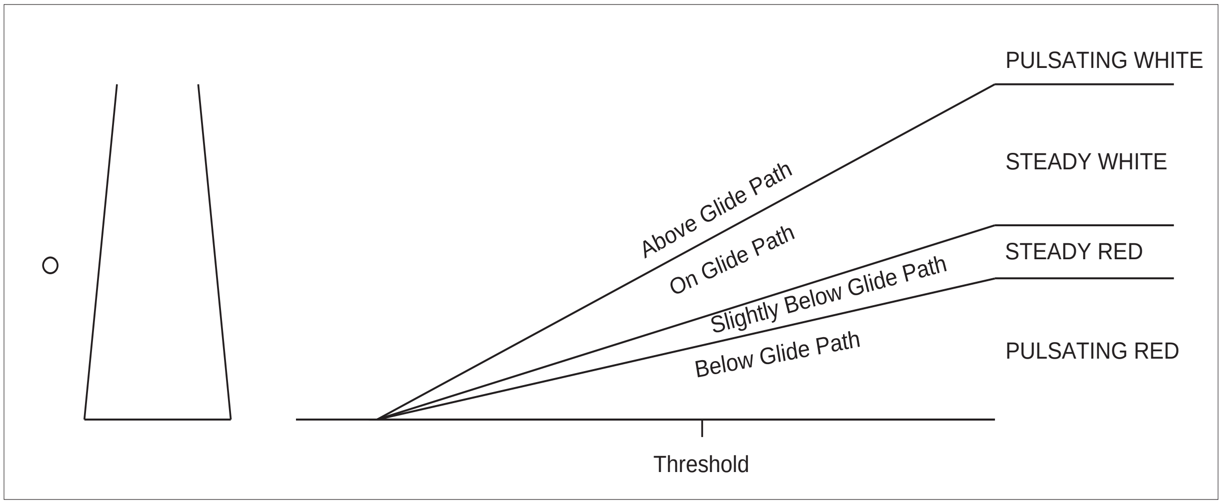
Army:	Director, USAASA ATTN: MOAS−AS Building 1466 9325 Gunston Road, Suite N319 Ft. Belvoir, VA 22060−5582 Telephone: (703) 806−4864
Air Force:	HQ USAF/XOO−CA 1480 Air Force Pentagon, Room 4D1010 Washington DC 20330−1480 Telephone: (703) 697−5967
Navy/ Marine Corps:	Commander Naval Facilities Engineering Command, Code 141JB 200 Stovall Street, Room 10N45 Alexandria, VA 22332−2300 Telephone: (703) 325−0475

At Coast Guard airfields, prior permission must be requested from the commanding officer of the airfield to be used.

7. Applicable ICAO Documents

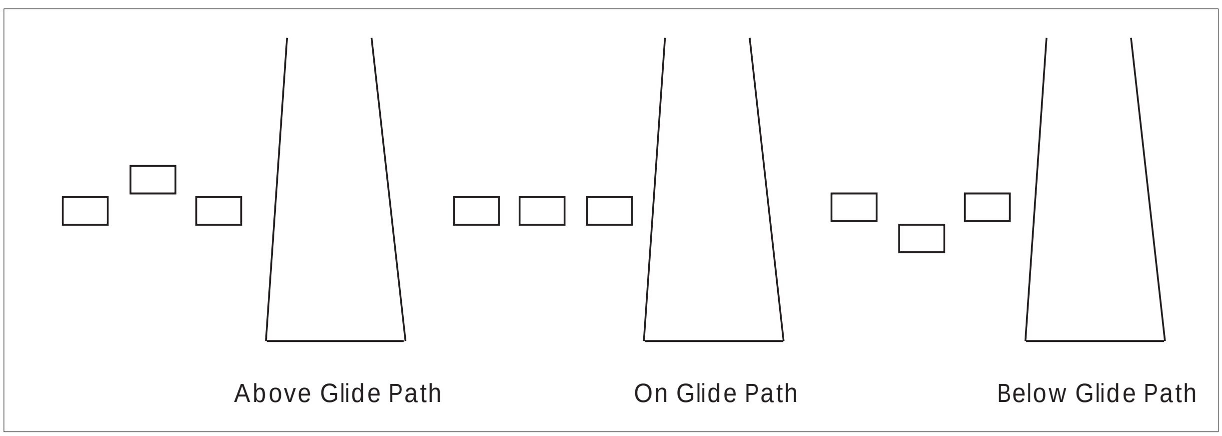
ICAO Standards and Recommended Practices contained in Annex 14 are applied with the exceptions noted in GEN 1.7, Differences from ICAO Standards, Recommended Practices and Procedures.

FIG AD 1.1−7
Pulsating Visual Approach Slope Indicator



NOTE−
Since the PVASI consists of a single light source which could possibly be confused with other light sources, pilots should exercise care to properly locate and identify the light signal.

FIG AD 1.1−8
Alignment of Elements



12.5.3 Taxiway Centerline Lead−Off Lights. Taxiway centerline lead−off lights provide visual guidance to persons exiting the runway. They are color−coded to warn pilots and vehicle drivers that they are within the runway environment or instrument landing system/microwave landing system (ILS/MLS) critical area, whichever is more restrictive. Alternate green and yellow lights are installed, beginning with green, from the runway centerline to one centerline light position beyond the runway holding position or ILS/MLS critical area holding position.

12.5.4 Taxiway Centerline Lead−On Lights. Taxiway centerline lead−on lights provide visual guidance to persons entering the runway. These "lead−on" lights are also color−coded with the same color pattern as lead−off lights to warn pilots and vehicle drivers that they are within the runway environment or instrument landing system/microwave landing system (ILS/MLS) critical area, whichever is more conservative. The fixtures used for lead−on lights are bidirectional, i.e., one side emits light for the lead−on function while the other side emits light for the lead−off function. Any fixture that emits yellow light for the lead−off function must also emit yellow light for the lead−on function. (See FIG AD 1.1−14.)

12.5.5 Land and Hold Short Lights. Land and hold short lights are used to indicate the hold short point on certain runways which are approved for Land and Hold Short Operations (LAHSO). Land and hold short lights consist of a row of pulsing white lights installed across the runway at the hold short point. Where installed, the lights will be on anytime LAHSO is in effect. These lights will be off when LAHSO is not in effect.

REFERENCE−
Section ENR 1.1, Paragraph 22, Pilot Responsibilities When Conducting Land and Hold Short Operations (LAHSO).

12.6 Runway Status Light (RWSL) System

12.6.1 Introduction.

12.6.1.1 RWSL is a fully automated system that provides runway status information to pilots and surface vehicle operators to clearly indicate when it is unsafe to enter, cross, takeoff from, or land on a runway. The RWSL system processes information from surveillance systems and activates Runway Entrance Lights (REL), Takeoff Hold Lights (THL), Runway Intersection Lights (RIL), and Final Approach Runway Occupancy Signal (FAROS) in accordance with the position and velocity of the detected surface traffic and approach traffic. REL, THL, and RIL are in-pavement light fixtures that are directly visible to pilots and surface vehicle operators. FAROS alerts arriving pilots that the approaching runway is occupied by flashing the Precision Approach Path Indicator (PAPI). FAROS may be implemented as an add-on to the RWSL system or implemented as a stand-alone system at airports without a RWSL system. RWSL is an independent safety enhancement that does not substitute for or convey an ATC clearance. Clearance to enter, cross, takeoff from, land on, or operate on a runway must still be received from ATC. Although ATC has limited control over the system, personnel do not directly use and may not be able to view light fixture activations and deactivations during the conduct of daily ATC operations.

12.6.2 Runway Entrance Lights (REL): The REL system is composed of flush mounted, in-pavement, unidirectional light fixtures that are parallel to and focused along the taxiway centerline and directed toward the pilot at the hold line. An array of REL lights include the first light at the hold line followed by a series of evenly spaced lights to the runway edge; one additional light at the runway centerline is in line with the last two lights before the runway edge (see FIG AD 1.1−9 and FIG AD 1.1−12). When activated, the red lights indicate that there is high speed traffic on the runway or there is an aircraft on final approach within the activation area.

12.6.2.1 REL Operating Characteristics − Departing Aircraft:

When a departing aircraft reaches a site adaptable speed of approximately 30 knots, all taxiway intersections with REL arrays along the runway ahead of the aircraft will illuminate (see FIG AD 1.1−9. As the aircraft approaches an REL equipped taxiway intersection, the lights at that intersection extinguish approximately 3 to 4 seconds before the aircraft reaches it. This allows controllers to apply "anticipated separation" to permit ATC to move traffic more expeditiously without compromising safety. After the aircraft is declared "airborne" by the system, all REL lights associated with this runway will extinguish.

12.6.2.2 REL Operating Characteristics − Arriving Aircraft:

When an aircraft on final approach is approximately 1 mile from the runway threshold, all sets of taxiway REL light arrays that intersect the runway illuminate. The distance is adjustable and can be configured for specific operations at particular airports. Lights extinguish at each equipped taxiway intersection approximately 3 to 4 seconds before the aircraft reaches it to apply anticipated separation until the aircraft has slowed to approximately 80 knots (site adjustable parameter). Below 80 knots, all arrays that are not within 30 seconds of the aircraft's forward path are extinguished. Once the arriving aircraft slows to approximately 34 knots (site adjustable parameter), it is declared to be in a taxi state, and all lights extinguish.

12.6.2.3 What a pilot would observe: A pilot at or approaching the hold line to a runway will observe RELs illuminate and extinguish in reaction to an aircraft or vehicle operating on the runway, or an arriving aircraft operating less than 1 mile from the runway threshold.

12.6.2.4 When a pilot observes the red lights of the REL, that pilot will stop at the hold line or remain stopped. The pilot will then contact ATC for resolution if the clearance is in conflict with the lights. Should pilots note illuminated lights under circumstances when remaining clear of the runway is impractical for safety reasons (for example, aircraft is already on the runway), the crew should proceed according to their best judgment while understanding the illuminated lights indicate the runway is unsafe to enter or cross. Contact ATC at the earliest possible opportunity.

12.6.3 Takeoff Hold Lights (THL) : The THL system is composed of flush mounted, in-pavement, unidirectional light fixtures in a double longitudinal row aligned either side of the runway centerline lighting. Fixtures are focused toward the arrival end of the runway at the "line up and wait" point. THLs extend for 1,500 feet in front of the holding aircraft starting at a point 375 feet from the departure threshold (see FIG AD 1.1−13). Illuminated red lights provide a signal, to an aircraft in position for takeoff or rolling, that it is unsafe to takeoff because the runway is occupied or about to be occupied by another aircraft or ground vehicle. Two aircraft, or a surface vehicle and an aircraft, are required for the lights to illuminate. The departing aircraft must be in position for takeoff or beginning takeoff roll. Another aircraft or a surface vehicle must be on or about to cross the runway.

12.6.3.1 THL Operating Characteristics − Departing Aircraft:

THLs will illuminate for an aircraft in position for departure or departing when there is another aircraft or vehicle on the runway or about to enter the runway (see FIG AD 1.1−9.) Once that aircraft or vehicle exits the runway, the THLs extinguish. A pilot may notice lights extinguish prior to the downfield aircraft or vehicle being completely clear of the runway but still moving. Like RELs, THLs have an "anticipated separation" feature.

NOTE−
When the THLs extinguish, this is not clearance to begin a takeoff roll. All takeoff clearances will be issued by ATC.

12.6.3.2 What a pilot would observe: A pilot in position to depart from a runway, or has begun takeoff roll, will observe THLs illuminate in reaction to an aircraft or vehicle on the runway or entering or crossing it. Lights will extinguish when the runway is clear. A pilot may observe several cycles of illumination and extinguishing depending on the amount of crossing traffic.

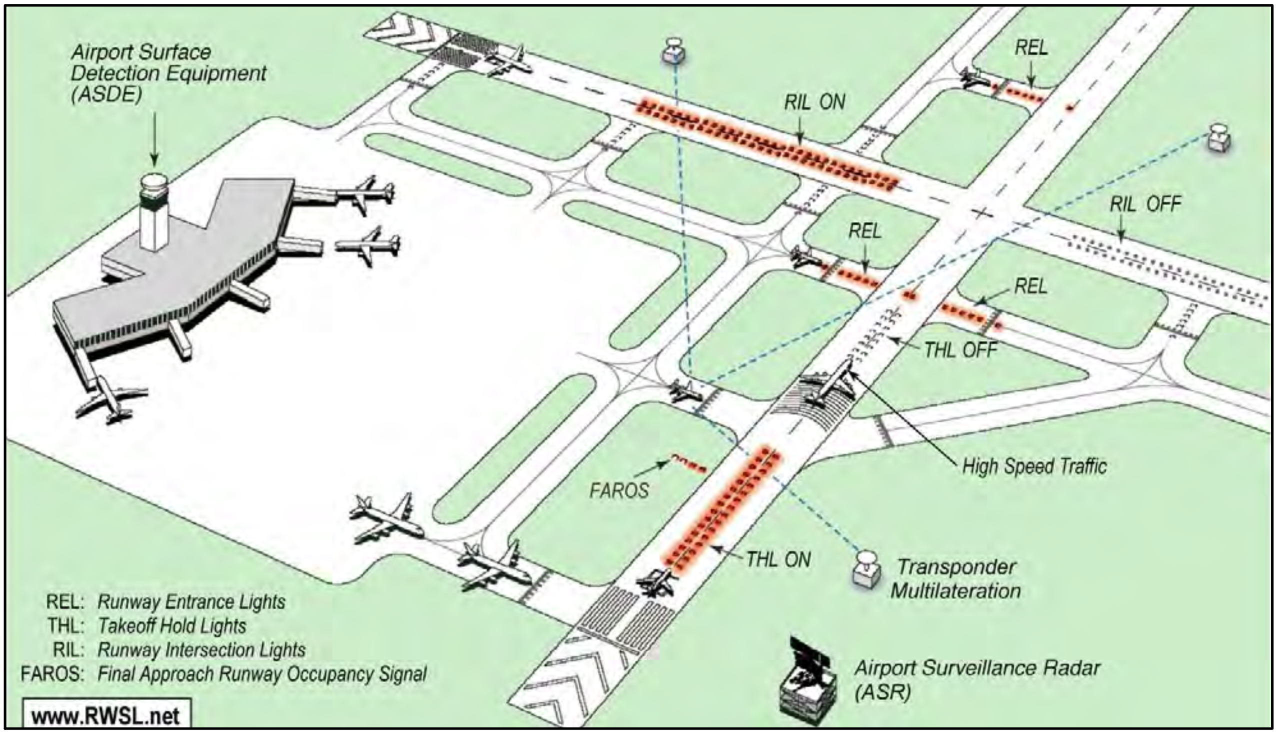
12.6.3.3 When a pilot observes the red light of the THLs, the pilot should safely stop if it's feasible or remain stopped. The pilot must contact ATC for resolution if any clearance is in conflict with the lights. Should pilots note illuminated lights while in takeoff roll and under circumstances when stopping is impractical for safety reasons, the crew should proceed according to their best judgment while understanding the illuminated lights indicate that continuing the takeoff is unsafe. Contact ATC at the earliest possible opportunity.

12.6.4 Runway Intersection Lights (RIL): The RIL system is composed of flush mounted, in−pavement, unidirectional light fixtures in a double longitudinal row aligned either side of the runway centerline lighting in the same manner as THLs. Their appearance to a pilot is similar to that of THLs. Fixtures are focused toward the arrival end of the runway, and they extend for 3,000 feet in front of an aircraft that is approaching an intersecting runway. They end at the Land and Hold Short Operation (LASHO) light bar or the hold short line for the intersecting runway.

12.6.4.1 RIL Operating Characteristics − Departing Aircraft:

RILs will illuminate for an aircraft departing or in position to depart when there is high speed traffic operating on the intersecting runway (see FIG AD 1.1−9). Note that there must be an aircraft or vehicle in a position to observe the RILs for them to illuminate. Once the conflicting traffic passes through the intersection, the RILs extinguish.

FIG AD 1.1−9
Runway Status Light System



12.6.4.2 RIL Operating Characteristics − Arriving Aircraft:

RILs will illuminate for an aircraft that has landed and is rolling out when there is high speed traffic on the intersecting runway that is ±5 seconds of meeting at the intersection. Once that traffic passes through the intersection, the RILs extinguish.

12.6.4.3 What a pilot would observe: A pilot departing or arriving will observe RILs illuminate in reaction to the high speed traffic operation on the intersecting runway. The lights will extinguish when that traffic has passed through the runway intersection.

12.6.4.4 Whenever a pilot observes the red light of the RIL array, the pilot will stop before the LAHSO stop bar or the hold line for the intersecting runway. If a departing aircraft is already at high speed in the takeoff roll when the RILs illuminate, it may be impractical to stop for safety reasons. The crew should safely operate according to their best judgment while understanding the illuminated lights indicate that continuing the takeoff is unsafe. Contact ATC at the earliest possible opportunity.

12.6.4.5 The Final Approach Runway Occupancy Signal (FAROS) is communicated by flashing of the Precision Approach Path Indicator (PAPI) (see FIG AD 1.1−9). When activated, the light fixtures of the PAPI flash or pulse to indicate to the pilot on an approach that the runway is occupied and that it may be unsafe to land.

a) FAROS Operating Characteristics:

If an aircraft or surface vehicle occupies a FAROS equipped runway, the PAPI(s) on that runway will flash. The glide path indication will not be affected, and the allotment of red and white PAPI lights observed by the pilot on approach will not change. The FAROS system will flash the PAPI when traffic enters the runway and there is an aircraft on approach and within 1.5 nautical miles of the landing threshold.

b) What a pilot would observe: A pilot on approach to the runway will observe the PAPI flash if there is traffic on the runway and will notice the PAPI ceases to flash when the traffic moves outside the hold short lines for the runway.

c) When a pilot observes a flashing PAPI at 500 feet above ground level (AGL), the contact height, the pilot must look for and acquire the traffic on the runway. At 300 feet AGL, the pilot must contact ATC for resolution if the FAROS indication is in conflict with the clearance. If the PAPI continues to flash, the pilot must execute an immediate "go around" and contact ATC at the earliest possible opportunity.

12.6.5 Pilot Actions

12.6.5.1 When operating at airports with RWSL, pilots will operate with the transponder "On" when departing the gate or parking area until it is shutdown upon arrival at the gate or parking area. This ensures interaction with the FAA surveillance systems such as ASDE-X which provide information to the RWSL system.

12.6.5.2 Pilots must always inform the ATCT when they have either stopped, are verifying a landing clearance, or are executing a go-around due to RWSL or FAROS indication that are in conflict with ATC instructions. Pilots must request clarification of the taxi, takeoff, or landing clearance.

12.6.5.3 Never cross over illuminated red lights. Under normal circumstances, RWSL will confirm the pilot's taxi or takeoff clearance previously issued by ATC. If RWSL indicates that it is unsafe to takeoff from, land on, cross, or enter a runway, immediately notify ATC of the conflict and re-confirm the clearance.

12.6.5.4 Do not proceed when lights have extinguished without an ATC clearance. RWSL verifies an ATC clearance, it does not substitute for an ATC clearance.

12.6.5.5 Never land if PAPI continues to flash. Execute a go around and notify ATC.

12.6.6 ATC Control of RWSL System:

12.6.6.1 Controllers can set in−pavement lights to one of five (5) brightness levels to assure maximum conspicuity under all visibility and lighting conditions. REL, THL, and RIL subsystems may be independently set.

12.6.6.2 System lights can be disabled should RWSL operations impact the efficient movement of air traffic or contribute, in the opinion of the assigned ATC Manager, to unsafe operations. REL, THL, RIL, and FAROS light fixtures may be disabled separately. Disabling of the FAROS subsystem does not extinguish PAPI lights or impact its glide path function. Whenever the system or a component is disabled, a NOTAM must be issued, and the Automatic Terminal Information System (ATIS) must be updated.

12.7 Stand-Alone Final Approach Runway Occupancy Signal (FAROS)

12.7.1 Introduction:

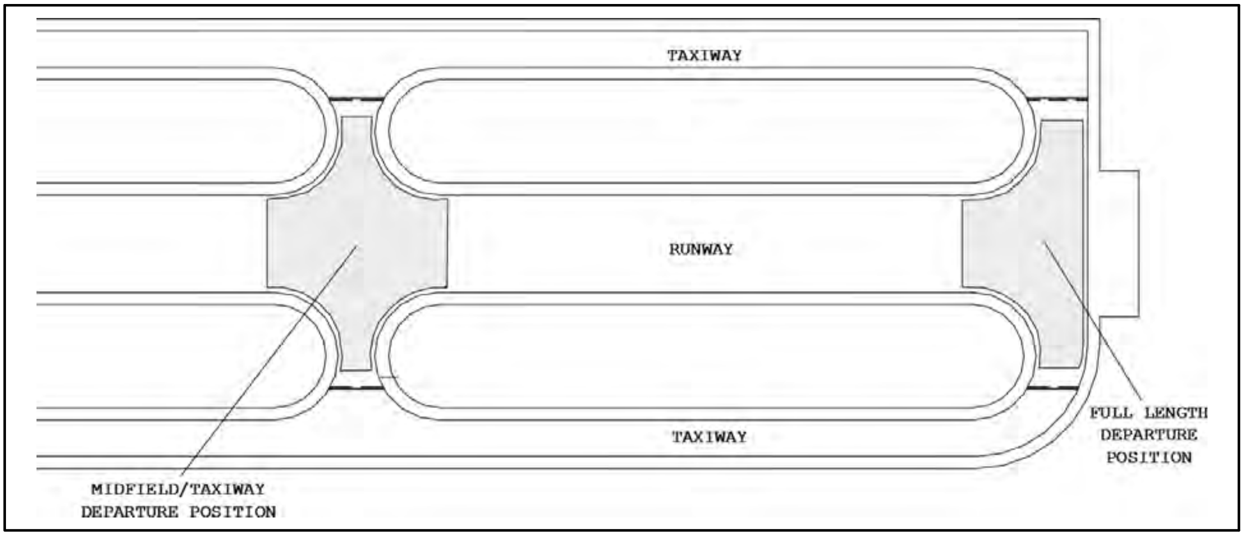
The stand-alone FAROS system is a fully automated system that provides runway occupancy status to pilots on final approach to indicate whether it may be unsafe to land. When an aircraft or vehicle is detected on the runway, the Precision Approach Path Indicator (PAPI) light fixtures flash as a signal to indicate that the runway is occupied and that it may be unsafe to land. The stand-alone FAROS system is activated by localized or comprehensive sensors detecting aircraft or ground vehicles occupying activation zones.

The stand-alone FAROS system monitors specific areas of the runway, called activation zones, to determine the presence of aircraft or ground vehicles in the zone (see FIG AD 1.1−10). These activation zones are defined as areas on the runway that are frequently occupied by ground traffic during normal airport operations and could present a hazard to landing aircraft. Activation zones may include the full-length departure position, the midfield departure position, a frequently crossed intersection, or the entire runway.

Pilots can refer to the airport specific FAROS pilot information sheet for activation zone configuration.

Clearance to land on a runway must be issued by Air Traffic Control (ATC). ATC personnel have limited control over the system and may not be able to view the FAROS signal.

FIG AD 1.1−10
FAROS Activation Zones



12.7.2 Operating Characteristics:

If an aircraft or ground vehicle occupies an activation zone on the runway, the PAPI light fixtures on that runway will flash. The glide path indication is not affected, i.e. the configuration of red and white PAPI lights observed by the pilot on approach does not change. The stand-alone FAROS system flashes the PAPI lights when traffic occupies an activation zone whether or not there is an aircraft on approach.

12.7.3 Pilot Observations:

A pilot on approach to the runway observes the PAPI lights flashing if there is traffic on the runway activation zones and notices the PAPI lights cease to flash when the traffic moves outside the activation zones.

A pilot on departure from the runway should disregard any observations of flashing PAPI lights.

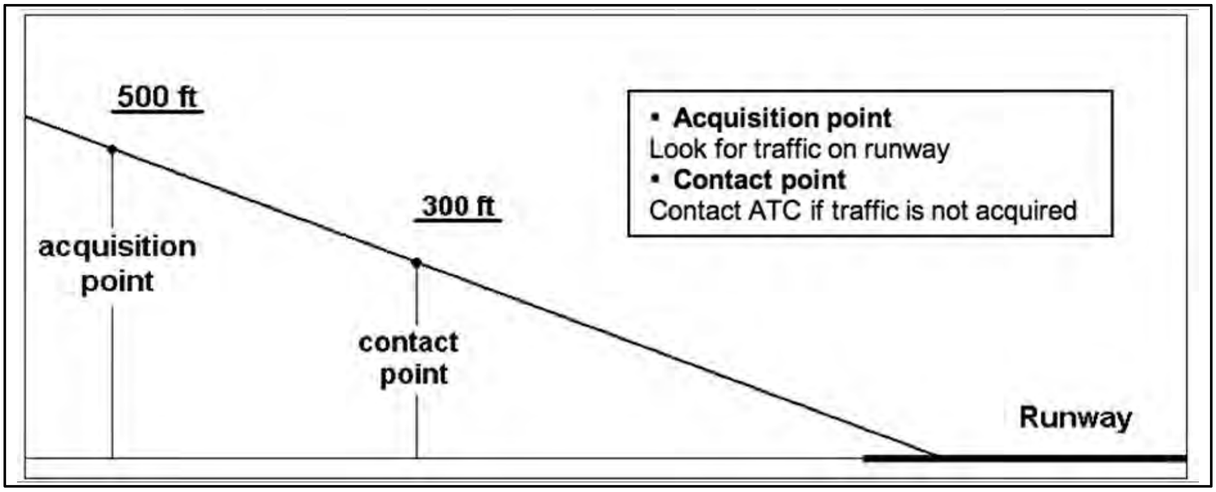
12.7.4 Pilot Actions:

When a pilot observes a flashing PAPI at 500 feet above ground level (AGL), the pilot must look for and attempt to acquire the traffic on the runway. At 300 feet AGL, the pilot must contact ATC for resolution if the FAROS indication is in conflict with the clearance (see FIG AD 1.1−11). If the PAPI lights continue to flash and the pilot cannot visually determine that it is safe to land, the pilot must execute an immediate "go around". As with operations at non-FAROS airports, it is always the pilot's responsibility to determine whether or not it is safe to continue with the approach and to land on the runway.

Pilots should inform the ATCT when they have executed a go around due to a FAROS indication that is in conflict with ATC instructions.

NOTE−
At this time, the stand-alone FAROS system is not widely implemented and is used for evaluation purposes.

FIG AD 1.1−11
FAROS Glide Slope Action Points



12.8 Control of Lighting Systems

12.8.1 Operation of approach light systems and runway lighting is controlled by the control tower (ATCT). At some locations the FSS may control the lights where there is no control tower in operation.

12.8.2 Pilots may request that lights be turned on or off. Runway edge lights, in−pavement lights and approach lights also have intensity controls which may be varied to meet the pilot's request. Sequenced flashing lights may be turned on and off. Some sequenced flashing system also have intensity control.

12.9 Pilot Control of Airport Lighting

12.9.1 Radio control of lighting is available at selected airports to provide airborne control of lights by keying the aircraft's microphone. Control of lighting system is often available at locations without specified hours for lighting or where there is no control tower or FSS, or when the control tower or FSS is closed (locations with a part−time tower or FSS). All lighting systems which are radio controlled at an airport, whether on a single runway or multiple runways, operate on the same radio frequency.
(See TBL AD 1.1−2 and TBL AD 1.1−3.)

12.9.2 With FAA approved systems, various combinations of medium intensity approach lights, runway lights, taxiways lights, VASI and/or REIL may be activated by radio control. On runways with both approach lighting and runway lighting (runway edge lights, taxiway lights, etc.) systems, the approach lighting system takes precedence for air−to−ground radio control over the runway lighting system which is set at a predetermined intensity step, based on expected visibility conditions. Runways without approach lighting may provide radio controlled intensity adjustments of runway edge lights. Other lighting systems, including VASI, REIL, and taxiway lights, may be either controlled with the runway edge lights or controlled independently of the runway edge lights.

12.9.3 The control system consists of a 3−step control responsive to 7, 5, and/or 3 microphone clicks. This 3−step control will turn on lighting facilities capable of either 3−step, 2−step or 1−step operation. The 3−step and 2−step lighting facilities can be altered in intensity, while the 1−step cannot. All lighting is illuminated for a period of 15 minutes from the most recent time of activation and may not be extinguished prior to end of the 15−minute period (except for 1−step and 2−step REILs which may be turned off when desired by keying the mike 5 or 3 times, respectively).

FIG AD 1.1−12
Runway Entrance Lights

FIG AD 1.1−13
Takeoff Hold Lights

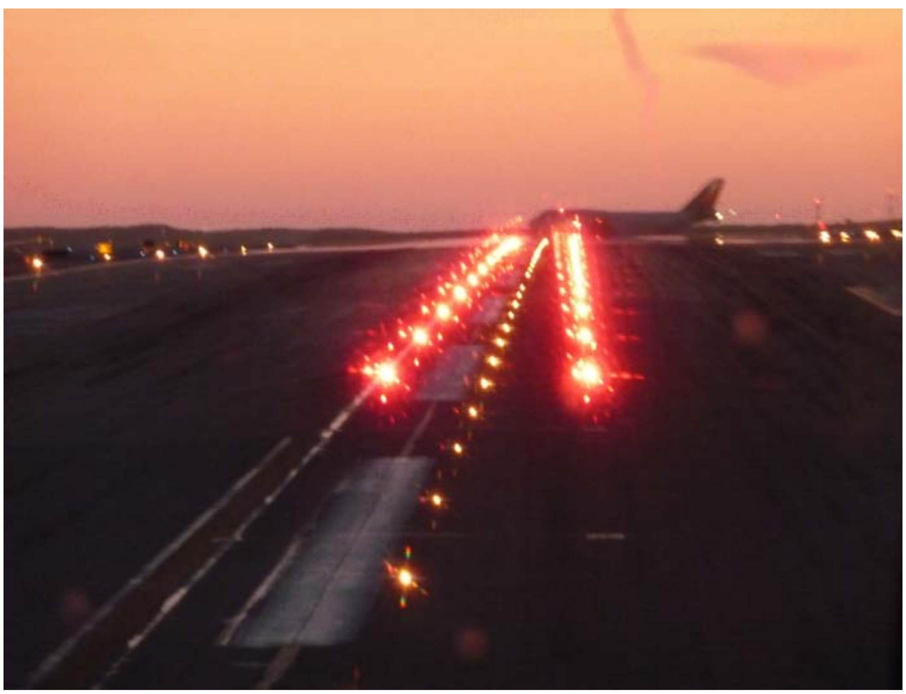


FIG AD 1.1−14
Taxiway Lead−On Light Configuration

TBL AD 1.1−2
Runways With Approach Lights

Lighting System	Number of Intensity Steps	Status During Nonuse Period	Intensity Step Selected Per Number of Mike Clicks		
			3 Clicks	**5 Clicks**	**7 Clicks**
Approach Lights (Med. Int.)	2	Off	Low	Low	High
Approach Lights (Med. Int.)	3	Off	Low	Med	High
MIRL	3	Off or Low	◆	◆	◆
HIRL	5	Off or Low	◆	◆	◆
VASI	2	Off	✯	✯	✯

NOTES: ◆Predetermined intensity step.
✯Low intensity for night use. High intensity for day use as determined by photocell control.

TBL AD 1.1−3

Runways Without Approach Lights

Lighting System	Number of Intensity Steps	Status During Nonuse Period	Intensity Step Selected Per Number of Mike Clicks		
			3 Clicks	5 Clicks	7 Clicks
MIRL	3	Off or Low	Low	Med.	High
HIRL	5	Off or Low	Step 1 or 2	Step 3	Step 5
LIRL	1	Off	On	On	On
VASI✯	2	Off	◆	◆	◆
REIL✯	1	Off	Off	On / Off	On
REIL✯	3	Off	Low	Med.	High
NOTES: ◆Low intensity for night use. High intensity for day use as determined by photocell control. ✯The control of VASI and/or REIL may be independent of other lighting systems.					

12.9.4 Suggested use is to always initially key the mike 7 times; this assures that all controlled lights are turned on to the maximum available intensity. If desired, adjustment can then be made, where the capability is provided, to a lower intensity (or the REIL turned off) by keying 5 and/or 3 times. Due to the close proximity of airports using the same frequency, radio controlled lighting receivers may be set at a low sensitivity requiring the aircraft to be relatively close to activate the system. Consequently, even when lights are on, always key mike as directed when overflying an airport of intended landing or just prior to entering the final segment of an approach. This will assure the aircraft is close enough to activate the system and a full 15 minutes lighting duration is available. Approved lighting systems may be activated by keying the mike (within 5 seconds) as indicated in TBL AD 1.1−4.

TBL AD 1.1−4

Radio Control System

Key Mike	Function
7 times within 5 seconds	Highest intensity available
5 times within 5 seconds	Medium or lower intensity (Lower REIL or REIL-off)
3 times within 5 seconds	Lowest intensity available (Lower REIL or REIL-off)

12.9.5 The Airport/Facility Directory contains the types of lighting, runway, and the frequency that is used to activate the system for all public use airports with FAA standard systems. Airports with instrument approach procedures include data on the approach chart identifying the light system(s), the runway on which they are installed, and the frequency that is used to activate the system(s).

NOTE−
Although the CTAF is used to activate the lights at many airports, other frequencies may also be used. The appropriate frequency for activating the lights on the airport is provided in the Airport/Facility Directory and the standard instrument approach procedures publications. It is not identified on the sectional charts.

12.9.6 Where the airport is not served by an instrument approach procedure, it may have either the standard FAA approach control system or an independent type system of different specification installed by the airport sponsor. The Airport/Facility Directory contains descriptions of pilot−controlled lighting systems for each airport having other than FAA approved systems, and explains the type lights, method of control, and operating frequency in clear text.

13. Airport/Heliport Beacons

13.1 Airport and heliport beacons have a vertical light distribution to make them most effective from one to ten degrees above the horizon; however, they can be seen well above and below this peak spread. The beacon may be an omnidirectional capacitor-discharge device, or it may rotate at a constant speed which produces the visual effect of flashes at regular intervals. Flashes may be one or two colors alternately. The total number of flashes are:

13.1.1 24 to 30 per minute for beacons marking airports, landmarks, and points on Federal airways.

13.1.2 30 to 45 per minute for beacons marking heliports.

13.2 The colors and color combinations of beacons are:

13.2.1 White and Green−Lighted land airport.

13.2.2 *Green alone−Lighted land airport.

13.2.3 White and Yellow−Lighted water airport.

13.2.4 *Yellow alone−Lighted water airport.

13.2.5 Green, Yellow, and White−Lighted heliport.

NOTE−
**Green alone or yellow alone is used only in connection with a white-and-green or white-and-yellow beacon display, respectively.*

13.3 Military airport beacons flash alternately white and green, but are differentiated from civil beacons by dual−peaked (two quick) white flashes between the green flashes.

13.4 In Class B, C, D, and E surface areas, operation of the airport beacon during the hours of daylight indicates that the ground visibility is less than 3 miles and/or the ceiling is less than 1,000 feet. An ATC clearance in accordance with 14 CFR Part 91 is required for landing, takeoff and flight in the traffic pattern. Pilots should not rely solely on the operation of the airport beacon to indicate if weather conditions are IFR or VFR. At locations with control towers, when controls are in the tower, ATC personnel turn the beacon on. At many airports, the airport beacon is turned on by a photoelectric cell or time clocks and ATC personnel cannot control it. There is no regulatory requirement for daylight operation, and it is the pilot's responsibility to comply with proper pre−flight planning in accordance with 14 CFR Section 91.103.

14. Taxiway Lights

14.1 Taxiway Edge Lights. Taxiway edge lights are used to outline the edges of taxiways during periods of darkness or restricted visibility conditions. These fixtures emit blue light.

NOTE−
At most major airports these lights have variable intensity settings and may be adjusted at pilot request or when deemed necessary by the controller.

14.2 Taxiway Centerline Lights. Taxiway centerline lights are used to facilitate ground traffic under low visibility conditions. They are located along the taxiway centerline in a straight line on straight portions, on the centerline of curved portions, and along designated taxiing paths in portions of runways, ramps, and apron areas. Taxiway centerline lights are steady burning and emit green light.

14.3 Clearance Bar Lights. Clearance bar lights are installed at holding positions on taxiways in order to increase the conspicuity of the holding position in low visibility conditions. They may also be installed to indicate the location of an intersecting taxiway during periods of darkness. Clearance bars consist of three in−pavement, steady−burning yellow lights.

14.4 Runway Guard Lights. Runway guard lights are installed at taxiway/runway intersections. They are primarily used to enhance the conspicuity of taxiway/runway intersections during low visibility conditions, but may be used in all weather conditions. Runway guard lights consist of either a pair of elevated flashing yellow lights installed on either side of the taxiway, or a row of in-pavement yellow lights installed across the entire taxiway, at the runway holding position marking.

NOTE−
Some airports may have a row of three or five in−pavement yellow lights installed at taxiway/runway intersections. They should not be confused with clearance bar lights described in paragraph 14.3 above.

14.5 Stop Bar Lights. Stop bar lights, when installed, are used to confirm the ATC clearance to enter or cross the active runway in low visibility conditions (below 1,200 feet Runway Visual Range). A stop bar consists of a row of red, unidirectional, steady−burning in-pavement lights installed across the entire taxiway at the runway holding position, and elevated steady−burning red lights on each side. A controlled stop bar is operated in conjunction with the taxiway centerline lead-on lights which extend from the stop bar toward the runway. Following the ATC clearance to proceed, the stop bar is turned off and the lead-on lights are turned on. The stop bar and lead-on lights are automatically reset by a sensor or backup timer.

CAUTION−
Pilots should never cross a red illuminated stop bar, even if an ATC clearance has been given to proceed onto or across the runway.

NOTE−
If after crossing a stop bar, the taxiway centerline lead−on lights inadvertently extinguish, pilots should hold their position and contact ATC for further instructions.

15. Air Navigation and Obstruction Lighting

15.1 Aeronautical Light Beacons

15.1.1 An aeronautical light beacon is a visual NAVAID displaying flashes of white and/or colored light to indicate the location of an airport, a heliport, a landmark, a certain point of a Federal airway in mountainous terrain, or an obstruction. The light used may be a rotating beacon or one or more flashing lights. The flashing lights may be supplemented by steady burning lights of lesser intensity.

15.1.2 The color or color combination display by a particular beacon and/or its auxiliary lights tell whether the beacon is indicating a landing place, landmark, point of the Federal airways, or an obstruction. Coded flashes of the auxiliary lights, if employed, further identify the beacon site.

15.2 Code Beacons and Course Lights

15.2.1 Code Beacons. The code beacon, which can be seen from all directions, is used to identify airports and landmarks. The code beacon flashes the three− or four−character airport identifier in International Morse Code six to eight times per minute. Green flashes are displayed for land airports while yellow flashes indicate water airports.

15.2.2 Course Lights. The course light, which can be seen clearly from only one direction, is used only with rotating beacons of the Federal Airway System; two course lights, back to back, direct coded flashing beams of light in either direction along the course of airway.

NOTE−
Airway beacons are remnants of the "lighted" airways which antedated the present electronically equipped federal airways system. Only a few of those beacons exist today to mark airway segments in remote mountain areas. Flashes in Morse code identify the beacon site.

15.3 Obstruction Lights

15.3.1 Obstructions are marked/lighted to warn airmen of their presence during daytime and nighttime conditions. They may be marked/lighted in any of the following combinations:

15.3.1.1 Aviation Red Obstruction Lights. Flashing aviation red beacons (20 to 40 flashes per minute) and steady burning aviation red lights during nighttime operation. Aviation orange and white paint is used for daytime marking.

15.3.1.2 Medium Intensity Flashing White Obstruction Lights. Medium intensity flashing white obstruction lights may be used during daytime and twilight with automatically selected reduced intensity for nighttime operation. When this system is used on structures 500 feet (153 m) AGL or less in height, other methods of marking and lighting the structure may be omitted. Aviation orange and white paint is always required for daytime marking on structures exceeding 500 feet (153 m) AGL. This system is not normally installed on structures less than 200 feet (61 m) AGL.

15.3.1.3 High Intensity White Obstruction Lights. Flashing high intensity white lights during daytime with reduced intensity for twilight and nighttime operation. When this type system is used, the marking of structures with red obstruction lights and aviation orange and white paint may be omitted.

15.3.1.4 Dual Lighting. A combination of flashing aviation red beacons and steady burning aviation red lights for nighttime operation and flashing high intensity white lights for daytime operation. Aviation orange and white paint may be omitted.

15.3.1.5 Catenary Lighting. Lighted markers are available for increased night conspicuity of high−voltage (69KV or higher) transmission line catenary wires. Lighted markers provide conspicuity both day and night.

15.3.2 Medium intensity omnidirectional flashing white lighting system provides conspicuity both day and night on catenary support structures. The unique sequential/simultaneous flashing light system alerts pilots of the associated catenary wires.

15.3.3 High intensity flashing white lights are being used to identify some supporting structures of overhead transmission lines located across rivers, chasms, gorges, etc. These lights flash in a middle, top, lower light sequence at approximately 60 flashes per minute. The top light is normally installed near the top of the supporting structure, while the lower light indicates the approximate lower portion of the wire span. The lights are beamed towards the companion structure and identify the area of the wire span.

15.3.4 High intensity flashing white lights are also employed to identify tall structures, such as chimneys and towers, and obstructions to air navigation. The lights provide a 360 degree coverage about the structure at 40 flashes per minute and consist of from one to seven levels of lights depending upon the height of the structure. Where more than one level is used, the vertical banks flash simultaneously.

16. Runway Lead−in Light System (RLLS)

16.1 The lead−in lighting system consists of a series of flashing lights installed at or near ground level to describe the desired course to a runway or final approach. Each group of lights is positioned and aimed so as to be conveniently sighted and followed from the approaching aircraft under conditions at or above approach minimums under consideration. The system may be curved, straight, or combination thereof, as required. The lead−in lighting system may be terminated at any approved approach lighting system, or it may be terminated at a distance from the landing threshold which is compatible with authorized visibility minimums permitting visual reference to the runway environment.

16.2 The outer portion uses groups of lights to mark segments of the approach path beginning at a point within easy visual range of a final approach fix. These groups are spaced close enough together (approximately one mile) to give continuous lead−in guidance. A group consists of at least three flashing lights in a linear or cluster configuration and may be augmented by steady burning lights where required. When practicable, groups flash in sequence toward runways. Each system is designed to suit local conditions and to provide the visual guidance intended. The design of all RLLS is compatible with the requirements of U.S. Standards for Terminal Instrument Procedures (TERPS) where such procedures are applied for establishing instrument minimums.

17. Airport Marking Aids and Signs

17.1 General

17.1.1 Airport pavement markings and signs provide information that is useful to a pilot during takeoff, landing, and taxiing.

17.1.2 Uniformity in airport markings and signs from one airport to another enhances safety and improves efficiency. Pilots are encouraged to work with the operators of the airports they use to achieve the marking and sign standards described in this section.

17.1.3 Pilots who encounter ineffective, incorrect, or confusing markings or signs on an airport should make the operator of the airport aware of the problem. These situations may also be reported under the Aviation Safety Reporting Program as described in ENR 1.16. Pilots may also report these situations to the FAA Regional Airports Division.

17.1.4 The markings and signs described in this section reflect the current FAA recommended standards.

REFERENCE−
AC 150/5340−1, Standards for Airport Markings.
AC 150/5340−18, Standards for Airport Sign Systems.

17.2 Airport Pavement Markings

17.2.1 General. For the purpose of this presentation the Airport Pavement Markings have been grouped into the four areas:

17.2.1.1 Runway Markings.

17.2.1.2 Taxiway Markings.

17.2.1.3 Holding Position Markings.

17.2.1.4 Other Markings.

17.2.2 Marking Colors. Markings for runways are white. Markings defining the landing area on a heliport are also white except for hospital heliports which use a red “H” on a white cross. Markings for taxiways, areas not intended for use by aircraft (closed and hazardous areas), and holding positions (even if they are on a runway) are yellow.

17.3 Runway Markings

17.3.1 General. There are three types of markings for runways: visual, non precision instrument, and precision instrument. TBL AD 1.1−5 identifies the marking elements for each type of runway, and TBL AD 1.1−6 identifies runway threshold markings.

17.3.2 Runway Designators. Runway numbers and letters are determined from the approach direction. The runway number is the whole number nearest one−tenth the magnetic azimuth of the centerline of the runway, measured clockwise from the magnetic north. The letters differentiate between left (L), right (R), or center (C), parallel runways, as applicable:

17.3.2.1 For two parallel runways "L" "R."

17.3.2.2 For three parallel runways "L" "C" "R."

17.3.3 Runway Centerline Marking. The runway centerline identifies the center of the runway and provides alignment guidance during takeoff and landing. The centerline consists of a line of uniformly spaced stripes and gaps.

17.3.4 Runway Aiming Point Marking. The aiming point marking serves as a visual aiming point for a landing aircraft. These two rectangular markings consist of a broad white stripe located on each side of the runway centerline and approximately 1,000 feet from the landing threshold.
(See FIG AD 1.1−15.)

17.3.5 Runway Touchdown Zone Markers. The touchdown zone markings identify the touchdown zone for landing operations and are coded to provide distance information in 500 feet (150 m) increments. These markings consist of groups of one, two, and three rectangular bars symmetrically arranged in pairs about the runway centerline as shown in FIG AD 1.1−15, Precision Instrument Runway Markings. For runways having touchdown zone markings on both ends, those pairs of markings which extend to within 900 feet (270 m) of the midpoint between the thresholds are eliminated.

TBL AD 1.1−5
Runway Marking Elements

Marking Element	Visual Runway	Nonprecision Instrument Runway	Precision Instrument Runway
Designation	X	X	X
Centerline	X	X	X
Threshold	X[1]	X	X
Aiming Point	X[2]	X	X
Touchdown Zone			X
Side Stripes			X

[1]On runways used, or intended to be used, by international commercial transports.

[2]On runways 4,000 feet (1200 m) or longer used by jet aircraft.

TBL AD 1.1−6
Number of Runway Threshold Stripes

Runway Width	Number of Stripes
60 feet (18 m)	4
75 feet (23 m)	6
100 feet (30 m)	8
150 feet (45 m)	12
200 feet (60 m)	16

17.3.6 Runway Side Stripe Marking. Runway side stripes delineate the edges of the runway. They provide a visual contrast between the runway and the abutting terrain or shoulders. Side stripes consist of continuous white stripes located on each side of the runway. (See FIG AD 1.1−19.)

17.3.7 Runway Shoulder Markings. Runway shoulder stripes may be used to supplement runway side stripes to identify pavement areas contiguous to the runway sides that are not intended for use by aircraft. Runway shoulder stripes are yellow.
(See FIG AD 1.1−17.)

17.3.8 Runway Threshold Markings. Runway threshold markings come in two configurations. They consist of either eight longitudinal stripes of uniform dimensions disposed symmetrically about the runway centerline, as shown in FIG AD 1.1−15, or the number of stripes is related to the runway width as indicated in TBL AD 1.1−6. A threshold marking helps identify the beginning of the runway that is available for landing. In some instances the landing threshold may be relocated or displaced.

17.3.8.1 Relocation of a Threshold. Sometimes construction, maintenance, or other activities require the threshold to be relocated towards the rollout end of the runway. (See FIG AD 1.1−18.) When a threshold is relocated, it closes not only a set portion of the approach end of a runway, but also shortens the length of the opposite direction runway. In these cases, a NOTAM should be issued by the airport operator identifying the portion of the runway that is closed; e.g., 10/28 W 900 CLSD. Because the duration of the relocation can vary from a few hours to several months, methods identifying the new threshold may vary. One common practice is to use a ten−foot wide white threshold bar across the width of the runway. Although the runway lights in the area between the old threshold and new threshold will not be illuminated, the runway markings in this area may or may not be obliterated, removed, or covered.

17.3.8.2 Displaced Threshold. A displaced threshold is a threshold located at a point on the runway other than the designated beginning of the runway. Displacement of a threshold reduces the length of runway available for landings. The portion of runway behind a displaced threshold is available for takeoffs in either direction and landings from the opposite direction. A ten−foot wide white threshold bar is located across the width of the runway at the displaced threshold. White arrows are located along the centerline in the area between the beginning of the runway and displaced threshold. White arrowheads are located across the width of the runway just prior to the threshold bar, as shown in FIG AD 1.1−19.

NOTE−
Airport operator. When reporting the relocation or displacement of a threshold, the airport operator should avoid language which confuses the two.

17.3.9 Demarcation Bar. A demarcation bar delineates a runway with a displaced threshold from a blast pad, stopway, or taxiway that precedes the runway. A demarcation bar is 3 feet (1 m) wide and yellow, since it is not located on the runway. (See FIG AD 1.1−20.)

17.3.10 Chevrons. These markings are used to show pavement areas aligned with the runway that are unusable for landing, takeoff, and taxiing. Chevrons are yellow. (See FIG AD 1.1−21).

17.3.11 Runway Threshold Bar. A threshold bar delineates the beginning of the runway that is available for landing when the threshold has been relocated or displaced. A threshold bar is 10 feet (3 m) in width and extends across the width of the runway, as shown in FIG AD 1.1−19.

18. Taxiway Markings

18.1 General. All taxiways should have centerline markings and runway holding position markings whenever they intersect a runway. Taxiway edge markings are present whenever there is a need to separate the taxiway from a pavement that is not intended for aircraft use or to delineate the edge of the taxiway. Taxiways may also have shoulder markings and holding position markings for Instrument Landing System/Microwave Landing System (ILS/MLS) critical areas, and taxiway/taxiway intersection markings.

18.2 Taxiway Centerline.

18.2.1 Normal Centerline. The taxiway centerline is a single continuous yellow line, 6 inches (15 cm) to 12 inches (30 cm) in width. This provides a visual cue to permit taxiing along a designated path. Ideally, the aircraft should be kept centered over this line during taxi. However, being centered on the taxiway centerline does not guarantee wingtip clearance with other aircraft or other objects.

18.2.2 Enhanced Centerline. At some airports, mostly the larger commercial service airports, an enhanced taxiway centerline will be used. The enhanced taxiway centerline marking consists of a parallel line of yellow dashes on either side of the normal taxiway centerline. The taxiway centerlines are enhanced for a maximum of 150 feet prior to a runway holding position marking. The purpose of this enhancement is to warn the pilot that he/she is approaching a runway holding position marking and should prepare to stop unless he/she has been cleared onto or across the runway by ATC.
(See FIG AD 1.1−22.)

18.3 Taxiway Edge Markings. Taxiway edge markings are used to define the edge of the taxiway. They are primarily used when the taxiway edge does not correspond with the edge of the pavement. There are two types of markings depending upon whether the aircraft is suppose to cross the taxiway edge:

18.3.1 Continuous Markings. These consist of a continuous double yellow line, with each line being at least 6 inches (15 cm) in width spaced 6 inches (15 cm) apart. They are used to define the taxiway edge from the shoulder or some other abutting paved surface not intended for use by aircraft.

18.3.2 Dashed Markings. These markings are used when there is an operational need to define the edge of a taxiway or taxilane on a paved surface where the adjoining pavement to the taxiway edge is intended for use by aircraft; e.g., an apron. Dashed taxiway edge markings consist of a broken double yellow line, with each line being at least 6 inches (15 cm) in width, spaced 6 inches (15 cm) apart (edge to edge). These lines are 15 feet (4.5 m) in length with 25−foot (7.5 m) gaps. (See FIG AD 1.1−23.)

18.4 Taxi Shoulder Markings. Taxiways, holding bays, and aprons are sometimes provided with paved shoulders to prevent blast and water erosion. Although shoulders may have the appearance of full strength pavement, they are not intended for use by aircraft and may be unable to support an aircraft. Usually the taxiway edge marking will define this area. Where conditions exist such as islands or taxiway curves that may cause confusion as to which side of the edge stripe is for use by aircraft, taxiway shoulder markings may be used to indicate the pavement is unusable. Taxiway shoulder markings are yellow. (See FIG AD 1.1−24.)

18.5 Surface Painted Taxiway Direction Signs. Surface painted taxiway direction signs have a yellow background with a black inscription. These signs are provided when it is not possible to provide taxiway direction signs at intersections or when it is necessary to supplement such signs. These markings are located adjacent to the centerline with signs indicating turns to the left being on the left side of the taxiway centerline and signs indicating turns to the right being on the right side of the centerline.
(See FIG AD 1.1−25.)

18.6 Surface Painted Location Signs. Surface painted location signs have a black background with a yellow inscription. When necessary, these markings are used to supplement location signs located along side the taxiway and assist the pilot in confirming the designation of the taxiway on which the aircraft is located. These markings are located on the right side of the centerline. (See FIG AD 1.1−25.)

18.7 Geographic Position Markings. These markings are located at points along low visibility taxi routes designated in the airport's Surface Movement Guidance Control System (SMGCS) plan. They are used to identify the location of taxiing aircraft during low visibility operations. Low visibility operations are those that occur when the runway visible range (RVR) is below 1,200 feet (360 m). They are positioned to the left of the taxiway centerline in the direction of taxiing. (See FIG AD 1.1−26.) The geographic position marking is a circle comprised of an outer black ring contiguous to a white ring with a pink circle in the middle. When installed on asphalt or other dark−colored pavements, the white ring and the black ring are reversed; i.e., the white ring becomes the outer ring and the black ring becomes the inner ring. It is designated with either a number or a number and letter. The number corresponds to the consecutive position of the marking on the route.

19. Holding Position Markings

19.1 Runway Holding Position Markings. For runways, these markings indicate where an aircraft is supposed to stop when approaching a runway. They consist of four yellow lines, two solid and two dashed, spaced six or twelve inches apart, and extending across the width of the taxiway or runway. The solid lines are always on the side where the aircraft is to hold. There are three locations where runway holding position markings are encountered.

19.1.1 Runway Holding Position Markings on Taxiways. These markings identify the locations on a taxiway where an aircraft is supposed to stop when it does not have clearance to proceed onto the runway. Generally, runway holding position markings also identify the boundary of the runway safety area for aircraft exiting the runway. The runway holding position markings are shown in FIG AD 1.1−27 and FIG AD 1.1−30. When instructed by ATC to, "Hold short of (runway "xx")," the pilot must stop so that no part of the aircraft extends beyond the runway holding position marking. When approaching the runway, a pilot should not cross the runway holding position marking without ATC clearance at a controlled airport, or without making sure of adequate separation from other aircraft at uncontrolled airports. An aircraft exiting a runway is not clear of the runway until all parts of the aircraft have crossed the applicable holding position marking.

REFERENCE−
ENR 1.1, Exiting the Runway After Landing, paragraph 23.

19.1.2 Runway Holding Position Markings on Runways. These markings are installed on runways only if the runway is normally used by air traffic control for "land, hold short" operations or taxiing operations and have operational significance only for those two types of operations. A sign with a white inscription on a red background is installed adjacent to these holding position markings. (See FIG AD 1.1−28.) The holding position markings are placed on runways prior to the intersection with another runway, or some designated point. Pilots receiving instructions "cleared to land, runway "xx"" from air traffic control are authorized to use the entire landing length of the runway and should disregard any holding position markings located on the runway. Pilots receiving and accepting instructions "cleared to land runway "xx," hold short of runway "yy"" from air traffic control must either exit runway "xx," or stop at the holding position prior to runway "yy."

19.1.3 Taxiways Located in Runway Approach Areas. These markings are used at some airports where it is necessary to hold an aircraft on a taxiway located in the approach or departure area of a runway so that the aircraft does not interfere with the operations on that runway. This marking is collocated with the runway approach area holding position sign. When specifically instructed by ATC "Hold short of (runway xx approach area)" the pilot should stop so no part of the aircraft extends beyond the holding position marking. (See paragraph 21.2.2, Runway Approach Area Holding Position Sign, and FIG AD 1.1−29, Taxiways Located in Runway Approach Area.)

19.2 Holding Position Markings for Instrument Landing System (ILS). Holding position markings for ILS/MLS critical areas consist of two yellow solid lines spaced two feet apart connected by pairs of solid lines spaced ten feet apart extending across the width of the taxiway as shown in FIG AD 1.1−30. A sign with an inscription in white on a red background is installed adjacent to these hold position markings. When the ILS critical area is being protected, the pilot should stop so no part of his/her aircraft extends beyond the holding position marking. When approaching the holding position marking, a pilot should not cross the marking without ATC clearance. The ILS critical area is not clear until all parts of the aircraft have crossed the applicable holding position marking.

REFERENCE−
ENR 4.1, Instrument Landing System (ILS), paragraph 7.

19.3 Holding Position Markings for Taxiway/Taxiway Intersections. Holding position markings for taxiway/taxiway intersections consist of a single dashed line extending across the width of the taxiway as shown in FIG AD 1.1−31. They are installed on taxiways where air traffic control normally holds aircraft short of a taxiway intersection. When instructed by ATC "hold short of (taxiway)" the pilot should stop so no part of his/her aircraft extends beyond the holding position marking. When the marking is not present, the pilot should stop the aircraft at a point which provides adequate clearance from an aircraft on the intersecting taxiway.

19.4 Surface Painted Holding Position Signs. Surface painted holding position signs have a red background with a white inscription and supplement the signs located at the holding position. This type of marking is normally used where the width of the holding position on the taxiway is greater than 200 feet (60 m). It is located to the left side of the taxiway centerline on the holding side and prior to the holding position marking. (See FIG AD 1.1−25.)

20. Other Markings

20.1 Vehicle Roadway Markings. The vehicle roadway markings are used when necessary to define a pathway for vehicle operations on or crossing areas that are also intended for aircraft. These markings consist of a white solid line to delineate each edge of the roadway and a dashed line to separate lanes within the edges of the roadway. In lieu of the solid lines, zipper markings may be used to delineate the edges of the vehicle roadway. (See FIG AD 1.1−32.) Details of the zipper markings are shown in FIG AD 1.1−33.

20.2 VOR Receiver Checkpoint Markings. The VOR receiver checkpoint marking allows the pilot to check aircraft instruments with navigational aid signals. It consists of a painted circle with an arrow in the middle; the arrow is aligned in the direction of the checkpoint azimuth. This marking, and an associated sign, is located on the airport apron or taxiway at a point selected for easy access by aircraft but where other airport traffic is not to be unduly obstructed. (See FIG AD 1.1−34.)

NOTE−
The associated sign contains the VOR station identification letter and course selected (published) for the check, the words "VOR check course," and DME data (when applicable). The color of the letters and numerals are black on a yellow background.

EXAMPLE−
VOR SIGN
DCA 176−356
VOR check course
DME XXX

20.3 Nonmovement Area Boundary Markings.

These markings delineate the movement area; i.e., area under air traffic control. These markings are yellow and located on the boundary between the movement and nonmovement area. The nonmovement area boundary markings consist of two yellow lines (one solid and one dashed) 6 inches (15cm) in width. The solid line is located on the nonmovement area side while the dashed yellow line is located on the movement area side. The nonmovement boundary marking area is shown in FIG AD 1.1−35.

20.4 Marking and Lighting of Permanently Closed Runways and Taxiways. For runways and taxiways which are permanently closed, the lighting circuits will be disconnected. The runway threshold, runway designation, and touchdown markings are obliterated and yellow crosses are placed at each end of the runway and at 1,000 foot intervals. (See FIG AD 1.1−36.)

20.5 Temporarily Closed Runways and Taxiways. To provide a visual indication to pilots that a runway is temporarily closed, crosses are placed on the runway only at each end of the runway. The crosses are yellow in color. (See FIG AD 1.1−36.)

20.5.1 A raised lighted yellow cross may be placed on each runway end in lieu of the markings described in paragraph 20.4 to indicate the runway is closed.

20.5.2 A visual indication may not be present depending on the reason for the closure, duration of the closure, airfield configuration, and the existence and the hours of operation of an airport traffic control tower. Pilots should check NOTAMs and the Automated Terminal Information System (ATIS) for local runway and taxiway closure information.

20.5.3 Temporarily closed taxiways are usually treated as hazardous areas, in which no part of an aircraft may enter, and are blocked with barricades. However, as an alternative, a yellow cross may be installed at each entrance to the taxiway.

20.6 Helicopter Landing Areas. The markings illustrated in FIG AD 1.1−37 are used to identify the landing and takeoff area at a public use heliport and hospital heliport. The letter "H" in the markings is oriented to align with the intended direction of approach. FIG AD 1.1−37 also depicts the markings for a closed airport.

20.7 Airport Signs. There are six types of signs installed on airfields: mandatory instruction signs, location signs, direction signs, destination signs, information signs, and runway distance remaining signs. The characteristics and use of these signs are discussed below.

REFERENCE−
Advisory Circular−150/5340−18, Standards for Airport Sign Systems.

21. Mandatory Instruction Signs

21.1 These signs have a red background with a white inscription and are used to denote:

21.1.1 An entrance to a runway or critical area.

21.1.2 Land and Hold Short Operations (LAHSO) holding position signs on runways:

21.1.2.1 Hold short of Intersecting Runway.

21.1.2.2 Hold short of Intersecting Taxiway.

21.1.2.3 Hold short of a Point.

21.1.3 Areas where an aircraft is prohibited from entering.

21.2 Typical mandatory signs and applications are:

21.2.1 Runway Holding Position Sign. This sign is located at the holding position on taxiways that intersect a runway or on runways that intersect other runways. The inscription on the sign contains the designation of the intersecting runway as shown in FIG AD 1.1−38. The runway numbers on the sign are arranged to correspond to the respective runway threshold. For example, "15−33" indicates that the threshold for Runway 15 is to the left and the threshold for Runway 33 is to the right.

21.2.1.1 On taxiways that intersect the beginning of the takeoff runway, only the designation of the takeoff runway may appear on the sign as shown in FIG AD 1.1−39, while all other signs will have the designation of both runway directions.

21.2.1.2 If the sign is located on a taxiway that intersects the intersection of two runways, the designations for both runways will be shown on the sign along with arrows showing the approximate alignment of each runway as shown in FIG AD 1.1−40. In addition to showing the approximate runway alignment, the arrow indicates the direction to the threshold of the runway whose designation is immediately next to the arrow.

21.2.1.3 Land and Hold Short Operations (LAHSO) include landing and holding short of an intersecting runway, taxiway, or a designated point on the runway. LAHSO signs are mandatory signs when Air Traffic Control is operating under LAHSO. The holding position markings will be located on the runway pavement adjacent to the signs. Holding position markings are described in paragraph 19..

21.2.1.4 A runway holding position sign(s) will be installed on a runway that is normally used as a taxiway, adjacent to the holding position markings.

21.2.1.5 A runway holding position sign on a taxiway will be installed adjacent to holding position markings.

21.2.2 Runway Approach Area Holding Position Sign. At some airports, it is necessary to hold an aircraft on a taxiway located in the approach or departure area for a runway so that the aircraft does not interfere with operations on that runway. In these situations a sign with the designation of the approach end of the runway followed by a "dash" (−) and letters "APCH" will be located at the holding position on the taxiway. Holding position markings in accordance with paragraph 20. will be located on the taxiway pavement. An example of this sign is shown in FIG AD 1.1−41. In this example, the sign may protect the approach to Runway 15 and/or the departure for Runway 33.

21.2.3 ILS Critical Area Holding Position Sign. At some airports, when the instrument landing system is being used, it is necessary to hold an aircraft on a taxiway at a location other than the holding position described in paragraph 19., Holding Position Markings. In these situations the holding position sign for these operations will have the inscription "ILS" and be located adjacent to the holding position marking on the taxiway described in paragraph 19.. An example of this sign is shown in FIG AD 1.1−42.

21.2.4 No Entry Sign. This sign, shown in FIG AD 1.1−43, prohibits an aircraft from entering an area. Typically, this sign would be located on a taxiway intended to be used in only one direction or at the intersection of vehicle roadways with runways, taxiways or aprons where the roadway may be mistaken as a taxiway or other aircraft movement surface.

NOTE−
The holding position sign provides the pilot with a visual cue as to the location of the holding position marking. The operational significance of holding position markings are described in paragraph 19..

22. Location Signs

Location signs are used to identify either a taxiway or runway on which the aircraft is located. Other location signs provide a visual cue to pilots to assist them in determining when they have exited an area. The various location signs are described below.

22.1 Taxiway Location Sign. This sign has a black background with a yellow inscription and yellow border as shown in FIG AD 1.1−44. The inscription is the designation of the taxiway on which the aircraft is located. These signs are installed along taxiways either by themselves or in conjunction with direction signs or runway holding position signs.
(See FIG AD 1.1−45 and FIG AD 1.1−49.)

22.2 Runway Location Sign. This sign has a black background with a yellow inscription and yellow border as shown in FIG AD 1.1−46. The inscription is the designation of the runway on which the aircraft is located. These signs are intended to complement the information available to pilots through their magnetic compass and typically are installed where the proximity of two or more runways to one another could cause pilots to be confused as to which runway they are on.

22.3 Runway Boundary Sign. This sign has a yellow background with a black inscription with a graphic depicting the pavement holding position marking as shown in FIG AD 1.1−47. This sign, which faces the runway and is visible to the pilot exiting the runway, is located adjacent to the holding position marking on the pavement. The sign is intended to provide pilots with another visual cue which they can use as a guide in deciding when they are "clear of the runway."

22.4 ILS Critical Area Boundary Sign. This sign has a yellow background with a black inscription with a graphic depicting the ILS pavement holding position marking as shown in FIG AD 1.1−48. This sign is located adjacent to the ILS holding position marking on the pavement and can be seen by pilots leaving the critical area. The sign is intended to provide pilots with another visual cue which they can use as a guide in deciding when they are "clear of the ILS critical area."

23. Direction Signs

23.1 Direction signs have a yellow background with a black inscription. The inscription identifies the designation(s) of the intersecting taxiway(s) leading out of intersection that a pilot would normally be expected to turn onto or hold short of. Each designation is accompanied by an arrow indicating the direction of the turn.

23.2 Except as noted in subparagraph 23.5, each taxiway designation shown on the sign is accompanied by only one arrow. When more than one taxiway designation is shown on the sign, each designation and its associated arrow is separated from the other taxiway designations by either a vertical message divider or a taxiway location sign as shown in FIG AD 1.1−49.

23.3 Direction signs are normally located on the left prior to the intersection. When used on a runway to indicate an exit, the sign is located on the same side of the runway as the exit. FIG AD 1.1−50 shows a direction sign used to indicate a runway exit.

23.4 The taxiway designations and their associated arrows on the sign are arranged clockwise starting from the first taxiway on the pilot's left. (See FIG AD 1.1−49.)

23.5 If a location sign is located with the direction signs, it is placed so that the designations for all turns to the left will be to the left of the location sign; the designations for continuing straight ahead or for all turns to the right would be located to the right of the location sign. (See FIG AD 1.1−49.)

23.6 When the intersection is comprised of only one crossing taxiway, it is permissible to have two arrows associated with the crossing taxiway as shown in FIG AD 1.1−51. In this case, the location sign is located to the left of the direction sign.

24. Destination Signs

24.1 Destination signs also have a yellow background with a black inscription indicating a destination on the airport. These signs always have an arrow showing the direction of the taxiing route to that destination. FIG AD 1.1−52 is an example of a typical destination sign. When the arrow on the destination sign indicates a turn, the sign is located prior to the intersection.

24.2 Destinations commonly shown on these types of signs include runways, aprons, terminals, military areas, civil aviation areas, cargo areas, international areas, and fixed base operators. An abbreviation may be used as the inscription on the sign for some of these destinations.

24.3 When the inscription for two or more destinations having a common taxiing route are placed on a sign, the destinations are separated by a "dot" (●) and one arrow would be used as shown in FIG AD 1.1−53. When the inscription on a sign contains two or more destinations having different taxiing routes, each destination will be accompanied by an arrow and will be separated from the other destinations on the sign with a vertical black message divider as shown in FIG AD 1.1−54.

25. Information Signs

25.1 Information signs have a yellow background with a black inscription. They are used to provide the pilot with information on such things as areas that cannot be seen from the control tower, applicable radio frequencies, and noise abatement procedures.

The airport operator determines the need, size, and location for these signs.

26. Runway Distance Remaining Signs

26.1 Runway distance remaining signs have a black background with a white numeral inscription and may be installed along one or both side(s) of the runway. The number on the signs indicates the distance (in thousands of feet) of landing runway remaining. The last sign; i.e., the sign with the numeral "1," will be located at least 950 feet from the runway end. FIG AD 1.1−55 shows an example of a runway distance remaining sign.

27. Aircraft Arresting Systems

27.1 Certain airports are equipped with a means of rapidly stopping military aircraft on a runway. This equipment, normally referred to as EMERGENCY ARRESTING GEAR, generally consists of pendant cables supported over the runway surface by rubber "donuts." Although most devices are located in the overrun areas, a few of these arresting systems have cables stretched over the operational areas near the ends of a runway.

27.2 Arresting cables which cross over a runway require special markings on the runway to identify the cable location. These markings consist of 10 feet diameter solid circles painted "identification yellow," 30 feet on center, perpendicular to the runway centerline across the entire runway width. Additional details are contained in AC 150/5220−9, Aircraft Arresting Systems for Joint Civil/Military Airports.

NOTE−
Aircraft operations on the runway are not restricted by the installation of aircraft arresting devices.

27.3 Engineered materials arresting systems (EMAS). EMAS, which are constructed of high energy−absorbing materials of selected strength, are located in the safety area beyond the end of the runway. They are designed to crush under the weight of commercial aircraft and they exert deceleration forces on the landing gear. These systems do not affect the normal landing and takeoff of airplanes. More information concerning EMAS is in FAA Advisory Circular AC 150/5220−22, Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns.

NOTE−
EMAS may be located as close as 35 feet.beyond the end of the runway. Aircraft should never taxi or drive across the runway.

28. Security Identifications Display Area (Aerodrome Ramp Area)

28.1 Security Identification Display Areas (SIDA) are limited access areas that require a badge issued in accordance with procedures in CFR 49 Part 1542. Movement through or into these areas is prohibited without proper identification being displayed. If you are unsure of the location of a SIDA, contact the airport authority for additional information. Airports that have a SIDA must have the following information available:

28.1.1 A description and map detailing boundaries and pertinent features;

28.1.2 Measures used to perform the access control functions required under CFR 49 Part 1542.201(b)(1);

28.1.3 Procedures to control movement within the secured area, including identification media required under CFR 49 Part 1542.201(b)(3); and

28.1.4 A description of the notification signs required under CFR 49 Part 1542.201(b)(6).

28.2 Pilots or passengers without proper identification that are observed entering a SIDA (ramp area) may be reported to TSA or airport security. Pilots are advised to brief passengers accordingly.

FIG AD 1.1−15
Precision Instrument Runway Markings

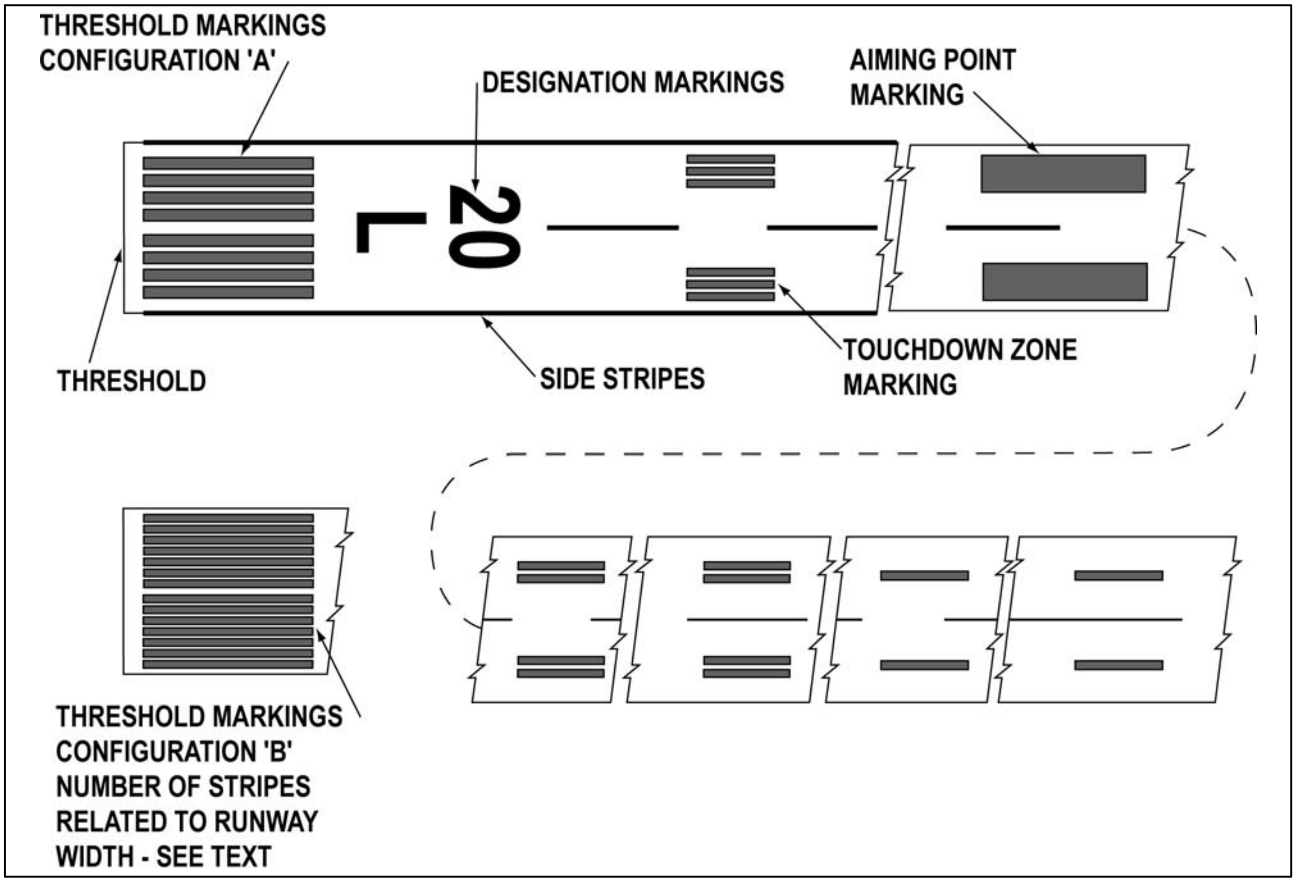


FIG AD 1.1−16

Nonprecision Instrument Runway and Visual Runway Markings

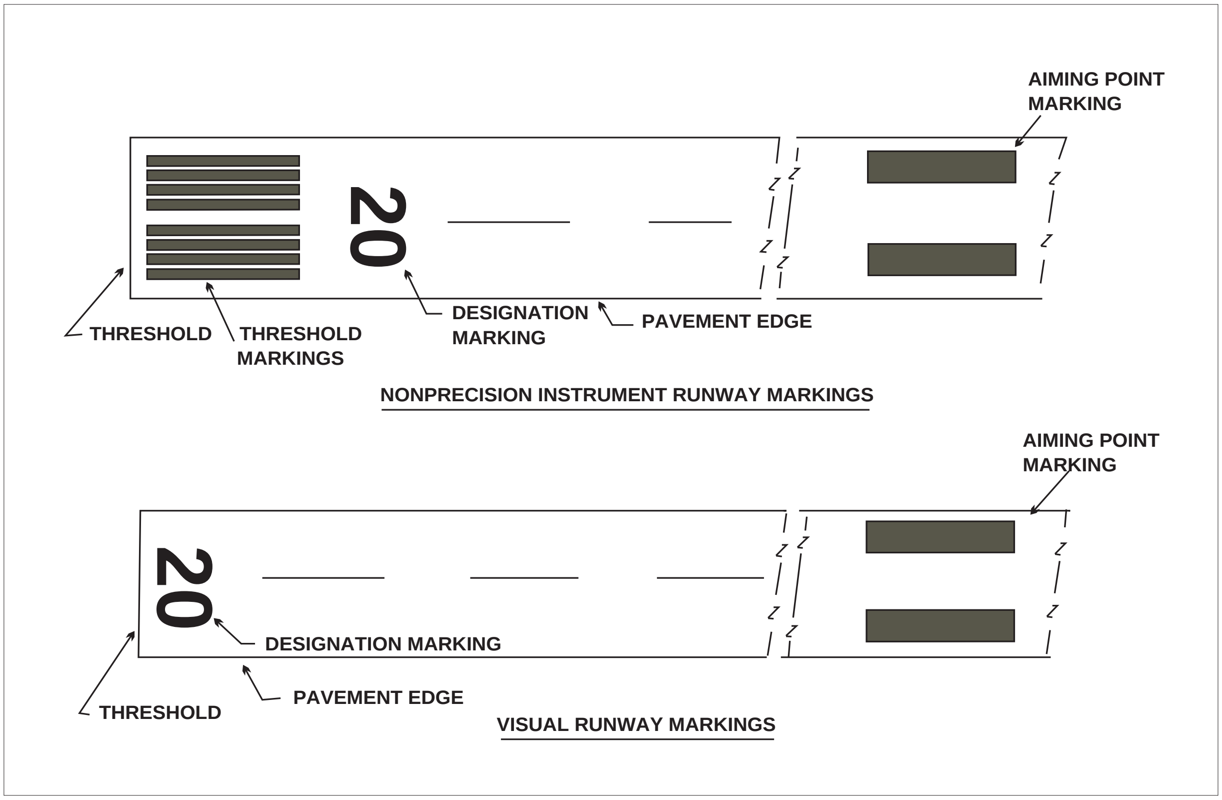


FIG AD 1.1−17

Runway Shoulder Markings

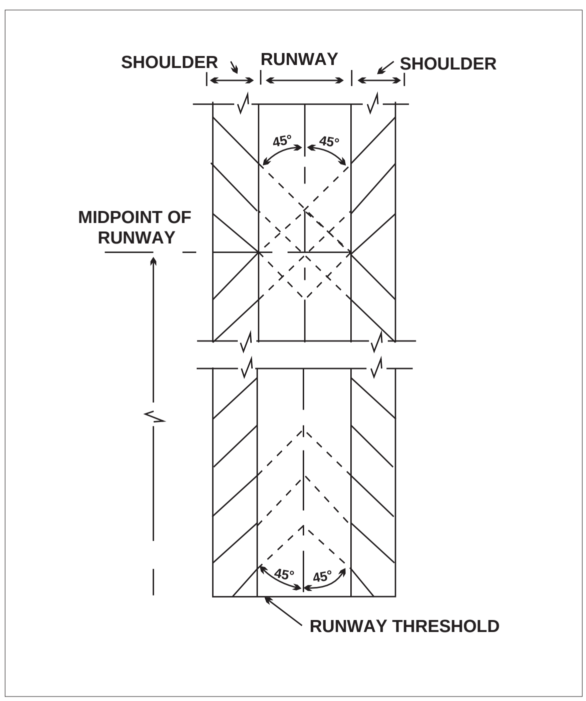


FIG AD 1.1−18

Relocation of a Threshold with Markings for Taxiway Aligned with Runway

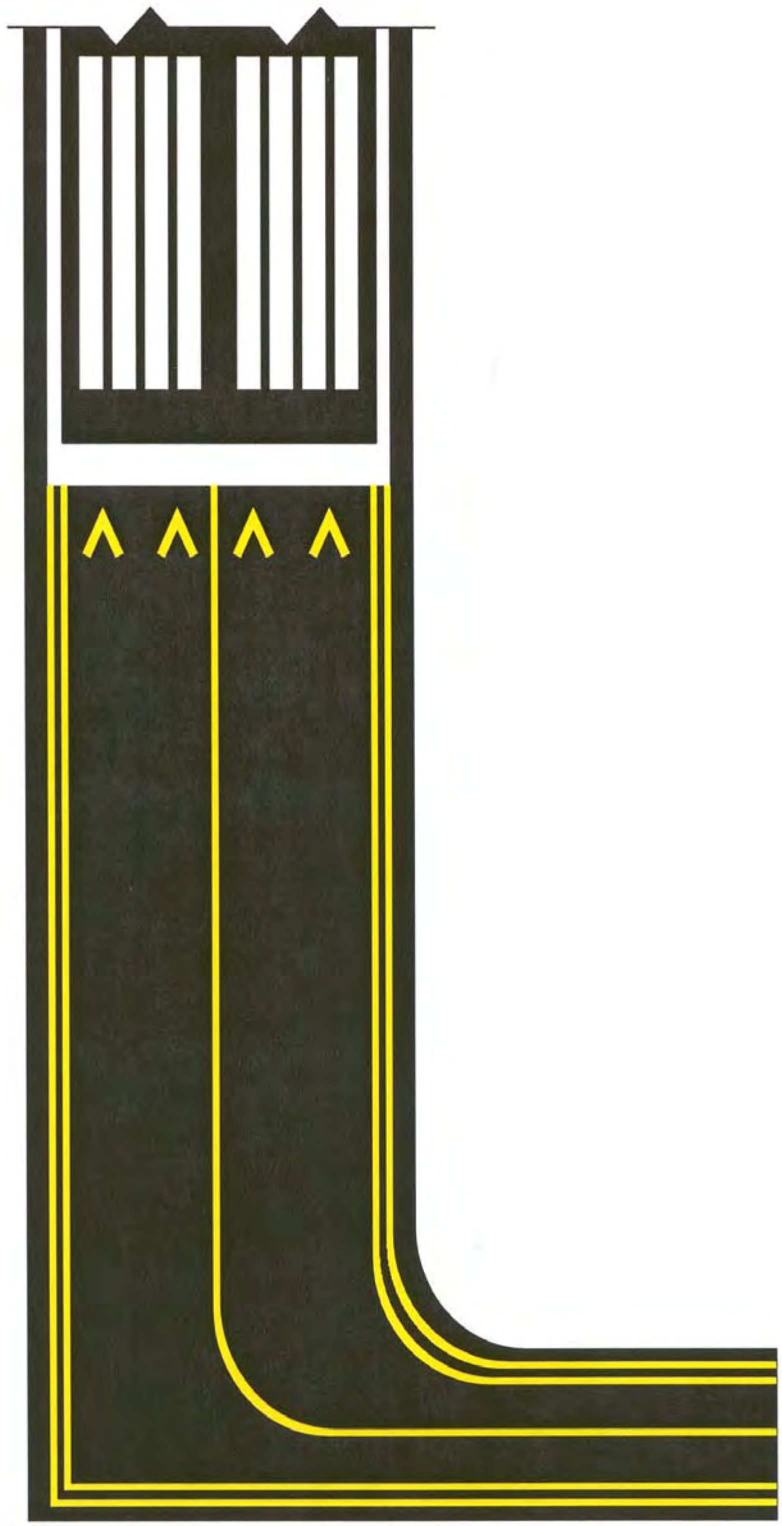


FIG AD 1.1−19
Displaced Threshold Markings

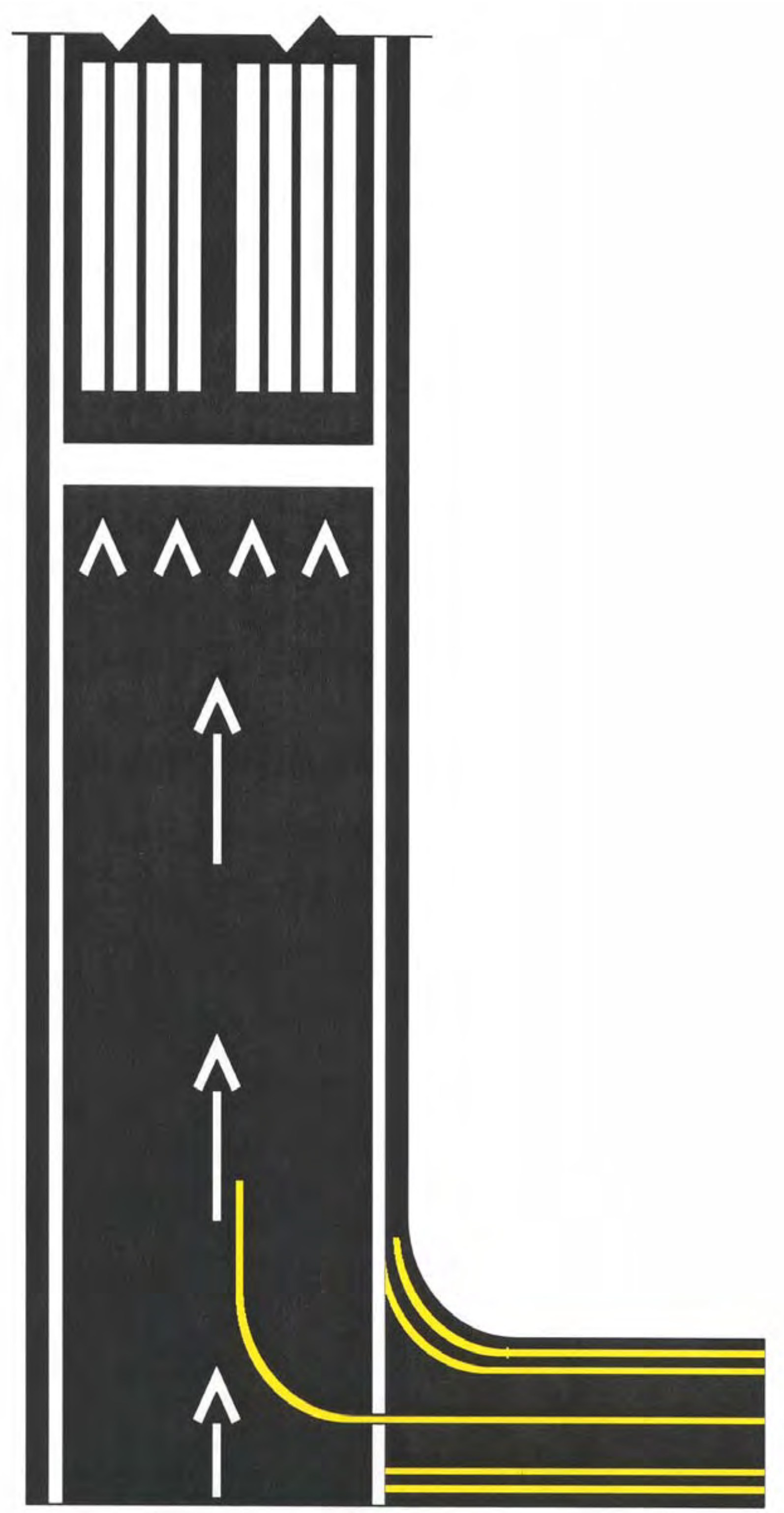


FIG AD 1.1−20

Markings for Blast Pad or Stopway or Taxiway Preceding a Displaced Threshold

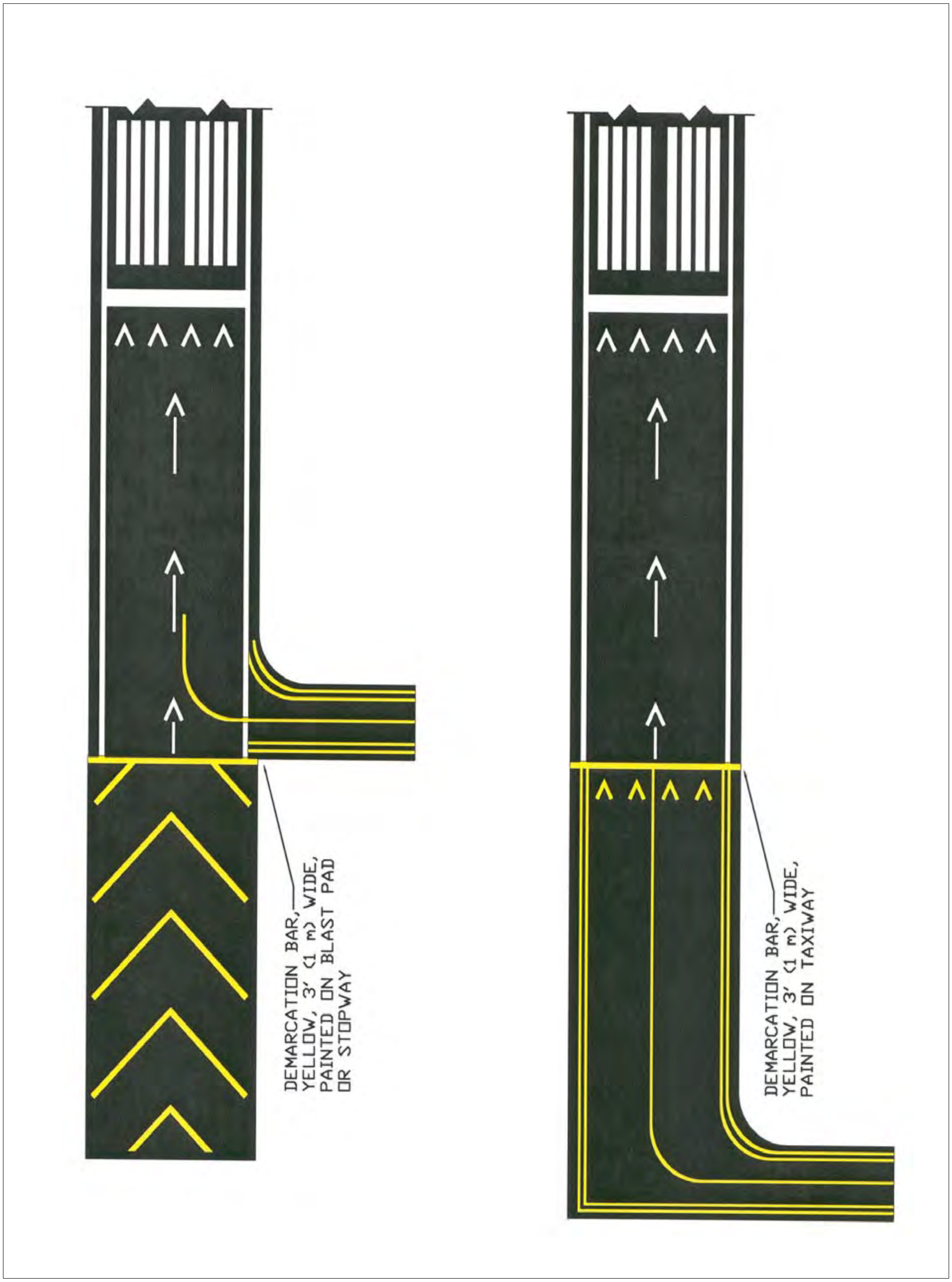


FIG AD 1.1−21
Markings for Blast Pads and Stopways

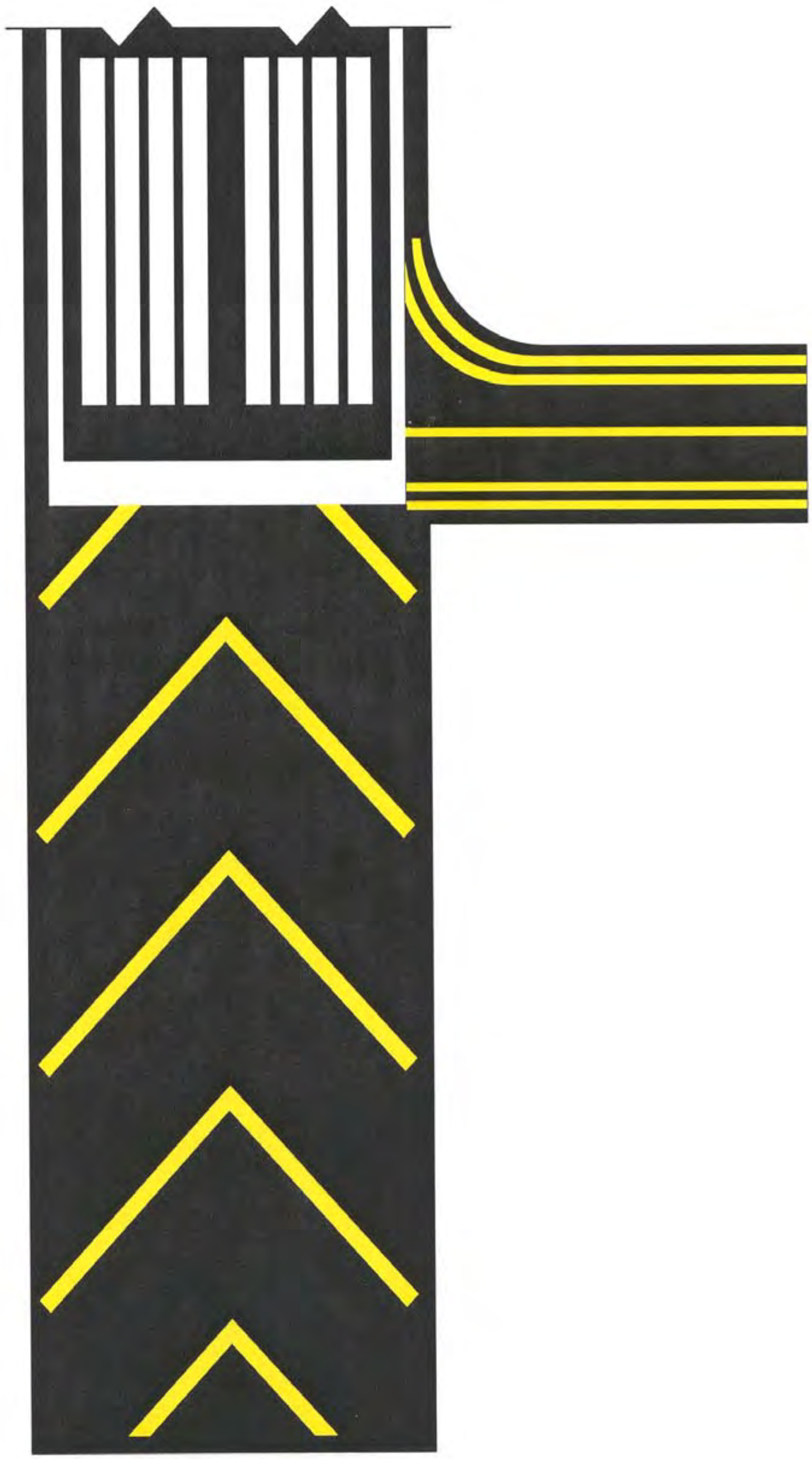


FIG AD 1.1−22
Enhanced Taxiway Centerline

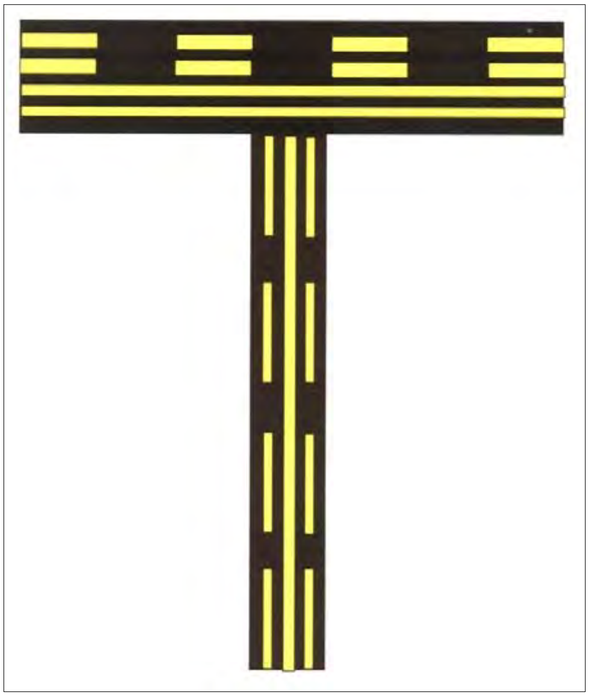


FIG AD 1.1−23
Dashed Markings

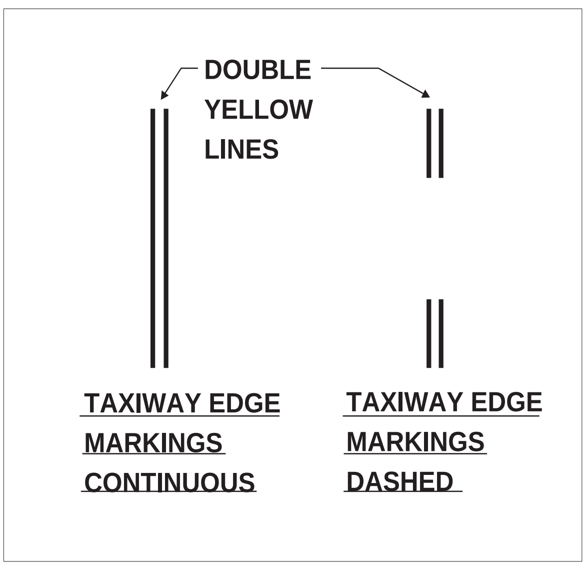


FIG AD 1.1−24
Taxi Shoulder Markings

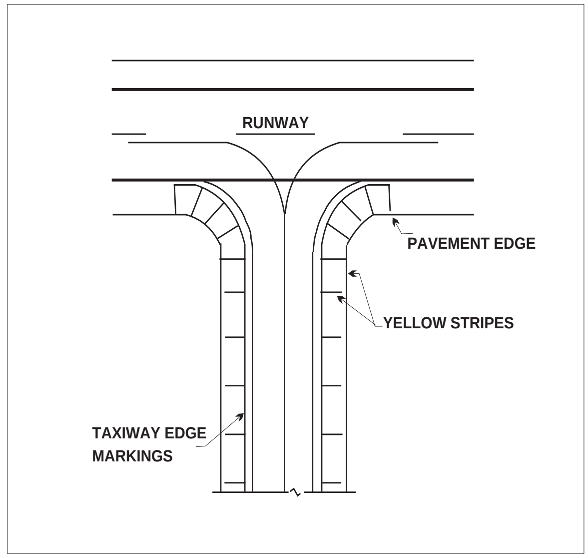


FIG AD 1.1−25
Surface Painted Signs

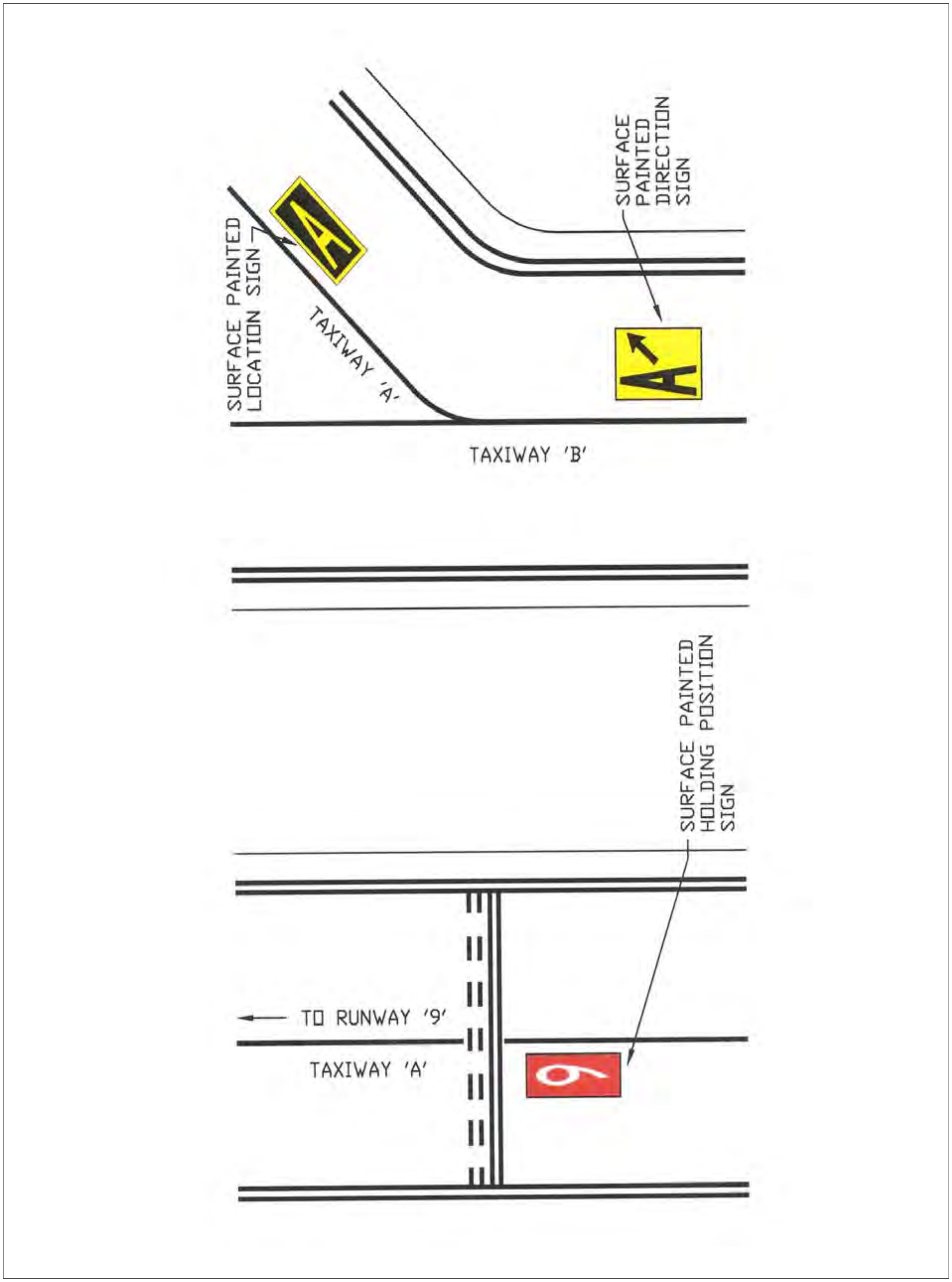


FIG AD 1.1−26
Geographic Position Markings

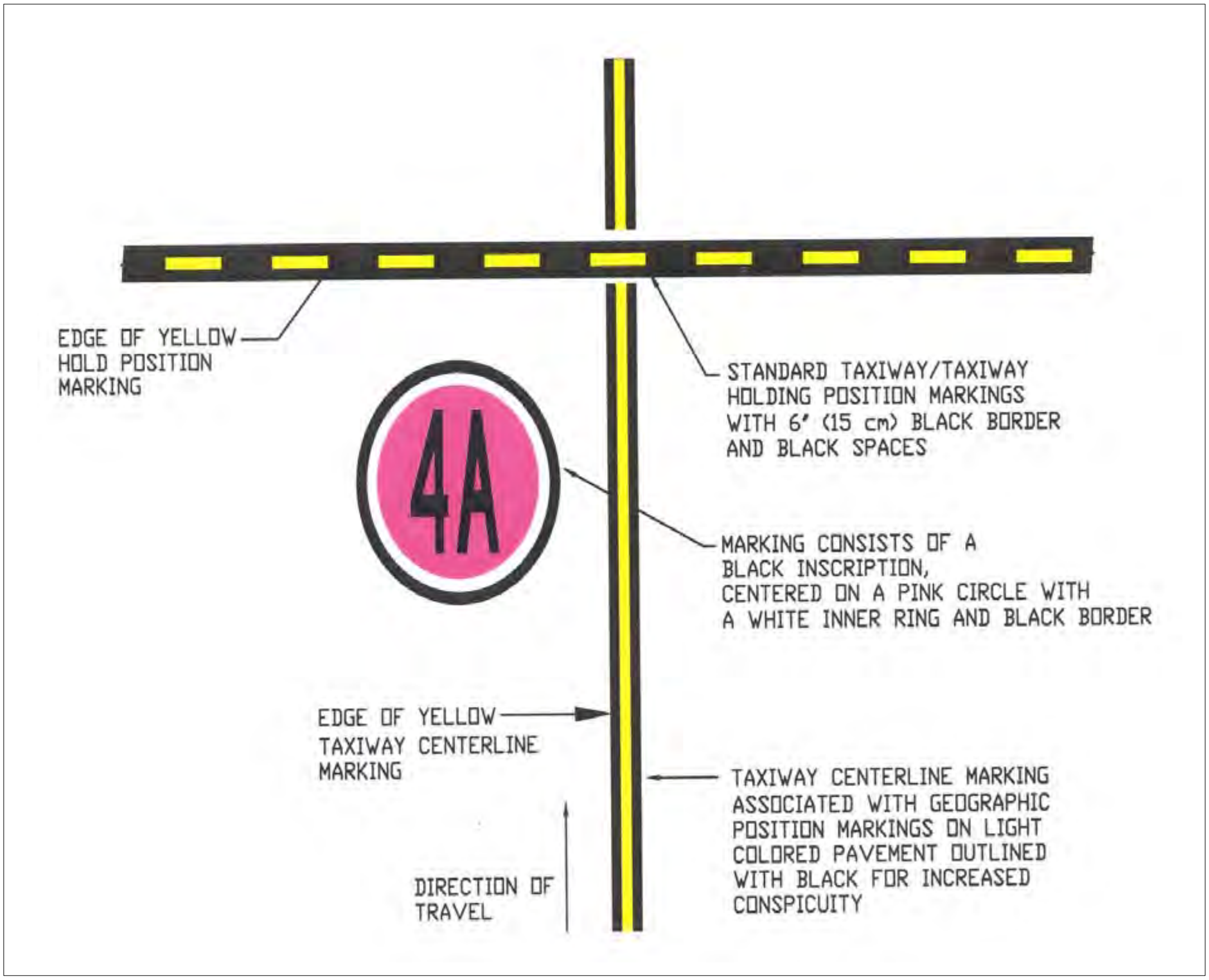


FIG AD 1.1−27
Runway Holding Position Markings on Taxiway

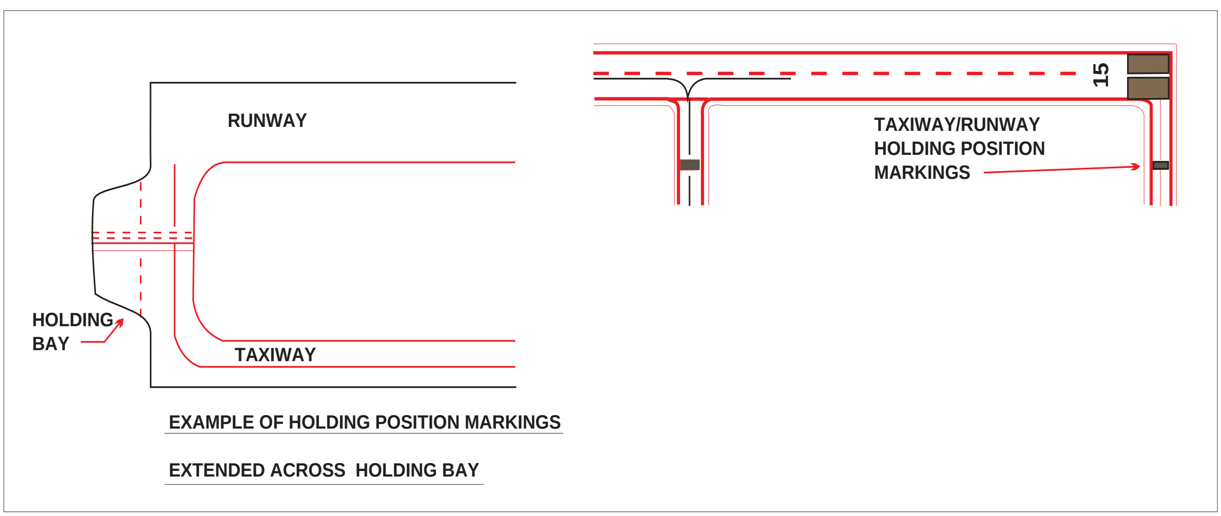


FIG AD 1.1−28
Runway Holding Position Markings on Runways

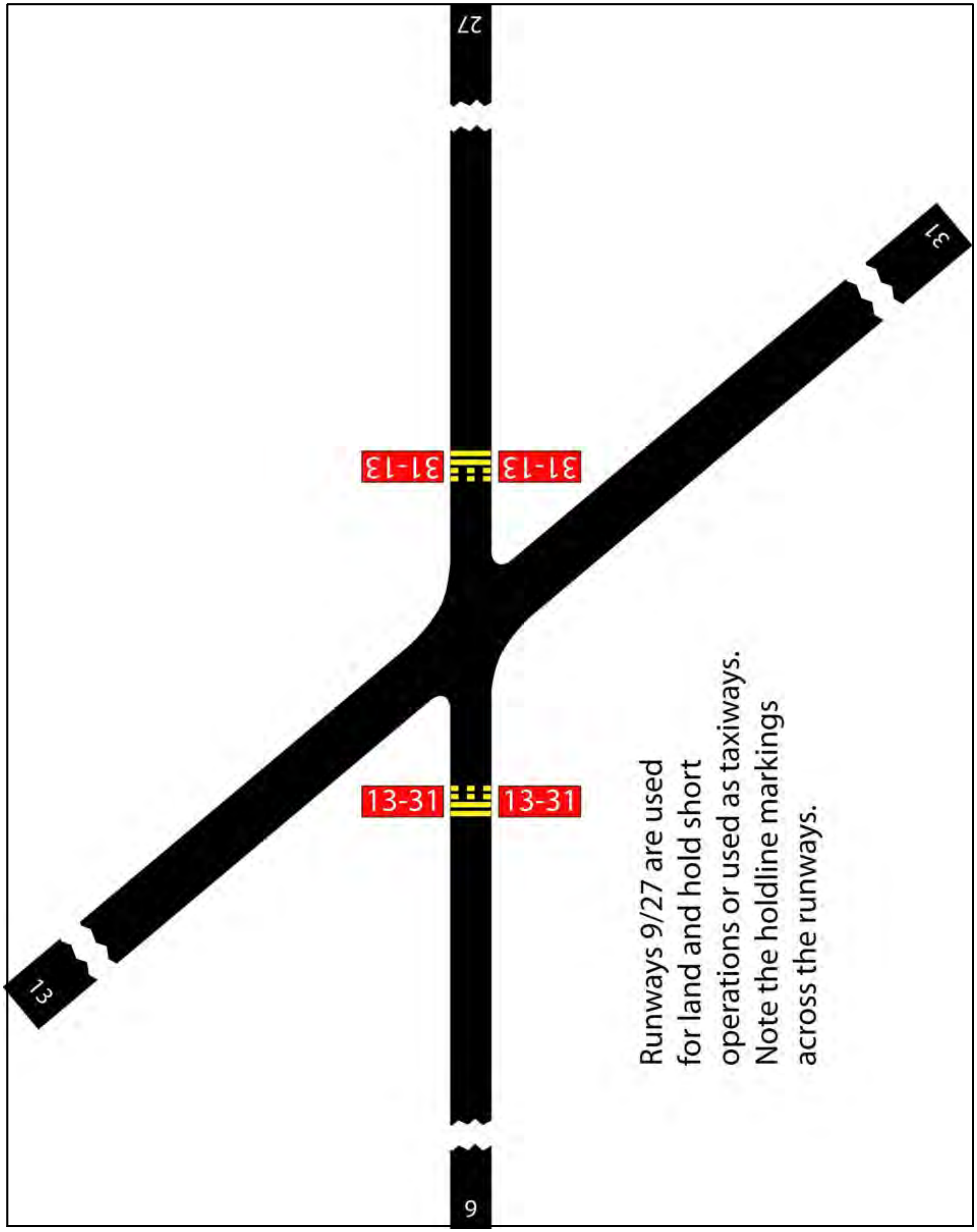


FIG AD 1.1−29
Taxiways Located in Runway Approach Area

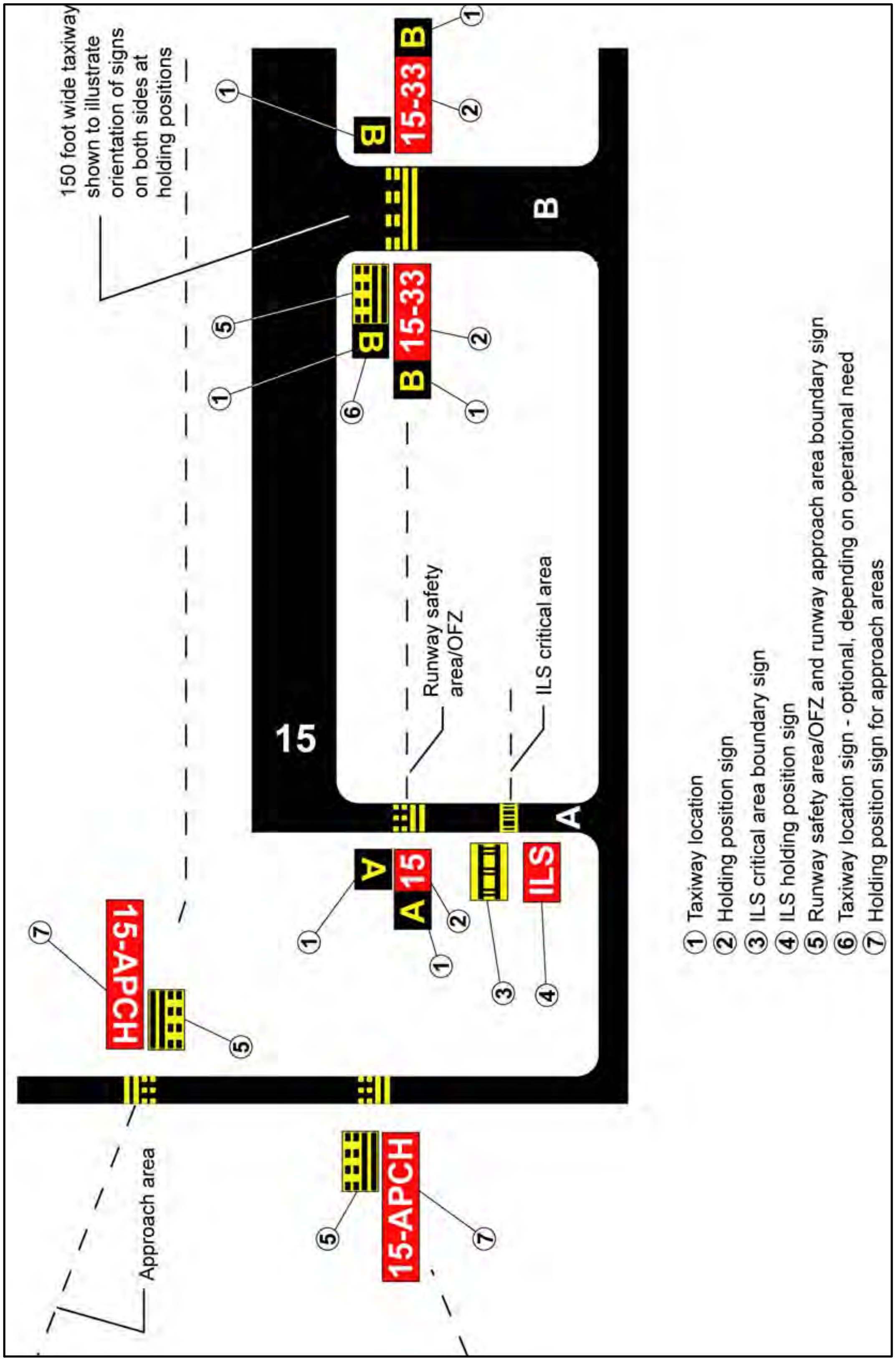


FIG AD 1.1−30
Holding Position Markings: ILS Critical Area

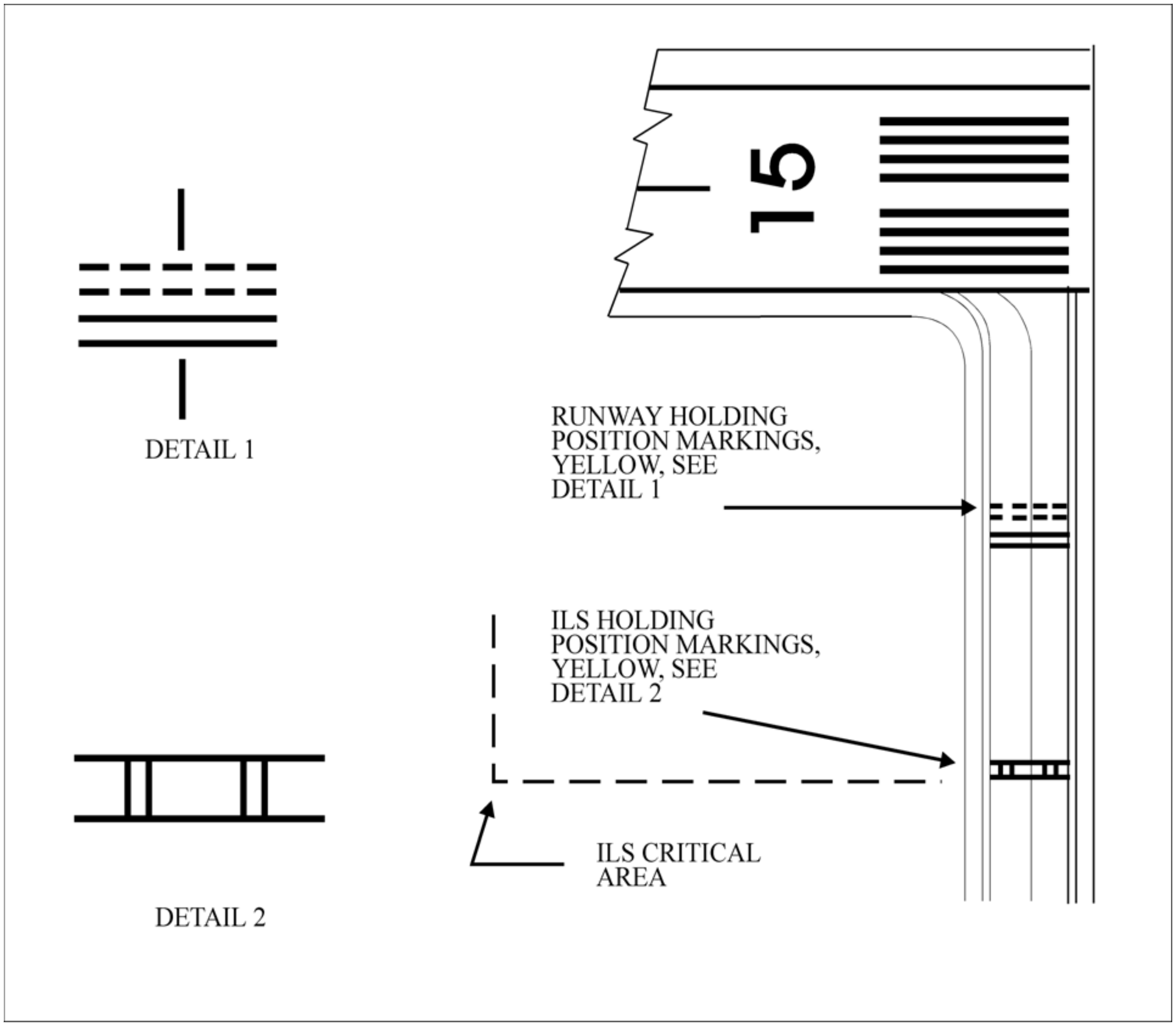


FIG AD 1.1−31

Holding Position Markings: Taxiway/Taxiway Intersections

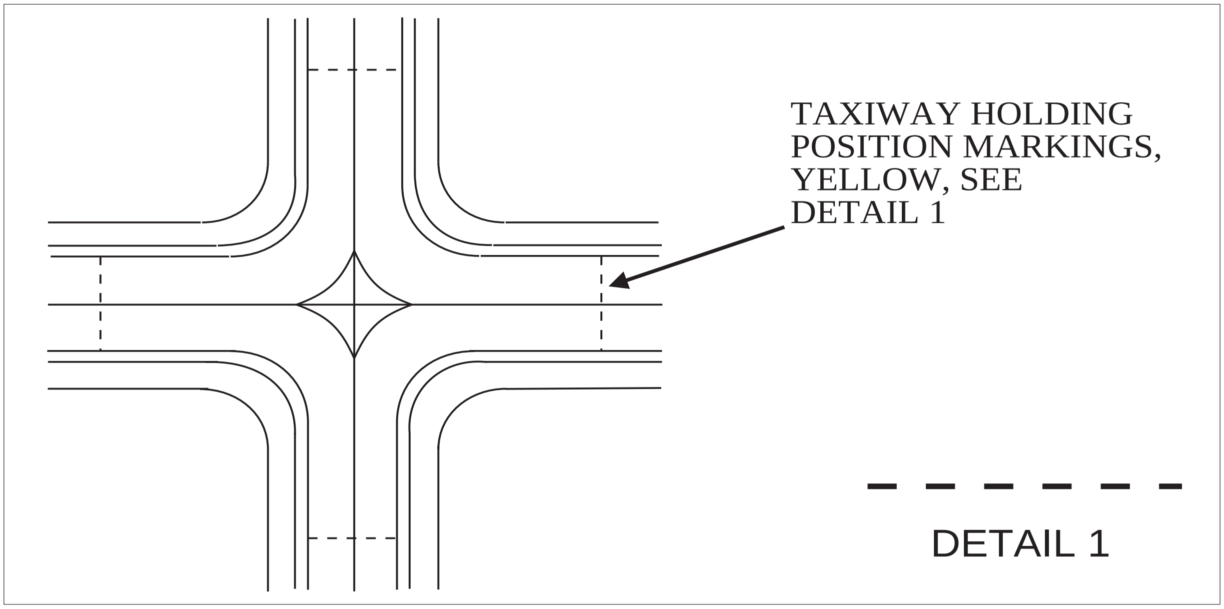


FIG AD 1.1−32

Vehicle Roadway Markings

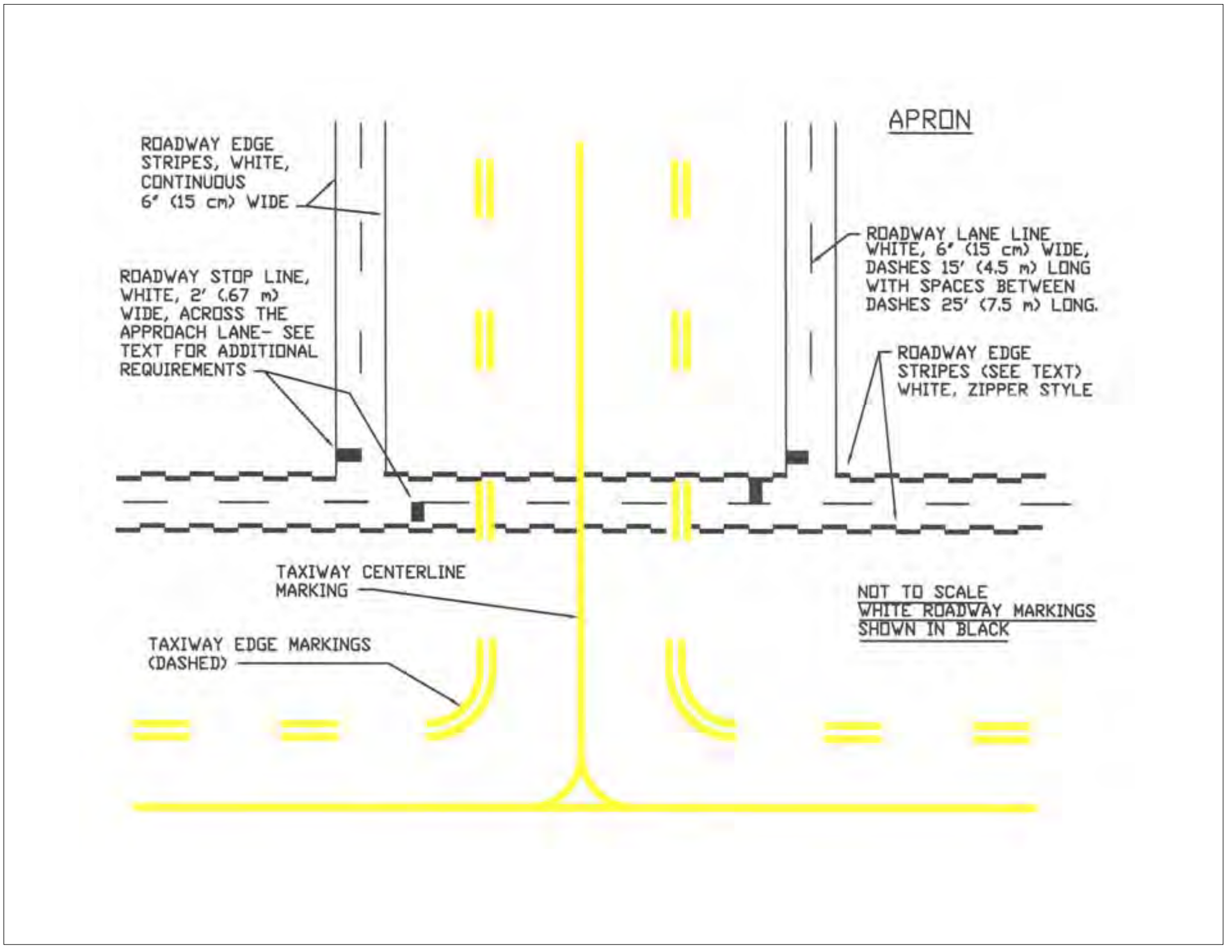


FIG AD 1.1−33
Roadway Edge Stripes, White, Zipper Style

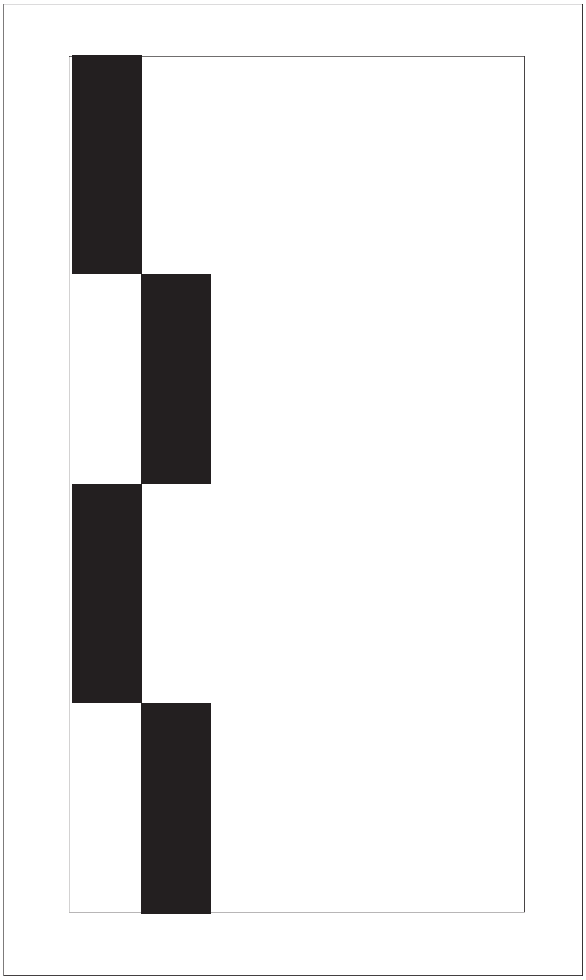


FIG AD 1.1−34
Ground Receiver Checkpoint Markings

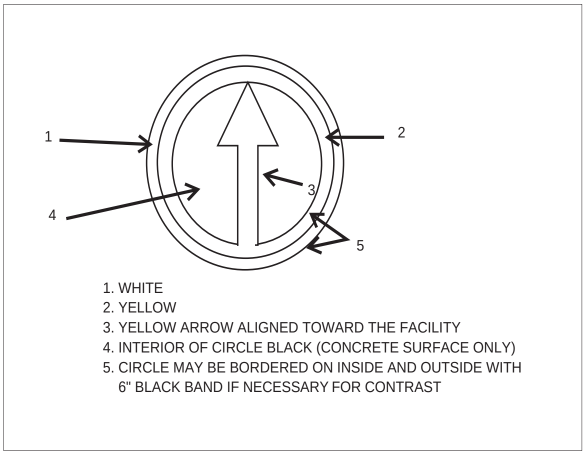


FIG AD 1.1−35
Nonmovement Area Boundary Markings

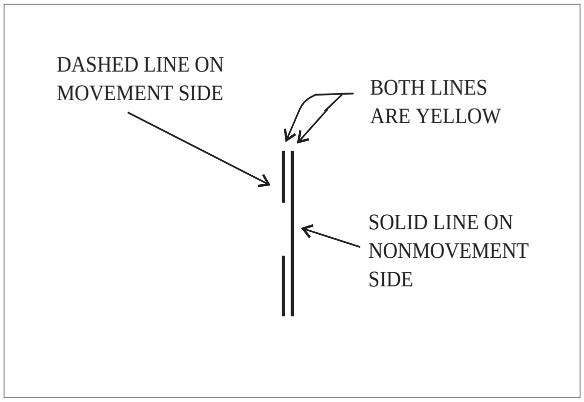


FIG AD 1.1−36
Closed or Temporarily Closed Runway and Taxiway Markings

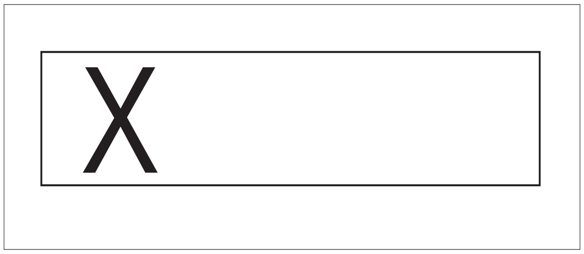


FIG AD 1.1−37
Helicopter Landing Areas

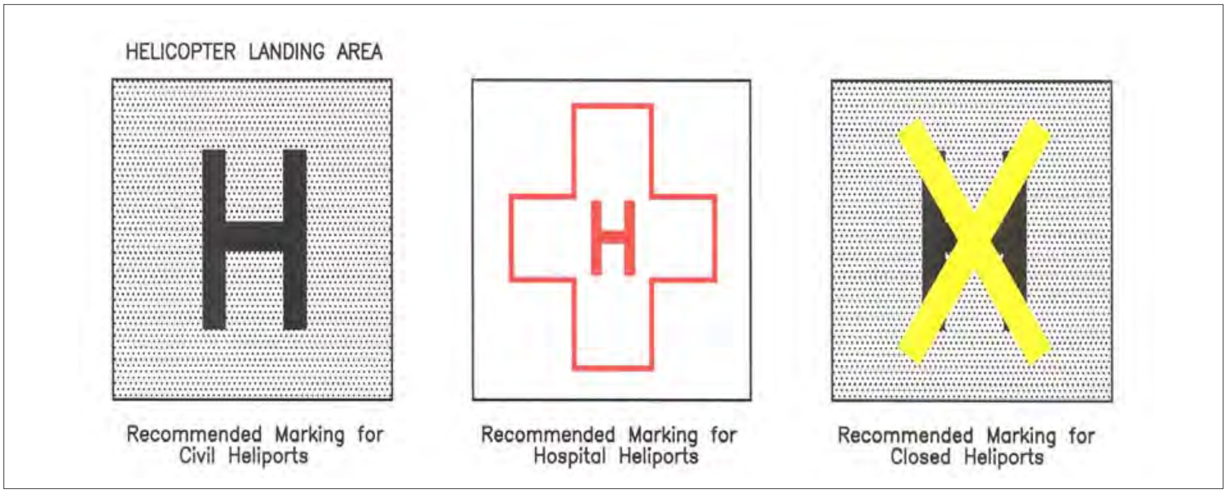


FIG AD 1.1−38
Runway Holding Position Sign

FIG AD 1.1−39
Holding Position Sign at Beginning of Takeoff Runway

FIG AD 1.1−40
Holding Position Sign for a Taxiway that Intersects the Intersection of Two Runways

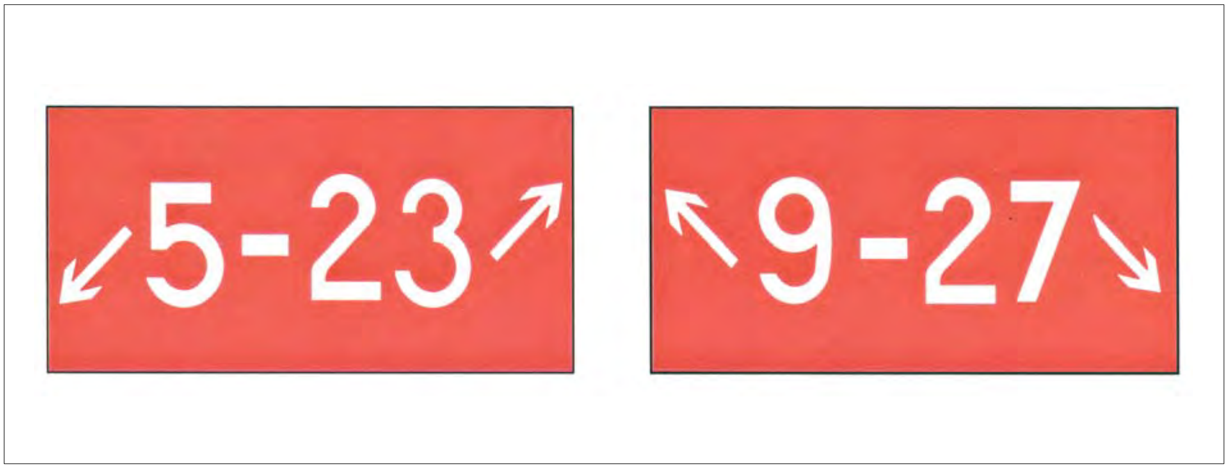


FIG AD 1.1−41
Holding Position Sign for a Runway Approach Area

FIG AD 1.1−42
Holding Position Sign for ILS Critical Area

FIG AD 1.1−43
Sign Prohibiting Aircraft Entry into an Area

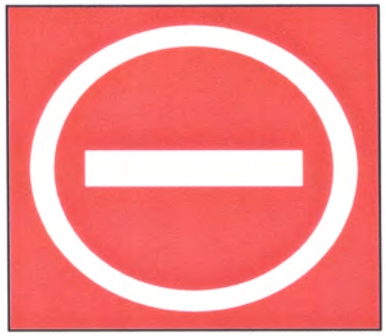


FIG AD 1.1−44
Taxiway Location Sign

FIG AD 1.1−45
Taxiway Location Sign Collocated with Runway Holding Position Sign

FIG AD 1.1−46
Runway Location Sign

FIG AD 1.1−47
Runway Boundary Sign

FIG AD 1.1−48
ILS Critical Area Boundary Sign

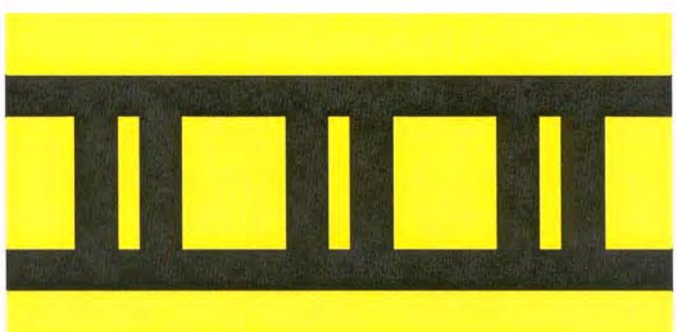


FIG AD 1.1−49
Direction Sign Array with Location Sign on Far Side of Intersection

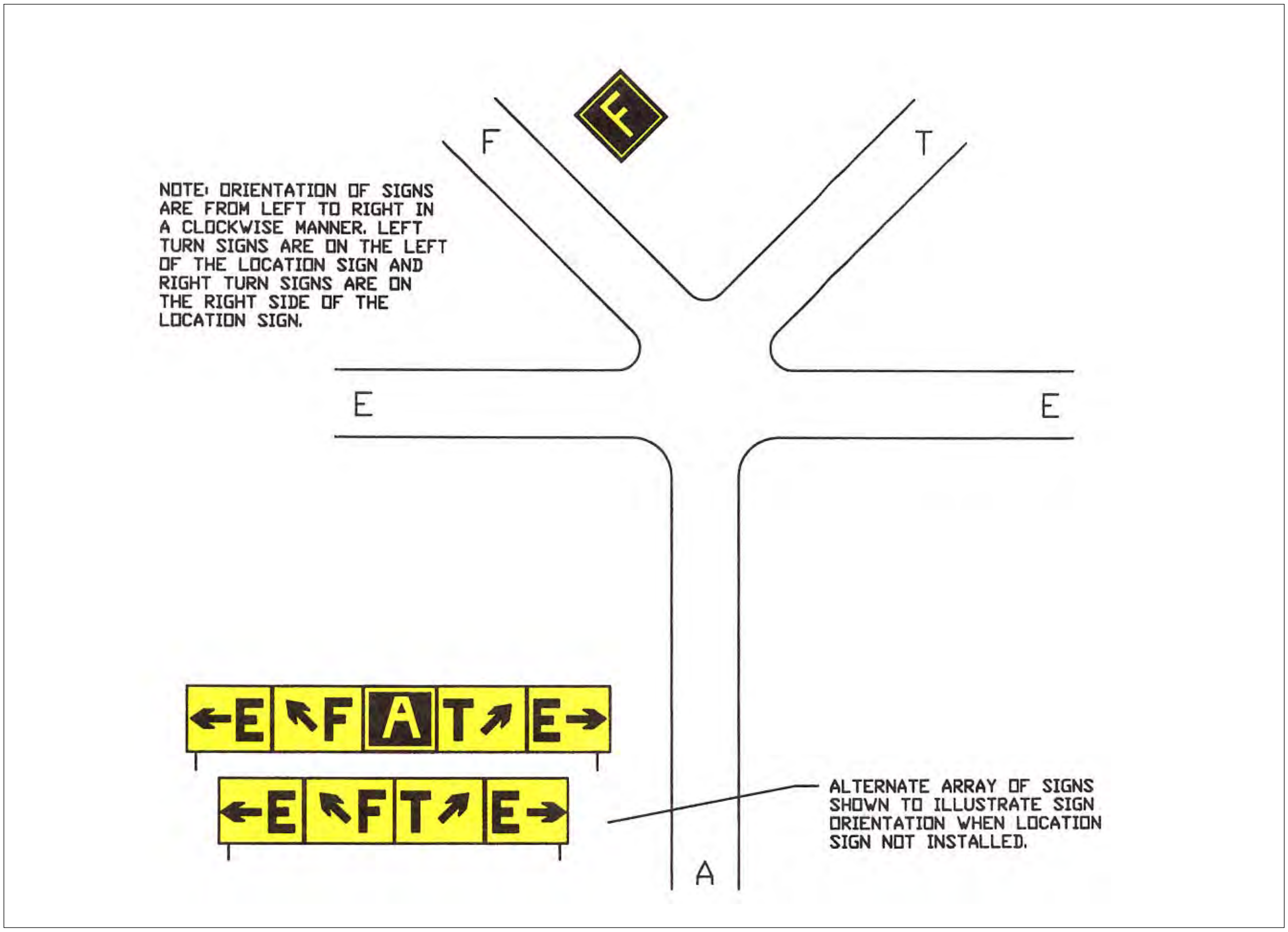


FIG AD 1.1−50
Direction Sign for Runway Exit

FIG AD 1.1−51
Direction Sign Array for Simple Intersection

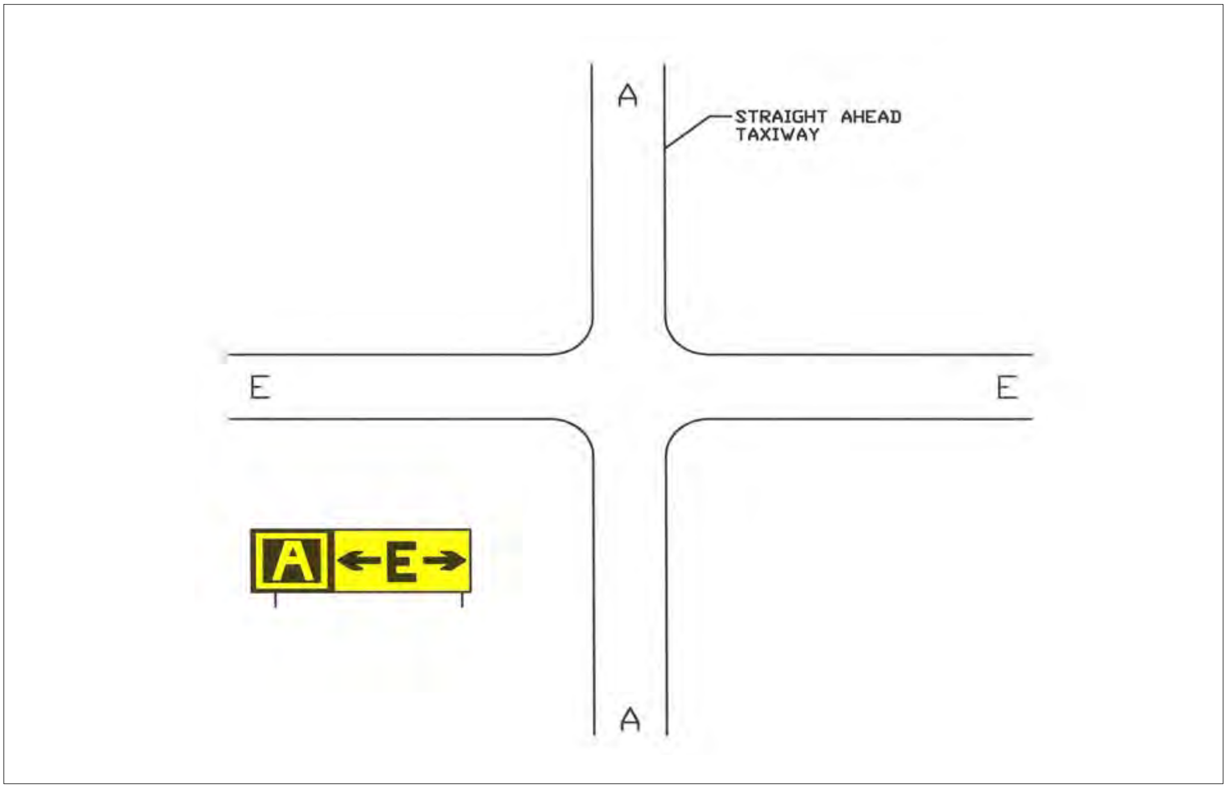


FIG AD 1.1−52
Destination Sign for Military Area

FIG AD 1.1−53
Destination Sign for Common Taxiing Route to Two Runways

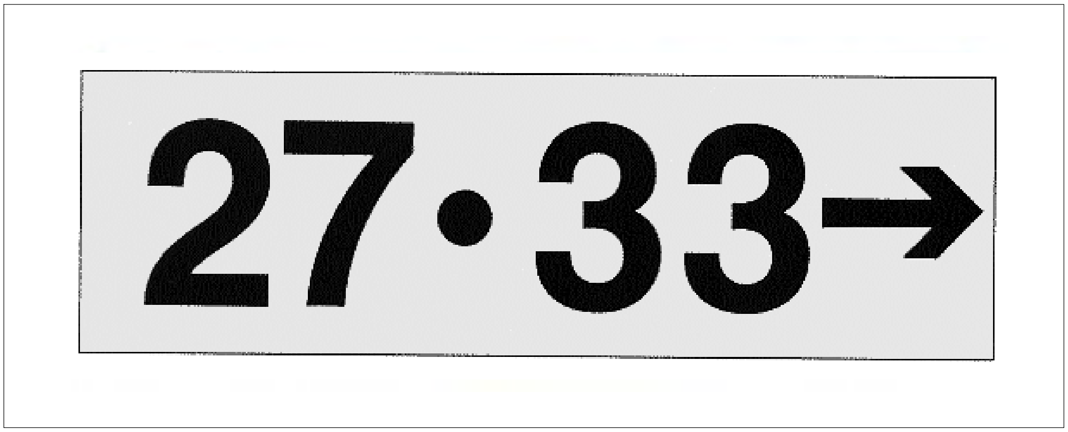


FIG AD 1.1−54
Destination Sign for Different Taxiing Routes to Two Runways

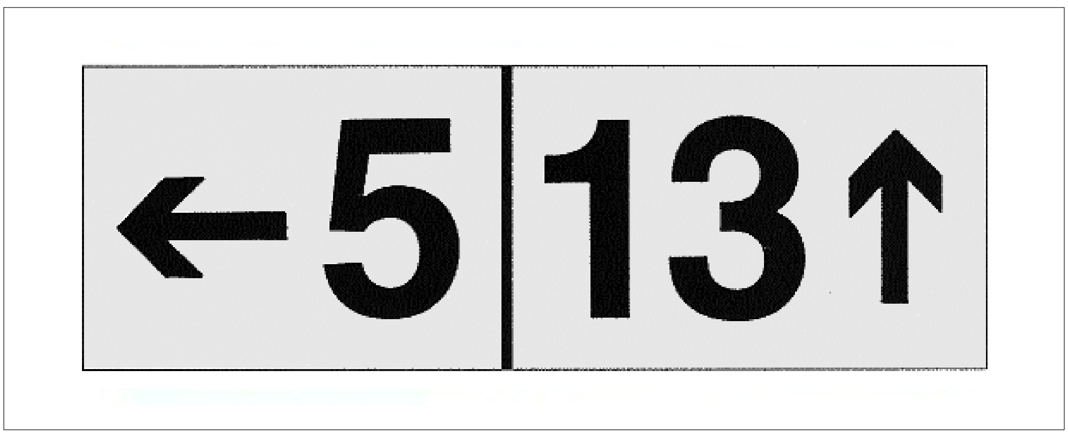


FIG AD 1.1−55
Runway Distance Remaining Sign Indicating
3,000 feet of Runway Remaining

FIG AD 1.1−56
Engineered Materials Arresting System (EMAS)

AD 2. AERODROMES

1. The following is a partial list of U.S. airports designated to serve international operations. This list contains U.S. airports with scheduled passenger service in large aircraft and certain airports designated as alternate service airports. Omitted from this list are designated general aviation airports, airports with scheduled cargo but no scheduled passenger service, and certain airports having international service in commuter−type aircraft.

ICAO ID	Location	Airport Name	Designation
Alaska			
PANC	Anchorage	Ted Stevens Anchorage International	Regular
PAED	Anchorage	Elmendorf AFB	Alternate
PACD	Cold Bay	Cold Bay	Alternate
PAEI	Fairbanks	Eielson AFB	Alternate
PAFA	Fairbanks	Fairbanks International	Regular
PAJN	Juneau	Juneau International	Regular
PAKN	King Salmon	King Salmon	Alternate
American Samoa			
NSTU	Pago Pago	Pago Pago International	Regular
Arizona			
KPHX	Phoenix	Phoenix Sky Harbor International	Regular
KTUS	Tucson	Tucson International	Regular
California			
KFAT	Fresno	Fresno Yosemite International	Alternate
KLAX	Los Angeles	Los Angeles International	Regular
KOAK	Oakland	Metropolitan Oakland International	Regular
KONT	Ontario	Ontario International	Alternate
KPMD	Palmdale	Palmdale Regional/ USAF Plant 42	Alternate
KSMF	Sacramento	Sacramento International	Alternate
KSAN	San Diego	San Diego International	Regular
KSFO	San Francisco	San Francisco International	Regular
KSJC	San Jose	San Jose Norman Y. Mineta International	Regular
KSCK	Stockton	Stockton Metropolitan	Alternate
Colorado			
KDEN	Denver	Denver International	Regular
KPUB	Pueblo	Pueblo Memorial	Alternate
Connecticut			
KBDL	Windsor Locks	Bradley International	Regular
District of Columbia			
KIAD	Washington	Washington Dulles International	Regular
Florida			
KFLL	Fort Lauderdale	Fort Lauderdale−Hollywood International	Regular
KRSW	Fort Myers	Southwest Florida International	Regular
KMIA	Miami	Miami International	Regular
KMCO	Orlando	Orlando International	Regular
KTPA	Tampa	Tampa International	Regular
KPBI	West Palm Beach	Palm Beach International	Regular
Georgia			
KATL	Atlanta	Hartsfield − Jackson Atlanta International	Regular
Guam			
PGUM	Agana	Guam International	Regular
PGUA	Guam Island	Andersen AFB	Alternate
Hawaii			
PHTO	Hilo	Hilo International	Alternate
PHNL	Honolulu	Honolulu International	Regular
PHOG	Kahului	Kahului	Regular

ICAO ID	Location	Airport Name	Designation
		Illinois	
KORD	Chicago	Chicago−O'Hare International	Regular
		Indiana	
KIND	Indianapolis	Indianapolis International	Regular
		Kansas	
KICT	Wichita	Wichita Mid−Continent	Alternate
		Kentucky	
KCVG	Covington	Cincinnati/ Northern Kentucky International	Regular
		Louisiana	
KMSY	New Orleans	Louis Armstrong New Orleans International	Regular
		Maine	
KBGR	Bangor	Bangor International	Alternate
		Maryland	
KBWI	Baltimore	Baltimore− Washington International Thurgood Marshall	Regular
		Massachusetts	
KBOS	Boston	General Edward Lawrence Logan International	Regular
		Michigan	
KDTW	Detroit	Detroit Metropolitan Wayne County	Regular
		Minnesota	
KMSP	Minneapolis	Minneapolis− St. Paul International (Wold− Chamberlain)	Regular
		Missouri	
KMCI	Kansas City	Kansas City International	Regular
KSTL	St. Louis	Lambert− St. Louis International	Regular
		Nevada	
KLAS	Las Vegas	McCarran International	Regular
KRNO	Reno	Reno/Tahoe International	Regular
		New Jersey	
KEWR	Newark	Newark Liberty International	Regular
		New York	
KJFK	New York	John F. Kennedy International	Regular
KIAG	Niagara Falls	Niagara Falls International	Alternate
KSYR	Syracuse	Syracuse Hancock International	Regular
		North Carolina	
KCLT	Charlotte	Charlotte/ Douglas International	Regular
KRDU	Raleigh− Durham	Raleigh−Durham International	Regular
		Northern Mariana Islands	
PGSN	Saipan Island	Francisco C. Ada/Saipan International	Regular
		Ohio	
KCLE	Cleveland	Cleveland− Hopkins International	Regular
KCMH	Columbus	Port Columbus International	Regular
		Oregon	
KPDX	Portland	Portland International	Regular
		Palau Island	
PTRO	Babelthuap Island	Babelthuap/ Koror	Regular
		Pennsylvania	
KPHL	Philadelphia	Philadelphia International	Regular
KPIT	Pittsburgh	Pittsburgh International	Regular
		Puerto Rico	
TJMZ	Mayaguez	Eugenio Maria De Hostos	Regular
TJSJ	San Juan	Luis Munoz Marin International	Regular
		Tennessee	
KMEM	Memphis	Memphis International	Regular
KBNA	Nashville	Nashville International	Regular

ICAO ID	Location	Airport Name	Designation
Texas			
KDFW	Dallas	Dallas−Fort Worth International	Regular
KELP	El Paso	El Paso International	Regular
KIAH	Houston	George Bush Intercontinental/ Houston	Regular
KLRD	Laredo	Laredo International	Regular
KSAT	San Antonio	San Antonio International	Regular
Utah			
KSLC	Salt Lake City	Salt Lake City International	Regular
Virgin Islands			
TIST	Charlotte Amalie St. Thomas	Cyril E King	Regular
TISX	Christiansted St. Croix	Henry E Rohlsen	Regular
Washington			
KPAE	Everett	Snohomish County (Paine Field)	Alternate
KSEA	Seattle	Seattle−Tacoma International	Regular
KGEG	Spokane	Spokane International	Alternate
Wisconsin			
KMKE	Milwaukee	General Mitchell International	Regular

1.1 Diagrams of these airports, arranged alphabetically by state and in the order listed above, are on the pages following. The most up−to−date diagrams of these and other U.S. airports are in the Terminal Procedures Publication (TPP). For additional information on these airports, see the U.S. Airport/ Facility Directory (A/FD).

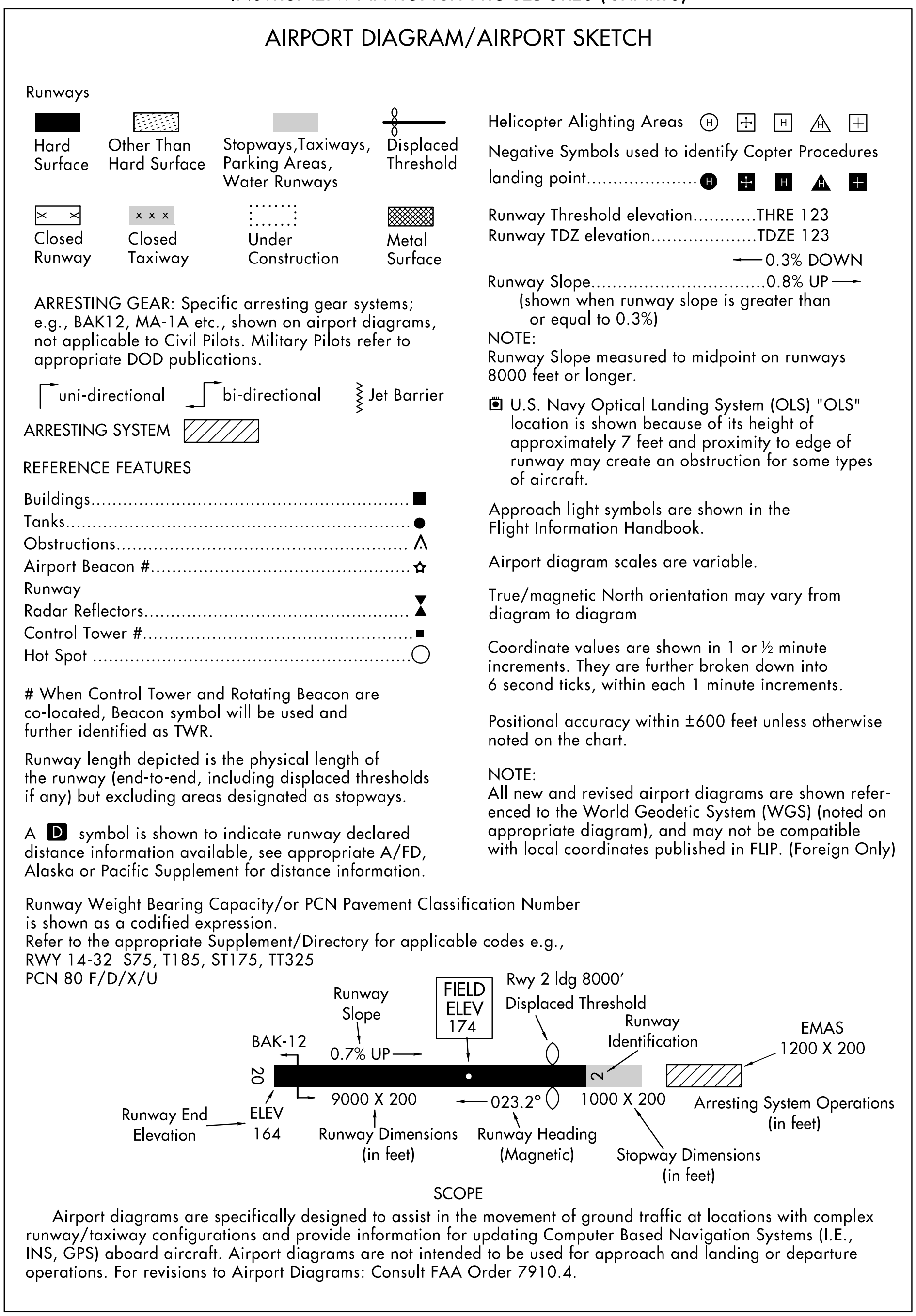
1.2 Both the A/FD and TPP may be purchased from:
Aeronautical Navigation Products (AeroNav)
Logistics Group, AJV−372
Federal Aviation Administration
10201 Good Luck Road
Glenn Dale, MD 20769−9700
Telephone: 1−800−638−8972 (Toll free within U.S.)
301−436−8301
301−436−6829 (FAX)
e−mail: 9−AMC−Chartsales@faa.gov

Instrument Approach Procedures (Charts)
Airport Diagram/Airport Sketch

09071

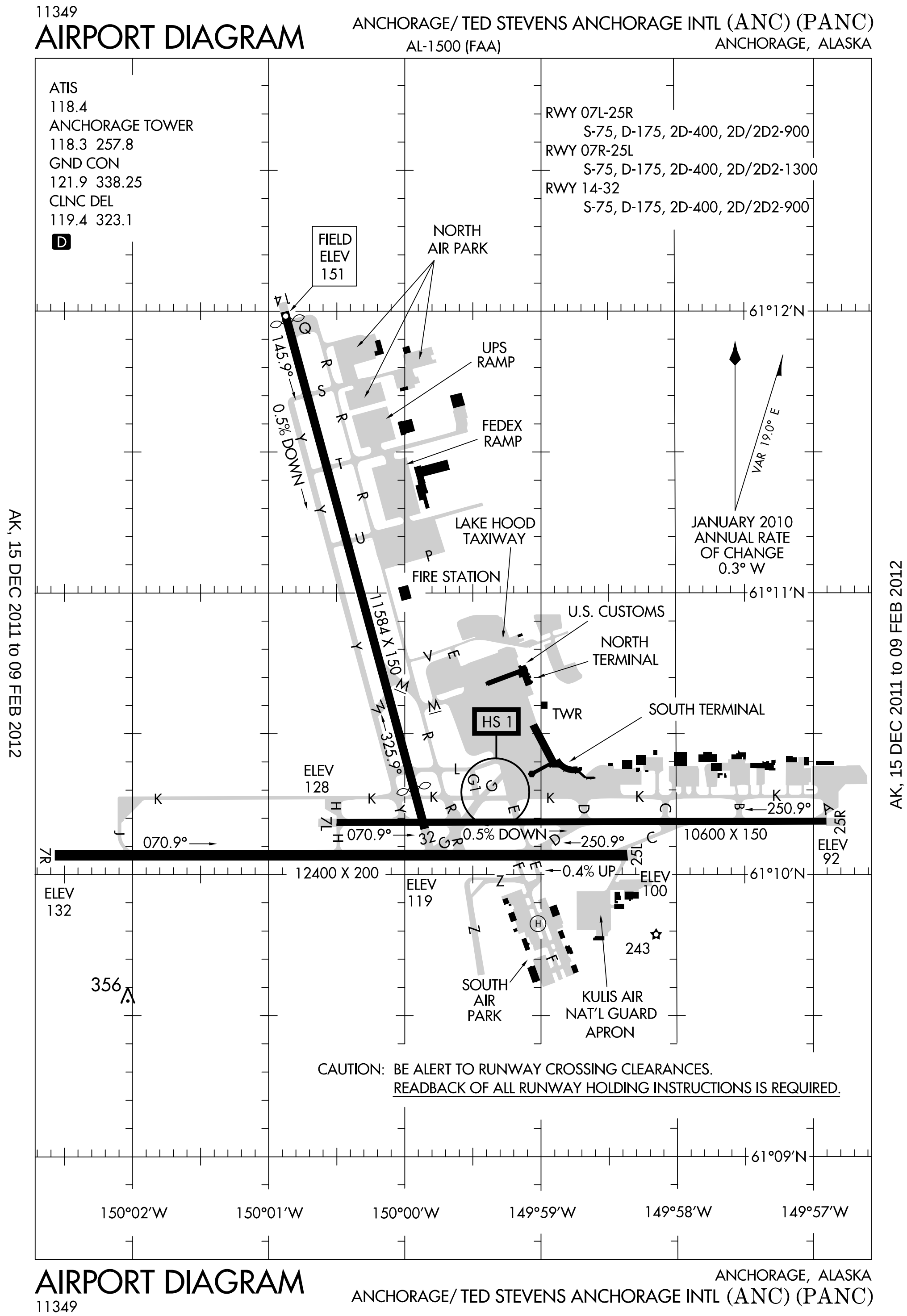
LEGEND

INSTRUMENT APPROACH PROCEDURES (CHARTS)



LEGEND

Anchorage, Alaska
Ted Stevens Anchorage International
ICAO Identifier PANC



Anchorage, AK
Ted Stevens Anchorage Intl
ICAO Identifier PANC

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 61-10-26.70N / 149-59-53.50W
2.2.2 From City: 4 Miles SW Of Anchorage, AK
2.2.3 Elevation: 151 ft
2.2.5 Magnetic variation: 19E (2010)
2.2.6 Airport Contact: John Parrott
BOX 196960
Anchorage, AK 99519
(907−266−2525)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A,A1
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 4/1/2005

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10600 ft x 150 ft
2.12.5 Coordinates: 61−10−11.15N / 150−00−30.00W
2.12.6 Threshold elevation: 128 ft
2.12.6 Touchdown zone elevation: 128 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 25R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10600 ft x 150 ft
2.12.5 Coordinates: 61−10−11.32N / 149−56−53.88W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 92 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12400 ft x 200 ft
2.12.5 Coordinates: 61-10-00.00N / 150-02-34.34W
2.12.6 Threshold elevation: 132 ft
2.12.6 Touchdown zone elevation: 132 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12400 ft x 200 ft
2.12.5 Coordinates: 61-10-00.00N / 149-58-21.54W
2.12.6 Threshold elevation: 100 ft
2.12.6 Touchdown zone elevation: 115 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 14
2.12.2 True Bearing: 165
2.12.3 Dimensions: 11584 ft x 150 ft
2.12.5 Coordinates: 61-11-59.97N / 150-00-52.84W
2.12.6 Threshold elevation: 151 ft
2.12.6 Touchdown zone elevation: 151 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 32
2.12.2 True Bearing: 345
2.12.3 Dimensions: 11584 ft x 150 ft
2.12.5 Coordinates: 61−10−00.00N / 149−59−51.21W
2.12.6 Threshold elevation: 119 ft
2.12.6 Touchdown zone elevation: 121 ft

AD 2.13 Declared distances
2.13.1 Designation: 07L
2.13.2 Takeoff run available: 10600
2.13.3 Takeoff distance available: 10600
2.13.4 Accelerate-stop distance available: 10600
2.13.5 Landing distance available: 10600

2.13.1 Designation: 25R
2.13.2 Takeoff run available: 10600
2.13.3 Takeoff distance available: 10600
2.13.4 Accelerate-stop distance available: 10600
2.13.5 Landing distance available: 10600

2.13.1 Designation: 07R
2.13.2 Takeoff run available: 10900
2.13.3 Takeoff distance available: 10900
2.13.4 Accelerate-stop distance available: 10900
2.13.5 Landing distance available: 12400

2.13.1 Designation: 25L
2.13.2 Takeoff run available: 12400
2.13.3 Takeoff distance available: 12400
2.13.4 Accelerate-stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 14
2.13.2 Takeoff run available: 10493
2.13.3 Takeoff distance available: 10493
2.13.4 Accelerate-stop distance available: 10493
2.13.5 Landing distance available: 10493

2.13.1 Designation: 32
2.13.2 Takeoff run available: 11582
2.13.3 Takeoff distance available: 12582
2.13.4 Accelerate-stop distance available: 11582
2.13.5 Landing distance available: 10493

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 25R
2.14.4 Visual approach slope indicator system: 6−box VASI on left
2.14.10 Remarks: Upwind Threshold Crossing Height 64.19’ GA 3.25 Deg; Dwnwnd Threshold Crossing Height 39.31’ GA 3.00 Deg.

2.14.1 Designation: 07R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI, Runway 25L, Upwind Threshold Crossing Height 101 Ft Glide Angle 3.25 Deg; Dwnwnd Threshold Crossing Height 75 Ft Glide Angle 3.00 Deg.

2.14.1 Designation: 14
2.14.2 Approach lighting system: Omnidirectional approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 118.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 119.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: CD/S
2.18.3 Service designation: 128.65 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 134.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 257.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 257.9 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 259.1 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 271.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 290.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 290.5 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 323.1 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 324.3 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 327.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 363.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 363.2 MHz

2.18.1 Service designation: USB ANG OPS
2.18.3 Service designation: 4897.5 MHz

2.18.1 Service designation: ANG OPS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 338.25 MHz

2.18.1 Service designation: ANG OPNS
2.18.3 Service designation: 140.15 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 07L. Magnetic variation: 19E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61-10-00.00N / 150-10-37.20W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 07L. Magnetic variation: 19E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61-10-13. / 150-00-10.18W
2.19.6 Site elevation: 123 ft

2.19.1 ILS type: DME for runway 07L. Magnetic variation: 19E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61-10-14.06N / 149-56-33.03W
2.19.6 Site elevation: 106 ft

2.19.1 ILS type: Localizer for runway 07L. Magnetic variation: 19E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61-10-11.33N / 149-56-32.65W
2.19.6 Site elevation: 85 ft

2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 19E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61-10-00.00N / 150-02-12.48W
2.19.6 Site elevation: 128 ft

2.19.1 ILS type: Outer Marker for runway 07R.

Magnetic variation: 19E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61-10-00.00N / 150-10-37.20W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 07R. Magnetic variation: 19E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61-10-00.00N / 150-02-51.67W
2.19.6 Site elevation: 127 ft

2.19.1 ILS type: Middle Marker for runway 07R. Magnetic variation: 19E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61-10-00.00N / 150-02-56.82W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 19E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61-10-00.00N / 149-57-58.40W
2.19.6 Site elevation: 112 ft

2.19.1 ILS type: Localizer for runway 07R.

Magnetic variation: 19E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61-10-00.00N / 149-57-55.50W
2.19.6 Site elevation: 98 ft

2.19.1 ILS type: Localizer for runway 14. Magnetic variation: 21E
2.19.2 ILS identification: BSC
2.19.5 Coordinates: 61-09-59.92N / 149-59-45.64W
2.19.6 Site elevation: 121 ft

2.19.1 ILS type: DME for runway 14. Magnetic variation: 21E
2.19.2 ILS identification: BSC
2.19.5 Coordinates: 61-10-00.00N / 149-59-40.34W
2.19.6 Site elevation: 135 ft

2.19.1 ILS type: Glide Slope for runway 14. Magnetic variation: 21E
2.19.2 ILS identification: BSC
2.19.5 Coordinates: 61-11-45.22N / 150-00-52.61W
2.19.6 Site elevation: 142 ft

General Remarks:

MIGRATORY BIRDS IN THE VICINITY OF AIRPORT SPRING THROUGH FALL.

ONE HR PRIOR PERMISSION REQUIRED FOR NON−TRANSPONDER AIRCRAFT OPERATIONS. PRIOR PERMISSION REQUIRED FOR NON−RADIO AIRCRAFT OPERATIONS. NO NIGHTTIME NON−RADIO AIRCRAFT OPERATIONS PERMITTED. PILOTS MUST PROVIDE AN ESTIMATED TIME OF ARRIVAL & REMAIN WITHIN PLUS OR MINUS 15 MINUTES OF ESTIMATED TIME OF ARRIVAL.

FOR WEATHER SERVICE OFFICE PHONE 907−266−5105.

NOISE SENSITIVE AREA IN EFFECT; CONTACT AIRPORT MANAGER AT 907−266−2525 OR AIRPORT OPERATIONS 907−266−2600 FOR FURTHER INFORMATION.

TO COORDINATE NON−TRANSPONDER OR NON−RADIO OPERATIONS CONTACT AERONAUTICAL CHART ATCT AT 907−271−2700 DURING ADMIN HRS (0730−1600 WKDAYS). DURING NON−ADMIN HRS & HOLIDAYS CONTACT FAA AT 907−271−5936.

UNLIGHTED 489 FT TOWER 2 1/2 MILES NORTHEAST.

PORTIONS OF TAXIWAY K BETWEEN TAXIWAY H & TAXIWAY J NOT VISIBILITY FROM ATCT.

NO COMPASS CALIBRATION PAD.

RIGHT TURN OUT OF RAMP PARKING AREA R−2 THROUGH R−4 PROHIBITED.

USE FREQ 122.55 (RCO) FOR FILING, ACTIVATING & CANCELING FLIGHT PLANS IN THE ANCHORAGE BOWL AREA.

FAA RAMP PRIOR PERMISSION REQUIRED − CONTACT AERONAUTICAL CHART FLIGHT INSPECTION FIELD OFFICE FREQ 135.85, 907−271−2414 OR AVIATION 405−954−9780 MON−FRI 0600−1430L.

ANCHORAGE WX CAMERA AVAILABLE ON INTERNET AT HTTP://AKWEATHERCAMS.FAA.GOV

ANCHORAGE AIRPORT TRAFFIC CONTROL TOWER HAS BEEN GRANTED A WAIVER TO THE GUIDELINES THAT PROHIBIT THE CONTROL TOWER FROM DIRECTING AN AIRCRAFT TO “LINEUP AND WAIT” AT AN INTERSECTION, BETWEEN SUNSET AND SUNRISE.

THIS WAIVER ALLOWS THE TOWER TO DIRECT THE AIRCRAFT TO “LINEUP AND WAIT” DURING PERIODS OF DARKNESS AT THE FOLLOWING INTERSECTION: RUNWAY 32 AT TAXIWAY KILO.

AIRCRAFT SHALL NOT “LINEUP AND WAIT” UNDER THE PROVISIONS OF THIS WAIVER WHEN THE SUBJECT INTERSECTION IS NOT VISIBLE FROM THE TOWER. WHEN THE PROVISIONS OF THIS WAIVER ARE BEING EXERCISED, THE AFFECTED RUNWAY SHALL BE USED FOR DEPARTURES ONLY.

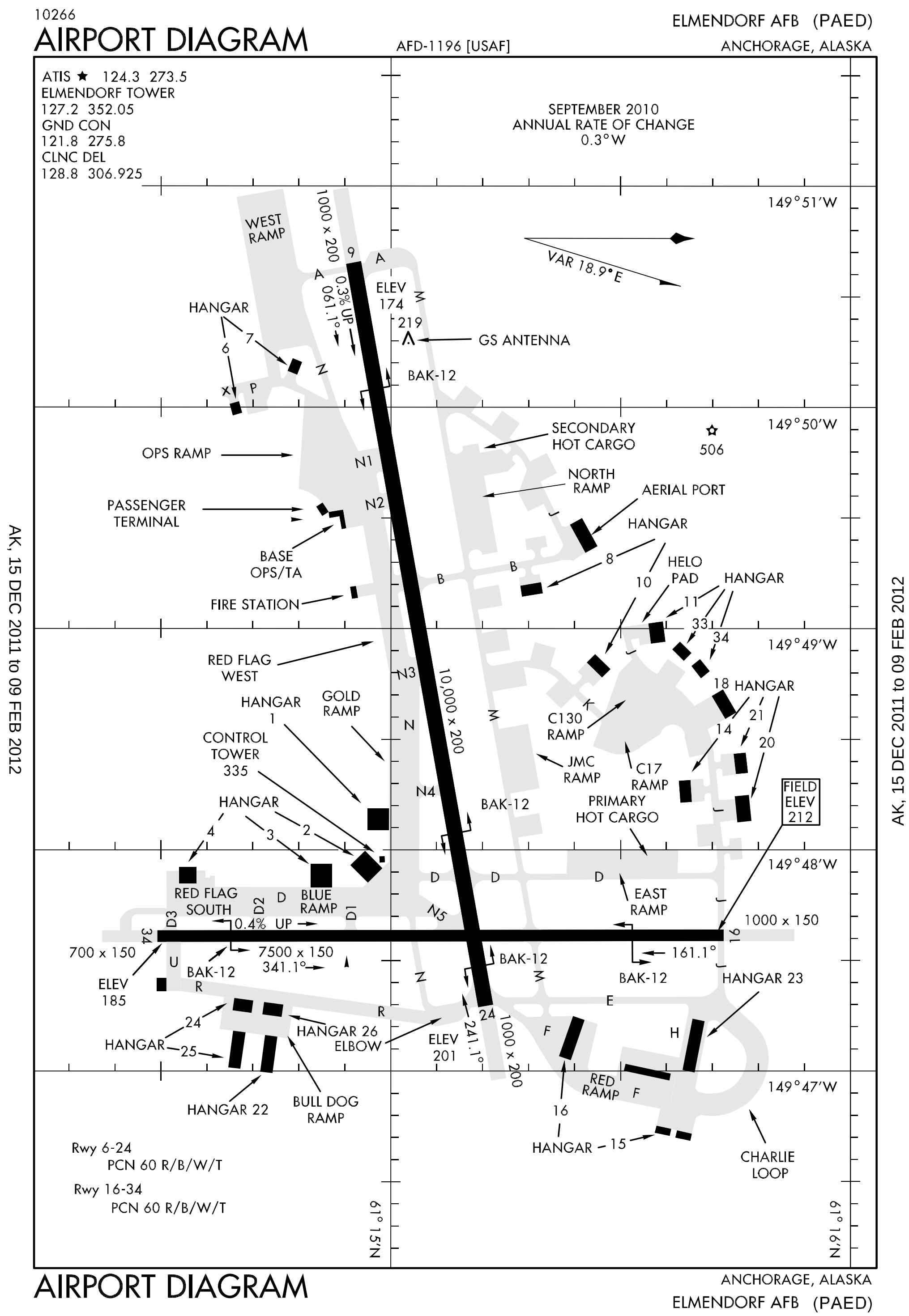
INTERSECTION DEPARTURES WILL CONTINUE TO BE UTILIZED AT OTHER LOCATIONS BETWEEN SUNSET AND SUNRISE. HOWEVER, AIRCRAFT CANNOT BE DIRECTED TO “LINEUP AND WAIT ” PRIOR TO TAKEOFF CLEARANCE.

TAXIWAY V SECURITY GATE EAST OF TAXIWAY E; KEY 121.75 5 TIMES TO ACTIVATE.TWY V RESTRICTED TO AIRCRAFT WEIGHING 12500 LBS OR LESS. SUBJECT TO JET BLAST WEST OF TAXIWAY E.

TRANSIENT MILITARY AIRCRAFT PRIOR PERMISSION REQUIRED.

RUNWAY 07R: BACK TAXIING FROM TAXIWAY J FOR DEP PROHIBITED.

Anchorage, Alaska
Elmendorf AFB
ICAO Identifier PAED



Anchorage, AK
Elmendorf AFB
ICAO Identifier PAED

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 61−15−00.00N / 149−48−23.45W
2.2.2 From City: 3 Miles NE Of Anchorage, AK
2.2.3 Elevation: 212 ft
2.2.5 Magnetic variation: 21E (2005)
2.2.6 Airport Contact: Airfield Mgr
300SS/DOFJ
Elmendorf AFB, AK 99506
(907−552−2444)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: None
2.4.4 De−icing facilities: Fluid: Presair, De−Ice, Nitrogen−Lhnit.
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: None

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 16
2.10.1.b Type of obstacle: Trees Hill. Not Lighted or Marked

2.10.1.a. Runway designation: 34
2.10.1.b Type of obstacle: Pline Tree. Not Lighted or Marked

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Pline Pole. Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 16
2.12.2 True Bearing: 180
2.12.3 Dimensions: 7505 ft x 150 ft
2.12.4 PCN: 60 R/B/W/T
2.12.5 Coordinates: 61−15−43.45N / 149−47−36.51W
2.12.6 Threshold elevation: 212 ft

2.12.1 Designation: 34
2.12.2 True Bearing: 360
2.12.3 Dimensions: 7505 ft x 150 ft
2.12.4 PCN: 60 R/B/W/T
2.12.5 Coordinates: 61−14−29.54N / 149−47−36.55W
2.12.6 Threshold elevation: 185 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 80
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 60 R/B/W/T
2.12.5 Coordinates: 61−14−55.08N / 149−50−39.33W
2.12.6 Threshold elevation: 175 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 260
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 60 R/B/W/T
2.12.5 Coordinates: 61−15−12.17N / 149−47−18.01W
2.12.6 Threshold elevation: 201 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 16
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Non−Standard PAPI Glide Angle 4.2 Degs On Runway 16 Due To High Terrain.

2.14.1 Designation: 34
2.14.2 Approach lighting system: ALSAF: 3000 feet high intensity approach lighting system with centerline sequence flashers
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 06
2.14.2 Approach lighting system: ALSAF: 3000 feet high intensity approach lighting system with centerline sequence flashers
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Approach Lights Extended 15’’ Above Surface Up To 100’ Prior To Threshold Runway 06 PAPI Unusable Beyond 8 Degs Either Side Of Course Path.

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI Runway 24 Unusable Beyond 7 Degrees Right Of Course.

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: 11AF RESCUE COORD CNTR
2.18.3 Service designation: 123.1 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.3 MHz
2.18.4 Hours of operation: 0700−2300

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 134.8 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 273.5 MHz
2.18.4 Hours of operation: 0700−2300

2.18.1 Service designation: 11AF RESCUE COORD CNTR
2.18.3 Service designation: 282.8 MHz

2.18.1 Service designation: PMSV
2.18.3 Service designation: 346.6 MHz

2.18.1 Service designation: AIR MOBILITY CTRL CNTR (CALL “DENALI”)
2.18.3 Service designation: 349.4 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: 11AF COMD CEN
2.18.3 Service designation: 381 MHz

2.18.1 Service designation: AIR MOBILITY CTRL CNTR (CALL “DENALI”)
2.18.3 Service designation: 134.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 352.05 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 306.925 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 06. Magnetic variation: 21E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61-15-14.02N34N / 149-46−52.33W
2.19.6 Site elevation: 212 ft

2.19.1 ILS type: Glide Slope for runway 06. Magnetic variation: 21E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61-15-00.00N / 149-50-16.98W
2.19.6 Site elevation: 168 ft

2.19.1 ILS type: Inner Marker for runway 06. Magnetic variation: 21E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61-14-52.87N / 149-51-00.00W
2.19.6 Site elevation: 192 ft

2.19.1 ILS type: Middle Marker for runway 06. Magnetic variation: 21E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61-14-49.02N / 149-51-49.94W
2.19.6 Site elevation: 99999 ft

General Remarks:

LANDING RUNWAY 16 NOT RECOMMENDED FOR JET AIRCRAFT EXCEPT DURING DAY VFR DUE OBSTRUCTION 337’ MSL LOCATED 1950’ FROM THR & 574’ W OF CENTERLINE.

HANGAR SPACE & WARM STORAGE EXTREMELY LIMITED OCT-MAY.
PREVENTIVE MAINT: TACAN WED AND FRI 1600-1700Z; ILS TUE AND THR 1500-1700Z; PRECISION APPROACH RADAR SAT-SUN 1800-2000Z; AIRPORT SURVEILLANCE RADAR SAT-SUN 2000-2200.

QUIET HR 0630-1400Z WEEKDAYS; 0630-1600Z WEEKEND & HOLS, AIR MOBILITY COMMAND AIRCRAFT EXEMPT.

CAUTION: MOOSE ON & IN THE VICINITY OF RUNWAY.

DURING VISUAL METEOROLOGICAL CONDITIONS DEPS/MISSED APCHS/GO AROUNDS; AIRCRAFT SHALL MAINTAIN AT OR BELOW 1200' MSL UNTIL DEP END OF RUNWAY 05.
ALL FIGHTER AIRCRAFT ON ARR EXPECT REDUCED SEPARATION; SAME TYPE AIRCRAFT AND DAY 3000 FT; DISSIMILAR AIRCRAFT AND/OR NIGHT 6000 FT; AHEAD/BEHIND FORMATION LANDING-6000 FT.

NOTICE: A RIDGE EXTENDING FROM APPROXIMATELY 260 - 020 DEGREES ONE TO TWO MILES FROM THE TOWER PREVENTS OBSERVATION OF FOG OVER KNIK ARM. VISIBILITY MAY DROP RAPIDLY AS FOG POURS OVER RIDGE.

AIRCRAFT REQUIRING CUSTOMS CONTACT BASE OPERATIONS 90 MIN PRIOR TO ARRIVAL BY WAY OF GLOBAL RADIO.

ALL AIRCRAFT MAINTAIN IDLE POWER ON OUTBOARD ENGINE WHILE TAXIING.

NO SIGNS OR PAINTED HOLD SHORT LINES ON INTERSECTING RUNWAYS.

PRIOR PERMISSION REQUIRED NUMBERS WILL BE PROVIDED BETWEEN 24 HRS & 5 DAYS PRIOR TO ARR, CONTACT BASE OPERATIONS DSN 317-552-2107/1202 OR C907-552-2107/1202.

EXTENSIVE SERVICE DELAY FOR FUEL.

ALL VIP AIRCRAFT CONTACT BASE OPERATIONS 30 MIN PRIOR TO ARR.

FREQUENT ACTIVITY IN R2203. WHEN UNABLE TO AVOID CONTACT ATCT.

ALL TRANSIENT AIRCREWS OPER OUT OF ELMENDORF INTENDING ON LOCAL MISSIONS MUST RECIEVE A LOCAL BRIEFING FROM 3 OG/CC AT 317-552-2262.

SPECIAL AIR TRAFFIC RULES FAR PART 93, SEE REGULATORY NOTICES IN THE SUPPLEMENT.

FIRST 1000 FT RUNWAY 0506 & FIRST 1200 FT RUNWAY 24 ARE CONCRETE, MIDDLE 7800 FT IS ASPHALT. FOR CURRENT RUNWAY CONDITION READING/RUNWAY SURFACE CONDITIONS ON RUNWAY 06/24 & RUNWAY 16/34 CONTACT TOWER.

LIMITED MAINTENANCE CAPABILITIES ON WEEKEND.

JOAP, JOINT OIL ANALYSIS PROGRAM AVAILABLE. L/H NIT, LOW & HIGH PRESSURE NITROGEN SERVICING AVAILABLE.

CHANGE JET AIRCRAFT STARTING UNITS (JASU) TO, (A/M32A-86), MC-1A), (MC-2A),

(AM32A-60A). (AM32-95)150 +/-5 LBS/MIN (2055 +/-68CFM) AT 51 +/-02 PSIA. LASS 150 +/-5 LBS/MIN @ 49 +/-2 PSIA.

FUEL: J8

OIL: O-123, O-128, O-133, O-148, O-156, JOAP.

JOAP & LOW & HIGH PRESURE NITROGEN SERVICING FURNISHED DURING NORMAL DUTY HOURS, OTHER TIMES ON REQUEST.

FLUID: PRESAIR, DE-ICE, NITROGEN-L/H NIT.

ALL AIRCRAFT REQUIRE BARRIER REMOVAL MUST CONTACT AIRFIELD MANAGEMENT PRIOR TO DEPARTING PREVIOUS STATION.

PRIOR PERMISSION REQUIRED NRS VALID 6 HRS PRIOR TO OR AFTER ESTIMATED TIME OF ARRIVAL.

UNITS DEPLOYING, INTENDING TO FLY ANY SORTIES THAT ORIGINATE AND TERMINATE AT ELMENDORF MUST DEPLOY WITH CREW CHIEFS AND CONTACT 3 WG SCHEDULING DSN 317-552-2406 NOT LATER THAN 90 DAYS PRIOR TO ARRIVAL TO OBTAIN SPONSORING UNIT INFORMATION.

RUNWAY 16/34 RUBBER ACCUMULATE NORTH & SOUTH 1000FT.

TRANSIENT MAINTENANCE: AIRCRAFT SERVICES ARE LIMITED TO POL SERVICING, INTAKE/EXHAUST INSPECTIONS, F-16 CHIP DETECTOR INSPECTIONS AND END OF RUNWAY INSPECTIONS.

IFF SERVICE AVAILABLE. AIRFIELD WX IS AUTOMATICALLY MONITOR BY AN/FQ-19 AUTOMATED WX OBSERVING SYSTEM AND BACKED-UP/ AUGMENTED BY HUMAN OBSERVER WHEN NECESSARY 24/7. DSN 317-552-4903/4397OR C907-552-4903/4397. FULL SERVICE WX BRIEFING 24HRS 17 OPERATIONAL WEATHER SQUADRON DSN 315-449-8333 OR C808-449-8333.

C17/C130 OVERT LIGHTS AVAILABLE ON RY16/34. C17/C130 COVERT LIGHTS AVAILABLE ON RUNWAY 16.

NIGHT VISION GOGGLE OPERATIONS ON RUNWAY 16/34 & RUNWAY 06/24 MON-FRI FROM 0400-1000Z++ .

DURING EVACUATION OF WX STATION, CONTACT 17 OPERATIONAL WX SQUADRON AT DSN 315-449-8333.

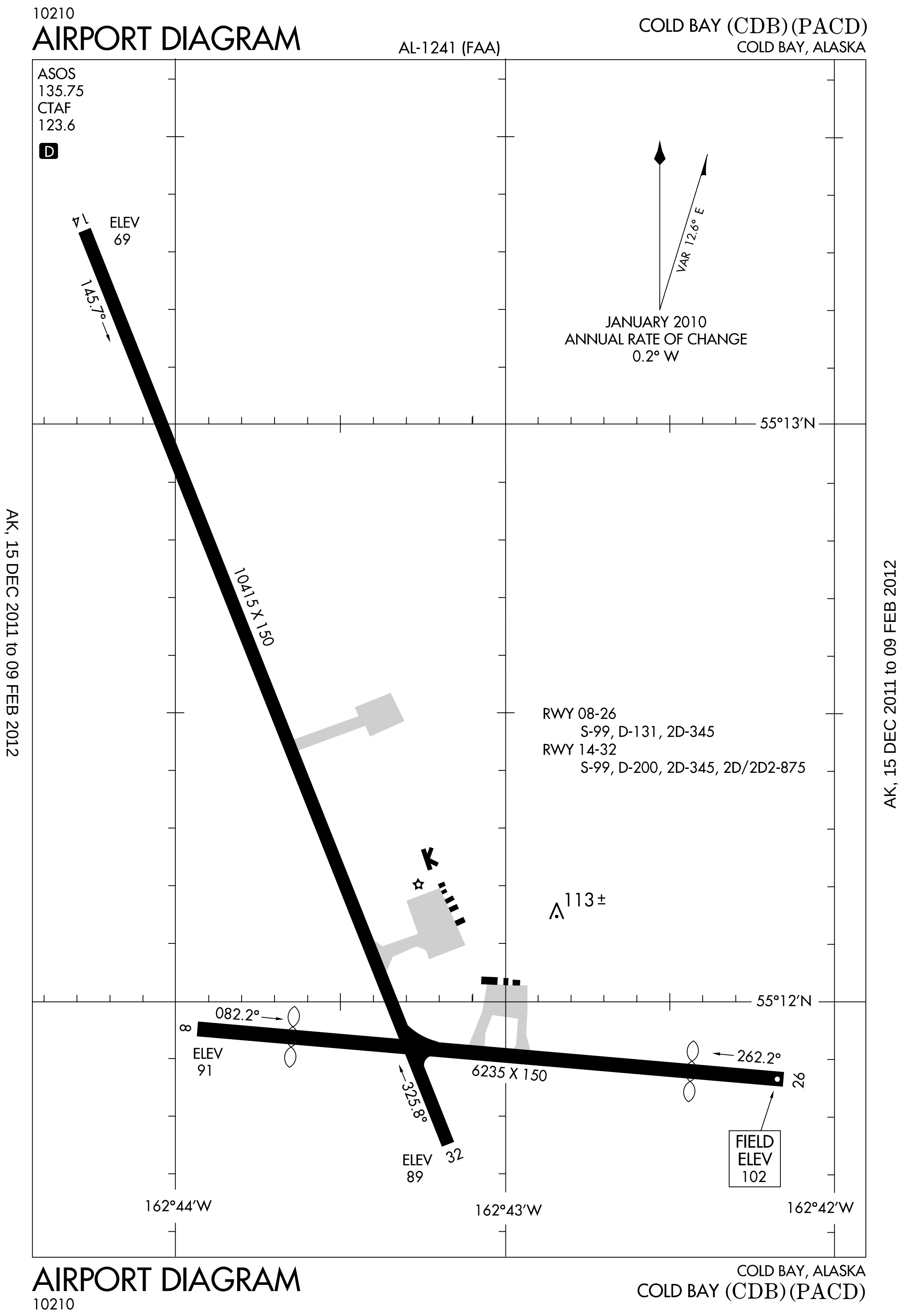
ALTERNATE WX LOCATION VISIBILITY OBSTRUCTED FROM SE-W DUE TO HANGARS. USE PHONE PATCH WHEN WX RELOCATES TO ALTERNATE LOCATION.PHONE PATCH CAPABILITY THROUGH 3 WG/CP AT 907-552-3000.

CAUTION: NUMEROUS AIRCRAFT WILL BE OPR IFR BETWEEN 1500-2000 MSL FROM BGQ 092/10 INTO R2203 TO EDF 320/07 IN THE VICINITY OF BIG LAKE, PALMER, BIRCHWOOD, GOOSEBAY AND WASILLA, AK., MON-SAT 0300-0800Z++, AND TUES AND THU 1800-2200Z++.

ALL NON-BASED ASSIGNED AIRCRAFT REQUIRE PRIOR PERMISSION REQUIRED.

CAUTION: HEAVY RAINFALL MAY CAUSE HI POTENTIAL FOR HYDROPLANING FOR CONCRETE ENDS OF RUNWAY 06 AND RUNWAY 34.

Cold Bay, Alaska
Cold Bay
ICAO Identifier PACD



Cold Bay, AK
Cold Bay
ICAO Identifier PACD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 55−12−18.54N / 162−43−28.08W
2.2.2 From City: 0 Miles N Of Cold Bay, AK
2.2.3 Elevation: 102 ft
2.2.5 Magnetic variation: 14E (2005)
2.2.6 Airport Contact: Jeff Doerning
BOX 97
Cold Bay, AK 99571
(907−532−5000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: MAY−SEP Months, ALL Days, 0800−1900 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Minor
2.4.7 Remarks: Maint Duty Hrs: 0700 − 1800 Sun Thru Sat (1 May − 30 Sep); 0530 − 1800 (1 Oct − 30 Apr).

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 1/2005
2.6.4 Remarks: Closed To Aircraft 0 Operations With More Than 30 Passenger Seats Except Prior Permission Required In Writing To Airport Manager Box 97 Cold Bay Ak 99571.

AD 2.12 Runway physical characteristics
2.12.1 Designation: 14
2.12.2 True Bearing: 158
2.12.3 Dimensions: 10415 ft x 150 ft
2.12.5 Coordinates: 55−13−20.62N / 162−44−16.51W
2.12.6 Threshold elevation: 69 ft
2.12.6 Touchdown zone elevation: 74 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 338
2.12.3 Dimensions: 10415 ft x 150 ft
2.12.5 Coordinates: 55−11−45.16N / 162−43−10.26W
2.12.6 Threshold elevation: 89 ft
2.12.6 Touchdown zone elevation: 89 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 95
2.12.3 Dimensions: 6235 ft x 150 ft
2.12.5 Coordinates: 55−11−57.13N / 162−43−56.05W
2.12.6 Threshold elevation: 91 ft
2.12.6 Touchdown zone elevation: 93 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 26
2.12.2 True Bearing: 275
2.12.3 Dimensions: 6235 ft x 150 ft
2.12.5 Coordinates: 55−11−52.01N / 162−42−00.00W
2.12.6 Threshold elevation: 102 ft
2.12.6 Touchdown zone elevation: 96 ft

AD 2.13 Declared distances
2.13.1 Designation: 08
2.13.2 Takeoff run available: 6235
2.13.3 Takeoff distance available: 6235
2.13.4 Accelerate−stop distance available: 5235
2.13.5 Landing distance available: 4235

2.13.1 Designation: 26
2.13.2 Takeoff run available: 6235
2.13.3 Takeoff distance available: 6235
2.13.4 Accelerate−stop distance available: 5235
2.13.5 Landing distance available: 4235

AD 2.14 Approach and runway lighting
2.14.1 Designation: 14
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 32
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 08
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.10 Remarks: Line Of Sight For VASI Rwy 08 Offset 5 Degrees To The North.

2.14.1 Designation: 26
2.14.4 Visual approach slope indicator system: 4−box VASI on left

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 14. Magnetic variation: 14E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−11−41.02N / 162−43−00.00W
2.19.6 Site elevation: 89 ft

2.19.1 ILS type: Glide Slope for runway 14. Magnetic variation: 14E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−13−12.78N / 162−44−00.00W
2.19.6 Site elevation: 68 ft

2.19.1 ILS type: Outer Marker for runway 14. Magnetic variation: 14E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−17−49.16N / 162−47−24.07W
2.19.6 Site elevation: 36 ft

2.19.1 ILS type: Middle Marker for runway 14. Magnetic variation: 14E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−13−53.76N / 162−44−39.55W
2.19.6 Site elevation: 99999 ft

General Remarks:

SNOW & ICE REMOVAL AND AIRPORT HAZARD REPORTING ONLY PERFORMED DURING DUTY HRS UNLESS BY PRIOR ARRANGEMENT IN WRITING WITH AIRPORT MANAGER.

LARGE BIRDS NEAR APPROACH ENDS OF ALL RUNWAYS.

BRAKELOCK TURNS NOT ALLOWED ON RUNWAYS.

CODE OF FEDERAL REGULATIONS INDEX B. INDEX MAY BE REDUCED FOR AIRCRAFT LESS THAN 90’.

NO CUSTOMS AVAILABLE; WRITTEN PERMISSION REQUIRED FOR REFUELING STOPS 24−48 HRS IN ADVANCE IF ARRIVING FROM A FOREIGN COUNTY; FAX 907−271−2684 OR 907−271−2686.

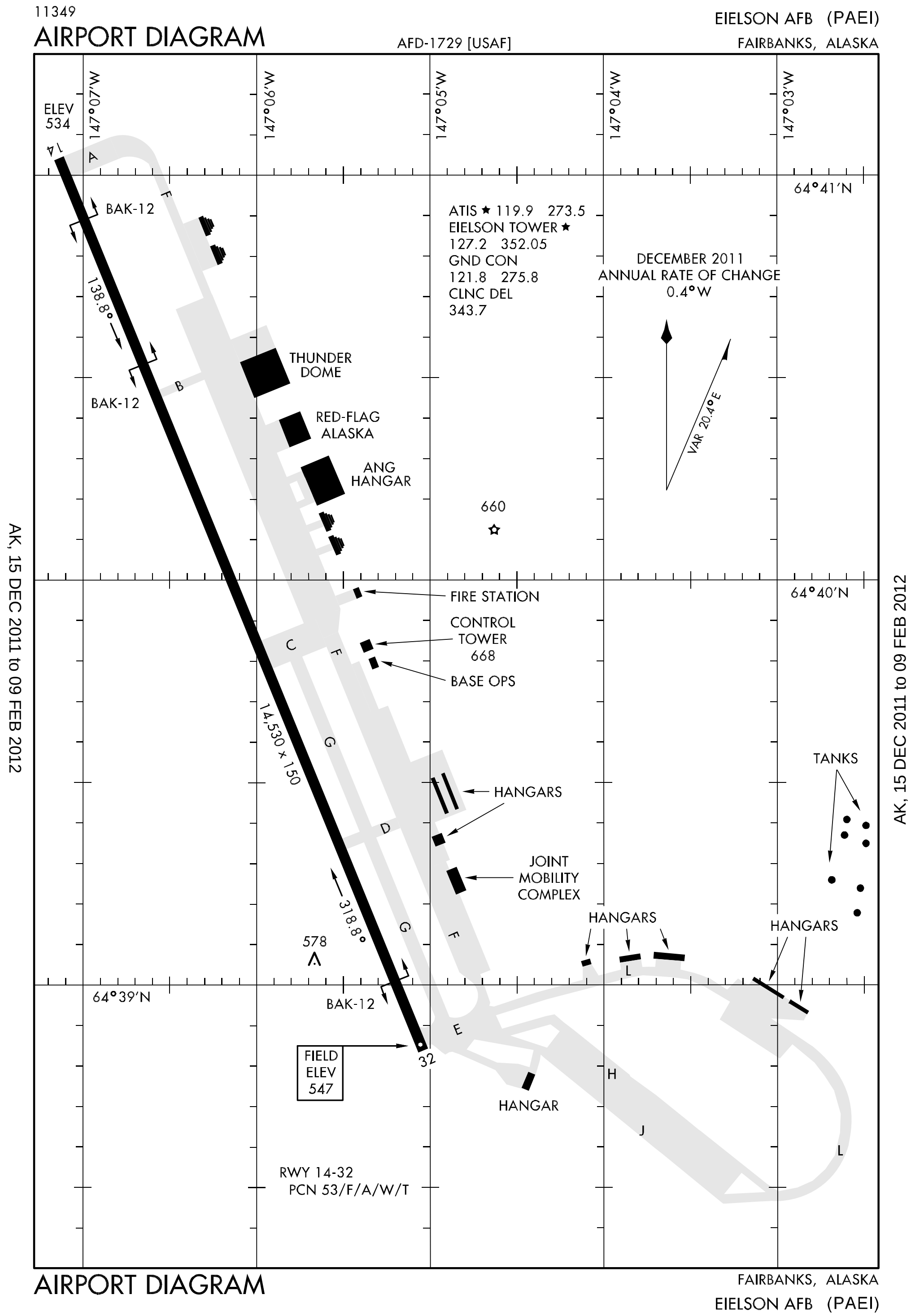
TOWER 4.8 NAUTICAL MILE NW OF AIRPORT UNLIGHTED.

PERSONNEL AND EQUIPMENT MAY BE WORKING ON THE RUNWAY AT ANY TIME.

AIRPORT SAND LARGER GRADATION THAN FAA RECOMMENDED/SEE AC150/5200−30.

WX CAMERA AVAILABLE ON INTERNET AT HTTP://AKWEATHERCAMS.FAA.GOV

Fairbanks, Alaska
Eielson AFB
ICAO Identifier PAEI



Fairbanks, AK
Eielson AFB
ICAO Identifier PAEI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 64−39−56.40N / 147−06−00.00W
2.2.2 From City: 17 Miles SE Of Fairbanks, AK
2.2.3 Elevation: 547 ft
2.2.5 Magnetic variation: 23E (2005)
2.2.6 Airport Contact: Chief Airfield Management
343 CSG/OTM
Eielson AFB, AK 99702
(907−377−3201)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 1600−0800Z++ Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: None
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: None

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Trees. Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 14
2.12.2 True Bearing: 159
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 53 F/A/W/T
2.12.5 Coordinates: 64−41−00.00N / 147−07−00.00W
2.12.6 Threshold elevation: 534 ft
2.12.6 Touchdown zone elevation: 547 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 339
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 53 F/A/W/T
2.12.5 Coordinates: 64−38−49.49N / 147−05−00.00W
2.12.6 Threshold elevation: 547 ft
2.12.6 Touchdown zone elevation: 536 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Non Standard 2 Parallel Row Approach Lights−Af Type E.

2.14.1 Designation: 32
2.14.2 Approach lighting system: ALSAF: 3000 feet high intensity approach lighting system with centerline sequence flashers
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: SUAIS RADIO
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 259.1 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 273.5 MHz
2.18.4 Hours of operation: 1600−0800Z++

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 318.2 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 324.3 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 343.7 MHz

2.18.1 Service designation: PMSV
2.18.3 Service designation: 346.6 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 352.05 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 139.3 MHz

2.18.1 Service designation: WING OPS
2.18.3 Service designation: 259.5 MHz

2.18.1 Service designation: SOURDOUGH
2.18.3 Service designation: 139.6 MHz

2.18.1 Service designation: CP (HAVE QUICK)
2.18.3 Service designation: 289.4 MHz

2.18.1 Service designation: 168 ANG OPS
2.18.3 Service designation: 238.3 MHz

2.18.1 Service designation: 168 ANG OPS
2.18.3 Service designation: 293.6 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 119.9 MHz
2.18.4 Hours of operation: 1600−0800Z++

2.18.1 Service designation: SOURDOUGH
2.18.3 Service designation: 359.15 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 32. Magnetic variation: 23E
2.19.2 ILS identification: EAF
2.19.5 Coordinates: 64−41−22.13N / 147−07−21.41W
2.19.6 Site elevation: 529 ft

2.19.1 ILS type: Glide Slope for runway 32. Magnetic variation: 23E
2.19.2 ILS identification: EAF
2.19.5 Coordinates: 64−38−58.93N / 147−05−25.28W
2.19.6 Site elevation: 540 ft

2.19.1 ILS type: Middle Marker for runway 32. Magnetic variation: 23E
2.19.2 ILS identification: EAF
2.19.5 Coordinates: 64−38−10.49N / 147−04−32.62W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 14. Magnetic variation: 23E
2.19.2 ILS identification: EIL
2.19.5 Coordinates: 64−40−51.59N / 147−07−00.00W
2.19.6 Site elevation: 532 ft

2.19.1 ILS type: Localizer for runway 14. Magnetic variation: 23E
2.19.2 ILS identification: EIL
2.19.5 Coordinates: 64−38−33.05N / 147−04−51.27W
2.19.6 Site elevation: 548 ft

General Remarks:

TRANSMIT ALERT SERVICE AVAILABLE 0700-0000 MON-FRI EXCEPT HOLIDAY; OTHER TIMES PRIOR PERMISSION REQUIRED THROUGH BASE OPERATIONS OFFICE.

CRYPTO MATERIALS NOT AVAILABLE TRANSIENT CREW. ALL AIRCRAFT WITH VIP CONTACT AIRFIELD MANAGEMENT 20-30 MINUTES PRIOR TO ESTIMATED TIME OF ARRIVAL WITH FIRM CHICK TIME. LIMITED FLEET SERVICE AVAILABLE, NO POTABLE WATER.

OVERHEAD TRAFFIC PATTERN ALTITUDE 2000 FT MSL; RECTANGULAR TRAFFIC PATTERN ALTITUDE 1500 FT MSL.

AVOID SMALL ARMS RANGE LOCATED 2.5 NAUTICAL MILE E OF APPROACH END RUNWAY 32. SMALL ARM RANGE ACTIVE WEEKEND 1700-0100Z++, SURFACE TO 3500 FT AGL.

CARGO & PASSENGER CARRYING AIRCRAFT CALL COMMAND POST 3 HRS PROIR TO LANDING AND 30 MIN PROIR TO LANDING AND STATE NUMBER OF PASSENGERS.

BASH PHASE II MONTHS ARE APR, MAY, AUG AND SEPT. DURING PERIODS OF STANDING WATER ON THE AIRFIELD, GULLS, DUCKS, GEESE AND OTHER BIRDS POSE A SIGNIFICANT HAZARD TO AIRCRAFT. REPORT ALL BIRD AND ANIMAL STRIKES ON & IN THE VICINITY OF EILSON TO AIRFIELD MANAGEMENT, DSN 317-377-186, PILOT TO DISPATCH OR 354 FW/SE DSN 317-377-4110.

TO AVOID DELAY FILE FLIGHT PLAN AT LEAST 2 HRS PRIOR TO ESTIMATED TIME OF DEPARTURE. ARRIVALS REQUIRING CUSTOMS MUST NOTIFY AIRFIELD MANAGEMENT 1.5 HRS PRIOR TO LANDING. U.S. IMMIGRATION SERVICE NOT AVAILABLE. AIR TERMINAL AND GROUND HANDLING SERVICE OPRS 1630-0030Z++ WEEKDAYS.

DEP AIRCRAFT REMAIN AT OR BELOW 1500 FT UNTIL DEP END OF RUNWAY.

ALL PACAF FIGHTER AIRCRAFT ON ARR EXPECT REDUCED RUNWAY SEPARATION; SIMILAR FIGHTER TYPE/DAY - 3000 FT; DISSIMILAR FIGHTER TYPE AND/OR NIGHT WET RUNWAY OR RUNWAY CONDITION READING REPORT LESS THAN 17 - 6000 FT; BEHIND FORMATION LANDING - 6000 FT; FIGHTER TYPE LANDING BEHIND NON-FTR TYPE - 9000 FT; RUNWAY CONDITION READING VALIDATED AS CONDITIONS WARRANT.

FLIGHTS ORIGINATING OUTSIDE OF THE STATE REFER TO ALASKA SECTION OF US AIR FORCE - FOREIGN CLEARANCE GUIDE.

TRANSMIT BILLETING EXTREMELY LIMITED/EXTENSIVE FUEL DELAYS DURING RED FLAG ALASKA EXERCISE (APR-OCT).

ARCTIC GEAR IS STRONGLY ENCOURAGED DUE TO POSSIBLE EXTREME COLD TEMPERATURES 1 OCT - 31 AT SEA; LIMITED SUPPLIES ON HAND.

QUIET HRS 0800-1600Z++ EXCEPT REQUIRE OG/CC APPROVAL.

AIR TERMINAL AND GROUND HANDLING SERVICE OPRS 1630-0030Z++ WEEKDAYS. AIRCRAFT REQUIRING TERMINAL AND GROUND HANDLING SERVICE ARE REQUIRED TO PROVIDE ADVANCE NOTICE OR DELAYS IN SERVICE MAY BE EXPERIENCED. AIRCRAFT REQUIRING SERVICE SHOULD MAKE PRIOR COORDINATION WITH AIRFIELD MANAGEMENT.

ALASKA ANG 168TH AREFS OPERATIONS DSN (317-377-8800, C 907-377-8800) ANG OPR 24 HRS. AIRFIELD MANAGEMENT DSN 317-377-1861/3201.

FOR FLIGHT ADVISORIES OR STATUS OF RESTRICTED & MOAS CONTACT EIELSON RANGE CONTROL ON SAUIS RADIO 125.3 OR CALL 1-800-758-8723.

TAXIING PROHIBITED ON TAXIWAY ’F’ FROM TAXIWAY ’C’ TO TAXIWAY ’D’ FOR AIRCRAFT WITH WINGSPAN GREATER THAN 133 FT WHEN ANY AIRCRAFT IS PARKED ON ’L’ ROW. RUNWAY 14 & 32 PAPI GS NOT COINCIDENTAL WITH ILS GS.

AIRPORT REMARKS: PRIOR PERMISSION REQUIRED NUMBER REQUIRED 24 HRS IN ADVANCE PRIOR TO FILING FLIGHT PLAN; CONTACT DSN 317-377-1861 C907-377-1861.

EXPECT ARRIVAL TIME RESTRICTION FOR ALL AIRCRAFT, EXCEPT AIREVAC & DV CODE 7 OR HIGHER

DURING BIRD WATCH CONDITION MODERATE LOCAL PATTERN WORK LIMITED TO MIN REQUIRE WITH OG/CC APPROVAL, NO TOUCH AND GO LANDING, FORMATION TKOF/LNDG PROHIBITED AND LOW APPROACH LIMITED TO 300 FT AGL. DURING BIRD WATCH CONDITION SEVERE; TAKE-OFF, PATTERN, AND LANDING PROHIBITED WITHOUT OG/CC APPROVAL, EXCEPT FOR EMERGENCY.

MOOSE HAVE BEEN SPOTTED ON OR NEAR THE RUNWAY ENVIRONMENT ALL HRS OF THE DAY.

N & S BARRIER RUNOUT REDUCED TO 950 FT.

ALL TRANSIENT AIRCREWS MUST REGISTER WITH AIRFIELD MANAGEMENT UPON ARRIVAL. SEE AP1 SUPPLEMENTARY AIRPORT REMARKS. LIMITED SECRET AND COMSEC STORAGE AVAILABLE AT AIRFIELD MANAGEMENT.

LIMITED SECRET AND COMSEC STORAGE AVAILABLE AT BASE OPERATIONS. AIRFIELD MANAGEMENT DOES NOT HAVE COMSEC RESPONSIBILITIES. FOR TOP SECRET AND COMSEC ISSUE/STORAGE CONTACT COMMAND COMMAND POST DSN 317-377-1500.

PORTIONS OF APRON ’O’ ROW AND SOUTH RAMP NOT VISIBLE FROM TOWER.

ALL CONTINGENCY OPER CONTACT AIRPORT MANAGER FOR COORDINATION.

TRANSIENT ALERT: TRANSIENT MAINT LIMITED TO F16 SERVICING UPON AIRCREW REQ. THRU FLIGHT/BPO/PREFLIGHT INSPECTION OF F16 NOT AVAILABLE.

AIRPORT OPR 1600-0800Z++. QUIET HRS 0700-1600Z++, EXCEPTIONS REQUIRE OPERATIONS GROUP COMMANDER APPROVAL.

RADIO/NAV/WEATHER REMARKS - (F) 1500-0700Z ++ DAILY.

ARTIC GEAR IS STRONGLY ENCOURAGED DUE TO EXTREME COLD TEMPARTURES OCT1-MAR31.

PERSONNEL AND EQUIPMENT WORKING ON RUNWAY 14-32 WHEN TOWER UNMANNED. PRE-COORDINATE WITH MAINT OPERATIONS CENTER DSN 317-377-1205 NO LATER THAN 48 HRS FROM ESTIMATED TIME OF ARRIVAL. UHF IS THE PREFERRED PATTERN FREQ.

AIRPORT REMARKS: PRIME KNIGHT NOT AVAILABLE.

AIRPORT REMARKS: RUNWAY 300 FT WIDE ENTIRE LENGTH, CENTER 150 FT USABLE.

FAIRBANKS FSS LOCAL CONTROL 474-0137. FOR FLIGHT ADVISORIES OR STATUS OF RESTRICTED AND MILITARY OPERATING AREAS, CONTACT EIELSON RANGE CONTROL ON SUAIS RADIO 125.3 OR TELEPHONE 1-800-758-8723. ASOS FREQ 119.275 IS ASSOCIATED WITH R-2205 YUKON TRAINING RANGE.

BASE OPERATIONS DOES NOT HAVE COMSEC RESPONSIBILITIES. BASE OPERATIONS WILL

NOT ISSUE COMSEC.

ASOS FREQ 118.525 IS ASSOCIATED WITH R-2211 BLAIR LAKE TRAINING RANGE. PMSV: METRO BELOW 3000 FT RECEPTION FROM 300¿-090¿ IS LIMITED BEYOND 15NM BY TERRAIN, BELOW 15000 FT LIMITED BEYOND 75NM, NO LIMITATIONS WITHIN 100NM AT 20000 FT.

AUGMENTATION CAPABLE DURING NORMAL OPR HR. DUR EVACUATION OF WX STATION CONTACT OP WX SQUADRON AT NUMBER ABOVE. ALTITUDE WX LOCATION VISIBILITY SEVERELY LIMITED DUE TO BUILDING AND PARK AIRCRAFT.

PHONE PATCH CAPABILITY THROUGH 354 FW/CP AT 907-377-1500. FMQ19 907-377-5846.

CAUTION: NONSTANDARD LIGHT, 2000 FT OF RUNWAY EDGE LIGHT BETWEEN DELTA-CHARLIE TAXIWAYS LOCATED 12 FT FR RUNWAY EDGE.

UNMONITORED WHEN PAEI TOWER CLOSED. FULL SERVICE AVAILABLE 1600-0800Z++, LIMITED SERVICE ON TIME. FULL SERVICE VARY WITH LOCAL FLYNG SCHEDULE. WX BRIEFING AVAILABLE DSN 317-377-3140/1160.

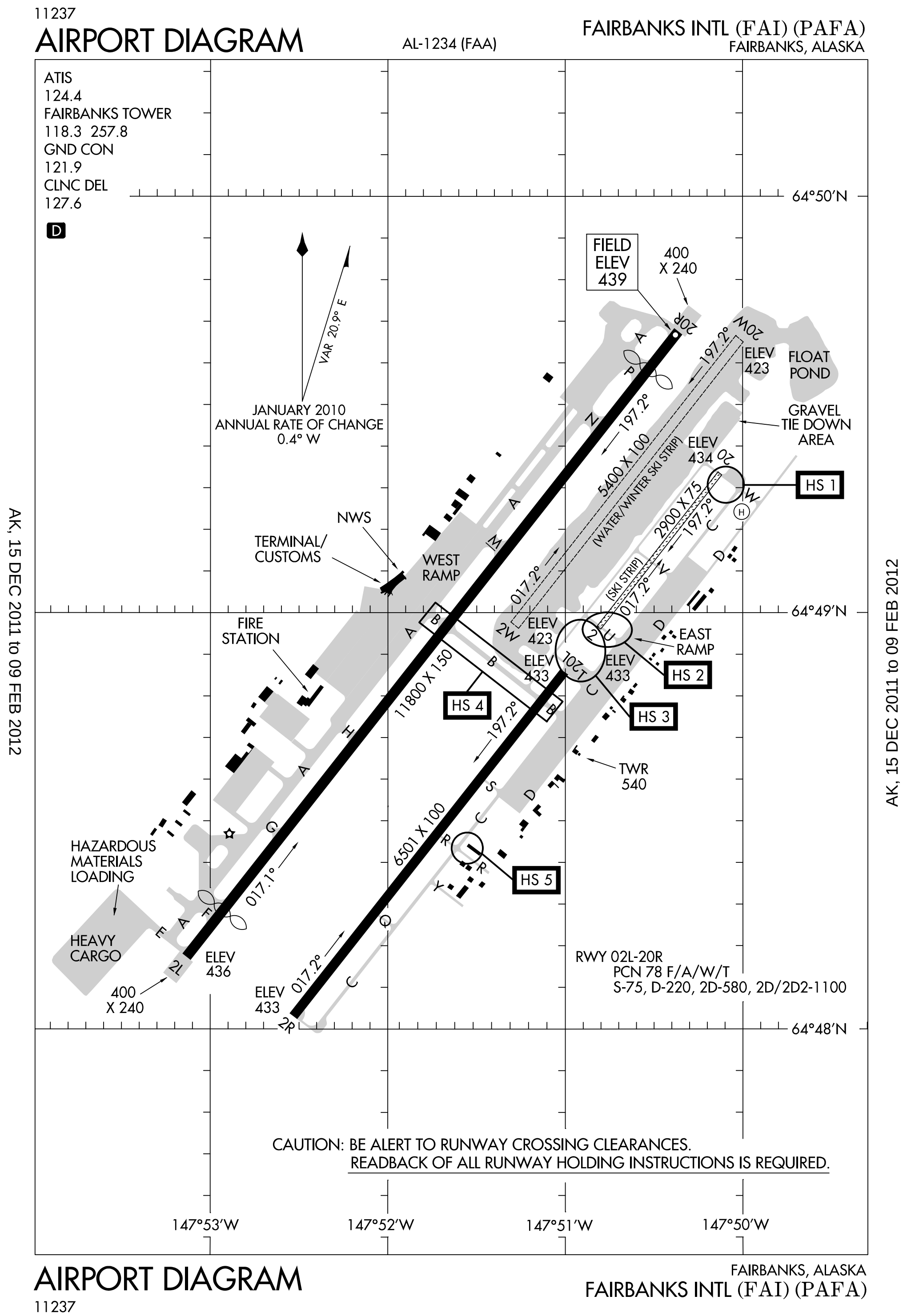
AWOS IN USE.

BRIEFING FOR TRANSIENT AIRCREWS BEYOND NORMAL OPERATING HRS BY WAY OF 17TH OWS AT JOINT BASE PEARL HARBOR-HICKAM DSN 315-449-8333/7950 C808-449-8333/7950 OR DSN 315-448-3809, C808-448-3809.

CAUTION: LOCALIZER AND GS CRITICAL AREAS ARE NOT PROTECTED FROM AIRFIELD ACCESS ROADS.

CAUTION: FIRE HYDRANTS LOCATED 64 FT NE OF TAXIWAY H CNTLN.

Fairbanks, Alaska
Fairbanks International
ICAO Identifier PAFA



Fairbanks, AK
Fairbanks Intl
ICAO Identifier PAFA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 64−48−54.40N / 147−51−23.21W
2.2.2 From City: 3 Miles SW Of Fairbanks, AK
2.2.3 Elevation: 439 ft
2.2.5 Magnetic variation: 21E (2010)
2.2.6 Airport Contact: Jesse Vanderzanden
6450 AIRPORT WAY − SUITE 1
Fairbanks, AK 99709
(907−474−2500)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 3/1/2005

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 02L
2.10.1.b Type of obstacle: Tree (72 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 652 ft from Centerline

2.10.1.a. Runway designation: 20R
2.10.1.b Type of obstacle: Tree (86 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 430 ft from Centerline

2.10.1.a. Runway designation: 20W
2.10.1.b Type of obstacle: Fence (11 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 02W
2.10.1.b Type of obstacle: Fence (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 170 ft from Centerline

2.10.1.a. Runway designation: 02R
2.10.1.b Type of obstacle: Trees (79 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 350 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 02L
2.12.2 True Bearing: 38
2.12.3 Dimensions: 11800 ft x 150 ft
2.12.4 PCN: 78 F/A/W/T
2.12.5 Coordinates: 64−48−00.00N / 147−53−00.00W
2.12.6 Threshold elevation: 436 ft
2.12.6 Touchdown zone elevation: 439 ft

2.12.1 Designation: 20R
2.12.2 True Bearing: 218
2.12.3 Dimensions: 11800 ft x 150 ft
2.12.4 PCN: 78 F/A/W/T
2.12.5 Coordinates: 64−49−40.91N / 147−50−21.13W
2.12.6 Threshold elevation: 439 ft
2.12.6 Touchdown zone elevation: 439 ft

2.12.1 Designation: 02W
2.12.2 True Bearing: 38
2.12.3 Dimensions: 5400 ft x 100 ft
2.12.5 Coordinates: 64−48−58.00N / 147−51−16.59W
2.12.6 Threshold elevation: 423 ft

2.12.1 Designation: 20W
2.12.2 True Bearing: 218
2.12.3 Dimensions: 5400 ft x 100 ft
2.12.5 Coordinates: 64−49−39.83N / 147−49−59.62W
2.12.6 Threshold elevation: 423 ft

2.12.1 Designation: 02R
2.12.2 True Bearing: 38
2.12.3 Dimensions: 6501 ft x 100 ft
2.12.5 Coordinates: 64−48−00.00N / 147−52−32.24W
2.12.6 Threshold elevation: 433 ft
2.12.6 Touchdown zone elevation: 433 ft

2.12.1 Designation: 20L
2.12.2 True Bearing: 218
2.12.3 Dimensions: 6501 ft x 100 ft
2.12.5 Coordinates: 64−48−51.24N / 147−50−59.67W
2.12.6 Threshold elevation: 433 ft
2.12.6 Touchdown zone elevation: 434 ft

2.12.1 Designation: 02
2.12.2 True Bearing: 38
2.12.3 Dimensions: 2900 ft x 75 ft
2.12.5 Coordinates: 64−48−57.80N / 147−50−47.60W
2.12.6 Threshold elevation: 433 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 218
2.12.3 Dimensions: 2900 ft x 75 ft
2.12.5 Coordinates: 64−49−20.26N / 147−50−00.00W
2.12.6 Threshold elevation: 434 ft

AD 2.13 Declared distances
2.13.1 Designation: 02L
2.13.2 Takeoff run available: 11800
2.13.3 Takeoff distance available: 12800
2.13.4 Accelerate−stop distance available: 11800
2.13.5 Landing distance available: 11050

2.13.1 Designation: 20R
2.13.2 Takeoff run available: 11800
2.13.3 Takeoff distance available: 12800
2.13.4 Accelerate−stop distance available: 11800
2.13.5 Landing distance available: 11050

AD 2.14 Approach and runway lighting
2.14.1 Designation: 02L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 20R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 02R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 20L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS(907−456−1244)
2.18.3 Service designation: 124.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P TRSA IC
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: APCH/P DEP/P TRSA
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 327.1 MHz

2.18.1 Service designation: APCH/P DEP/P TRSA IC
2.18.3 Service designation: 363.2 MHz

2.18.1 Service designation: APCH/P DEP/P TRSA
2.18.3 Service designation: 381.4 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 02L. Magnetic variation: 21E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64-49-49.84N / 147-50-00.00W
2.19.6 Site elevation: 438 ft

2.19.1 ILS type: Inner Marker for runway 02L. Magnetic variation: 21E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64-48-00.00N / 147-53-12.52W
2.19.6 Site elevation: 430 ft

2.19.1 ILS type: Glide Slope for runway 02L. Magnetic variation: 21E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64-48-21.00N / 147-52-36.30W
2.19.6 Site elevation: 431 ft

2.19.1 ILS type: Middle Marker for runway 02L. Magnetic variation: 21E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64-47-53.40N / 147-53-39.80W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 02L. Magnetic variation: 21E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64-48-21.25N / 147-52-36.04W
2.19.6 Site elevation: 435 ft

2.19.1 ILS type: Middle Marker for runway 20R. Magnetic variation: 21E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64-49-56.80N / 147-49-51.90W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 20R. Magnetic variation: 21E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64-48-00.00N / 147-53-23.88W
2.19.6 Site elevation: 429 ft

2.19.1 ILS type: Outer Marker for runway 20R. Magnetic variation: 21E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64-53-59.27N / 147-42-24.01W
2.19.6 Site elevation: 655 ft

2.19.1 ILS type: Glide Slope for runway 20R. Magnetic variation: 21E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64-49-24.42N / 147-50-39.71W
2.19.6 Site elevation: 434 ft

General Remarks:

MIGRATORY BIRDS IN THE VICINITY OF AIRPORT DURING SPRING THRU FALL.

ATCT LOCATED AT 64−48−39.438N 147−50−55.722W ELEVATION 538’ MSL.

SEAPLANE BASE CONTROLLED BY FAIRBANKS INTL ATCT. CONTACT ATCT ON FREQ 118.3 AS SOON AS PRACTICAL AFTER START UP FOR TAXI ON THE POND. FLOAT POND TRAFFIC AS ASSIGNED BY FAIRBANKS ATCT. LIMITED TRANSIENT FLOAT PLANE PARKING AVAILABLE, CONTACT OPERATIONS 907−474−2530 FOR INFORMATION. SURFACE FROZEN IN WINTER, NOT MONT, AIR OPERATIONS NOT RECOMMENDED.

BE ALERT FOR SNOW REMOVAL EQUIPMENT OPERATIONS FROM 1 OCT TO 15 MAY.

MILITARY CONTRACT FUEL AVAILABLE.

FOR FLIGHTS IN MOA’S EAST OF FAIRBANKS RECOMMEND CONTACTING EIELSON RANGR CONTROL ON 125.3 OR CALL 1−800−758−8723 FOR INFORMATION ON MILITARY ACTIVITES.

NOISE ABATEMENT PROCEDURES IN EFECT FROM 2200−0800 ALL LARGE AIRCRAFT, TURBINE ENGINE, AND HEAVY AIRCRAFT UTILIZE RUNWAY 01L FOR ARRS AND 19R FOR DEPS WHEN WIND IS NOT AN OPERATIOINAL FACTOR.

RUNWAY 02R/20L CLOSED TO JET AIRCRAFT.

TRANSIENT PARKING EAST RAMP FOR NON JET AIRCRAFT WITH WINGSPAN LESS THAN 79 FT. NO TRANSIENT AIRCRAFT PARKING ON WEST RAMP, CONTACT APT OPERATIONS 907−474−2530 FOR INFORMATION & MEDIVAC PARKING. HELICOPTER ARRIVALS & DEPS FR NEW COMPASS ROSE OPER TO/FR EAST.

RUNWAYS 02W & 20W TOUCHDOWN REFERENCE MARKERS 500 FT FROM SHORELINE, MARKED WITH BUOYS DURING FLOAT SEASON.

FOR AVAILABILITY OF SUMMER GRAVEL STRIP RUNWAY 02/20 AND WINTER SKI STRIP RUNWAY 02/20 CONSULT LOCAL NOTAMS AND CONTACT TOWER PRIOR TO ARRIVAL /DEPARTURE.

N/S TAXIWAY (TWY A) IS WEST AND PARALLEL TO RUNWAY 02L/20R. BE ALERT TO AVOID LANDING ON TAXIWAY.

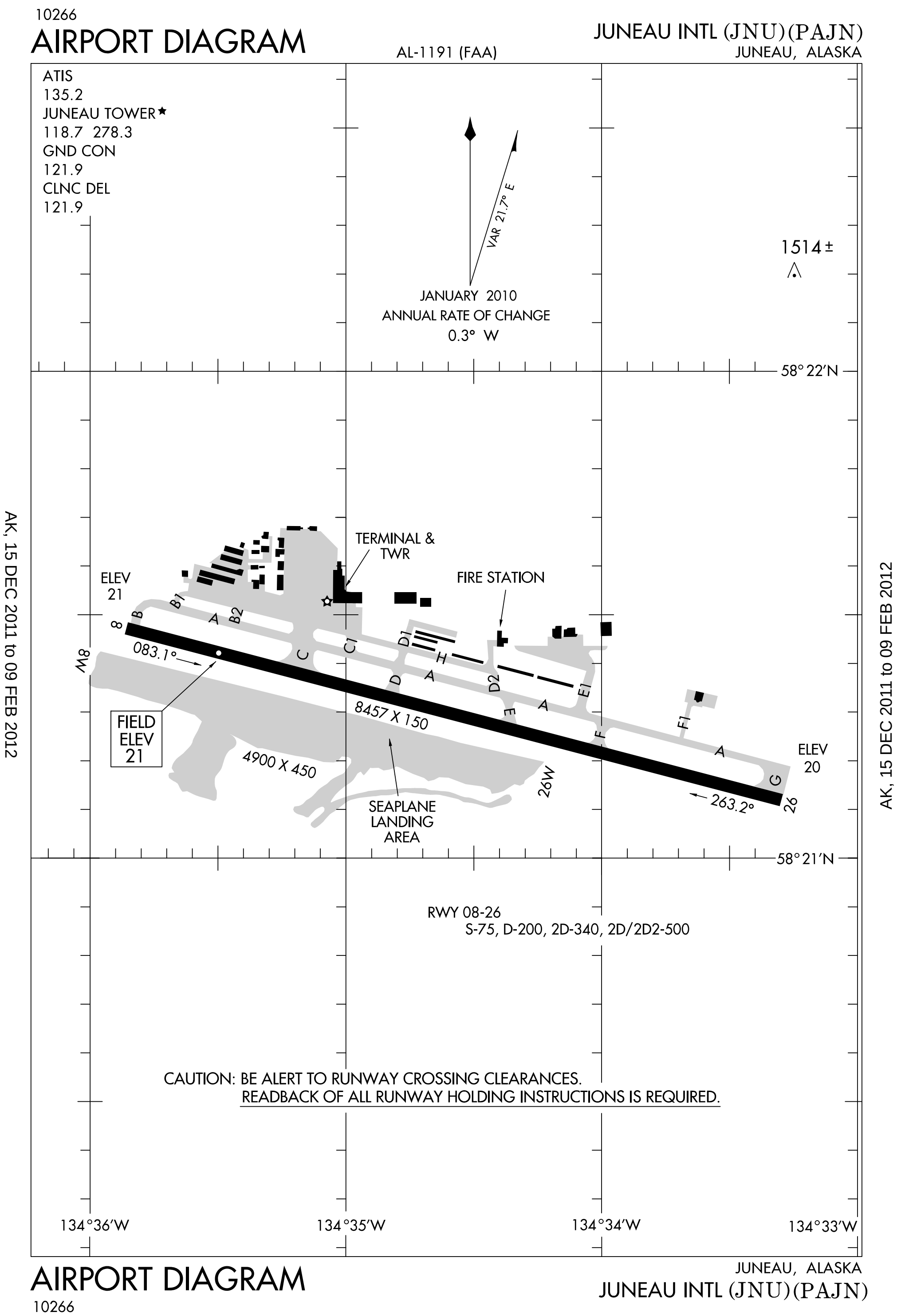
NO STEP TAXI EXCEPT IN CHANNEL.

RUNWAY 02/20 SKI STRIP HOLD LINES AND NE COMPASS ROSE MARKINGS OBSCURE FALL−SPRING.

NE COMPASS ROSE CLOSED TO HELICOPTERS OVER 12,500 LBS. FROST HEAVES SOUTH 2600 FT RUNWAY 02R/20L CONTACT AIRPORT OPERS 907-474-2530 WITH SAFETY CONCERNS. CONSULT NOTAMS FOR NW COMPASS ROSE AVAILABILITY.

TEMPORARY HELIPAD LOCATED ON EAST RAMP SOUTH OF TAXIWAY W IN GRASSY AREA MARKED BY ORANGE CONES (MAY 1 THRU OCT 1), APPROACH AND DEP FROM THE WEST (BE ALERT FOR FIXED WING AIRCRAFT ON THE GROUND).

Juneau, Alaska
Juneau International
ICAO Identifier PAJN



Juneau, AK
Juneau Intl
ICAO Identifier PAJN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 58−21−17.90N / 134−34−34.60W
2.2.2 From City: 7 Miles NW Of Juneau, AK
2.2.3 Elevation: 21 ft
2.2.5 Magnetic variation: 23E (2005)
2.2.6 Airport Contact: Jeannie Johnson
1873 SHELL SIMMONS DR, SUITE 201
Juneau, AK 99801 (907−789−7821)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,80,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major
2.4.7 Remarks: Airframe/Power Plant Service For Single/Twin Prop Eng Aircraft Turbin & Avionics.

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 4/1/2005

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Tower (573 ft). Marked and Lighted
2.10.1.c Location of obstacle: 900 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 105
2.12.3 Dimensions: 8457 ft x 150 ft
2.12.5 Coordinates: 58−21−28.55N / 134−35−51.21W
2.12.6 Threshold elevation: 21 ft
2.12.6 Touchdown zone elevation: 21 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 285
2.12.3 Dimensions: 8457 ft x 150 ft
2.12.5 Coordinates: 58−21−00.00N / 134−33−18.00W
2.12.6 Threshold elevation: 20 ft
2.12.6 Touchdown zone elevation: 20 ft

2.12.1 Designation: 08W
2.12.3 Dimensions: 4900 ft x 450 ft

2.12.1 Designation: 26W
2.12.3 Dimensions: 4900 ft x 450 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left
2.14.10 Remarks: VASI Aligned Aprxly 13 Degs Right Of Runway Centerline And Is Not Visible On Runway Cntrl. VASI Unusable Beyond 06 Degs Left Of Crs. Ldin Lights.

2.14.1 Designation: 26
2.14.4 Visual approach slope indicator system: 4−box VASI on right
2.14.10 Remarks: VASI Usable Only Within 2 Nm.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 124.65 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 135.2 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 278.3 MHz

2.18.1 Service designation: NG OPS

2.18.3 Service designation: 64.7 MHz

2.18.1 Service designation: SEASONAL USE ONLY.
2.18.3 Service designation: 120.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 08. Magnetic variation: 23E
2.19.2 ILS identification: JDL
2.19.5 Coordinates: 58−21−32.04N / 134−38−10.36W
2.19.6 Site elevation: 161 ft

2.19.1 ILS type: DME for runway 08. Magnetic variation: 23E
2.19.2 ILS identification: JDL
2.19.5 Coordinates: 58−21−31.02N / 134−38−10.22W
2.19.6 Site elevation: 175 ft

General Remarks:

NATIONAL GUARD 24 HR PRIOR PERMISSION REQUIRED DUE TO LIMITED PARKING C907−789−3366. 0730−1600 WEEKDAYS CONTACT GUARD OPERATIONS 10 MIN PRIOR TO LANDING ON 124.65.

WILDLIFE & BIRDS ON & IN THE VICINITY OF AIRPORT.

BATTLESHIP ISLAND LDIN GROUPING; CENTER LIGHT 582132.88N 1344012.22W. IJDL−LOCALIZER LDIN GROUPING; CENTER LIGHT 582132.02N 1343810.39W.

INCREASED HELICOPTER/LIGH AIRCRAFT ACTIVITY APR 15−OCT 1 ENTIRE LENGTH ON GASTINEAU CHANNEL & WITHIN 5 MILES OF AIRPORT.

PARAGLIDING ACTIVITY 3 MILES N OF AIRPORT IN THE VICINITY OF THUNDER MOUNTAIN & OVER GASTINEAU CHANNEL NEARS DOWNTOWN APR 15−OCT 1 6000 FT & BELOW.

TRAFFIC PATTERN ALTITUDE 1500 AGL FOR LARGE TURBINE AIRCRAFT; 1000 FT AGL FOR FIXED WING AIRCRAFT; 500 FT AGL FOR HELICOPTERS.

FOR A LOCAL CALL TO JNU AUTOMATED FLIGHT SERVICE STATION CALL 907−789−7380.

TRANSIENT DOCK AVAILABLE FOR PUBLIC USE FOR UP TO SIX AIRCRAFT, SW CORNER.

SEE SPECIAL NOTICES AND GENERAL NOTICES FOR ADDITIONAL INFORMATION ON OPERATIONS IN JUNEAU AREA.

LENA POINT, PEDERSON HILL AND SISTERS ISLAND WX CAMERAS AVAILABLE ON INTERNET AT HTTP://AKWEATHERCAMS.FAA.GOV

COMPASS ROSE LOCATED ON TAXIWAY G AT EAST END OF TAXIWAY A NEAR APPROACH END RUNWAY 26.

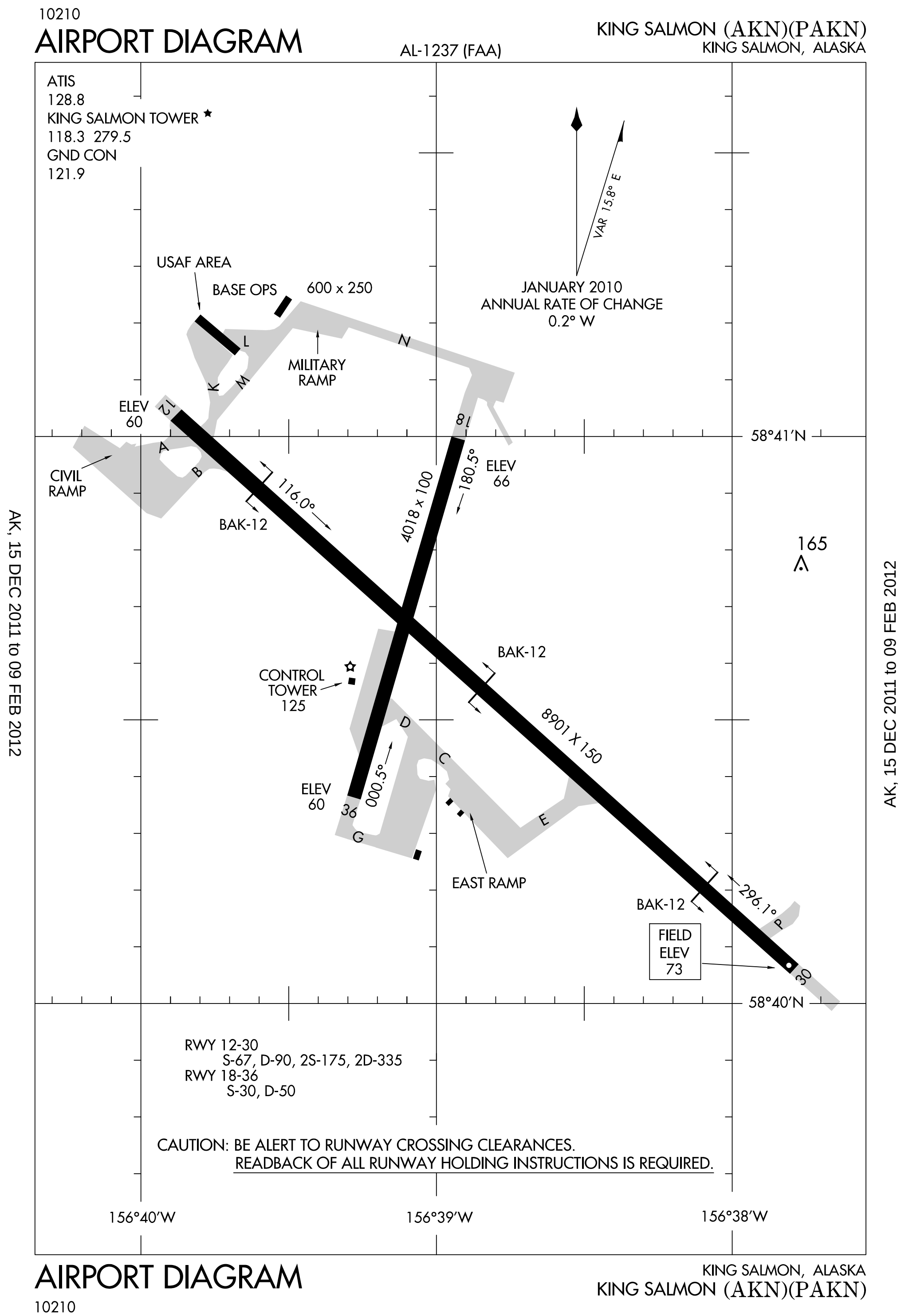
RUNWAY 08/26 SAND USED TO ENHANCE RUNWAY FRICTION MAY NOT MEET FAA SPECS.

HEAVY EQUIPMENT BETWEEN TAXIWAY E1 & TAXIWAY F1 NORTH OF TAXIWAY A 0630−1730 MON−SAT.

RUNWAY 26 PERSONNEL AND EQUIPMENT WORKING APPROACH END RUNWAY 0700−1700 MON−SAT.

RUNWAY 08/26 PERSONNEL AND EQUIPMENT WORKING ADJACENT E 3000 FT SOUTH SIDE 0700−1700 MON−SAT.

King Salmon, Alaska
King Salmon
ICAO Identifier PAKN



King Salmon, AK
King Salmon
ICAO Identifier PAKN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 58−40−35.38N / 156−38−55.29W
2.2.2 From City: 0 Miles SE Of King Salmon, AK
2.2.3 Elevation: 73 ft
2.2.5 Magnetic variation: 16E (2010)
2.2.6 Airport Contact: Jay Knight
PO BOX 65
King Salmon, AK 99613
(907−246−3325)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 0800−1800 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A,B
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major
2.4.7 Remarks: Transient Parking Marked At North End Of General Aviation Ramp And East End Of Cargo Ramp.

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I A certified on 3/21/2005
2.6.4 Remarks: Closed To Aircraft 0 Operations With More Than 30 Passenger Seats Except Prior Permission Required In Writing To Airport Manager PO Box 65 King Salmon Ak, 99613.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 18
2.10.1.b Type of obstacle: Trees (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 18
2.12.2 True Bearing: 196
2.12.3 Dimensions: 4018 ft x 100 ft
2.12.5 Coordinates: 58−40−59.78N / 156−38−55.61W
2.12.6 Threshold elevation: 66 ft
2.12.6 Touchdown zone elevation: 66 ft

2.12.1 Designation: 36
2.12.2 True Bearing: 16
2.12.3 Dimensions: 4018 ft x 100 ft
2.12.5 Coordinates: 58−40−21.80N / 156−39−16.96W
2.12.6 Threshold elevation: 60 ft
2.12.6 Touchdown zone elevation: 65 ft

2.12.1 Designation: NW
2.12.3 Dimensions: 4000 ft x 500 ft

2.12.1 Designation: SE
2.12.3 Dimensions: 4000 ft x 500 ft

2.12.1 Designation: 12
2.12.2 True Bearing: 132
2.12.3 Dimensions: 8901 ft x 150 ft
2.12.5 Coordinates: 58−41−00.00N / 156−39−53.02W
2.12.6 Threshold elevation: 60 ft
2.12.6 Touchdown zone elevation: 62 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 312
2.12.3 Dimensions: 8901 ft x 150 ft
2.12.5 Coordinates: 58−40−00.00N / 156−37−47.63W
2.12.6 Threshold elevation: 73 ft
2.12.6 Touchdown zone elevation: 73 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 12
2.14.2 Approach lighting system: LR: Simplified short approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: GND/P

2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 128.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 279.5 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58−39−56.55N / 156−37−32.37W
2.19.6 Site elevation: 78 ft

2.19.1 ILS type: Glide Slope for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58−40−57.34N / 156−39−29.89W
2.19.6 Site elevation: 64 ft

2.19.1 ILS type: Middle Marker for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58−41−25.44N / 156−40−42.92W
2.19.6 Site elevation: 1 ft

2.19.1 ILS type: Outer Marker for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58−44−14.14N / 156−46−45.49W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58−39−59.60N / 156−37−31.70W
2.19.6 Site elevation: 78 ft

General Remarks:

LANDING AREA RUNWAY NW/SE ALSO USED BY BOATS.

FLOCKS OF LARGE MIGRATORY BIRDS IN VICINITY DURING SEASON.

OFF PAVEMENT OPERATIONS BY AIRCRAFT; INCLUDING HELICOPTERS; NOT AUTHORIZED AT THE AIR CARRIER APRON. NO LANDING; PARKING OR TAKE-OFFS PERMITTED FROM DIRT OR GRASS.

AIR DEFENSE ALERT FIGHTERS MAY SCRAMBLE AT ANY TIME.

ONE INCH DIP ON CENTERLINE 1850 FT FROM APPROACH END RUNWAY 36 EXTENDS TO THREE INCH DIP 25 FT WIDE ON WEST EDGE.

CIVILIAN TRANSIENT PARKING ON SE RAMP ONLY; OTHER PARKING LONGER THAN 48 HRS REQUIRES PERMIT.

ALL FIGHTER AIRCRAFT ON ARR EXPECT REDUCED SEPARATION; SIMILAR APPROACH CHARACTERISTICS AND DAY − 3000 FT; DISSIMILAR APPROACH CHARACTERISTICS AND/OR NIGHT − 6000 FT; AHEAD/BEHIND FORMATION LANDING − 6000 FT.

200 FT SAFETY AREA APPROACH END RUNWAY 12.

RUNWAY CONDITION READING UPDATED AS REQUIRED DURING 11TH AF FIGHTER FLYING WINDOW. AIRCREWS COORDINATE FOR RUNWAY CONDITION READING CHECKS WITH KING SALMON OPERATIONS AT OTHER TIMES. AIRCRAFT OPERATIONS RESTRICTED TO LOW APPROACH/FULL STOP LANDING ONLY.

FIGHTER AIRCRAFT COORDINATE DESIRED BARRIER CONFIGURATION OR ENGAGEMENT AS EARLY AS POSSIBLE. EXPECT AT LEAST 30 MIN DELAY FOR SHORT−NOTICE REQUIREMENT.

FLIGHTS ORIG OUTSIDE ALASKA REFER TO USAF FOREIGN CLEARANCE GUIDE. NO CUSTOMS AVAILABLE.

SNOW, ICE REMOVAL & AIRPORT HAZARD CONDITION PERFORMED & REPORTED DURING MAINT DUTY HRS.

USAF FACILITIES MINIMALLY OPR BY CIVIL CONTRACTORS WITH LIMITED SUPPORT CAPABILITY. TO CONFIRM OPR HRS NOT LATER THAN 24 HRS IN ADVANCE OF EXPECTED ARRIVAL.

MILITARY FIGHTERS/EMERGENCY DIVERTS CALL HARMONY BEFORE 100 NAUTICAL MILE INBOUND ON 391.2/140.1. NON−EMERG/NON−FTR AIRCRAFT CALL KING SALMON OPERATIONS; 24 HR POINT NORMALLY MONITORS COMMON TRAFFIC ADVISORY FREQUENCY DURING OPR HRS.

RUNWAY 18/36 NOT INSPECTED FOR MILITARY OPERATIONS.

AIRCRAFT RESCUE AND FIRE FIGHTING EQUIPMENT STAFFED DURING PERIODS OF AIR CARRIER ACTIVITY ONLY.

PRIVATE JETS MAY PARK ON THE SE SECTION OF E RAMP; CALL AIRPORT MANAGER AT 907−246−3325 FOR INFORMATION.

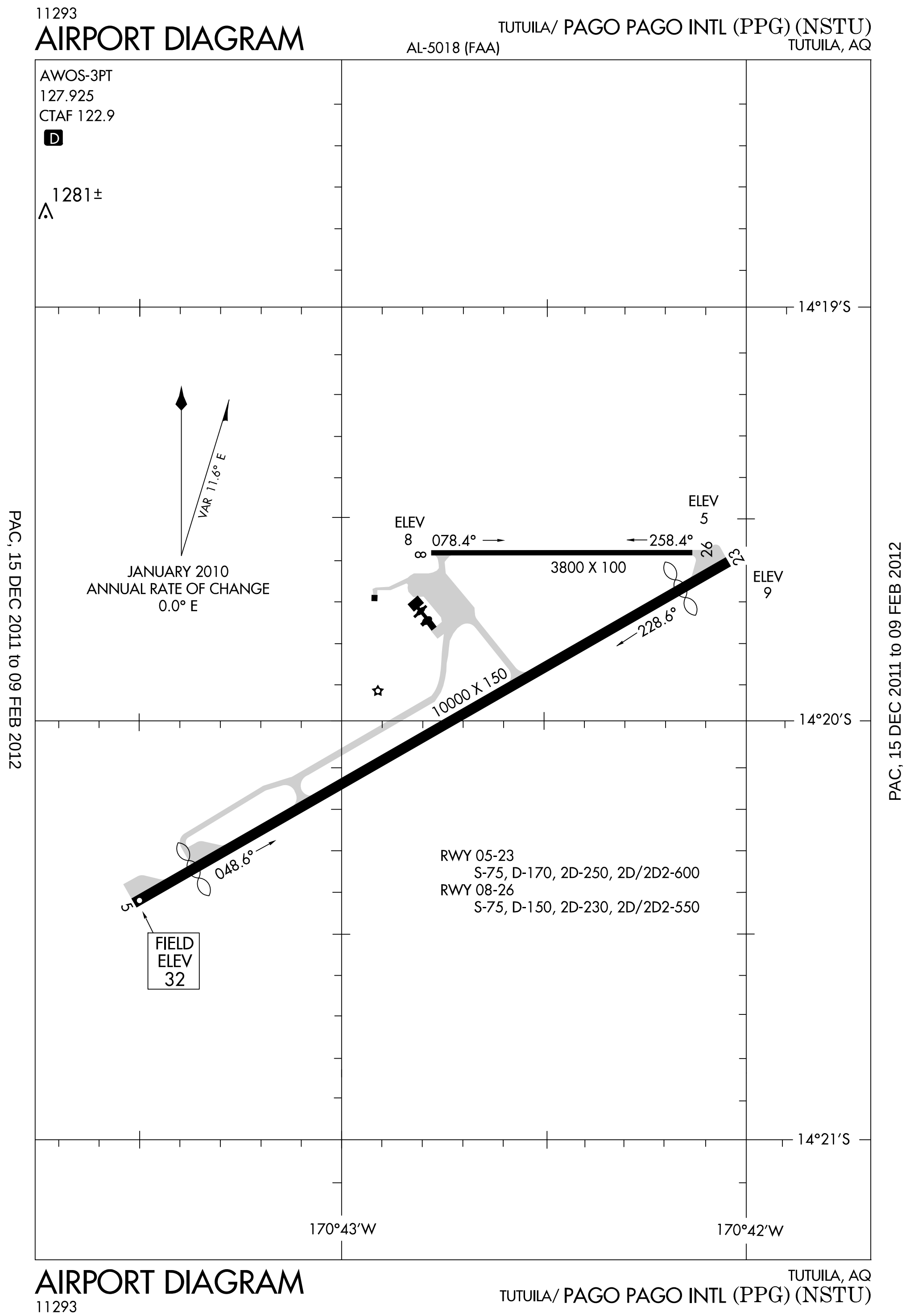
AIRPORT MAINT DUTY HRS 0800−1700.

AIRPORT SAND LARGER GRADATION THAN FAA RECOMMENDED/SEE AC150/5200−30.

EAST APRON: PAVEMENT CRUMBLING, POSSIBLE FOREIGN OBJECT DAMAGE HAZARD. JET AIRCRAFT BE ALERT DURING RUN−UP TO AVOID DAMAGE WITH JET WASH.

WX CAMERA AVAILABLE ON INTERNET AT HTTP://AKWEATHERCAMS.FAA.GOV.

Pago Pago, American Samoa
Pago Pago/International
ICAO Identifier NSTU



Pago Pago, AS
Pago Pago Intl
ICAO Identifier NSTU

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 14−19−53.98S / 170−42−41.41W
2.2.2 From City: 3 Miles SW Of Pago Pago, AS
2.2.3 Elevation: 32 ft
2.2.5 Magnetic variation: 12E (1990)
2.2.6 Airport Contact: Matagi R.M. Mcmoore
DEPT OF PORT ADMIN, BOX 1539
Pago Pago, AS 96799 (684−733−4510)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 05
2.10.1.b Type of obstacle: Hill (446 ft). Lighted
2.10.1.c Location of obstacle: 1000 ft from Centerline

2.10.1.a. Runway designation: 23
2.10.1.b Type of obstacle: Fence (8 ft). Lighted

AD 2.12 Runway physical characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 3800 ft x 100 ft
2.12.5 Coordinates: 14−19−35.13S / 170−42−46.75W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 6 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 3800 ft x 100 ft
2.12.5 Coordinates: 14−19−35.10S / 170−42−00.00W
2.12.6 Threshold elevation: 5 ft
2.12.6 Touchdown zone elevation: 6 ft

2.12.1 Designation: 05
2.12.2 True Bearing: 60
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 14−20−25.82S / 170−43−30.84W
2.12.6 Threshold elevation: 32 ft
2.12.6 Touchdown zone elevation: 30 ft

2.12.1 Designation: 23
2.12.2 True Bearing: 240
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 14−19−36.47S / 170−42−00.00W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

AD 2.13 Declared distances
2.13.1 Designation: 05
2.13.2 Takeoff run available: 9200
2.13.3 Takeoff distance available: 10200
2.13.4 Accelerate−stop distance available: 9200
2.13.5 Landing distance available: 8200

2.13.1 Designation: 23
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 9200

AD 2.14 Approach and runway lighting
2.14.1 Designation: 05
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 23
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 05. Magnetic variation: 12E
2.19.2 ILS identification: TUT

2.19.5 Coordinates: 14−19−38.78S / 170−42−12.90W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: DME for runway 05. Magnetic variation: 12E
2.19.2 ILS identification: TUT
2.19.5 Coordinates: 14−19−37.63S / 170−42−14.71W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Glide Slope for runway 05. Magnetic variation: 12E
2.19.2 ILS identification: TUT
2.19.5 Coordinates: 14−20−13.06S / 170−43−15.19W
2.19.6 Site elevation: 25 ft

2.19.1 ILS type: Middle Marker for runway 05. Magnetic variation: 12E
2.19.2 ILS identification: TUT
2.19.5 Coordinates: 14−20−36.10S / 170−43−49.30W
2.19.6 Site elevation: 74 ft

General Remarks:

PERMANENT CABLE ACROSS MID PAGO PAGO HARBOR 4SM NNE AIRPORT, RISES ABRUPTLY TO 1609’ MOUNTAIN ALAVA N SIDE OF HARBOR, EXTREMELY HAZARDOUS TO AIRCRAFT.

ALL FLIGHTS (EXCEPT SCHEDULED) PRIOR PERMISSION FROM AIRPORT MANAGER WITH 24 HRS PRIOR NOTICE.

SEA SPRAY FROM SURF & BLOW HOLES MAY DRIFT ACROSS RUNWAY 05/23 UNDER ROUGH SEA CONDITIONS.

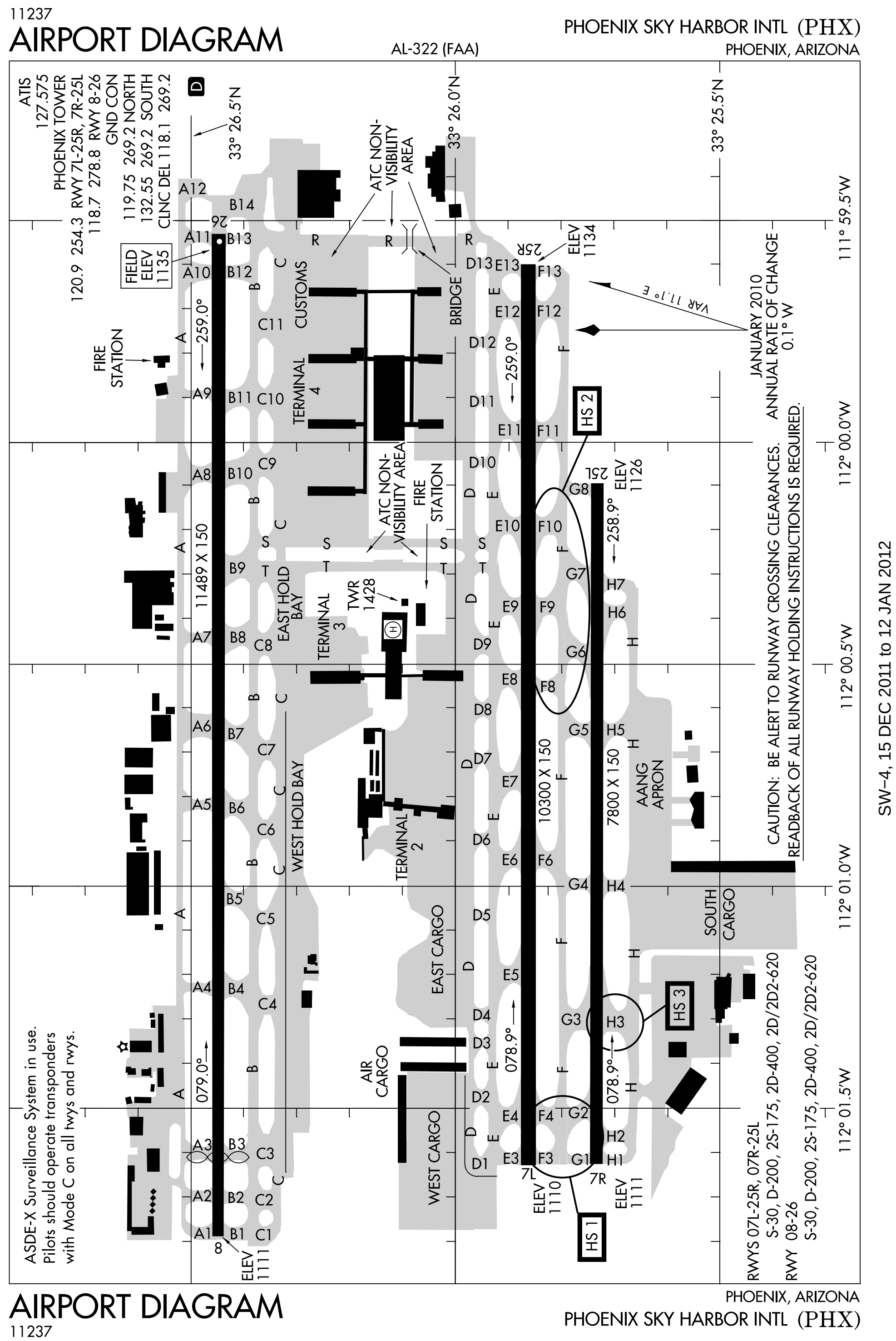
ALL AIRCRAFT TRANSITING PAGO PAGO (EXCEPT COMMERCIAL CARRIERS) MUST MAKE FUEL ARRANGEMENTS WITH PPG AT 684−733−3158.

ALL AIRCRAFT EXCEEDING 100000 GROSS WEIGHT UPON TOUCHDOWN TAXI TO THR TURN−AROUND BEFORE TAXIING TO APRON. AIRCRAFT UNDER 100000 MAKE TURN−ARND WHERE FEASIBLE.

OLOTELE MOUNTAIN 1617 FT MSL 3.5 MILES WEST OF THRESHOLD RUNWAY 08.

PERMANENTLY LIGHTED & MARKED 226’ TOWER ATOP MOUNTAIN ALAVA 4.3SM NNE AIRPORT.

Phoenix, Arizona
Phoenix Sky Harbor International
ICAO Identifier KPHX



Phoenix, AZ
Phoenix Sky Harbor Intl
ICAO Identifier KPHX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33−26−00.00N / 112−00−41.70W
2.2.2 From City: 3 Miles E Of Phoenix, AZ
2.2.3 Elevation: 1135 ft
2.2.5 Magnetic variation: 12E (2000)
2.2.6 Airport Contact: Danny Murphy
3400 SKY HARBOR BLVD, SUITE 3300
Phoenix, AZ 85034 (602−273−3300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Bldg (66 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 503 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Road (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 540 ft from Centerline

2.10.1.a. Runway designation: 07L
2.10.1.b Type of obstacle: Pole (62 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 750 ft from Centerline

2.10.1.a. Runway designation: 25R
2.10.1.b Type of obstacle: Ant (416 ft). Marked and Lighted
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Pole (33 ft). Lighted
2.10.1.c Location of obstacle: 640 ft from Centerline

2.10.1.a. Runway designation: 25L
2.10.1.b Type of obstacle: Ant (424 ft). Marked and Lighted
2.10.1.c Location of obstacle: 1193 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 11489 ft x 150 ft
2.12.5 Coordinates: 33−26−27.10N / 112−01−47.26W
2.12.6 Threshold elevation: 1111 ft
2.12.6 Touchdown zone elevation: 1118 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 11489 ft x 150 ft
2.12.5 Coordinates: 33−26−26.96N / 111−59−31.69W
2.12.6 Threshold elevation: 1135 ft
2.12.6 Touchdown zone elevation: 1135 ft

2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10300 ft x 150 ft
2.12.5 Coordinates: 33−25−51.81N / 112−01−37.56W
2.12.6 Threshold elevation: 1110 ft
2.12.6 Touchdown zone elevation: 1116 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10300 ft x 150 ft
2.12.5 Coordinates: 33−25−51.73N / 111−59−36.05W
2.12.6 Threshold elevation: 1134 ft
2.12.6 Touchdown zone elevation: 1134 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 90

2.12.3 Dimensions: 7800 ft x 150 ft
2.12.5 Coordinates: 33−25−43.89N / 112−01−37.57W
2.12.6 Threshold elevation: 1111 ft
2.12.6 Touchdown zone elevation: 1116 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7800 ft x 150 ft
2.12.5 Coordinates: 33−25−43.84N / 112−00−00.00W
2.12.6 Threshold elevation: 1126 ft
2.12.6 Touchdown zone elevation: 1126 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 60 ft x 60 ft

AD 2.13 Declared distances
2.13.1 Designation: 08
2.13.2 Takeoff run available: 11489
2.13.3 Takeoff distance available: 11489
2.13.4 Accelerate−stop distance available: 11489
2.13.5 Landing distance available: 10591

2.13.1 Designation: 26
2.13.2 Takeoff run available: 11489
2.13.3 Takeoff distance available: 11489
2.13.4 Accelerate−stop distance available: 11489
2.13.5 Landing distance available: 11489

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 07L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 07R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 119.2 MHz

2.18.1 Service designation: GND/P (NORTH)
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 120.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 123.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 123.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 124.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 124.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 128.65 MHz

2.18.1 Service designation: GND/P (SOUTH)
2.18.3 Service designation: 132.55 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 239 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 254.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 269.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 269.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 269.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 269.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 269.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 363 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 363 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 124.9 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 353.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 353.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 281.45 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 127.575 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 278.8 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 08. Magnetic variation: 12E
2.19.2 ILS identification: SYQ
2.19.5 Coordinates: 33−26−26.95N / 111−59−19.75W
2.19.6 Site elevation: 1145 ft

2.19.1 ILS type: DME for runway 08. Magnetic variation: 12E
2.19.2 ILS identification: SYQ
2.19.5 Coordinates: 33−26−24.32N / 111−59−19.70W

2.19.6 Site elevation: 1149 ft
2.19.1 ILS type: Glide Slope for runway 08. Magnetic variation: 12E
2.19.2 ILS identification: SYQ
2.19.5 Coordinates: 33−26−29.65N / 112−01−24.63W
2.19.6 Site elevation: 1111 ft

2.19.1 ILS type: DME for runway 26. Magnetic variation: 12E
2.19.2 ILS identification: CWJ
2.19.5 Coordinates: 33−26−24.18N / 112−01−59.25W
2.19.6 Site elevation: 1119 ft

2.19.1 ILS type: Glide Slope for runway 26. Magnetic variation: 12E
2.19.2 ILS identification: CWJ
2.19.5 Coordinates: 33−26−29.60N / 111−59−44.43W
2.19.6 Site elevation: 1129 ft

2.19.1 ILS type: Localizer for runway 26. Magnetic variation: 12E
2.19.2 ILS identification: CWJ
2.19.5 Coordinates: 33−26−27.11N / 112−01−59.23W
2.19.6 Site elevation: 1105 ft

2.19.1 ILS type: Localizer for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−51.72N / 111−59−20.41W
2.19.6 Site elevation: 1133 ft

2.19.1 ILS type: Middle Marker for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−51.76N / 112−02−00.00W
2.19.6 Site elevation: 1304 ft

2.19.1 ILS type: DME for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−54.14N / 111−59−19.06W
2.19.6 Site elevation: 1142 ft

2.19.1 ILS type: Outer Marker for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−53.81N / 112−06−23.58W
2.19.6 Site elevation: 1056 ft

2.19.1 ILS type: Glide Slope for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−49.05N / 112−01−25.22W
2.19.6 Site elevation: 1106 ft

2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: AHA
2.19.5 Coordinates: 33−25−41.10N / 112−01−25.10W
2.19.6 Site elevation: 1108 ft

2.19.1 ILS type: Localizer for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: AHA
2.19.5 Coordinates: 33−25−43.83N / 111−59−57.89W
2.19.6 Site elevation: 1123 ft

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: AHA
2.19.5 Coordinates: 33−25−43.837N / 111−59−52.33W
2.19.6 Site elevation: 1135 ft

2.19.1 ILS type: DME for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: RJG
2.19.5 Coordinates: 33−25−46.37N / 111−59−57.82W
2.19.6 Site elevation: 1135 ft

2.19.1 ILS type: Glide Slope for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: RJG
2.19.5 Coordinates: 33−25−41.06N / 112−00−16.87W
2.19.6 Site elevation: 1120 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: RJG

2.19.5 Coordinates: 33−25−43.90N / 112−01−48.76W

2.19.6 Site elevation: 1104 ft

General Remarks:

FEE FOR ALL CHARTERS; TRAVEL CLUBS AND CERTAIN REVENUE PRODUCING AIRCRAFT.

TRAINING BY CIVIL TURBOJET AIRCRAFT PROHIBITED EXCEPT PRIOR PERMISSION REQUIRED.

TAXIWAY A BETWEEN TAXIWAY A1 AND TAXIWAY A10 RESTRICTED TO AIRCRAFT WINGSPAN 125 FT OR LESS.

TAXIWAY D RESTRICTED TO AIRCRAFT WINGSPAN 171 FT OR LESS.

ILS (PHX) RUNWAY 07L ANTENNA LOCATED 525 FT WEST OF TAXIWAY G3, 117 FT NORTH TAXIWAY F CENTERLINE.

ILS (AHA) RUNWAY 07R ANTENNA LOCATED 525 FT. WEST OF TAXIWAY H3, 113 FT NORTH TAXIWAY H CENTERLINE.

AIRCRAFT ENGINE RUN−UP FOR MAINTENANCE PROHIBITED EXCEPT PRIOR PERMISSION REQUIRED. CONTACT DUTY SUPERVISORY (602) 273− 2008. NO ENGINE RUNS ON AIRPORT BETWEEN 2300 AND 0500.

ANG: PHASE II BASH (THE HIGH BIRD POTENTIAL HAZARD TIME PERIOD) IS IN EFFECTIVE AUG−OCT AND MAR−MAY.PHASE I BASH IS IN EFFECTIVE NOV−FEB AND JUN−JUL.

NOISE ABATEMENT PROCEDURES ARE IN AFFECT AT ALL TIMES. CONTACT 602−273−4300 FOR MORE INFORMATION.

NO EXPERIMENTAL FLIGHT OR GROUND DEMONSTRATION WITHOUT WRITTEN APPROVAL OF AVIATION DIRECTOR PHONE 602−273−2072.

PERSONNEL AND EQUIPMENT WORKING IN THE VICINITY OF TERMINALS 2,3 & 4.

BIRD ACTIVITY WITHIN 10 MILES OF AIRPORT UP TO 10,000 MSL.

TAXIWAY R AND PORTIONS OF TAXIWAYS S AND T DIRECTLY BELOW THE ATCT ARE NON VISIBLE AREAS FROM THE ATCT. PHOENIX ATCT UNABLE TO PROVIDE AIR TRAFFIC CONTROL SERVICES TO AIRCRAFT WHILE ON TAXIWAY R, AND PORTIONS OF TAXIWAYS S AND T.

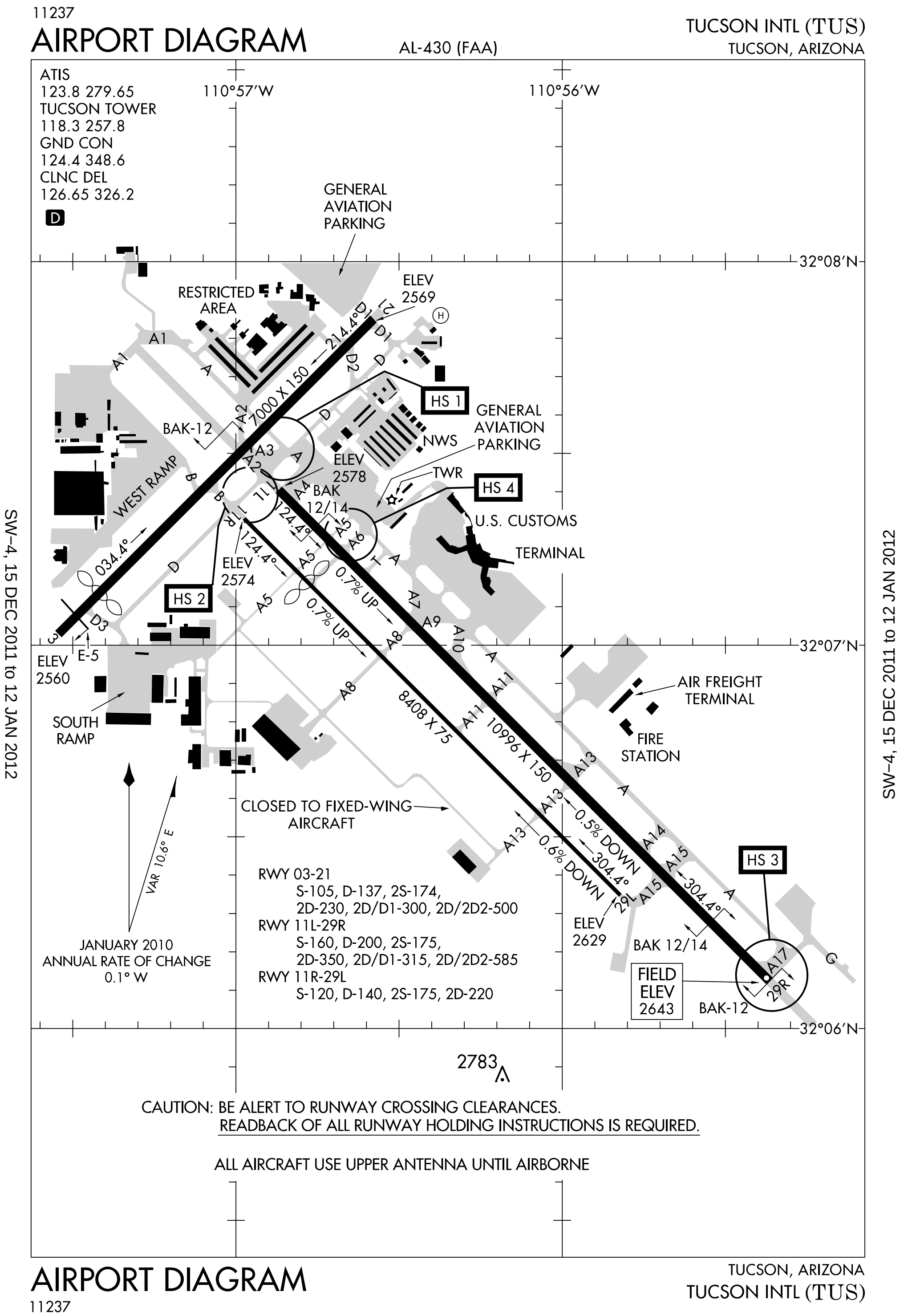
ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

TAXIWAY D BETWEEN INTERSECTIONS TAXIWAYS D8 & D9 RESTRICTED TO AIRCRAFT WITH WINGSPAN 135 FT OR LESS.

OVERHEAD TRAIN BRIDGE AT MIDPOINT OF TAXIWAY ;’R’ PROVIDES 79 FT TAIL & UP TO 160 FT WINGTIP CLEARANCE FROM TAXIWAY CENTERLINE.OVERHEAD TRAIN BRIDGE AT

MIDPOINT OF TAXIWAY ’R’ PROVIDES 79 FT TAIL & UP TO 160 FT WINGTIP CLEARANCE FROM TAXIWAY CENTERLINE.

Tucson, Arizona
Tucson International
ICAO Identifier KTUS



Tucson, AZ
Tucson Intl
ICAO Identifier KTUS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32−06−57.90N / 110−56−27.70W
2.2.2 From City: 6 Miles S Of Tucson, AZ
2.2.3 Elevation: 2643 ft
2.2.5 Magnetic variation: 12E (1995)
2.2.6 Airport Contact: Bonnie Allin
TUCSON APT AUTH 7005 S PLUMER
Tucson, AZ 85706 (520−573−8100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 29L
2.10.1.b Type of obstacle: Pole (37 ft). Lighted
2.10.1.c Location of obstacle: 350 ft from Centerline

2.10.1.a. Runway designation: 29R
2.10.1.b Type of obstacle: Gnd (8 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 03
2.10.1.b Type of obstacle: Rr (21 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 11R
2.12.2 True Bearing: 135
2.12.3 Dimensions: 8408 ft x 75 ft
2.12.5 Coordinates: 32−07−19.57N / 110−56−58.75W
2.12.6 Threshold elevation: 2574 ft
2.12.6 Touchdown zone elevation: 2605 ft
2.12.7 Slope: 0.7UP

2.12.1 Designation: 29L
2.12.2 True Bearing: 315
2.12.3 Dimensions: 8408 ft x 75 ft
2.12.5 Coordinates: 32−06−20.72N / 110−55−49.66W
2.12.6 Threshold elevation: 2629 ft
2.12.6 Touchdown zone elevation: 2629 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 11L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 10996 ft x 150 ft
2.12.5 Coordinates: 32−07−24.13N / 110−56−52.48W
2.12.6 Threshold elevation: 2578 ft
2.12.6 Touchdown zone elevation: 2599 ft
2.12.7 Slope: 0.7UP

2.12.1 Designation: 29R
2.12.2 True Bearing: 315
2.12.3 Dimensions: 10996 ft x 150 ft
2.12.5 Coordinates: 32−06−00.00N / 110−55−22.15W
2.12.6 Threshold elevation: 2643 ft
2.12.6 Touchdown zone elevation: 2643 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 32−07−00.00N / 110−57−32.55W
2.12.6 Threshold elevation: 2560 ft
2.12.6 Touchdown zone elevation: 2572 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 32−07−50.74N / 110−56−34.96W
2.12.6 Threshold elevation: 2569 ft
2.12.6 Touchdown zone elevation: 2572 ft

AD 2.13 Declared distances
2.13.1 Designation: 03
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 7000
2.13.5 Landing distance available: 6160

2.13.1 Designation: 21
2.13.2 Takeoff run available: 6000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 6000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 11R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 11L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 21
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 119 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: ATIS (520)741−1177
2.18.3 Service designation: 123.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P
2.18.3 Service designation: 124.4 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 126.65 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 326.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG COMD POST
2.18.3 Service designation: 138.525 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 279.65 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−05−53.51N / 110−55−00.00W
2.19.6 Site elevation: 2660 ft

2.19.1 ILS type: Glide Slope for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−07−14.77N / 110−56−48.06W
2.19.6 Site elevation: 2580 ft

2.19.1 ILS type: Middle Marker for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−07−51.90N / 110−57−22.60W
2.19.6 Site elevation: 2550 ft

2.19.1 ILS type: Outer Marker for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−10−54.55N / 111−00−57.52W
2.19.6 Site elevation: 2500 ft

2.19.1 ILS type: DME for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−05−54.93N / 110−55−00.00W
2.19.6 Site elevation: 2659 ft

General Remarks:

AIRCRAFT DEPG RUNWAY 11R REQUIRED TO ATTAIN AT LEAST 400’ AGL PRIOR TO STARTING TURN.

PORTIONS OF TAXIWAY D NOT VISIBLE FROM ATCT DUE TO HANGARS.

RUNWAY 11L/29R HAS DISTANCE REMAINING MARKINGS ON NE SIDE. RUNWAY 03/21 HAS DISTANCE REMAINING MARKERS ON SE SIDE.

NO B−747 TRAINING EXCEPT PRIOR PERMISSION REQUIRED; NO FLIGHT TRAINING 2200−0600 EXCEPT PRIOR PERMISSION REQUIRED; CALL FLIGHTLINE OFFICE 520−573−8128.

B747 AIRCRAFT TAXI WITH INBOARD ENGINES ONLY.

TAXIWAY T − GENERAL AVIATION TAXIWAY, 30,000 LBS OR LESS.

ANG: JUMP START AIRCRAFT CONTACT ANG CMD POST 520−295−6371 20 MIN PRIOR TO ARR.

ANG: PRIOR PERMISSION REQUIRED DSN 844−6371, C520−295−6371, FAX EXTENSION 6374.

ANG: BASE OPERATIONS OPR 1300−2400Z++MON−FRI EXCEPT HOLIDAY.

AIR CARRIERS USE RUNWAY 11L/29R.

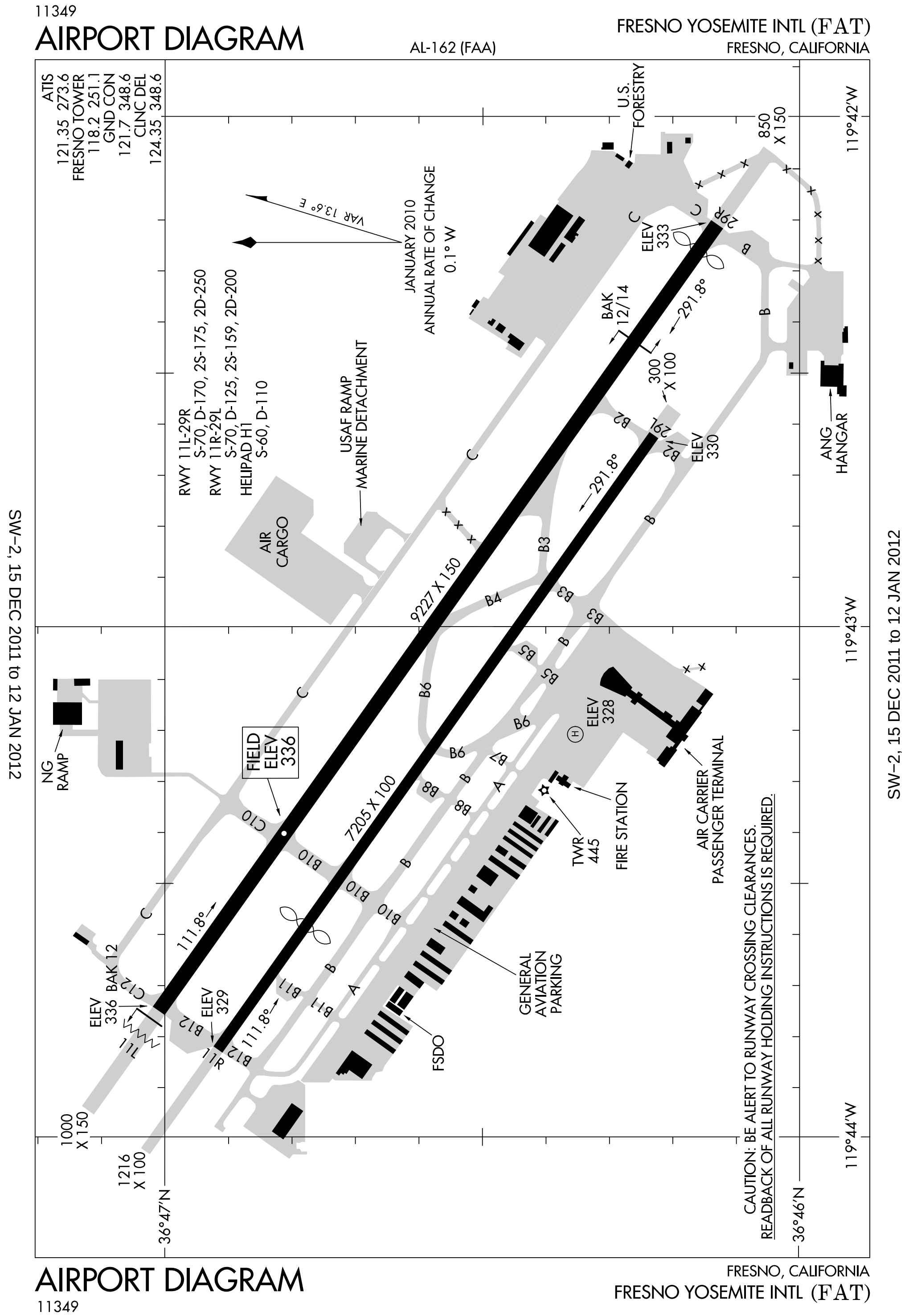
RUNWAY 11R/29L RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 73 FT & LANDING SPEED LESS THAN 120 KNOTS.

SERVICE−A−GEAR: BAK−12B IN RUNWAY 11L OVERRUN HAS 850’ RUN OUT.

HELICOPTER OPERATIONS LOCATED SOUTH OF RUNWAY 11R/29L & WEST OF TAXIWAY A13.

TAXIWAY A5 LIMITED TO 70,000 LBS OR LESS.

Fresno, California
Fresno Yosemite International
ICAO Identifier KFAT



Fresno, CA
Fresno Yosemite Intl
ICAO Identifier KFAT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36−46−34.30N / 119−43−00.00W
2.2.2 From City: 5 Miles NE Of Fresno, CA
2.2.3 Elevation: 336 ft
2.2.5 Magnetic variation: 14E (2005)
2.2.6 Airport Contact: Russell C. Widmar, A.A.E.
4995 E CLINTON WAY
Fresno, CA 93727
(559−621−4500)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 11L
2.10.1.b Type of obstacle: Pole (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 650 ft from Centerline

2.10.1.a. Runway designation: 29R
2.10.1.b Type of obstacle: Road (16 ft). Lighted
2.10.1.c Location of obstacle: 580 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: H1
2.12.3 Dimensions: 70 ft x 70 ft

2.12.1 Designation: 11L
2.12.2 True Bearing: 125
2.12.3 Dimensions: 9227 ft x 150 ft
2.12.5 Coordinates: 36−47−00.00N / 119−43−45.17W
2.12.6 Threshold elevation: 336 ft
2.12.6 Touchdown zone elevation: 336 ft

2.12.1 Designation: 29R
2.12.2 True Bearing: 305
2.12.3 Dimensions: 9227 ft x 150 ft
2.12.5 Coordinates: 36−46−00.00N / 119−42−12.68W
2.12.6 Threshold elevation: 333 ft
2.12.6 Touchdown zone elevation: 333 ft

2.12.1 Designation: 11R
2.12.2 True Bearing: 125
2.12.3 Dimensions: 7205 ft x 100 ft
2.12.5 Coordinates: 36−46−55.01N / 119−43−49.70W
2.12.6 Threshold elevation: 329 ft
2.12.6 Touchdown zone elevation: 333 ft

2.12.1 Designation: 29L
2.12.2 True Bearing: 305
2.12.3 Dimensions: 7205 ft x 100 ft
2.12.5 Coordinates: 36−46−13.79N / 119−42−37.48W
2.12.6 Threshold elevation: 330 ft
2.12.6 Touchdown zone elevation: 330 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 11L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 119.6 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 121.35 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 132 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 251.1 MHz

2.18.1 Service designation: NG OPNS
2.18.3 Service designation: 255.8 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 273.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ANG
2.18.3 Service designation: 298.3 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: NG OPNS
2.18.3 Service designation: 40.95 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 323.25 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 268.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 351.95 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 11L. Magnetic variation: 14E
2.19.2 ILS identification: RPW
2.19.5 Coordinates: 36−46−00.00N / 119−42−00.00W
2.19.6 Site elevation: 333 ft

2.19.1 ILS type: DME for runway 11L. Magnetic variation: 14E
2.19.2 ILS identification: RPW
2.19.5 Coordinates: 36−47−10.81N / 119−43−56.62W
2.19.6 Site elevation: 330 ft

2.19.1 ILS type: Localizer for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−47−00.00N / 119−43−58.60W
2.19.6 Site elevation: 331 ft

2.19.1 ILS type: DME for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−47−10.81N / 119−43−56.62W
2.19.6 Site elevation: 347 ft

2.19.1 ILS type: Middle Marker for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−45−47.67N / 119−41−37.41W
2.19.6 Site elevation: 330 ft

2.19.1 ILS type: Outer Marker for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−43−48.19N / 119−38−00.00W
2.19.6 Site elevation: 340 ft

2.19.1 ILS type: Inner Marker for runway 29R.
Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−46−00.00N / 119−42−00.00W
2.19.6 Site elevation: 330 ft

2.19.1 ILS type: Glide Slope for runway 29R.
Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−46−18.84N / 119−42−23.48W
2.19.6 Site elevation: 331 ft

General Remarks:

FOR TAXIWAY A; 40 FT WIDE; PRIOR APPROVAL REQUIRED AIRCRAFT OVER 60000 LBS GROSS WEIGHT.

NO INTERSECTION DEPS TO THE NW EXCEPT THE INTERSECTION OF RUNWAY 29R AT TAXIWAY B2 OR DURING SINGLE RUNWAY OPERATIONS.

FRESNO YOSEMITE INTL IS NOISE SENSITIVE; NOISE ABATEMENT PROCEDURES IN EFFECT.

NO MULTIPLE APPROACHES AND LANDINGS 2200−0700 MONDAY THRU SATURDAY; 1800−1000 SUNDAY.

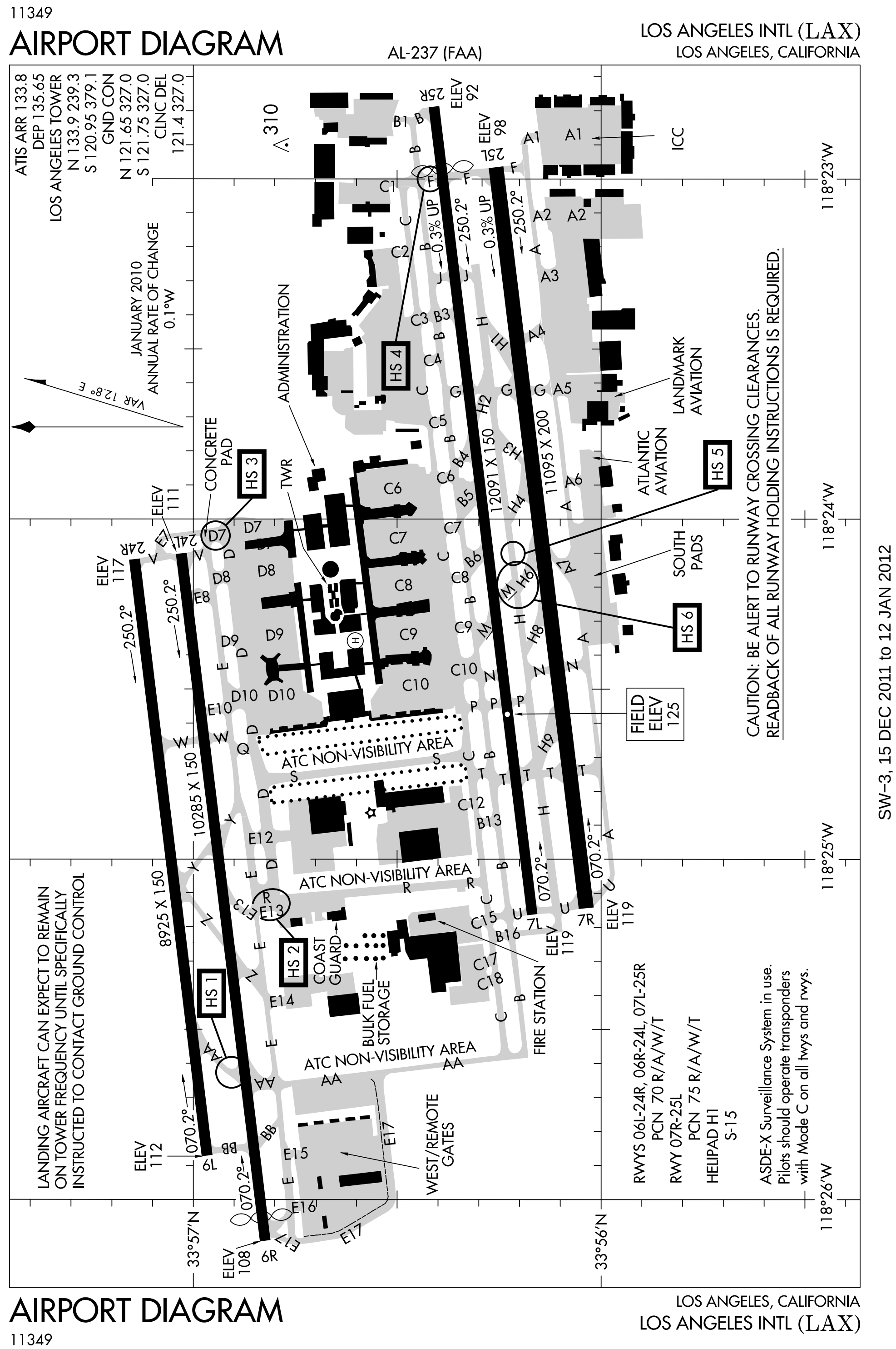
POSSIBLE WAKE TURBULENCE OR WIND SHEAR ARR TO RUNWAY 29L OR DEP FROM RUNWAY 11R. JET TESTING CONDUCTED AT AIR NATIONAL GUARD RAMP LOCATED AT SE CORNER OF AIRPORT.

(E93) HELIPORT LOCATED LATITUDE 36−46−20.82N LONG 119−43−11.51W.

NUMEROUS BIRDS IN THE VICINITY OF AIRPORT.

LIGHTED RUNWAY DISTANCE REMAINING MARKERS S SIDE OF RUNWAY 11R/29L; LIGHTED RUNWAY DISTANCE REMAINING MARKERS BOTH SIDES OF RUNWAY 11L/29R.

Los Angeles, California
Los Angeles International
ICAO Identifier KLAX



Los Angeles, CA
Los Angeles Intl
ICAO Identifier KLAX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33−56−32.98N / 118−24−29.05W
2.2.2 From City: 9 Miles SW Of Los Angeles, CA
2.2.3 Elevation: 125 ft
2.2.5 Magnetic variation: 14E (1980)
2.2.6 Airport Contact: Jacqueline Yaft
ONE WORLD WAY
Los Angeles, CA 90009
(424−646−5060)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 25R
2.10.1.b Type of obstacle: Rr (25 ft). Lighted
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Pole (67 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 825 ft from Centerline

2.10.1.a. Runway designation: 25L
2.10.1.b Type of obstacle: Rr (21 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 06L
2.10.1.b Type of obstacle: Pole (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 24R
2.10.1.b Type of obstacle: Sign (42 ft). Lighted
2.10.1.c Location of obstacle: 350 ft from Centerline

2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Pole (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 375 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07L
2.12.2 True Bearing: 83
2.12.3 Dimensions: 12091 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33-56-00.00N / 118-25-00.00W
2.12.6 Threshold elevation: 118 ft
2.12.6 Touchdown zone elevation: 126 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 263
2.12.3 Dimensions: 12091 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33-56-23.54N / 118-22-47.18W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 102 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 83
2.12.3 Dimensions: 11095 ft x 200 ft
2.12.4 PCN: 75 R/A/W/T
2.12.5 Coordinates: 33−56−00.00N / 118−25−00.00W
2.12.6 Threshold elevation: 119 ft
2.12.6 Touchdown zone elevation: 125 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 263
2.12.3 Dimensions: 11095 ft x 200 ft
2.12.4 PCN: 75 R/A/W/T
2.12.5 Coordinates: 33−56−14.49N / 118−22−57.75W
2.12.6 Threshold elevation: 98 ft
2.12.6 Touchdown zone elevation: 104 ft

2.12.1 Designation: 06L
2.12.2 True Bearing: 83
2.12.3 Dimensions: 8925 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−56−56.79N / 118−25−52.16W
2.12.6 Threshold elevation: 112 ft
2.12.6 Touchdown zone elevation: 117 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 263
2.12.3 Dimensions: 8925 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−57−00.00N / 118−24−00.00W
2.12.6 Threshold elevation: 117 ft
2.12.6 Touchdown zone elevation: 120 ft

2.12.1 Designation: 06R
2.12.2 True Bearing: 83
2.12.3 Dimensions: 10285 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−56−48.27N / 118−26−00.00W
2.12.6 Threshold elevation: 108 ft
2.12.6 Touchdown zone elevation: 114 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 263
2.12.3 Dimensions: 10285 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−57−00.00N / 118−24−00.00W
2.12.6 Threshold elevation: 111 ft
2.12.6 Touchdown zone elevation: 121 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 63 ft x 63 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 25R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 07R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.10 Remarks: Runway 25L ALSF2 Operates As SSALR Till Weather Goes Below Vfr.

2.14.1 Designation: 06L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Runway 24R ALSF2 Operates As SSALR Till Weather Goes Below Vfr.

2.14.1 Designation: 06R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P

2.18.3 Service designation: 119.8 MHz
2.18.1 Service designation: CD/S
2.18.3 Service designation: 120.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 120.95 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: SPECIAL FLIGHT RULE AREA
2.18.3 Service designation: 128.55 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 133.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND/P CD
2.18.3 Service designation: 327 MHz

2.18.1 Service designation: SAMSO FLT OPS
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 379.1 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 07L. Magnetic variation: 14E
2.19.2 ILS identification: IAS
2.19.5 Coordinates: 33-56-00.00N / 118-25-19.64W
2.19.6 Site elevation: 126 ft

2.19.1 ILS type: Localizer for runway 07L. Magnetic variation: 14E
2.19.2 ILS identification: IAS
2.19.5 Coordinates: 33-56-24.72N / 118-22-35.64W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Glide Slope for runway 07L. Magnetic variation: 14E
2.19.2 ILS identification: IAS
2.19.5 Coordinates: 33-56-00.00N / 118-24-56.42W
2.19.6 Site elevation: 119 ft

2.19.1 ILS type: Middle Marker for runway 07L. Magnetic variation: 14E
2.19.2 ILS identification: IAS
2.19.5 Coordinates: 33-56-00.00N / 118-25-46.90W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 25R. Magnetic variation: 13E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33-56-00.00N / 118-25-19.64W
2.19.6 Site elevation: 126 ft

2.19.1 ILS type: Outer Marker for runway 25R. Magnetic variation: 13E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33-56-53.50N / 118-16-32.20W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 25R. Magnetic variation: 13E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33-56-00.00N / 118-25-17.98W
2.19.6 Site elevation: 119 ft

2.19.1 ILS type: Glide Slope for runway 25R. Magnetic variation: 13E
2.19.2 ILS identification: CFN

2.19.5 Coordinates: 33-56-17.85N / 118-23-10.21W
2.19.6 Site elevation: 96 ft

2.19.1 ILS type: Middle Marker for runway 25R. Magnetic variation: 13E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33-56-25.90N / 118-22-24.40W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: Localizer for runway 07R. Magnetic variation: 14E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33-56-15.76N / 118-22-45.34W
2.19.6 Site elevation: 92 ft

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 14E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33-56-00.00N / 118-25-19.78W
2.19.6 Site elevation: 126 ft

2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 14E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33-56-00.00N / 118-24-55.54W
2.19.6 Site elevation: 119 ft

2.19.1 ILS type: Middle Marker for runway 07R. Magnetic variation: 14E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33-55-58.50N / 118-25-41.70W
2.19.6 Site elevation: 104 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 14E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33-55-59.85N / 118-25-20.81W
2.19.6 Site elevation: 119 ft

2.19.1 ILS type: Inner Marker for runway 25L. Magnetic variation: 14E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33-56-16.30N / 118-22-46.10W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Outer Marker for runway 25L. Magnetic variation: 14E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33-56-53.50N / 118-16-32.20W
2.19.6 Site elevation: 127 ft

2.19.1 ILS type: Middle Marker for runway 25L. Magnetic variation: 14E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33-56-18.50N / 118-22-23.90W
2.19.6 Site elevation: 84 ft

2.19.1 ILS type: Glide Slope for runway 25L. Magnetic variation: 14E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33-56-17.75N / 118-23-10.20W
2.19.6 Site elevation: 96 ft

2.19.1 ILS type: DME for runway 25L. Magnetic variation: 14E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33-56-00.00N / 118-25-19.78W
2.19.6 Site elevation: 126 ft

2.19.1 ILS type: Localizer for runway 06L. Magnetic variation: 14E
2.19.2 ILS identification: UWU
2.19.5 Coordinates: 33-57-00.00N / 118-23-57.09W
2.19.6 Site elevation: 106 ft

2.19.1 ILS type: Glide Slope for runway 06L. Magnetic variation: 14E
2.19.2 ILS identification: UWU
2.19.5 Coordinates: 33-56-54.57N / 118-25-39.81W
2.19.6 Site elevation: 109 ft

2.19.1 ILS type: DME for runway 06L. Magnetic variation: 14E
2.19.2 ILS identification: UWU
2.19.5 Coordinates: 33-56-51.00N / 118-26-27.00W
2.19.6 Site elevation: 133 ft

2.19.1 ILS type: Middle Marker for runway 06L. Magnetic variation: 14E
2.19.2 ILS identification: UWU
2.19.5 Coordinates: 33-56-50.80N / 118-26-25.80W
2.19.6 Site elevation: 121 ft

2.19.1 ILS type: DME for runway 24R. Magnetic variation: 14E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33-56-51.00N / 118-26-27.00W
2.19.6 Site elevation: 133 ft
2.19.1 ILS type: Glide Slope for runway 24R. Magnetic variation: 14E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33-57-00.00N / 118-24-18.51W
2.19.6 Site elevation: 115 ft

2.19.1 ILS type: Inner Marker for runway 24R. Magnetic variation: 14E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33-57-00.00N / 118-23-56.00W
2.19.6 Site elevation: 105 ft

2.19.1 ILS type: Middle Marker for runway 24R. Magnetic variation: 14E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33-57-11.00N / 118-23-33.00W
2.19.6 Site elevation: 104 ft

2.19.1 ILS type: Outer Marker for runway 24R. Magnetic variation: 14E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33-57-53.70N / 118-16-40.70W
2.19.6 Site elevation: 136 ft

2.19.1 ILS type: Localizer for runway 24R. Magnetic variation: 14E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33-56-53.17N / 118-26-27.50W
2.19.6 Site elevation: 123 ft

2.19.1 ILS type: Localizer for runway 06R. Magnetic variation: 14E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33-57-00.00N / 118-23-55.57W
2.19.6 Site elevation: 106 ft

2.19.1 ILS type: Glide Slope for runway 06R. Magnetic variation: 14E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33-56-52.61N / 118-25-54.09W
2.19.6 Site elevation: 106 ft

2.19.1 ILS type: Middle Marker for runway 06R. Magnetic variation: 14E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33-56-45.50N / 118-26-33.30W
2.19.6 Site elevation: 65 ft

2.19.1 ILS type: DME for runway 06R. Magnetic variation: 14E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33-56-49.97N / 118-26-22.78W
2.19.6 Site elevation: 133 ft

2.19.1 ILS type: DME for runway 24L. Magnetic variation: 13E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33-56-49.97N / 118-26-22.78W
2.19.6 Site elevation: 133 ft

2.19.1 ILS type: Outer Marker for runway 24L. Magnetic variation: 13E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33-57-53.70N / 118-16-40.70W
2.19.6 Site elevation: 136 ft

2.19.1 ILS type: Localizer for runway 24L. Magnetic variation: 13E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33-56-46.73N / 118-26-22.18W
2.19.6 Site elevation: 122 ft

2.19.1 ILS type: Glide Slope for runway 24L. Magnetic variation: 13E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33-57-00.00N / 118-24-18.49W
2.19.6 Site elevation: 115 ft

2.19.1 ILS type: Middle Marker for runway 24L. Magnetic variation: 13E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33-57-00.00N / 118-23-31.30W
2.19.6 Site elevation: 103 ft

General Remarks:

NUMEROUS BIRDS ON AND IN VICINITY OF AIRPORT.

TURBULENCE MAY BE DEFLECTED UPWARD FROM THE BLAST FENCE 180’ E OF RUNWAY 25R.

A 700 X 500’ CLEARWAY HAS BEEN REESTABLISHED AT WEST END OF RUNWAY 24R.

NOISE SENSITIVE AIRPORT. ON WESTERLY TAKE-OFFS NO TURNS BEFORE CROSSING SHORELINE. OVER−OCEAN APPROACHES UTILIZED 2400−0630.

HELIPAD H1 CLOSED INDEFINITELY.

PRACTICE INSTRUMENT APPROACHES & TOUCH AND GO LANDINGS ARE PROHIBITED.

RUNWAY 25L PREFERRED EMERGENCY RUNWAY.

SIMULTANEOUS AIRCRAFT OPERATIONS PROHIBITED ON TAXIWAYS T AND H9 BETWEEN RUNWAY 07L/25R AND 07R/25L.

SIMULTANEOUS AIRCRAFT OPERATIONS PROHIBITED ON TAXIWAY H2 AND G BETWEEN RUNWAYS 07L/25R AND 07R/25L.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

MILITARY RESTRICTED: ALL MILITARY AIRCRAFT OFFICIAL BUSINESS ONLY, MIN 24 HR PRIOR PERMISSION REQUIRED, CONTACT 61 ABW/CP FLIGHT OPERATIONS DSN 633−3779/4014, C310−653−3779/4014.

MILITARY AF: ALL MILITARY AIRCREWS MUST CONTACT 61 ABW/CP FLIGHT OPERATIONS FOR PARK LOCATION/INSTR. NO GOVERNMENT TRANSPORTATION, QUARTERS OR SECURITY AVAILABLE. VIP NOTIFICATION PRO APPLY. USER FEES ASSESSED USING AVCARD CREDIT. CONTACT ATLANTIC AVIATION FBO 131.6 INBOUND. INBOUND RELAY ESTIMATED TIME OF ARRIVAL, VIP CODE, SERVICE REQUIRE 30 MIN PRIOR TO ARR.

WESTBOUND B747−400 AIRCRAFT ON TAXIWAY C PROHIBITED FROM SOUTHBOUND TURNS ONTO TAXIWAY P.

TAXIWAY C−7, C−8, C−9 NORTH OF TAXIWAY C) AND TAXIWAY D−7 SOUTH OF TAXIWAY E WILL NOT ACCOMMODATE B747 − 200 AND LARGER AIRCRAFT.

TAXIWAY D BETWEEN TAXIWAY D−7 AND D−8 (NORTH OF TERMINAL ONE) RESTRICTED TO B−767−300 AND SMALLER AIRCRAFT.

WEST REMOTE GATES: AIRCRAFT USE OF OPEN GATES AS TAXI PATH IS PROHIBITED (GATES

206, 207,208,209).

FOR B-777-300 AND 300ER/A340-600 AIRCRAFT OPERATION RESTRICTIONS CONTACT LAX AIRFIELD OPERATIONS (310) 646-4265.

TOM BRADLEY INTERNATIONAL GATES: CHECK LAWA (LOS ANGELES WORLD AIRPORT) RULES AND REGULATIONS FOR LATEST OPERATING PROCEDURES.

TAXIWAY E-17: A340-600, B777-300/300ER AIRCRAFT NORTHBOUND TURN ONTO TAXIWAY E-17 FROM WESTBOUND TAXIWAY E PROHIBITED.

TAXIWAY E: A340-600, B777-300/300ER AIRCRAFT WESTBOUND TURN ONTO TAXIWAY E FROM SOUTHBOUND TAXIWAY BB PROHIBITED.

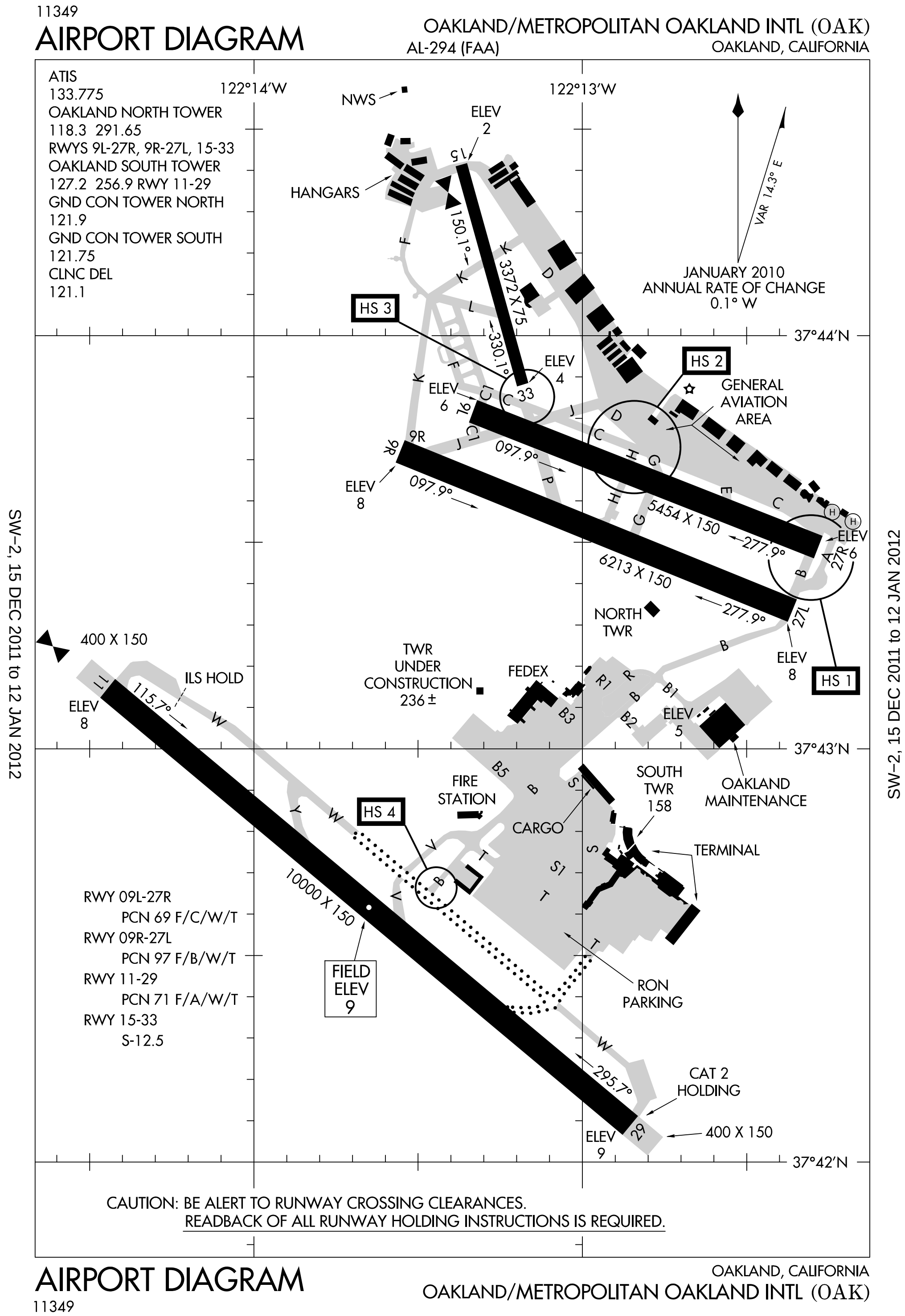
TAXIWAY C-8: A340-600, B777-300/300ER AIRCRAFT PROHIBITED ON TAXIWAY C-8 BETWEEN TAXIWAY B AND TAXIWAY C.

TAXIWAY C-9: A340-600, B777-300/300ER AIRCRAFT PROHIBITED ON TAXIWAY C-9 BETWEEN TAXIWAY B AND TAXIWAY C.

A-380 OPERATIONS CONTACT LAX AIRFIELD OPERATIONS (310) 646-4265 FOR AIRCRAFT MOVEMENT PROCEDURES.

TAXILANE D7 SOUTH OF TAXIWAY E RESTRICTED TO 767-300 AIRCRAFT AND SMALLER.

Oakland, California
Metropolitan Oakland International
ICAO Identifier KOAK



Oakland, CA
Metropolitan Oakland Intl
ICAO Identifier KOAK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−43−16.60N / 122−13−14.60W
2.2.2 From City: 4 Miles S Of Oakland, CA
2.2.3 Elevation: 9 ft
2.2.5 Magnetic variation: 16E (1995)
2.2.6 Airport Contact: Rob Forester
METROPOLITAN OAKLAND INTL ARPT
Oakland, CA 94621 (510−563−6436)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 27R
2.10.1.b Type of obstacle: Bldg (11 ft). Lighted
2.10.1.c Location of obstacle: 480 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09L
2.12.2 True Bearing: 112
2.12.3 Dimensions: 5454 ft x 150 ft
2.12.4 PCN: 69 F/C/W/T
2.12.5 Coordinates: 37−43−49.67N / 122−13−19.80W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 6 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 292
2.12.3 Dimensions: 5454 ft x 150 ft
2.12.4 PCN: 69 F/C/W/T
2.12.5 Coordinates: 37−43−29.32N / 122−12−16.93W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 7 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 112
2.12.3 Dimensions: 6213 ft x 150 ft
2.12.4 PCN: 97 F/B/W/T
2.12.5 Coordinates: 37−43−43.35N / 122−13−33.25W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 292
2.12.3 Dimensions: 6213 ft x 150 ft
2.12.4 PCN: 97 F/B/W/T
2.12.5 Coordinates: 37−43−20.18N / 122−12−21.63W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 129
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 71 F/A/W/T
2.12.5 Coordinates: 37−43−00.00N / 122−14−26.65W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 310
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 71 F/A/W/T
2.12.5 Coordinates: 37−42−00.00N / 122−12−51.32W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 164
2.12.3 Dimensions: 3372 ft x 75 ft
2.12.5 Coordinates: 37−44−25.01N / 122−13−22.09W
2.12.6 Threshold elevation: 2 ft
2.12.6 Touchdown zone elevation: 5 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 344

2.12.3 Dimensions: 3372 ft x 75 ft
2.12.5 Coordinates: 37−43−52.90N / 122−13−10.83W
2.12.6 Threshold elevation: 4 ft
2.12.6 Touchdown zone elevation: 5 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 09R
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 27L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 11
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 124.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.775 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 291.65 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 16E
2.19.2 ILS identification: OAK
2.19.5 Coordinates: 37−43−54.33N / 122−13−34.24W
2.19.6 Site elevation: 3 ft

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 16E
2.19.2 ILS identification: OAK
2.19.5 Coordinates: 37−43−16.88N / 122−11−38.86W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 16E
2.19.2 ILS identification: OAK
2.19.5 Coordinates: 37−43−28.59N / 122−12−30.62W
2.19.6 Site elevation: 3 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 16E
2.19.2 ILS identification: OAK
2.19.5 Coordinates: 37−41−54.13N / 122−07−25.03W
2.19.6 Site elevation: 30 ft

2.19.1 ILS type: Outer Marker for runway 11. Magnetic variation: 16E
2.19.2 ILS identification: AAZ
2.19.5 Coordinates: 37−46−54.04N / 122−19−53.69W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Middle Marker for runway 11. Magnetic variation: 16E
2.19.2 ILS identification: AAZ
2.19.5 Coordinates: 37−43−31.45N / 122−15−00.00W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 11. Magnetic variation: 16E
2.19.2 ILS identification: AAZ
2.19.5 Coordinates: 37−42−00.00N / 122−12−46.64W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Glide Slope for runway 11. Magnetic variation: 16E
2.19.2 ILS identification: AAZ
2.19.5 Coordinates: 37−43−00.00N / 122−14−13.82W
2.19.6 Site elevation: 4 ft

2.19.1 ILS type: Glide Slope for runway 29. Magnetic variation: 16E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37−42−00.00N / 122−13−00.00W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Outer Marker for runway 29. Magnetic variation: 16E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37−39−00.00N / 122−08−25.68W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 29. Magnetic variation: 16E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37−43−29.86N / 122−14−58.10W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Middle Marker for runway 29. Magnetic variation: 16E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37−41−44.61N / 122−12−20.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Inner Marker for runway 29. Magnetic variation: 16E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37−41−59.92N / 122−12−43.09W
2.19.6 Site elevation: 10 ft

General Remarks:

BIRDS ON & IN THE VICINITY OF AIRPORT.

400 FT BLAST PAD RUNWAY 29 & 500 FT BLAST PAD RUNWAY 11.

RUNWAYS 09L/27R & 09R/27L HAVE CENTERLINE REFLECTORS.

NOISE PROHIBITIONS NOT APPLICABLE IN EMERGENCY OR WHENEVER RUNWAY 11/29 IS CLOSED DUE TO MAINT, SAFETY, WINDS OR WEATHER.

AIRCRAFT WITH EXPERIMENTAL OR LIMITED CERTIFICATION HAVING OVER 1000 HORSEPOWER OR 4000 LBS ARE RESTRICTED TO RUNWAY 11/29.

1000’CLEARWAYS RUNWAY 11 & 29.

100’ LIGHTED MICROWAVE ANTENNA TOWER LOCATED 1320’ WSW OF OAK VORTAC; S OF UPWIND END OF RUNWAY 27L.

RUNWAYS 29, 27R AND RUNWAY 27L DISTANCE REMAINING SIGNS LEFT SIDE.

FOR NOISE ABATEMENT INFORMATION CONTACT NOISE ABATEMENT OFFICE AT (510) 563−6463.

RUNWAY 15/33 CLOSED TO AIR CARRIER AIRCRAFT.

PREFERENTIAL RUNWAY USE PROGRAM IN EFFECT 2200−0600. NORTH FIELD PREFERRED ARR RUNWAY 27L, NORTH FIELD PREFERRED DEP RUNWAYS 09R OR 27R. IF THESE RUNWAYS UNACCEPTABLE FOR SAFETY OR ATC INSTRUCTION THEN RUNWAY 11/29 MUST BE USED.

24 HR NOISE ABATEMENT PROCEDURE − TURBOJET AND TURBOFAN POWERED AIRCRAFT, TURBOROPS OVER 17, 000 LBS, FOUR−ENGINE RECIPROCATING POWERED AIRCRAFT, AND SURPLUS MILITARY AIRCRAFT OVER 12,500 POUNDS SHOULD NOT DEPART RUNWAYS 27R & 27R OR LAND ON RUNWAYS 09R & 09L.

INTERSECTION OF TAXIWAYS B, W AND V NOT VISIBLE FROM ATCT. TAXIWAY K BETWEEN RUNWAY 33 AND TAXIWAY D AND PORTIONS OF TAXIWAY D NOT VISIBLE FROM ATCT.

TAXIWAY A, E, G, H BETWEEN RUNWAY 27R AND TAXIWAY C MAX AIRCRAFT WEIGHT 150,000 LBS.

TAXIWAY G & H BETWEEN RUNWAY 27 L & 27R: MAX AIRCRAFT WEIGHT 12,500 LBS. TAXIWAY P MAX AIRCRAFT WEIGHT 24,000 LBS SINGLE; 40,000 LBS DUAL.

TAXIWAY C BETWEEN RUNWAY 27R & TAXIWAY G AND TAXIWAYS B, J, AND D MAX AIRCRAFT WEIGHT 900,000 LBS.

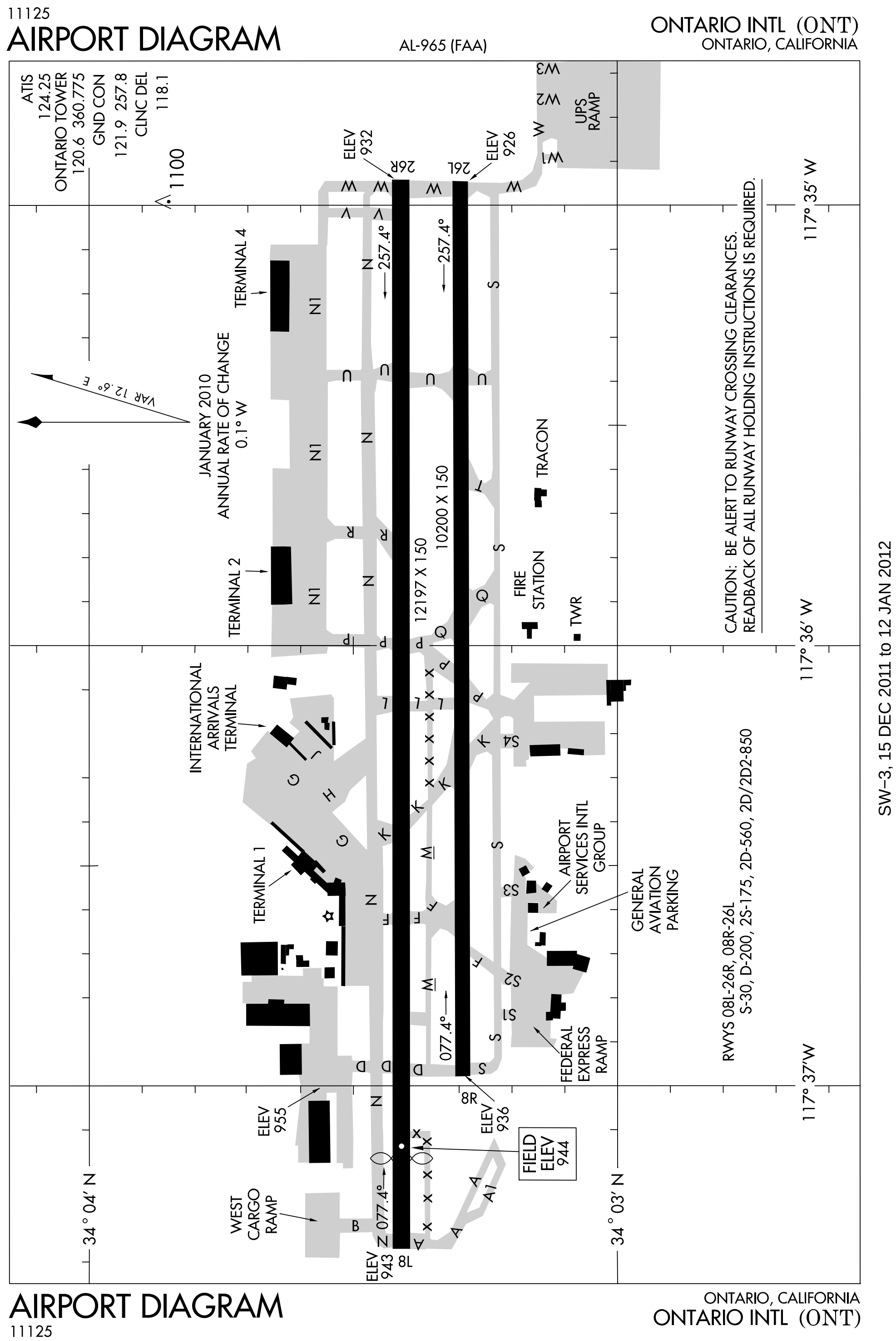
TAXIWAY C BETWEEN TAXIWAY G & J MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 175,000 LBS DUAL; 400,000 LBS TANDEM.

TAXIWAY C BETWEEN TAXIWAY J & F MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 150,000 LBS DUAL; 155,000 LBS TANDEM (DUAL TANDEM NOT AUTHORIZED).

TAXIWAY K BETWEEN TAXIWAY D & INTERSECTION TAXIWAYS F, L, K MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 115,000 LBS DUAL; 140,000 LBS TANDEM.

TAXIWAY K BETWEEN RUNWAY 9R AND INTERSECTION TAXIWAYS F, L, K MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 45,000 LBS DUAL; TANDEM NOT AUTHORIZED.

Ontario, California
Ontario International
ICAO Identifier KONT



Ontario, CA
Ontario Intl
ICAO Identifier KONT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 34−03−21.60N / 117−36−00.00W
2.2.2 From City: 2 Miles E Of Ontario, CA
2.2.3 Elevation: 944 ft
2.2.5 Magnetic variation: 14E (1990)
2.2.6 Airport Contact: Jess Romo
ONTARIO INTERNATIONAL AIRPORT
Ontario, CA 91761 (909−544−5300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 08L
2.10.1.b Type of obstacle: Rr (20 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

2.10.1.a. Runway designation: 26R
2.10.1.b Type of obstacle: Pole (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 26L
2.10.1.b Type of obstacle: Pole (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12197 ft x 150 ft
2.12.5 Coordinates: 34−03−24.75N / 117−37−22.15W
2.12.6 Threshold elevation: 943 ft
2.12.6 Touchdown zone elevation: 944 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12197 ft x 150 ft
2.12.5 Coordinates: 34−03−24.82N / 117−34−57.19W
2.12.6 Threshold elevation: 932 ft
2.12.6 Touchdown zone elevation: 932 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10200 ft x 150 ft
2.12.5 Coordinates: 34−03−17.85N / 117−36−58.41W
2.12.6 Threshold elevation: 936 ft
2.12.6 Touchdown zone elevation: 936 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10200 ft x 150 ft
2.12.5 Coordinates: 34−03−17.89N / 117−34−57.19W
2.12.6 Threshold elevation: 926 ft
2.12.6 Touchdown zone elevation: 926 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS)
2.18.3 Service designation: 124.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 360.775 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 14E
2.19.2 ILS identification: AOD
2.19.5 Coordinates: 34−03−21.21N / 117−36−59.90W
2.19.6 Site elevation: 936 ft

2.19.1 ILS type: Middle Marker for runway 08L. Magnetic variation: 14E
2.19.2 ILS identification: AOD
2.19.5 Coordinates: 34−03−25.80N / 117−37−51.55W
2.19.6 Site elevation: 947 ft

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 14E
2.19.2 ILS identification: AOD
2.19.5 Coordinates: 34−03−24.82N / 117−34−45.84W
2.19.6 Site elevation: 929 ft

2.19.1 ILS type: Glide Slope for runway 26R. Magnetic variation: 14E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34−03−22.01N / 117−35−10.97W
2.19.6 Site elevation: 926 ft

2.19.1 ILS type: Outer Marker for runway 26R. Magnetic variation: 14E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34−03−22.33N / 117−28−17.72W
2.19.6 Site elevation: 1010 ft

2.19.1 ILS type: Middle Marker for runway 26R. Magnetic variation: 14E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34−03−24.79N / 117−34−24.33W
2.19.6 Site elevation: 940 ft

2.19.1 ILS type: DME for runway 26R. Magnetic variation: 14E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34−03−22.15N / 117−37−26.54W
2.19.6 Site elevation: 958 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 14E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34−03−24.76N / 117−37−26.68W
2.19.6 Site elevation: 945 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 14E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−20.47N / 117−37−00.00W
2.19.6 Site elevation: 948 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 14E
2.19.2 ILS identification: TWO

2.19.5 Coordinates: 34−03−17.88N / 117−34−24.41W
2.19.6 Site elevation: 924 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 14E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−21.89N / 117−35−10.97W
2.19.6 Site elevation: 925 ft

2.19.1 ILS type: Inner Marker for runway 26L. Magnetic variation: 14E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−17.89N / 117−34−47.85W
2.19.6 Site elevation: 921 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 14E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−22.33N / 117−28−17.72W
2.19.6 Site elevation: 1010 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 14E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−17.84N / 117−37−10.29W
2.19.6 Site elevation: 931 ft

General Remarks:

NO ACCESS TO RUNWAY 08R FROM TAXIWAY A.

FBO’S ON FREQ 130.75 AND 131.6.

TAXIWAY H RESTRICTED TO AIRCRAFT WITH WINGSPAN OF 124 FT OR SMALLER WHEN GATE 35A OCCUPIED BY B747 OR LARGER AIRCRAFT.

TAXIWAY J RESTRICTED TO AIRCRAFT WITH WINGSPAN OF 108 FT OR SMALLER.

WILDLIFE HAZARD MANAGEMENT PLAN IN EFFECT; POTENTIAL BIRD HAZARDS MAY EXIST ON AND IN THE VICINITY OF AIRPORT; BE ALERT TO LARGE NUMBERS OF STARLINGS AND CROWS POSSIBLE ON APPROACH TO RUNWAY 26L AND RUNWAY 26R, HAWKS, EAGLES, FALCONS AND OWLS SPOTTED ON OCCASION.

TAXIWAY M, TAXIWAY A, TAXIWAY S−3 AND TAXIWAY S−4 RESTRICTED TO AIRCRAFT WITH WINGSPAN 117 FT OR SMALLER.

PILOTS SHOULD USE JUDGEMENTAL OVERSTEER ON TAXIWAY A, TAXIWAY M, TAXIWAY H, TAXIWAY J, TAXIWAY S−3 AND TAXIWAY S−4.

NOISE ABATEMENT PROCEDURES IN EFFECT; FULL−LENGTH TURBOJET DEP ENCOURAGED, NIGHTLY PREFERENTIAL RUNWAY USAGE, 2100−0600.

EASTBOUND B747, B777, A330, A340 OR LARGER AIRCRAFT ON TAXIWAY S PROHIBITED FROM NORTHBOUND TURNS ONTO TAXIWAY K.

B747, B777, A330, A340 OR LARGER AIRCRAFT ON TAXIWAY S PROHIBITED FROM NORTHBOUND TURNS ONTO TAXIWAY P.

AIRCRAFT PARKING AND CONTRACT GROUND SERVICES ARE LIMITED FOR NON−SCHEDULED OPERATIONS. FOR SCHEDULING INFORMATION CALL AIRFIELD OPERATIONS (909)975−5344.

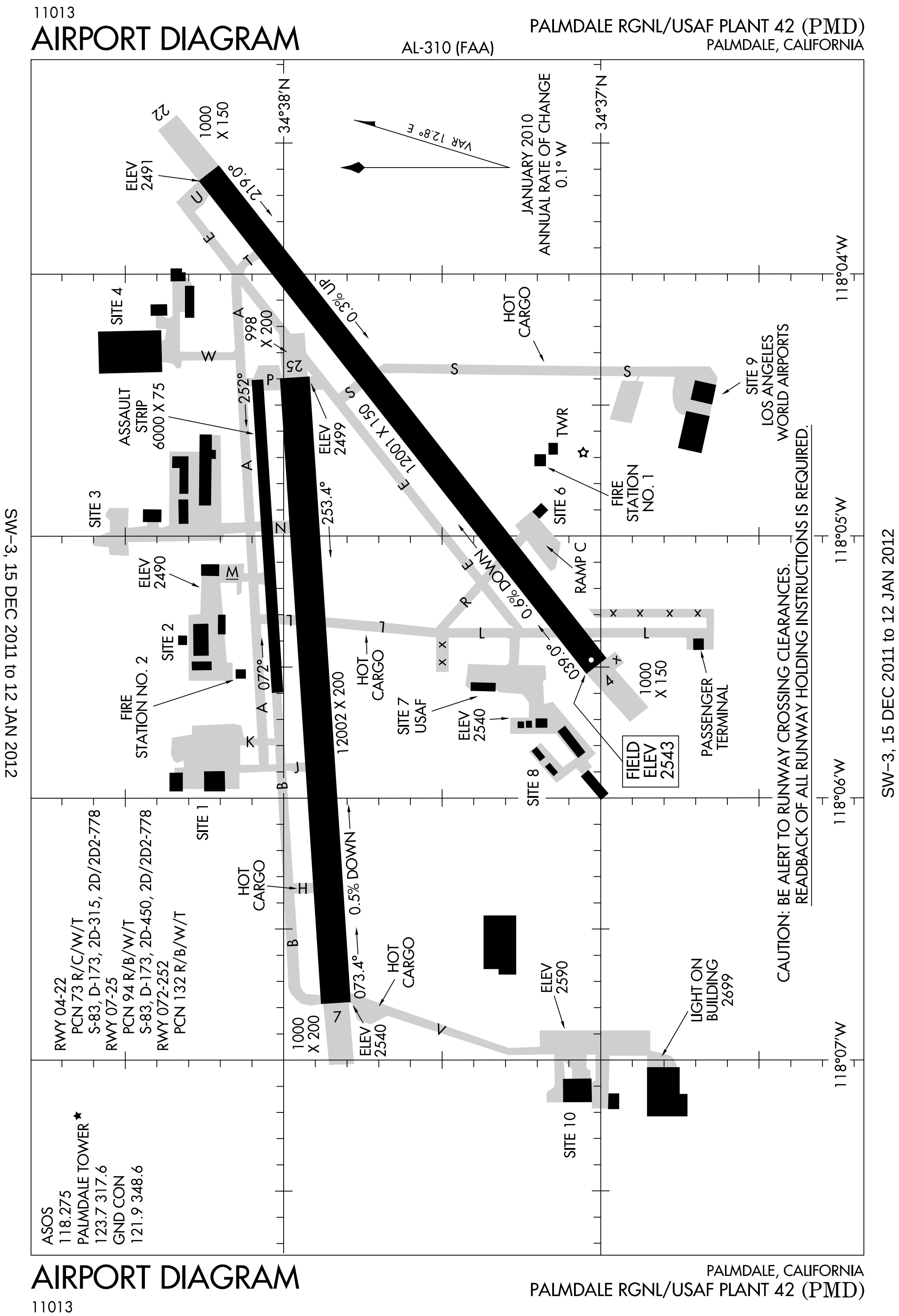
TAXIWAY W SOUTH OF TAXIWAY S IS A NON−MOVEMENT AREA; ALL AIRCRAFT CONTACT RAMP CONTROL 131.325 FOR ACCESS.

ALL MILITARY AND GENERAL AVIATION (FIXED OR ROTOR WING) AIRCRAFT OPERATIONS ARE RESTRICTED TO FBO FACILITIES WITH ADVANCE COORDINATION; OVERNIGHT TIEDOWN AND PARKING FEE.

TAXIWAY S SOUTH OF CENTERLINE BETWEEN TXLN S−2 AND S−3, AND THE SOUTHERN HALF OF TXLN S−2 AND S−3 ARE NOT VISIBLE FROM ATCT; PILOTS USE CAUTION ENTERING TXLN S−2 AND S−3.

TAXIWAY M FIRST 1,275 FT CLOSED EAST OF TAXIWAY A.

Palmdale, California
Palmdale Regional/USAF Plant 42
ICAO Identifier KPMD



Palmdale, CA
Palmdale Rgnl/USAF Plant 42
ICAO Identifier KPMD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 34−37−45.80N / 118−05−00.00W
2.2.2 From City: 3 Miles NE Of Palmdale, CA
2.2.3 Elevation: 2543 ft
2.2.5 Magnetic variation: 15E (1980)
2.2.6 Airport Contact: Ken Neitzel
2503 E AVE P
Palmdale, CA 93550
(661−272−6715)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 1330−0600Z++ Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: None
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: None

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 04
2.10.1.b Type of obstacle: Hill. Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07
2.12.2 True Bearing: 86
2.12.3 Dimensions: 12002 ft x 200 ft
2.12.4 PCN: 94 R/B/W/T
2.12.5 Coordinates: 34−37−50.11N / 118−06−47.03W
2.12.6 Threshold elevation: 2540 ft
2.12.6 Touchdown zone elevation: 2540 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 25
2.12.2 True Bearing: 266
2.12.3 Dimensions: 12002 ft x 200 ft
2.12.4 PCN: 94 R/B/W/T
2.12.5 Coordinates: 34−37−57.99N / 118−04−23.74W
2.12.6 Threshold elevation: 2499 ft
2.12.6 Touchdown zone elevation: 2503 ft
2.12.7 Slope: 0.2UP

2.12.1 Designation: 04
2.12.2 True Bearing: 52
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 73 R/C/W/T
2.12.5 Coordinates: 34−37−00.00N / 118−05−29.80W
2.12.6 Threshold elevation: 2542 ft
2.12.6 Touchdown zone elevation: 2542 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 22
2.12.2 True Bearing: 232
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 73 R/C/W/T
2.12.5 Coordinates: 34−38−14.24N / 118−03−36.97W
2.12.6 Threshold elevation: 2491 ft
2.12.6 Touchdown zone elevation: 2498 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 072
2.12.3 Dimensions: 6000 ft x 75 ft
2.12.4 PCN: 132 R/B/W/T

2.12.1 Designation: 252
2.12.3 Dimensions: 6000 ft x 75 ft
2.12.4 PCN: 132 R/B/W/T

AD 2.14 Approach and runway lighting
2.14.1 Designation: 25
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 25. Magnetic variation: 15E
2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34−38−22.66N / 117−57−30.34W
2.19.6 Site elevation: 2550 ft

2.19.1 ILS type: Middle Marker for runway 25. Magnetic variation: 15E
2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34−38−00.00N / 118−03−46.16W
2.19.6 Site elevation: 2492 ft

2.19.1 ILS type: Localizer for runway 25. Magnetic variation: 15E
2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34−37−48.79N / 118−07−10.91W
2.19.6 Site elevation: 2552 ft

2.19.1 ILS type: Glide Slope for runway 25. Magnetic variation: 15E
2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34−38−00.00N / 118−04−40.08W
2.19.6 Site elevation: 2492 ft

General Remarks:

MISC: INDUSTRIAL INSTALL - NO TRANSPORTATION, LODGING OR NORMAL SERVICE AVAILABLE ON SITE.

WHEN ATCT CLOSED AIRPORT CLOSED TO ALL TRAFFIC WITHOUT WRITTEN APPROVAL.

PARKING RAMP LOCATED S OF RUNWAY 22 & TAXIWAY V NOT VISIBLE FROM ATCT.

UNLIGHTED OBSTRUCTION SURROUND AIRFIELD.

DRAINAGE DITCHES PARALLEL ALL RUNWAYS.

BIRD HAZARD POTENTIAL EXISTS. MIGRATORY SEASON PHASE II 1 OCT - 31 AT SEA. DURING BIRD WATCH CONDITION MODERATE, TAKE-OFF AND LANDING PERMITTED. DURING BIRD WATCH CONDITION SEVERE, TAKE-OFF AND LANDING PROHIBITED.

MILITARY USE: ASSAULT LANDING ZONE LOCATED 1ST 6,000 EAST END OF TAXIWAY B, ASSAULT LANDING ZONE 25 OPEN TO C-130 AIRCRAFT, PRIOR PERMISSION REQUIRED ONLY; CALL 661-272-6715. ASSAULT LANDING ZONE ONE-WAY LANDING ASSAULT LANDING ZONE 25 ONLY.

MISC: WINDS ARE ESTIMATE DUE TO FMQ-13 WIND SENSORS BEING ACCURATE TO WITHIN ONLY +/- 2 KNOTS. ATC/WX WILL NOT INCLUDE/RELAY WIND CORRECTION INTO FORECAST/PHRASEOLOGY. THEREFORE, AIRCREWS WILL INCORPORATE A +/- 2 KNOTS ACCURACY INTO THEIR DECISION MAKING PROCESS FOR FLYING OPR.

CAUTION: RUNWAY EDGE LIGHT LOCATED 30’ FR OUTSIDE SIDE STRIPE. 60’ AGL STRING OF UTILITY POLES VIOLATE RUNWAY 22 APPROACH CLEAR ZONE SURFACE N OF EXTENSION CENTERLINE.

SERVICE-LGT: GATED THRESHOLD LIGHT RUNWAY 07-25 AND RUNWAY 04-22.

TRANSIENT ALERT (1 OF 2): NO FLEET SERVICE AVAILABLE. LIMITED TRANSIENT SERVICE DUR NORMAL HR, WEEKEND AND HOLIDAY CAPABILITY EXTREMELY LIMITED AND MAY BE POSTPONED UNTIL NEXT DUTY DAY. NO FOLLOW ME SERVICE AVAILABLE. EXPECT PROGRESSIVE TAXI TO PARK. AIRCREW RESPONSIBLE FOR AIRCRAFT PINNING/SAFING.

MISC: COMSEC STORAGE UNAVAILABLE.

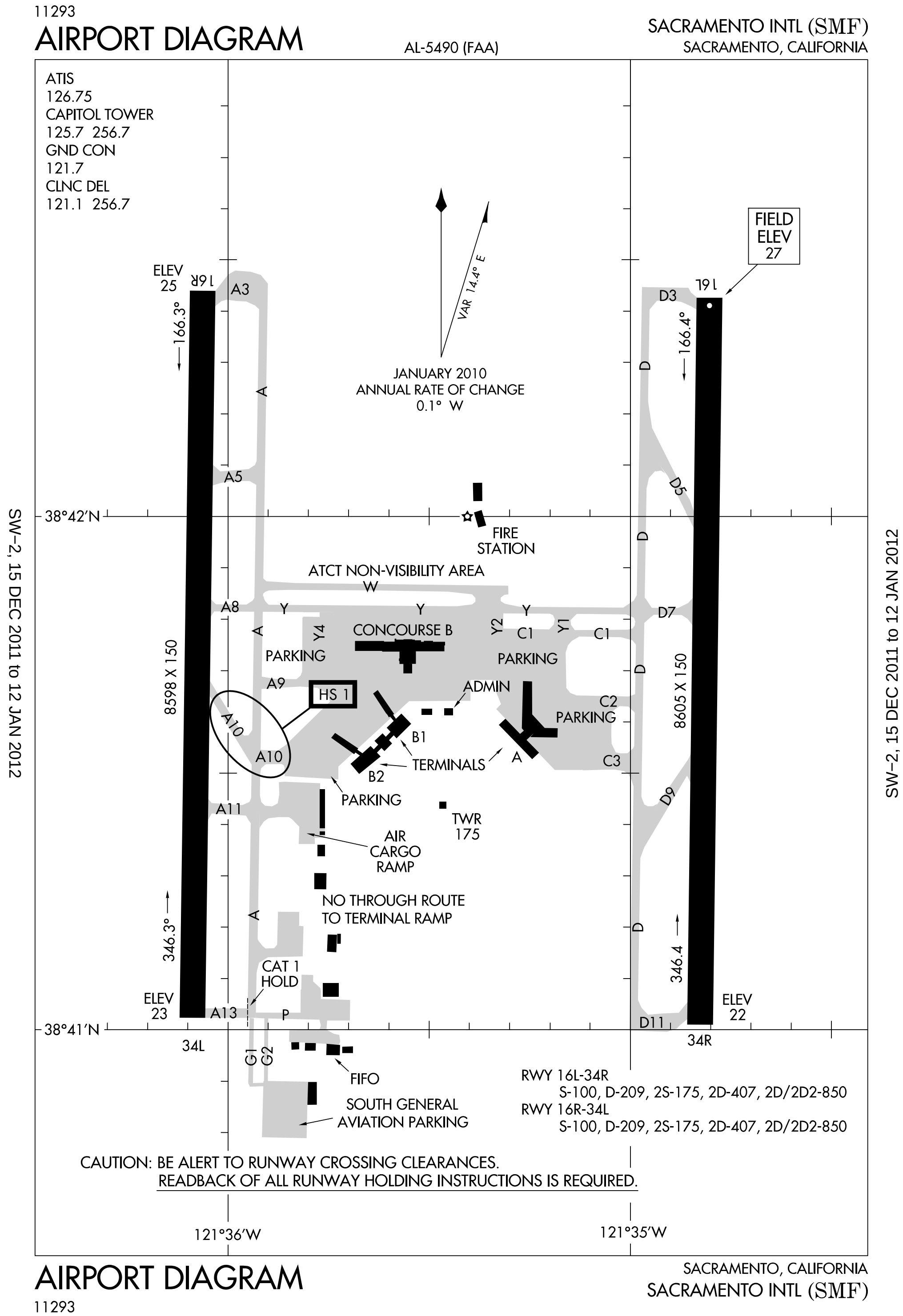
RUNWAY 252 MRK ONLY FOR C-130 ASSAULT OPR; ONE-WAY LANDING ONLY. USE OF

ASSAULT STRIP LANDING ZONE PRIOR PERMISSION REQUIRED WITH 146 OSF/OSK DSN 893-7590, C805-986-7590.

TRANSIENT ALERT (2 OF 2): UNABLE TO SERVICE AIRCRAFT WITH ORDNANCE. LIMITED GRD SUPPORT EQUIPMENT AVAILABLE. NO POTABLE WATER SERVICE. NO TRANSIENT MAINT AVAILABLE. GROUND SERVICE UNAVAILABLE WHEN LIGHTNING WITHIN 5 NAUTICAL MILE.

MISC: FLIGHT PLANS MUST BE ACTIVATED WITH PRESCOTT FSS.

Sacramento, California
Sacramento International
ICAO Identifier KSMF



Sacramento, CA
Sacramento Intl
ICAO Identifier KSMF

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−41−43.60N / 121−35−26.80W
2.2.2 From City: 10 Miles NW Of Sacramento, CA
2.2.3 Elevation: 27 ft
2.2.5 Magnetic variation: 17E (1980)
2.2.6 Airport Contact: Lance Mccasland
6900 AIRPORT BLVD
Sacramento, CA 95837
(916−874−0566)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway physical characteristics
2.12.1 Designation: 16L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 8605 ft x 150 ft
2.12.5 Coordinates: 38−42−25.70N / 121−34−48.21W
2.12.6 Threshold elevation: 27 ft
2.12.6 Touchdown zone elevation: 27 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 8605 ft x 150 ft
2.12.5 Coordinates: 38−41−00.00N / 121−34−49.64W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 24 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 8598 ft x 150 ft
2.12.5 Coordinates: 38−42−26.42N / 121−36−00.00W
2.12.6 Threshold elevation: 25 ft
2.12.6 Touchdown zone elevation: 25 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 8598 ft x 150 ft
2.12.5 Coordinates: 38−41−00.00N / 121−36−00.00W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 24 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 16L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: ALSF2 Unmonitored.

2.14.1 Designation: 34L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: LCL/P

2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 126.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P GND/P LCL/P
2.18.3 Service designation: 256.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: MDK
2.19.5 Coordinates: 38−40−50.25N / 121−34−49.82W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: DME for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: MDK
2.19.5 Coordinates: 38−40−50.22N / 121−34−46.30W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: MDK
2.19.5 Coordinates: 38−42−15.23N / 121−34−44.36W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 15E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−40−35.75N / 121−36−00.00W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 15E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−40−34.70N / 121−36−00.00W
2.19.6 Site elevation: 34 ft

2.19.1 ILS type: Inner Marker for runway 16R. Magnetic variation: 15E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−42−34.10N / 121−36−00.00W
2.19.6 Site elevation: 23 ft

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 15E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−42−53.08N / 121−36−00.00W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 15E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−42−15.86N / 121−36−00.00W
2.19.6 Site elevation: 23 ft

2.19.1 ILS type: Outer Marker for runway 16R. Magnetic variation: 15E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−47−41.76N / 121−35−57.70W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−42−35.75N / 121−36−00.00W
2.19.6 Site elevation: 23 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−41−12.50N / 121−36−00.00W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Outer Marker for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−37−00.00N / 121−36−11.87W
2.19.6 Site elevation: 15 ft

2.19.1 ILS type: Middle Marker for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−40−32.75N / 121−36−00.00W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: DME for runway 34L. Magnetic variation: 17E

2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−42−36.91N / 121−36−00.00W
2.19.6 Site elevation: 37 ft

General Remarks:

BIRDS ON AND IN VICINITY OF AIRPORT.

FAA GROSS WEIGHT STRENGTH EVALUATION DC−10−10 = 410000 LBS; DC−10−30 = 530000 LBS.

NOISE SENSITIVE AREAS W OF AIRPORT ON SAC RIVER. LOCAL TURN DISCOURAGED FOR JET AIRCRAFT. WHEN CONDUCTING IFR APPROACH IN VFR CONDITIONS EXECUTE MISSED APPROACH AT DEP END OF RUNWAYS. PLAN VFR PATTERNS TO E. USE MIN POWER SETTINGS.

ALL AIRCRAFT CONTACT ATC GROUND CONTROL PRIOR TO MOVEMENT ON RAMP.

CROP DUSTERS OPER IN THE VICINITY OF AIRPORT AT OR BELOW 200 FT AGL.

(A49A−16R) ALSF2 OPERS AS SSALR TILL WEATHER GOES BELOW VFR.

TAXIWAY REMARK #2: THE MAXIMUM ALLOWABLE GROSS AIRCRAFT LOAD FOR TAXIWAYS G1, G2, AND THE GENERAL AVIATION PARKING APRON IS: 70,000 LBS FOR SINGLE GEAR AIRCRAFT; 170,000 LBS FOR DUAL GEAR AIRCRAFT; AND 250,000 LBS FOR DUAL TANDEM GEAR AIRCRAFT.

TAXIWAY REMARK #2 CONT’D: AN AIRCRAFT CANNOT EXCEED THE AIRPLANE DESIGN GROUP III CRITERIA AND MUST HAVE A WHEEL BASE OF LESS THAN 60 FT.

MILITARY AIRCRAFT PARKING WILL BE LIMITED DUE TO CONSTRUCTION. CONTACT AIRPORT OPERATIONS IF PARKING IS REQUIRED (916) 806−5351.

PORTION OF TAXIWAY W 500 FT EAST OF TAXIWAY A TO 2100 FT EAST OF TAXIWAY A IS NOT VISIBLE FROM ATCT.

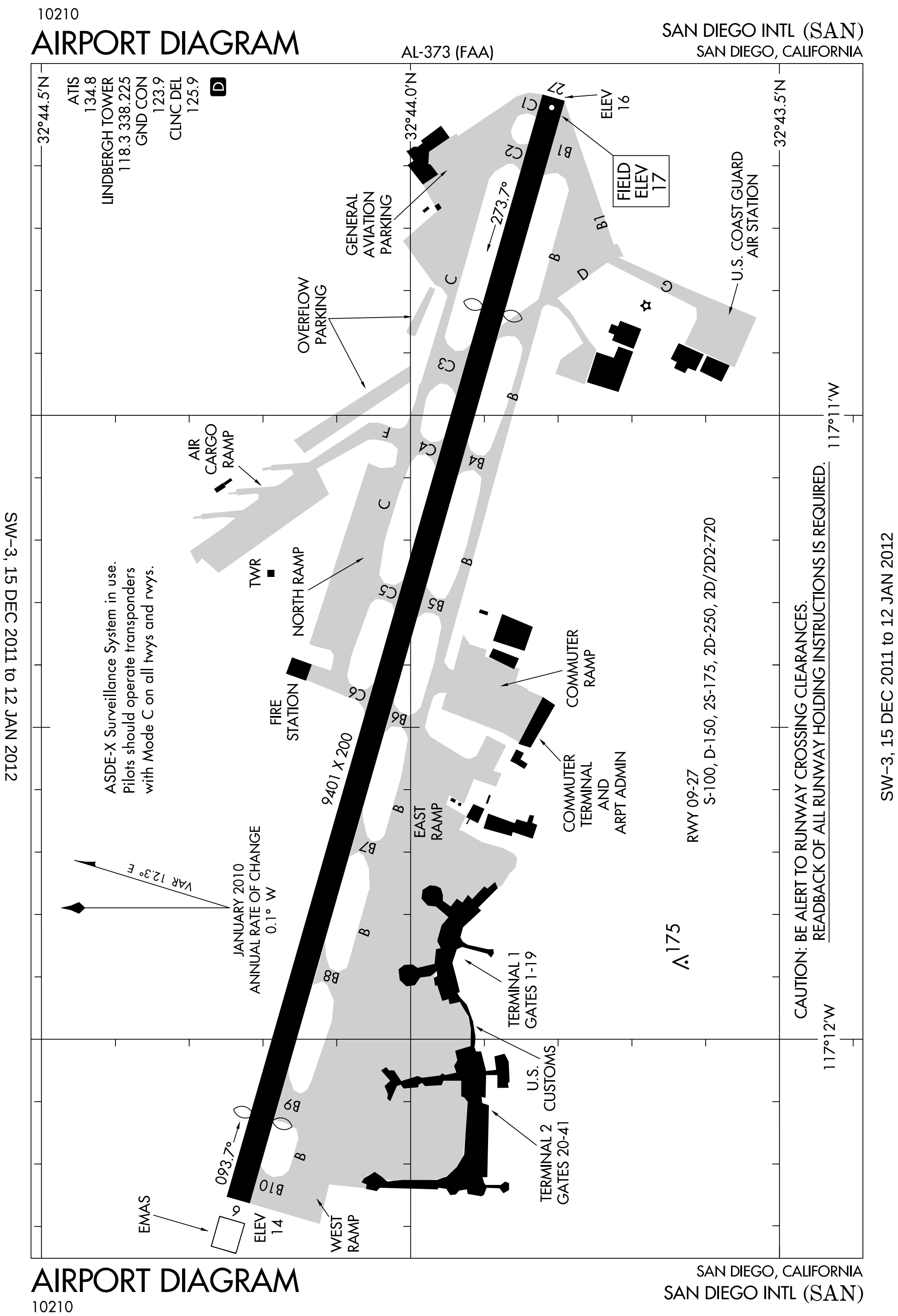
TAXIWAY Y4 WILL BE OPEN AND RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (GROUP III) AND WILL BE CLOSED NIGHTLY FOR REMAINING OVERNIGHT PARKING OR ANYTIME REMAINING OVERNIGHT PAD IS UTILIZED.

DUE TO CONSTRUCTION ACTIVITY, AIRCRAFT MAY ENCOUNTER DIFFICULTIES PERFORMING TRANSPONDER CHECKS IN AND AROUND GATES LOCATED AT TERMINAL B1 AND B2. PROBLEM MAY BE ALLEIVIATED BY PERFORMING TRANSPONDER CHECKS WHILE TAXIING OUT TO TAXIWAY A.

NUMEROUS CONSTRUCTION CRANES AND EQUIPMENT WILL BE OPERATING SOUTH OF TAXIWAY W BETWEEN TAXIWAY Y2 AND THE REMAINING OVERNIGHT PAD. NO CRANE OR OTHER EQUIPMENT WILL BE MORE THAN 275 FT AGL. EQUIPMENT WILL BE FLAGGED AND LIGHTED OR LOWERED DURING THE HOURS OF LOW VISIBILTY OR DARKNESS.

RUNWAY 16R/34L CRANE 265 FT AGL 1600 FT EAST MIDPOINT LIGHTED AND LOWERED AT NIGHT.

San Diego, California
San Diego International
ICAO Identifier KSAN



San Diego, CA
San Diego Intl
ICAO Identifier KSAN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32−44−00.00N / 117−11−22.80W
2.2.2 From City: 2 Miles W Of San Diego, CA
2.2.3 Elevation: 17 ft
2.2.5 Magnetic variation: 14E (1980)
2.2.6 Airport Contact: Angela Shafer−Payne
3225 N HARBOR DRIVE
San Diego, CA 92101
(619) 400−2455
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Tree (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 385 ft from Centerline

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Sign (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 106
2.12.3 Dimensions: 9401 ft x 200 ft
2.12.5 Coordinates: 32−44−13.62N / 117−12−15.66W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 286
2.12.3 Dimensions: 9401 ft x 200 ft
2.12.5 Coordinates: 32−43−47.98N / 117−10−29.88W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 17 ft

AD 2.13 Declared distances
2.13.1 Designation: 09
2.13.2 Takeoff run available: 9401
2.13.3 Takeoff distance available: 9401
2.13.4 Accelerate−stop distance available: 8280
2.13.5 Landing distance available: 7580

2.13.1 Designation: 27
2.13.2 Takeoff run available: 9401
2.13.3 Takeoff distance available: 9401
2.13.4 Accelerate−stop distance available: 9401
2.13.5 Landing distance available: 7591

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI 4−Box(L) 3.5 Degrees Angle; Threshold Crossing Height 66’ From Displaced Thr; Baffled Horizontally 4.8 Degrees N Of Centerline And 10.0 Degrees S Of Centerline ; Lateral Coverage Has Been Narrowed To Avoid Obstacles; Close Alignment To Runway Centerline Is Necessary; Use Of Localizer Recommended. MALS Rwy 27 Threshold To 1400’.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 338.225 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 14E
2.19.2 ILS identification: SAN
2.19.5 Coordinates: 32−43−47.58N / 117−10−28.21W
2.19.6 Site elevation: 18 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 14E
2.19.2 ILS identification: SAN
2.19.5 Coordinates: 32−44−23.65N / 117−12−57.08W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 09. Magnetic variation: 14E
2.19.2 ILS identification: SAN
2.19.5 Coordinates: 32−43−46.80N / 117−10−28.50W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 14E
2.19.2 ILS identification: SAN
2.19.5 Coordinates: 32−44−10.40N / 117−11−49.98W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 14E
2.19.2 ILS identification: UBR
2.19.5 Coordinates: 32−44−14.77N / 117−12−20.38W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: DME for runway 27. Magnetic variation: 14E
2.19.2 ILS identification: UBR
2.19.5 Coordinates: 32−44−11.40N / 117−12−19.91W
2.19.6 Site elevation: 26 ft

General Remarks:

TERRAIN & BUILDINGS TO 500’ MSL N & E WITHIN 1 1/2 MI.

PRACTICE APPROACHES AND TOUCH AND GO LANDING PROHIBITED.

POSSIBLE ERRONEOUS GROUND PROXIMITY WARNING SYSTEM ALERTS BETWEEN 1.6 & 1.3 DME WHILE ON PAPI APPROACH PATH FOR RUNWAY 27.

TO REDUCE JET BLAST IMPACT AT N END OF TAXIWAY F AIRCRAFT WILL NOT START ENGINE UNTIL 800 FT FROM N END OF TAXIWAY F; ABEAM THE SECOND PARKING PAD.

ULTRALIGHT VEHICLES PROHIBITED ON AIRPORT.

747 AND LARGER AIRCRAFT ARE PROHIBITED FROM MAKING INTERSECTION TAKE-OFFS.

INTERMITTENT PRESENCE OF BIRDS ON AND IN THE VICINITY OF OF AIRPORT.

CROSS−BLEED ENGINE STARTS PERMITTED ONLY ON PARALLEL TAXIWAY WITH AIRCRAFT ALIGNED ON TAXIWAY CENTERLINE.

OUTBOARD ENGINES OF FOUR−ENGINE AIRCRAFT ARE TO BE KEPT AT IDLE POWER FOR ALL GROUND MANEUVERING.

TAXIING AIRCRAFT ARE PROHIBITED FROM PASSING TO THE SOUTH OF AIRCRAFT LOCATED ON TAXIWAY B INTO ALLEY LOCATED BETWEEN GATES 7 AND 14. TAXIING AIRCRAFT SHALL FOLLOW LEAD−IN LINES UNTIL THE NOSE WHEEL OF THE AIRCRAFT HAS ENTERED THE NON−MOVEMENT AREA OF THE ALLEY.

PILOTS REQUIRED TO CONTACT ATCT GROUND CONTROLLER PRIOR TO PUSHBACK, TOW OUT AND TAXI FOR TRAFFIC ADVISORIES.

MILITARY AIRCRAFT ON OFFICIAL BUSINESS ONLY CONTACT AIRPORT OPERATIONS AT 619−400−2710 FOR PRIOR PERMISSION REQUIRED.

ASDE−X SURVEILLANCE SYSTEM IN USE. PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

TAXIWAY C EDGE LIGHTS OUT OF SERVICE INDEFINITELY.

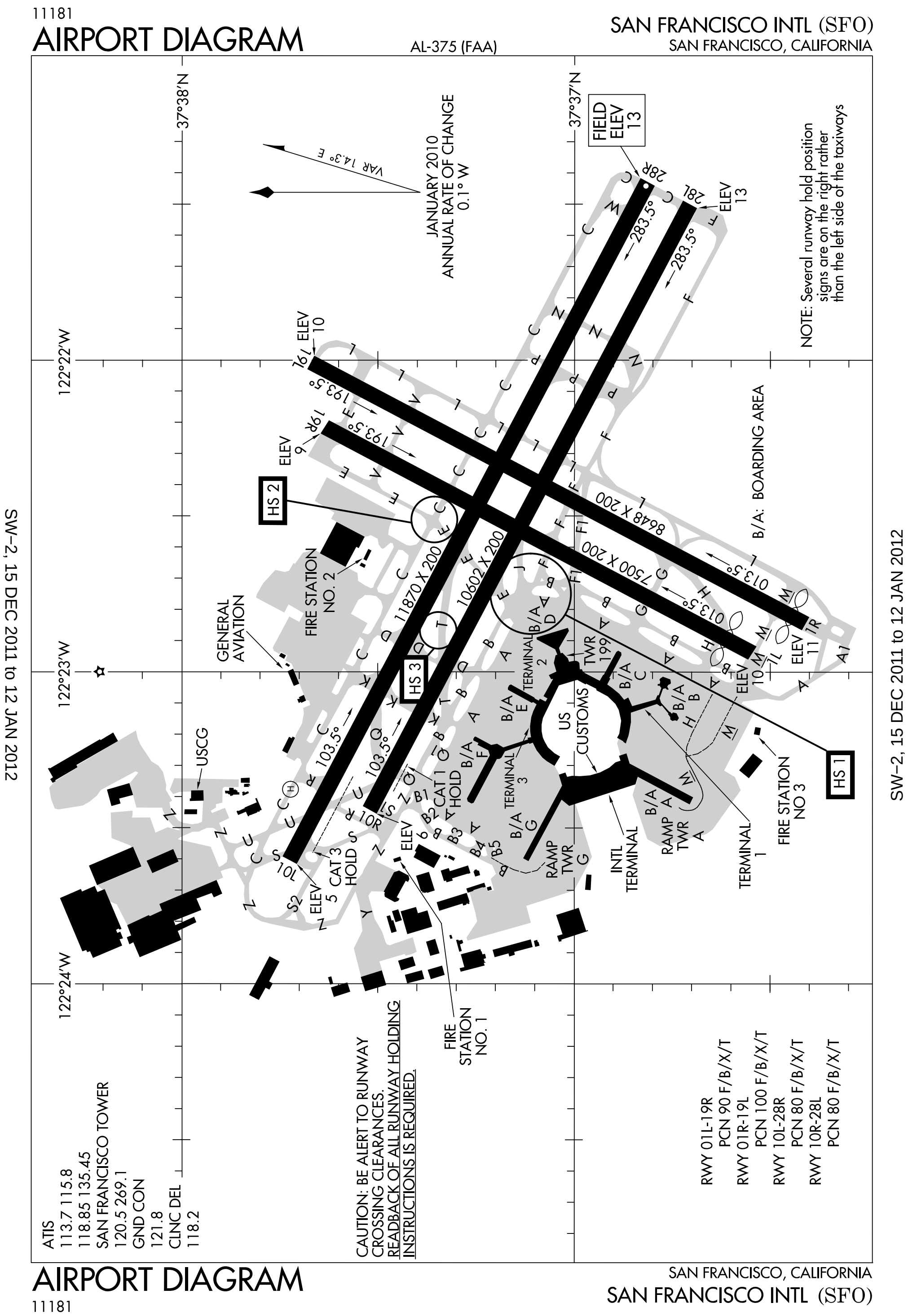
AIRCRAFT TAXIING ON TAXIWAY B EAST OF TAXIWAY B−6 RESTRICTED TO GROUP IV AIRCRAFT AND BELOW.

AIRCRAFT CROSSING RUNWAY 09/27 ON TAXIWAY C6, HOLD SHORT OF TAXIWAY C6 FACING WEST ON TAXIWAY C, PARALLEL TO RUNWAY.

DUE TO PERSONNEL AND EQUIPMENT WORKING ON RUNWAY 09−27, 30 MINUTE PRIOR PERMISSION REQUIRED 0030−0400Z FOR ALL LANDINGS AND DEPARTURES CALL 619 400−2710.

30 MIN PRIOR PERMISSION REQUIRED (619-400-2710) FOR AIRCRAFT WITH OVER 171 FT WINGSPAN.

San Francisco, California
San Francisco International
ICAO Identifier KSFO



San Francisco, CA
San Francisco Intl
ICAO Identifier KSFO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−37−00.00N / 122−22−29.60W
2.2.2 From City: 8 Miles SE Of San Francisco, CA
2.2.3 Elevation: 13 ft
2.2.5 Magnetic variation: 17E (1975)
2.2.6 Airport Contact: John L. Martin
PO BOX 8097
San Francisco, CA 94128
(650−821−5000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Tower (88 ft). Marked and Lighted
2.10.1.c Location of obstacle: 1300 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Tower (87 ft). Marked and Lighted
2.10.1.c Location of obstacle: 950 ft from Centerline

2.10.1.a. Runway designation: 01R
2.10.1.b Type of obstacle: Tree (177 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 28X
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 27
2.12.3 Dimensions: 7500 ft x 200 ft
2.12.4 PCN: 90 F/B/X/T
2.12.5 Coordinates: 37−36−32.35N / 122−22−55.92W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 11 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 207
2.12.3 Dimensions: 7500 ft x 200 ft
2.12.4 PCN: 90 F/B/X/T
2.12.5 Coordinates: 37−37−37.94N / 122−22−12.44W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 117
2.12.3 Dimensions: 11870 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−37−43.45N / 122−23−36.20W
2.12.6 Threshold elevation: 5 ft
2.12.6 Touchdown zone elevation: 7 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 297
2.12.3 Dimensions: 11870 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−36−48.71N / 122−21−25.70W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 117
2.12.3 Dimensions: 10602 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−37−31.04N / 122−23−26.58W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 28L

2.12.2 True Bearing: 297
2.12.3 Dimensions: 10602 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−36−42.15N / 122−21−30.03W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 27
2.12.3 Dimensions: 8648 ft x 200 ft
2.12.4 PCN: 100 F/B/X/T
2.12.5 Coordinates: 37-36-24.54N / 122-22-50.57W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 12 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 207
2.12.3 Dimensions: 8648 ft x 200 ft
2.12.4 PCN: 100 F/B/X/T
2.12.5 Coordinates: 37-37-40.17N / 122-22-00.00W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 11 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 19R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28L
2.14.2 Approach lighting system: SSALR: Simplified short approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19L
2.14.4 Visual approach slope indicator system: 4-light PAPI on left
2.14.10 Remarks: Runway 19L MALSf Has A Non Standard Length Of 1,115 Ft With 3 Sequenced Flashers.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 113.7 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 115.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 118.85 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: ILS PRM RY 28L IC
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: LDA PRM RY 28R IC
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 128.65 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.45 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 351.8 MHz

2.18.1 Service designation: MONITOR ILS PRM RY 28L
2.18.3 Service designation: 125.15 MHz

2.18.1 Service designation: MONITOR LDA PRM RY 28R
2.18.3 Service designation: 127.675 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 28X. Magnetic variation: 17E
2.19.2 ILS identification: FNP
2.19.5 Coordinates: 37−37−16.65N / 122−22−00.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: DME for runway 28X. Magnetic variation: 17E
2.19.2 ILS identification: FNP
2.19.5 Coordinates: 37−37−14.97N / 122−22−00.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Glide Slope for runway 28X. Magnetic variation: 17E
2.19.2 ILS identification: FNP
2.19.5 Coordinates: 37−36−49.92N / 122−21−40.22W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: DME for runway 28R. Magnetic variation: 15E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37−37−48.64N / 122−23−40.59W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 15E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37−36−33.79N / 122−20−50.18W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 15E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37−34−19.93N / 122−15−35.65W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Inner Marker for runway 28R. Magnetic variation: 15E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37−36−44.79N / 122−21−16.36W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 15E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37−37−46.34N / 122−23−43.12W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 15E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37−36−50.24N / 122−21−40.01W
2.19.6 Site elevation: 9 ft
2.19.1 ILS type: Glide Slope for runway 28L. Magnetic variation: 17E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37−36−50.12N / 122−21−40.09W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Outer Marker for runway 28L. Magnetic variation: 17E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37−34−19.93N / 122−15−35.65W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 28L. Magnetic variation: 17E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37-37-35.93N / 122-23-38.25W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: DME for runway 28L. Magnetic variation: 17E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37-37-34.60N / 122-23-39.23W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 17E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37-36-16.27N / 122-22-56.05W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: DME for runway 19L. Magnetic variation: 17E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37-36-18.70N / 122-22-59.40W
2.19.6 Site elevation: 24 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 17E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37-37-31.57N / 122-22-10.49W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 17E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37-38-10.77N / 122-21-40.14W
2.19.6 Site elevation: 99999 ft

General Remarks:

FLOCKS OF BIRDS FEEDING ALONG SHORELINE ADJACENT TO AIRPORT; ON OCCASIONS FLY ACROSS VARIOUS PARTS OF THE AIRPORT.

HIGH SPEED TAXIWAY (T) GRAVELLED FULL WIDTH BETWEEN RUNWAY 28R AND 28L.

NOISE SENSITIVE AIRPORT; FOR NOISE ABATEMENT PROCEDURES CONTACT AIRPORT NOISE OFFICE MON−FRI 0800−1700 BY CALLING 650−821−5100.

747−400'S SHALL TAXI AT A SPEED OF LESS THAN 10 MPH ON ALL NON−RESTRICTED TAXIWAYS ON THE TERMINAL SIDE OF THE INTERSECTING RUNWAYS. MOVEMENT SPEED OF NOT MORE THAN 5 MPH IS REQUIRED WHEN TWO 747−400'S PASS OR OVERTAKE EACH OTHER ON PARALLEL TAXIWAYS A & B.

SEVERAL RUNWAY HOLD POSITION SIGNS ARE ON THE RIGHT RATHER THAN THE LEFT SIDE OF THE TAXIWAYS.

NO GROOVING EXISTS AT AIRPORT RUNWAY INTERSECTIONS.

RUNWAY 10 PREFERRED RUNWAY BETWEEN 0100−0600 WEATHER AND FLIGHT CONDITIONS PERMITTING.

AIRLINE PILOTS SHALL STRICTLY FOLLOW THE PAINTED NOSE GEAR LINES AND NO OVERSTEERING ADJUSTMENT IS PERMITTED.

PERSONNEL AND EQUIPMENT WORKING APPROACH END RUNWAYS 28L, 28R, 19L INDEFINITELY.

RUNWAYS 01L/19R, 01R/19L, 10R/28L, 10L/28R GROOVED FULL LENGTH EXCEPT AT RUNWAY INTERSECTIONS.

B747, B777, A330, A340 OR LARGER AIRCRAFT ARE RESTRICTED FROM USING TAXIWAY A1 WHEN B747−400, A340−600, OR LARGER AIRCRAFT ARE HOLDING SHORT OF RUNWAY 1R ON TAXIWAY A.

RAMP CLOSED TO AIRCRAFT WITH WINGSPANS OVER 117 FT AT TERMINAL 1, GATE C41

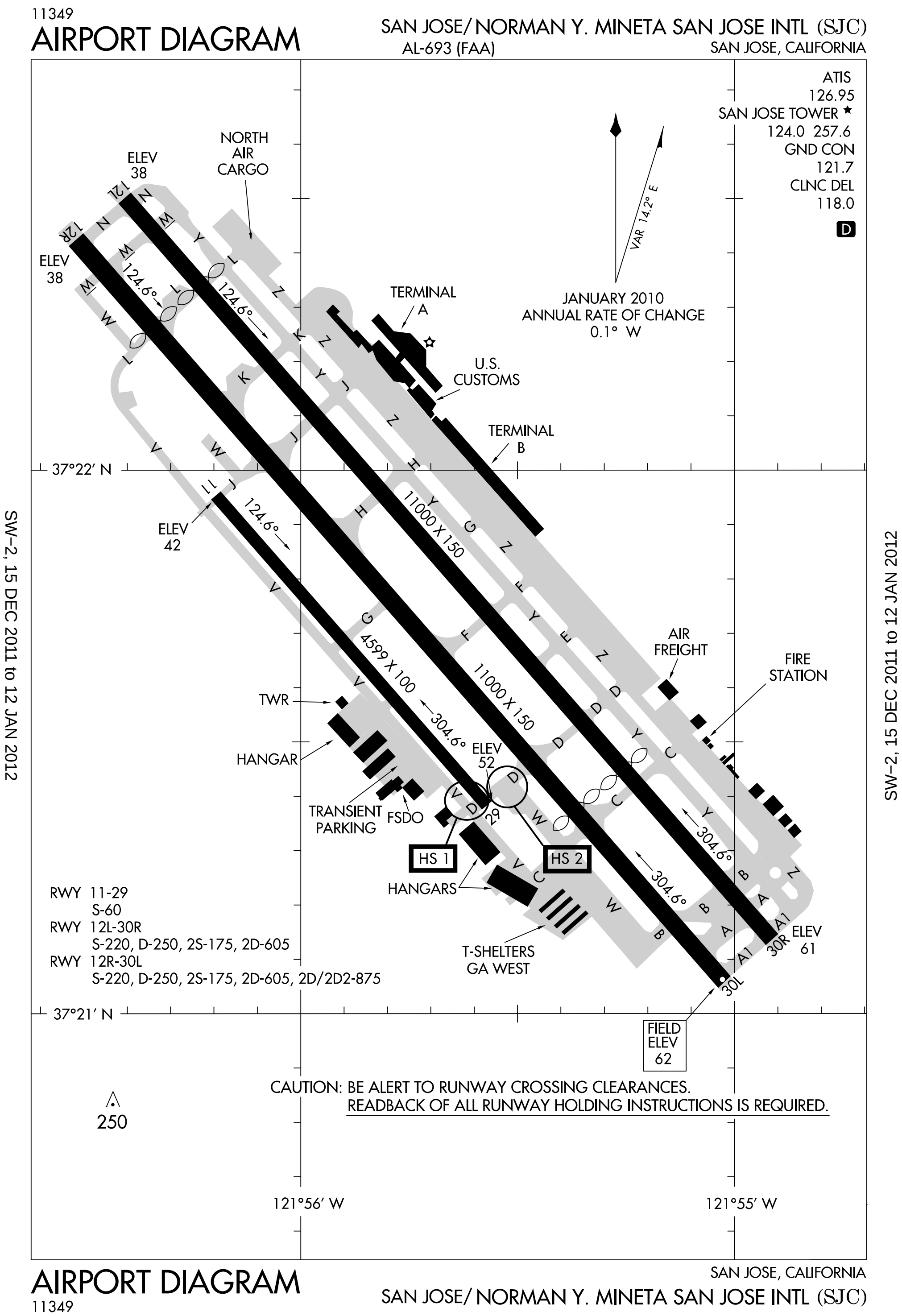
INDEFINITELY.

ALL OUTBOUND TAXIWAY YANKEE HEAVY AIRCRAFT WITH A WINGSPAN OF 171 FT. OR GREATER UNDER POWER PROHIBITED FROM ENTERING WESTBOUND TAXIWAY ZULU.

SIMULTANEOUS OPERATIONS IN EFFECT ALL RUNWAYS.

HELICOPTER LANDING AREA MARKED ON TAXIWAY (C) WEST OF TAXIWAY (R) OPERATIONS FOR CIVIL AND MILITARY USE.

San Jose, California
Norman Y. Mineta San Jose International
ICAO Identifier KSJC



San Jose, CA
Norman Y. Mineta San Jose Intl
ICAO Identifier KSJC

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−21−45.60N / 121−55−44.80W
2.2.2 From City: 2 Miles NW Of San Jose, CA
2.2.3 Elevation: 62 ft
2.2.5 Magnetic variation: 16E (1990)
2.2.6 Airport Contact: William Sherry, Aae
1701 AIRPORT BLVD, SUITE B−1130
San Jose, CA 95110 (408−392−3600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 29
2.10.1.b Type of obstacle: Tree (79 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 100 ft from Centerline

2.10.1.a. Runway designation: 12L
2.10.1.b Type of obstacle: Pole (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 580 ft from Centerline

2.10.1.a. Runway designation: 30R
2.10.1.b Type of obstacle: Tree (54 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 550 ft from Centerline

2.10.1.a. Runway designation: 12R
2.10.1.b Type of obstacle: Pole (29 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 480 ft from Centerline

2.10.1.a. Runway designation: 30L
2.10.1.b Type of obstacle: Fence (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 170 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 11
2.12.2 True Bearing: 139
2.12.3 Dimensions: 4599 ft x 100 ft
2.12.5 Coordinates: 37−21−57.21N / 121−56−11.75W
2.12.6 Threshold elevation: 42 ft
2.12.6 Touchdown zone elevation: 49 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 319
2.12.3 Dimensions: 4599 ft x 100 ft
2.12.5 Coordinates: 37−21−22.99N / 121−55−34.24W
2.12.6 Threshold elevation: 52 ft
2.12.6 Touchdown zone elevation: 52 ft

2.12.1 Designation: 12L
2.12.2 True Bearing: 139
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 37−22−29.97N / 121−56−24.63W
2.12.6 Threshold elevation: 38 ft
2.12.6 Touchdown zone elevation: 44 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 319
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 37−21−00.00N / 121−54−54.92W
2.12.6 Threshold elevation: 61 ft
2.12.6 Touchdown zone elevation: 55 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 139
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 37−22−25.42N / 121−56−31.15W
2.12.6 Threshold elevation: 38 ft
2.12.6 Touchdown zone elevation: 46 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 319
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 37−21−00.00N / 121−55−00.00W
2.12.6 Threshold elevation: 62 ft
2.12.6 Touchdown zone elevation: 57 ft

AD 2.13 Declared distances
2.13.1 Designation: 12L
2.13.2 Takeoff run available: 10139
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 10139
2.13.5 Landing distance available: 8833

2.13.1 Designation: 30R
2.13.2 Takeoff run available: 10134
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 10134
2.13.5 Landing distance available: 7597

2.13.1 Designation: 12R
2.13.2 Takeoff run available: 9883
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 9883
2.13.5 Landing distance available: 8587

2.13.1 Designation: 30L
2.13.2 Takeoff run available: 10134
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 10152
2.13.5 Landing distance available: 7614

AD 2.14 Approach and runway lighting
2.14.1 Designation: 11
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 12L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 12R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 126.95 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 257.6 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 16E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−21−00.00N / 121−55−00.00W
2.19.6 Site elevation: 75 ft

2.19.1 ILS type: DME for runway 12R. Magnetic variation: 16E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−21−00.00N / 121−55−00.00W
2.19.6 Site elevation: 75 ft

2.19.1 ILS type: Glide Slope for runway 12R. Magnetic variation: 16E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−22−00.00N /

121−56−14.57W
2.19.6 Site elevation: 36 ft

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 16E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−22−36.25N / 121−56−43.05W
2.19.6 Site elevation: 32 ft

2.19.1 ILS type: Outer Marker for runway 30L. Magnetic variation: 16E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−17−30.79N / 121−51−11.03W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 30L. Magnetic variation: 16E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−20−56.13N / 121−54−53.62W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 30L. Magnetic variation: 16E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−21−33.00N / 121−55−27.86W
2.19.6 Site elevation: 48 ft

2.19.1 ILS type: DME for runway 30L. Magnetic variation: 16E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−22−27.53N / 121−56−32.57W
2.19.6 Site elevation: 49 ft

2.19.1 ILS type: Localizer for runway 30L. Magnetic variation: 16E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−22−27.15N / 121−56−33.06W
2.19.6 Site elevation: 49 ft

General Remarks:

BIRDS FREQUENTLY ON OR IN VICINITY OF AIRPORT.

TAXIWAY Y WILL BE PERIODICALLY RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 171 FT (MD−11 OR SMALLER) DURING B−777 OPERATIONS ON RUNWAY 12L/30R.

TAXIWAY Z WILL BE PERIODICALLY RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (BBJ OR SMALLER) DURING B−777 OPERATIONS.

RUNWAY 11/29 LIMITED TO AIRCRAFT WITH WINGSPAN OF LESS THAN 79 FT AND APPROACH SPEED OF LESS THAN 121 KNOTS (GULFSTREAM I OR SMALLER).

TAXIWAY V LIMITED TO AIRCRAFT WITH WINGSPAN OF LESS THAN 118 FT (A321 OR SMALLER).

UNSCHEDULED OPERATIONS BY GROUP 5 AIRCRAFT (B747) AND LARGER NOT AUTH EXCEPT WITH PRIOR AIRPORT APPROVAL CONTACT AIRPORT MANAGER (408) 392−3501.

NOISE ABATEMENT PROCEDURE: RUNWAY 30L/12R IS PREFERRED ARRIVAL RUNWAY FOR JET AIRCRAFT AND RUNWAY 12L/30R IS THE PREFERRED DEP RUNWAY FOR JET AIRCRAFT. ALL JET AIRCRAFT TAKE-OFFS ARE TO BE INITIATED FROM END OF RUNWAY UNLESS DIRECTED OTHERWISE BY ATCT.

CURFEW HRS 2300−0700 FAR 36 STAGE II, 2330−0630 FAR 36 STAGE III AIRCRAFT LISTED ON THE SCHEDULE OF AUTHORIZED AIRCRAFT ISSUED BY THE DIRECTOR OF AVIATION. DELAYED SCHEDULED FLIGHTS, AND ALTERNATE/EMERGENCY OPERATIONS MAY BE

EXEMPT FROM CURFEW HOUR RESTRICTIONS.

PRIOR AIRPORT NOTIFICATION IS REQUIRED FOR ALL LATE/EARLY ARRIVALS. CONTACT MANAGER ON DUTY AT (408) 392−3501.

FIRST 400 FT RUNWAY 30R & RUNWAY 30L CLOSED FOR TAKE-OFF DC10, MD11, L1011.

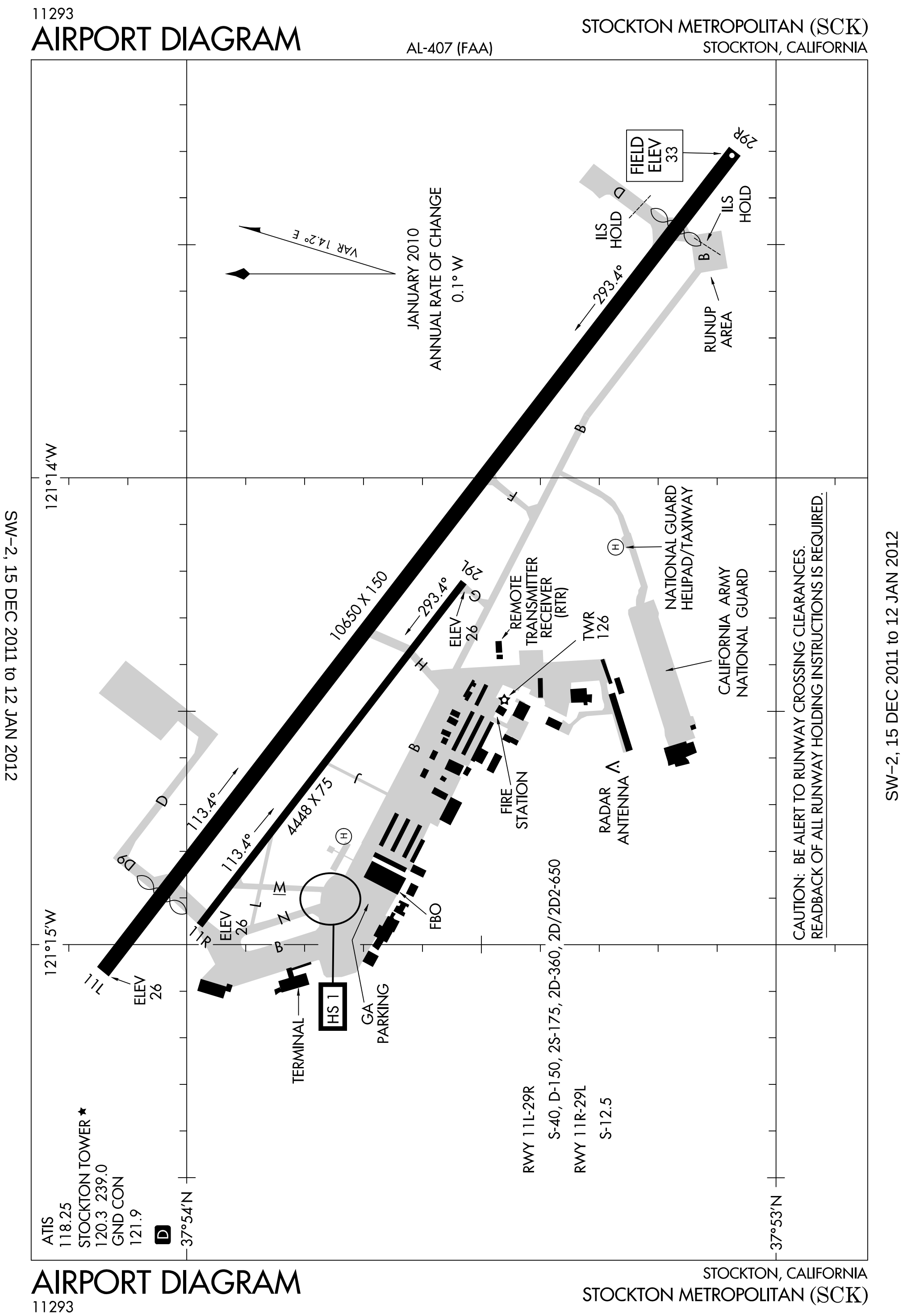
ALL ENGINE RUN−UPS REQUIRE PRIOR AIRPORT APPROVAL, CONTACT MANAGER ON DUTY (408) 392−3501.

RUNWAY 11−29 RUN−UP AREA LIMITED TO AIRCRAFT 12,500 LBS OR LIGHTER.

TAXIWAY D BETWEEN TAXIWAY W AND TAXIWAY V LIMITED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (A−321 OR SMALLER).

TAXIWAY G AND TAXIWAY J BETWEEN RUNWAY 12R/30L AND TAXIWAY V LIMITED TO 100,000 LBS GROSS TAKE-OFF WEIGHT.

Stockton, California
Stockton Metropolitan
ICAO Identifier KSCK



Stockton, CA
Stockton Metropolitan
ICAO Identifier KSCK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−53−39.00N / 121−14−17.90W
2.2.2 From City: 3 Miles SE Of Stockton, CA
2.2.3 Elevation: 33 ft
2.2.5 Magnetic variation: 14E (2010)
2.2.6 Airport Contact: Susan Palmeri
5000 S. AIRPORT WAY ROOM 202
Stockton, CA 95206 (209−468−4700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 5/1/1973
2.6.4 Remarks: Closed To Unscheduled Air Carrier Operations With More Than 30 Passenger Seats Except One Hr Prior Permission Required Call Airport Manager (209) 468−4700 Or 4722; After Hrs Call (209) 468−4722.

AD 2.12 Runway physical characteristics
2.12.1 Designation: H1
2.12.3 Dimensions: 70 ft x 70 ft

2.12.1 Designation: 11L
2.12.2 True Bearing: 128
2.12.3 Dimensions: 10650 ft x 150 ft
2.12.5 Coordinates: 37−54−00.00N / 121−15−00.00W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 29 ft

2.12.1 Designation: 29R
2.12.2 True Bearing: 308
2.12.3 Dimensions: 10650 ft x 150 ft
2.12.5 Coordinates: 37−53−00.00N / 121−13−17.91W
2.12.6 Threshold elevation: 33 ft
2.12.6 Touchdown zone elevation: 32 ft

2.12.1 Designation: 11R
2.12.2 True Bearing: 128
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.5 Coordinates: 37−53−58.67N / 121−14−57.42W
2.12.6 Threshold elevation: 25 ft
2.12.6 Touchdown zone elevation: 26 ft

2.12.1 Designation: 29L
2.12.2 True Bearing: 308
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.5 Coordinates: 37−53−31.86N / 121−14−13.45W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 ft

AD 2.13 Declared distances
2.13.1 Designation: 11L
2.13.2 Takeoff run available: 9600
2.13.3 Takeoff distance available: 10600
2.13.4 Accelerate−stop distance available: 9690
2.13.5 Landing distance available: 8690

2.13.1 Designation: 29R
2.13.2 Takeoff run available: 10037
2.13.3 Takeoff distance available: 11037
2.13.4 Accelerate−stop distance available: 9701
2.13.5 Landing distance available: 8701

AD 2.14 Approach and runway lighting
2.14.1 Designation: 11L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: ATIS(209−982−4667)
2.18.3 Service designation: 118.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239 MHz

2.18.1 Service designation: ANG OPNS
2.18.3 Service designation: 49 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 139.4 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 356.9 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 29R.
Magnetic variation: 14E
2.19.2 ILS identification: SCK
2.19.5 Coordinates: 37−54−14.45N / 121−15−13.08W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Glide Slope for runway 29R.
Magnetic variation: 14E
2.19.2 ILS identification: SCK
2.19.5 Coordinates: 37−53−20.81N / 121−13−36.95W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: Middle Marker for runway 29R.
Magnetic variation: 14E
2.19.2 ILS identification: SCK
2.19.5 Coordinates: 37−52−53.73N / 121−13−00.00W
2.19.6 Site elevation: 30 ft

2.19.1 ILS type: Outer Marker for runway 29R.
Magnetic variation: 14E
2.19.2 ILS identification: SCK
2.19.5 Coordinates: 37−49−54.29N / 121−08−00.00W
2.19.6 Site elevation: 52 ft

General Remarks:

SEAGULLS ON AND IN VICINITY OF AIRPORT MOSTLY DURING RAINY WEATHER.

AVOID OVERFLYING SAN JOAQUIN GENERAL HOSPITAL & THE CITY OF MANTECA.

AIRPORT CLOSED TO TOUCH AND GO LANDING & PLANNED LOW APPROACHES FOR TURBOJET AIRCRAFT 2200−0700 EXCEPT BY PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER PART 36 STAGE 3 AIRCRAFT.

PRACTICE CIRCLING APPROACHES TO RUNWAYS 11L/11R NOT AUTHORIZED FOR ANY TURBINE POWERED ACFT/PROP DRIVEN AIRCRAFT EXCEEDING 12500 LBS EXCEPT BY PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER.

MILITARY USE: ARRANGE OPR 1500−2330Z++ MON−FRI. DSN 466−5319, C209−983−5319, FAX 5391. PRIOR PERMISSION REQUIREDUIRED. LIMITED TRANSIENT SERVICE AND MAINT AVAILABLE FOR CH47.

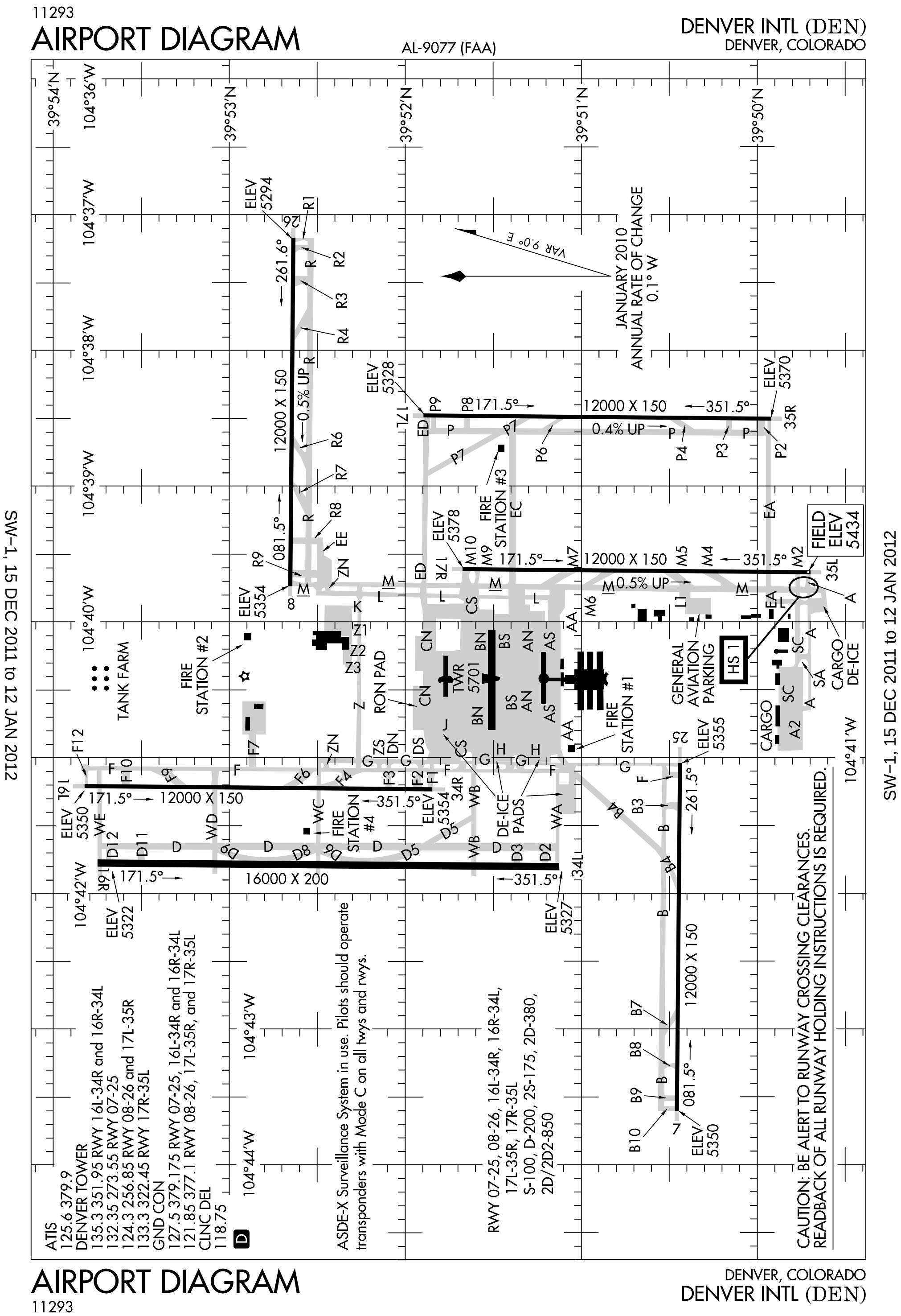
THE FOLLOWING AREAS NOT VISIBLE FROM ATCT: TAXIWAY B FROM NORTH SIDE OF TERMINAL BUILDING TO 25 FT WEST OF TAXIWAY J. SOUTH HALF OF TAXIWAY B INTERMITTENTLY FROM TAXIWAY J TO 200 FT WEST OF TAXIWAY H. TRANSIENT PARKING AREA. ALL TERMINAL RAMPS. TAXIWAY B FROM APPROXIMATE 200 FT WEST AND EAST OF TAXIWAY J.

TRANSIENT PARKING AVAILABLE AT FBO.

BE ALERT TO ELEVATED MALSR APPROACH END RUNWAY 29R LOCATED AT DSPLCD THRESHOLD DEMARCATION BAR WHEN USING FULL LENGTH OF RUNWAY 29R.

APRON TAXIWAY AND TAXIWAY B,F, D, D9, N, AND H FOR AIRCRAFT ABOVE 12,500 LBS. ALL OTHER TAXIWAYS RESTRICTED TO AIRCRAFT LESS THAN 12,500 LBS.

Denver, Colorado
Denver International
ICAO Identifier KDEN



Denver, CO
Denver Intl
ICAO Identifier KDEN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−51−42.00N / 104−40−23.40W
2.2.2 From City: 16 Miles NE Of Denver, CO
2.2.3 Elevation: 5434 ft
2.2.5 Magnetic variation: 11E (1995)
2.2.6 Airport Contact: Kim Day
ADMIN BLDG, 8500 PENA BLVD
Denver, CO 80249 (303−342−2200)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A,MOGAS
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 2/1/1995

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-50-27.40N / 104-43-35.96W
2.12.6 Threshold elevation: 5350 ft
2.12.6 Touchdown zone elevation: 5352 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 271
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-50-26.37N / 104-41-00.00W
2.12.6 Threshold elevation: 5355 ft
2.12.6 Touchdown zone elevation: 5355 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-53-49.33N / 104-41-12.50W
2.12.6 Threshold elevation: 5350 ft
2.12.6 Touchdown zone elevation: 5357 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-51-50.77N / 104-41-13.88W
2.12.6 Threshold elevation: 5354 ft
2.12.6 Touchdown zone elevation: 5354 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 91
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-52-39.20N / 104-39-44.03W
2.12.6 Threshold elevation: 5354 ft
2.12.6 Touchdown zone elevation: 5354 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 271
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-52-38.08N / 104-37-10.15W
2.12.6 Threshold elevation: 5294 ft
2.12.6 Touchdown zone elevation: 5309 ft

2.12.1 Designation: 17L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-51-53.83N / 104-38-28.70W
2.12.6 Threshold elevation: 5328 ft
2.12.6 Touchdown zone elevation: 5338 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-49-55.27N / 104-38-30.16W
2.12.6 Threshold elevation: 5370 ft
2.12.6 Touchdown zone elevation: 5370 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-51-40.48N / 104-39-36.56W
2.12.6 Threshold elevation: 5378 ft

2.12.6 Touchdown zone elevation: 5392 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39-49-41.93N / 104-39-37.98W
2.12.6 Threshold elevation: 5434 ft
2.12.6 Touchdown zone elevation: 5434 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 16000 ft x 200 ft
2.12.5 Coordinates: 39-53-44.87N / 104-41-45.90W
2.12.6 Threshold elevation: 5322 ft
2.12.6 Touchdown zone elevation: 5326 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 16000 ft x 200 ft
2.12.5 Coordinates: 39-51-00.00N / 104-41-47.72W
2.12.6 Threshold elevation: 5327 ft
2.12.6 Touchdown zone elevation: 5327 ft

AD 2.13 Declared distances
2.13.1 Designation: 07
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 25
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 16L
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 34R
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 08
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 26
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 17L
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 35R
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 17R
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 35L
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 16R
2.13.2 Takeoff run available: 16000
2.13.3 Takeoff distance available: 16000
2.13.4 Accelerate−stop distance available: 16000
2.13.5 Landing distance available: 16000

2.13.1 Designation: 34L
2.13.2 Takeoff run available: 16000
2.13.3 Takeoff distance available: 16000
2.13.4 Accelerate−stop distance available: 16000
2.13.5 Landing distance available: 16000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07
2.14.2 Approach lighting system: MALSR: 1400

feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 25
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 17R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 16R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 34L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.75 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 120.35 MHz

2.18.1 Service designation: FINAL CTL
2.18.3 Service designation: 120.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 124.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CLASS B DEP/P
2.18.3 Service designation: 126.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 127.05 MHz

2.18.1 Service designation: CLASS B DEP/P
2.18.3 Service designation: 128.25 MHz

2.18.1 Service designation: CLASS B DEP/P
2.18.3 Service designation: 128.45 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 133.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.025 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 134.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 322.45 MHz

2.18.1 Service designation: CLASS B DEP/P
2.18.3 Service designation: 360.75 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 363.25 MHz

2.18.1 Service designation: CLASS B DEP/P
2.18.3 Service designation: 371.95 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 377.1 MHz

2.18.1 Service designation: CLASS B DEP/P
2.18.3 Service designation: 251.075 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 251.125 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 379.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 273.55 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 256.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 351.95 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 379.175 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 379.3 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 124.95 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 346.4 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 126.55 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 269.525 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 307.3 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 07.
Magnetic variation: 11E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39-50-23.27N / 104-43-22.66W
2.19.6 Site elevation: 5341 ft

2.19.1 ILS type: Outer Marker for runway 07.

Magnetic variation: 11E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39-50-31.70N / 104-49-41.50W
2.19.6 Site elevation: 5215 ft

2.19.1 ILS type: Middle Marker for runway 07. Magnetic variation: 11E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39-50-27.60N / 104-44-11.80W
2.19.6 Site elevation: 5283 ft

2.19.1 ILS type: Localizer for runway 07. Magnetic variation: 11E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39-50-26.28N / 104-40-49.06W
2.19.6 Site elevation: 5355 ft

2.19.1 ILS type: DME for runway 07. Magnetic variation: 11E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39-50-23.66N / 104-40-48.62W
2.19.6 Site elevation: 5359 ft

2.19.1 ILS type: Localizer for runway 25. Magnetic variation: 11E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39-50-27.49N / 104-43-49.07W
2.19.6 Site elevation: 5349 ft

2.19.1 ILS type: DME for runway 25. Magnetic variation: 11E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39-50-23.66N / 104-40-48.62W
2.19.6 Site elevation: 5359 ft

2.19.1 ILS type: Glide Slope for runway 25. Magnetic variation: 11E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39-50-22.41N / 104-41-15.79W
2.19.6 Site elevation: 5344 ft

2.19.1 ILS type: Middle Marker for runway 25. Magnetic variation: 11E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39-50-26.10N / 104-40-25.50W
2.19.6 Site elevation: 5325 ft

2.19.1 ILS type: Outer Marker for runway 25. Magnetic variation: 11E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39-50-15.80N / 104-34-56.30W
2.19.6 Site elevation: 5319 ft

2.19.1 ILS type: Glide Slope for runway 34R. Magnetic variation: 9E
2.19.2 ILS identification: OUF
2.19.5 Coordinates: 39-52-00.00N / 104-41-19.01W
2.19.6 Site elevation: tion: 9E
2.19.2 ILS identification: OUF
2.19.5 Coordinates: 39-53-59.uter Marker for runway 16L. Magnetic variation: 11E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39-58-19.70N / 104-41-26.10W
2.19.6 Site elevation: 5161 ft

2.19.1 ILS type: Middle Marker for runway 16L. Magnetic variation: 11E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39-54-18.00N / 104-41-12.20W
2.19.6 Site elevation: 5347 ft

2.19.1 ILS type: Localizer for runway 16L. Magnetic variation: 11E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39-51-40.67N / 104-41-14.00W
2.19.6 Site elevation: 5343 ft

2.19.1 ILS type: DME for runway 16L. Magnetic variation: 11E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39-53-59.61N / 104-41-15.77W
2.19.6 Site elevation: 5357 ft

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 11E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39-53-39.55N / 104-41-17.87W

2.19.6 Site elevation: 5347 ft

2.19.1 ILS type: DME for runway 08. Magnetic variation: 11E
2.19.2 ILS identification: FUI
2.19.5 Coordinates: 39-52-41.lizer for runway 08. Magnetic variation: 11E
2.19.2 ILS identification: FUI
2.19.5 Coordinates: 39-52-37.98N / 104-36-57.6. Magnetic variation: 11E
2.19.2 ILS identification: JOY
2.19.5 Coordinates: 39-52-42.22N / 104-37-22. 11E
2.19.2 ILS identification: JOY
2.19.5 Coordinates: 39-52-41.rker for runway 17L. Magnetic variation: 11E
2.19.2 ILS identification: BXP
2.19.5 Coordinates: 39-52-23.20N / 104-38-28.30W
2.19.6 Site elevation: 5323 ft

2.19.1 ILS type: Glide Slope for runway 17L. Magnetic variation: 11E
2.19.2 ILS identification: BXP
2.19.5 Coordinates: 39-51-44.06N / 104-38-23.56W
2.19.6 Site elevation: DPP
2.19.5 Coordinates: 39-50-00.00N / 104-38-24.77W
2.19.6 Site elevation: ication: DPP
2.19.5 Coordinates: 39-52-00.00N / 104-38-28.57W
2.19.6 Site elevation: .5 Coordinates: 39-51-50.ion: 11E
2.19.2 ILS identification: ACX
2.19.5 Coordinates: 39-51-30.91N / 104-39-31.42W
2.19.6 Site elevation: 5378 ft

2.19.1 ILS type: Localizer for runway 35L. Magnetic variation: 9E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39-51-50.60N / 104-39-36.44W
2.19.6 Site elevation: 5377 ft

2.19.1 ILS type: DME for runway 35L. Magnetic variation: 9E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39-51-50.92N / 104-39-33.05W
2.19.6 Site elevation: 5388 ft

2.19.1 ILS type: Glide Slope for runway 35L. Magnetic variation: 9E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39-49-52.76N / 104-39-32.60W
2.19.6 Site elevation: 5419 ft

2.19.1 ILS type: Outer Marker for runway 35L. Magnetic variation: 9E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39-45-13.30N / 104-39-48.60W
2.19.6 Site elevation: 5606 ft

2.19.1 ILS type: Middle Marker for runway 35L. Magnetic variation: 9E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39-49-14.60N / 104-39-38.40W
2.19.6 Site elevation: 5411 ft

2.19.1 ILS type: Inner Marker for runway 35L. Magnetic variation: 9E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39-49-33.44N / 104-39-38.09W
2.19.6 Site elevation: 5429 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 11E
2.19.2 ILS identification: DQQ
2.19.5 Coordinates: 39-53-34.82N / 104-41-51.28W
2.19.6 Site elevation: 5317 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 11E
2.19.2 ILS identification: DQQ
2.19.5 Coordinates: 39-53-55.74N / 104-41-50.90W
2.19.6 Site elevation: 5324 ft

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 11E
2.19.2 ILS identification: DQQ
2.19.5 Coordinates: 39-50-56.78N / 104-41-47.83W
2.19.6 Site elevation: 5321 ft

2.19.1 ILS type: DME for runway 34L. Magnetic

variation: 9E
2.19.2 ILS identification: DXU
2.19.5 Coordinates: 39-53-55.74N / 104-41-50.90W
2.19.6 Site elevation: 5324 ft

2.19.1 ILS type: Localizer for runway 34L.
Magnetic variation: 9E
2.19.2 ILS identification: DXU
2.19.5 Coordinates: 39-53-54.88N / 104-41-45.78W
2.19.6 Site elevation: 5320 ft

2.19.1 ILS type: Glide Slope for runway 34L.
Magnetic variation: 9E
2.19.2 ILS identification: DXU
2.19.5 Coordinates: 39-51-17.60N / 104-41-52.85W
2.19.6 Site elevation: 5318 ft

2.19.1 ILS type: Inner Marker for runway 34L.
Magnetic variation: 9E
2.19.2 ILS identification: DXU
2.19.5 Coordinates: 39-50-58.30N / 104-41-47.81W
2.19.6 Site elevation: 5321 ft

General Remarks:

FIXED OR MOVABLE OBJECT LINE BETWEEN RAMP & SOUTH TAXIWAYS BN−BS REMOVED.

OVERHEAD PASSENGER BRIDGE ON SOUTH SIDE OF CONCOURSE ’A’ PROVIDES 42 FT TAIL & 118 FT WINGSPAN CLEARANCE WHEN ON TAXIWAY CENTERLINE.

INSUFFICIENT TAXIWAY CORNER FILLET PAVEMENT IN THE SE CORNER OF THE TAXIWAY M/M2 INTERSECTION FOR AIRCRAFT WITH WINGSPANS OVER 107 FT.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

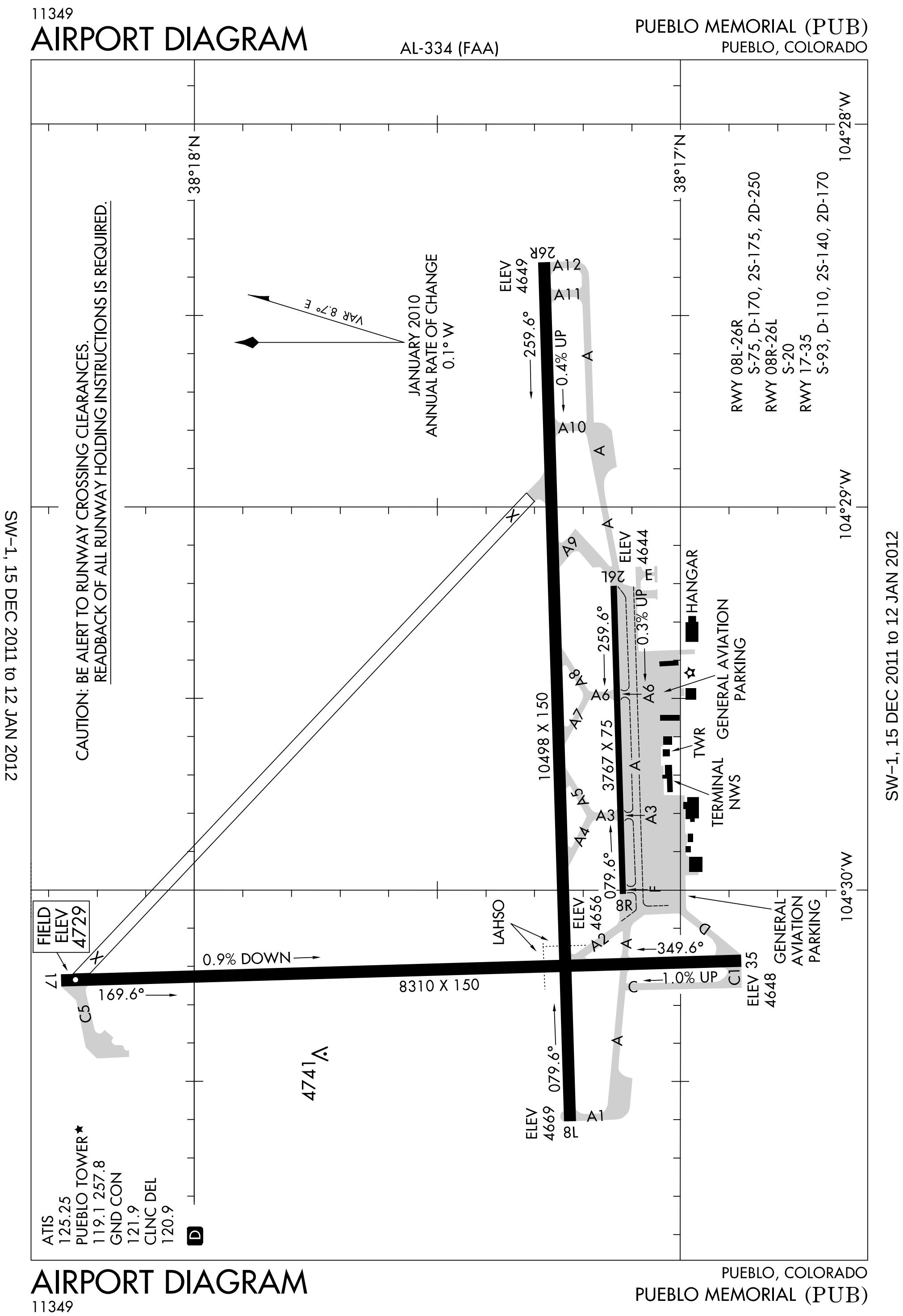
INFORMAL RUNWAY USE PROGRAM IS IN EFFECT 24 HRS A DAY. FOR ADDITIONAL NOISE ABATEMENT INFORMATION CONTACT AIRPORT MANAGEMENT AT 303−342−4200.

WATERFOWL AND MIGRATORY BIRD ACTIVITY IN THE VICINITY OF AIRPORT YEAR ROUND.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

AIRPORT MAINTAINS CLEARWAYS (500 FT X 1,000 FT, 1.25% SLOPE) ON DEP RUNWAY 08, RUNWAY 25, & RUNWAY 34R.

Pueblo, Colorado
Pueblo Memorial
ICAO Identifier KPUB



Pueblo, CO
Pueblo Memorial
ICAO Identifier KPUB

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−17−20.90N / 104−29−47.40W
2.2.2 From City: 5 Miles E Of Pueblo, CO
2.2.3 Elevation: 4729 ft
2.2.5 Magnetic variation: 11E (1985)
2.2.6 Airport Contact: Mark Lovin
31201 BRYAN CIRCLE
Pueblo, CO 81001
(719−553−2760)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, M−F Days, 0400−2300 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index Ii A certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 26L
2.10.1.b Type of obstacle: Gnd (7 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 245 ft from Centerline

2.10.1.a. Runway designation: 08R
2.10.1.b Type of obstacle: Gnd (20 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 17
2.12.2 True Bearing: 178
2.12.3 Dimensions: 8310 ft x 150 ft
2.12.5 Coordinates: 38−18−15.06N / 104−30−14.69W
2.12.6 Threshold elevation: 4729 ft
2.12.6 Touchdown zone elevation: 4729 ft
2.12.7 Slope: 0.9DOWN

2.12.1 Designation: 35
2.12.2 True Bearing: 358
2.12.3 Dimensions: 8310 ft x 150 ft
2.12.5 Coordinates: 38−16−52.97N / 104−30−11.65W
2.12.6 Threshold elevation: 4648 ft
2.12.6 Touchdown zone elevation: 4677 ft
2.12.7 Slope: 1UP

2.12.1 Designation: 08L
2.12.2 True Bearing: 88
2.12.3 Dimensions: 10498 ft x 150 ft
2.12.5 Coordinates: 38−17−13.64N / 104−30−36.24W
2.12.6 Threshold elevation: 4669 ft
2.12.6 Touchdown zone elevation: 4671 ft
2.12.7 Slope: 0DOWN

2.12.1 Designation: 26R
2.12.2 True Bearing: 268
2.12.3 Dimensions: 10498 ft x 150 ft
2.12.5 Coordinates: 38−17−16.75N / 104−28−24.66W
2.12.6 Threshold elevation: 4649 ft
2.12.6 Touchdown zone elevation: 4659 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 88
2.12.3 Dimensions: 3767 ft x 75 ft
2.12.5 Coordinates: 38−17−00.00N / 104−30−00.00W
2.12.6 Threshold elevation: 4656 ft
2.12.6 Touchdown zone elevation: 4656 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 268
2.12.3 Dimensions: 3767 ft x 75 ft
2.12.5 Coordinates: 38−17−00.00N / 104−29−14.23W
2.12.6 Threshold elevation: 4644 ft
2.12.6 Touchdown zone elevation: 4655 ft
2.12.7 Slope: 0.3UP

AD 2.13 Declared distances
2.13.1 Designation: 17
2.13.2 Takeoff run available: 8308
2.13.3 Takeoff distance available: 8308
2.13.4 Accelerate−stop distance available: 8308

2.13.5 Landing distance available: 8308

2.13.1 Designation: 35
2.13.2 Takeoff run available: 8308
2.13.3 Takeoff distance available: 8308
2.13.4 Accelerate−stop distance available: 8308
2.13.5 Landing distance available: 8308

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 10496
2.13.3 Takeoff distance available: 10496
2.13.4 Accelerate−stop distance available: 10496
2.13.5 Landing distance available: 10496

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 10496
2.13.3 Takeoff distance available: 10496
2.13.4 Accelerate−stop distance available: 10496
2.13.5 Landing distance available: 10496

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 3767
2.13.3 Takeoff distance available: 3767
2.13.4 Accelerate−stop distance available: 3767
2.13.5 Landing distance available: 3767

2.13.1 Designation: 26L
2.13.2 Takeoff run available: 3767
2.13.3 Takeoff distance available: 3767
2.13.4 Accelerate−stop distance available: 3767
2.13.5 Landing distance available: 3767

AD 2.14 Approach and runway lighting
2.14.1 Designation: 17
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 125.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: CLNC DEL
2.18.3 Service designation: 120.9 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: PUB
2.19.5 Coordinates: 38−17−17.20N / 104−28−00.00W
2.19.6 Site elevation: 4653 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: PUB
2.19.5 Coordinates: 38−17−18.93N / 104−30−21.58W
2.19.6 Site elevation: 4673 ft

2.19.1 ILS type: Outer Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: PUB
2.19.5 Coordinates: 38−17−00.00N / 104−38−49.50W
2.19.6 Site elevation: 4730 ft

2.19.1 ILS type: Middle Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: PUB
2.19.5 Coordinates: 38−17−12.61N / 104−31−20.10W

2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 26R. Magnetic variation: 11E
2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38−17−21.36N / 104−28−39.20W
2.19.6 Site elevation: 4650 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 11E
2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38−17−13.25N / 104−30−52.56W
2.19.6 Site elevation: 4668 ft

2.19.1 ILS type: Outer Marker for runway 26R. Magnetic variation: 11E
2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38−17−26.64N / 104−21−17.89W
2.19.6 Site elevation: 4660 ft

2.19.1 ILS type: Middle Marker for runway 26R. Magnetic variation: 11E
2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38−17−17.69N / 104−27−45.32W
2.19.6 Site elevation: 4640 ft

General Remarks:

HIGH VOLUME TRAINING DA−20 AIRCRAFT SR−SS MON−FRI. OVERHEAD PATTERN DURING TRAINING. EXTENSIVE USE OF TRAINING AREA 12−28 DME N−SW OF AIRPORT 500 FT AGL−8500 FT MSL.

FREQUENT USAGE OF RUNWAYS 8R/26L AFTER SUNSET BY UNLIGHTED MILITARY TRANSIENT AIRCRAFT.

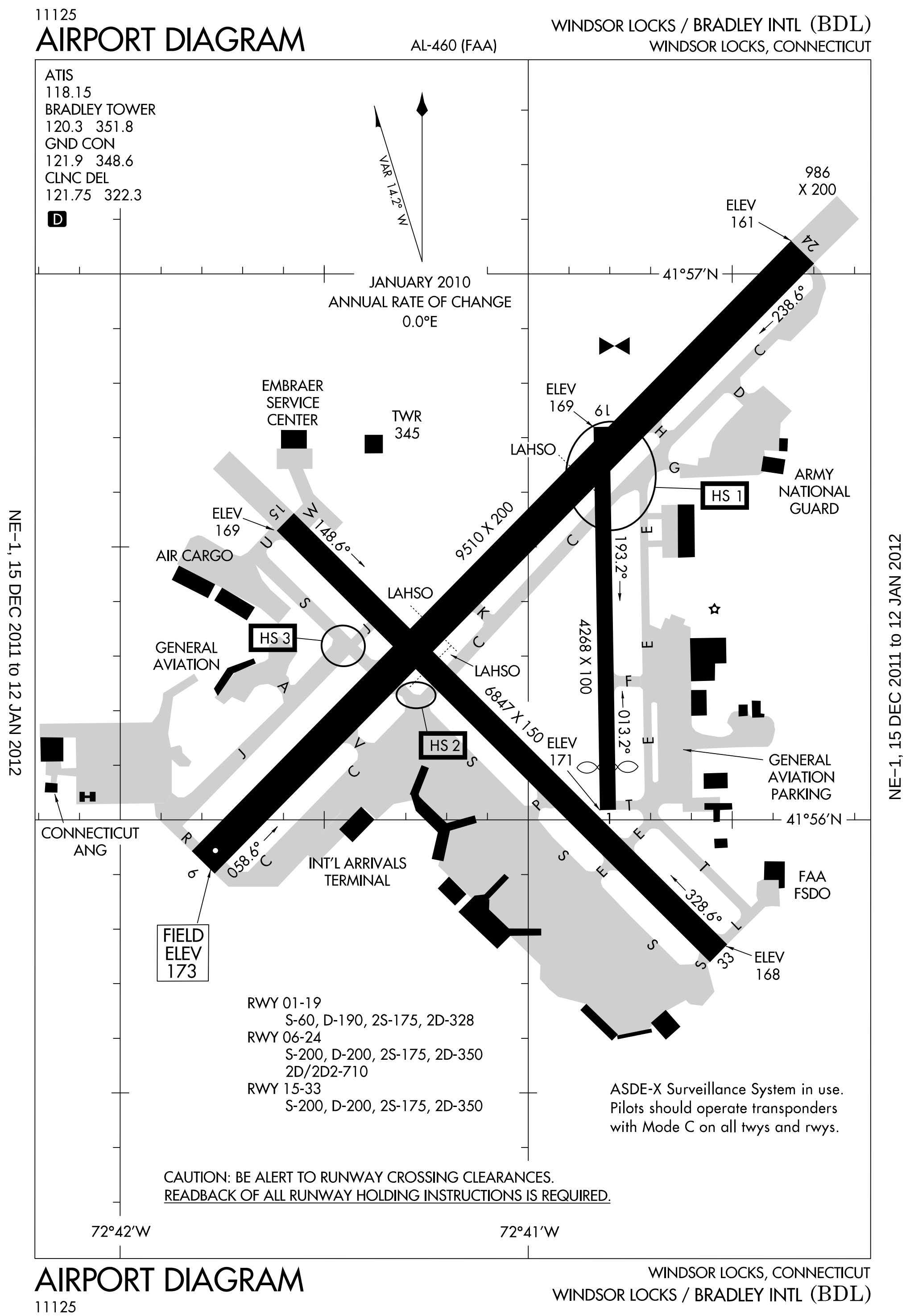
RUNWAY 8R/26L UNLIGHTED AND UNAVAILABLE AT NIGHT.

RUNWAY 8R/26L HAS BLUE TAXIWAY EDGE LIGHTS ON N EDGE.

BE ALERT; INTENSIVE USAF STUDENT TRAINING IN VICINITY OF COLORADO SPRINGS & PUEBLO COLORADO.

SEE FLIGHT INFORMATION PUBLICATION AP/1 SUPPLEMENTARY AIRPORT INFORMATION.

Windsor Locks, Connecticut
Bradley International
ICAO Identifier KBDL



Windsor Locks, CT
Bradley Intl
ICAO Identifier KBDL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41−56−20.00N / 72−40−59.60W
2.2.2 From City: 3 Miles W Of Windsor Locks, CT
2.2.3 Elevation: 173 ft
2.2.5 Magnetic variation: 14W (1980)
2.2.6 Airport Contact: Eric Waldron, A.A.E. Ace
BRADLEY INTL AIRPORT
Windsor Locks, CT 6096
(860−292−2001)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 15
2.10.1.b Type of obstacle: Trees (75 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 33
2.10.1.b Type of obstacle: Trees (44 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 430 ft from Centerline

2.10.1.a. Runway designation: 06
2.10.1.b Type of obstacle: Trees (185 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Trees (71 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 19
2.10.1.b Type of obstacle: Trees (90 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 01
2.10.1.b Type of obstacle: Acft (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 350 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 15
2.12.2 True Bearing: 134
2.12.3 Dimensions: 6847 ft x 150 ft
2.12.5 Coordinates: 41−56−32.63N / 72−41−35.71W
2.12.6 Threshold elevation: 169 ft
2.12.6 Touchdown zone elevation: 171 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 6847 ft x 150 ft
2.12.5 Coordinates: 41−55−45.32N / 72−40−30.96W
2.12.6 Threshold elevation: 168 ft
2.12.6 Touchdown zone elevation: 171 ft

2.12.1 Designation: 01
2.12.2 True Bearing: 359
2.12.3 Dimensions: 4268 ft x 100 ft
2.12.5 Coordinates: 41−56−00.00N / 72−40−48.30W
2.12.6 Threshold elevation: 171 ft
2.12.6 Touchdown zone elevation: 171 ft

2.12.1 Designation: 19
2.12.2 True Bearing: 179
2.12.3 Dimensions: 4268 ft x 100 ft
2.12.5 Coordinates: 41−56−43.21N / 72−40−49.25W
2.12.6 Threshold elevation: 169 ft
2.12.6 Touchdown zone elevation: 170 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 44
2.12.3 Dimensions: 9510 ft x 200 ft

2.12.5 Coordinates: 41-55-55.25N / 72-41-47.69W
2.12.6 Threshold elevation: 173 ft
2.12.6 Touchdown zone elevation: 173 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 224
2.12.3 Dimensions: 9510 ft x 200 ft
2.12.5 Coordinates: 41-57-00.00N / 72-40-19.68W
2.12.6 Threshold elevation: 161 ft
2.12.6 Touchdown zone elevation: 170 ft

AD 2.13 Declared distances
2.13.1 Designation: 15
2.13.2 Takeoff run available: 6847
2.13.3 Takeoff distance available: 6847
2.13.4 Accelerate−stop distance available: 6847
2.13.5 Landing distance available: 6847

2.13.1 Designation: 33
2.13.2 Takeoff run available: 6847
2.13.3 Takeoff distance available: 6847
2.13.4 Accelerate−stop distance available: 6847
2.13.5 Landing distance available: 6847

2.13.1 Designation: 06
2.13.2 Takeoff run available: 9509
2.13.3 Takeoff distance available: 9509
2.13.4 Accelerate−stop distance available: 9509
2.13.5 Landing distance available: 9509

2.13.1 Designation: 24
2.13.2 Takeoff run available: 9509
2.13.3 Takeoff distance available: 9509
2.13.4 Accelerate−stop distance available: 9509
2.13.5 Landing distance available: 9509

2.13.1 Designation: 01
2.13.2 Takeoff run available: 4268
2.13.3 Takeoff distance available: 4268
2.13.4 Accelerate-stop distance available: 4268

2.13.1 Designation: 19
2.13.5 Landing distance available: 4268

AD 2.14 Approach and runway lighting
2.14.1 Designation: 15
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: Vgsi And Glidepath Not Coincident.

2.14.1 Designation: 06
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Vgsi And Glidepath Not Coincident.

2.14.1 Designation: 24
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Vgsi And Glidepath Not Coincident.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 118.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 123.45 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 123.95 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 125.65 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 127.225 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS IC
2.18.3 Service designation: 127.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 243.9 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 322.3 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 323.2 MHz

2.18.1 Service designation: APCH/S DEP/S CLASS C
2.18.3 Service designation: 327.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG−OPS
2.18.3 Service designation: 349.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 351.8 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 41.9 MHz

2.18.1 Service designation: ANG OPS
2.18.3 Service designation: 138.55 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 290.55 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 269.325 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 281.5 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 33. Magnetic variation: 14W
2.19.2 ILS identification: IKX
2.19.5 Coordinates: 41−55−54.77N / 72−40−38.59W
2.19.6 Site elevation: 167 ft

2.19.1 ILS type: DME for runway 33. Magnetic variation: 14W
2.19.2 ILS identification: IKX
2.19.5 Coordinates: 41−56−37.97N / 72−41−47.43W
2.19.6 Site elevation: 183 ft

2.19.1 ILS type: Outer Marker for runway 33. Magnetic variation: 14W
2.19.2 ILS identification: IKX
2.19.5 Coordinates: 41−52−13.60N / 72−35−40.58W
2.19.6 Site elevation: 125 ft

2.19.1 ILS type: Localizer for runway 33. Magnetic variation: 14W
2.19.2 ILS identification: IKX
2.19.5 Coordinates: 41−56−40.16N / 72−41−46.01W
2.19.6 Site elevation: 168 ft

2.19.1 ILS type: Localizer for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−57−17.85N / 72−39−59.41W
2.19.6 Site elevation: 149 ft

2.19.1 ILS type: DME for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−57−17.28N / 72−39−56.50W
2.19.6 Site elevation: 164 ft

2.19.1 ILS type: Glide Slope for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−56−00.00N /

72−41−41.89W
2.19.6 Site elevation: 169 ft

2.19.1 ILS type: Inner Marker for runway 06.
Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−55−49.46N /
72−41−56.05W
2.19.6 Site elevation: 173 ft

2.19.1 ILS type: Outer Marker for runway 06.
Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−52−38.58N /
72−45−58.34W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 06.
Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−55−35.77N /
72−42−13.17W
2.19.6 Site elevation: 166 ft

2.19.1 ILS type: Localizer for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−55−47.66N /
72−41−57.63W
2.19.6 Site elevation: 170 ft

2.19.1 ILS type: DME for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−57−17.28N /
72−39−56.50W
2.19.6 Site elevation: 164 ft

2.19.1 ILS type: Outer Marker for runway 24.
Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 42−01−16.18N /
72−34−53.96W
2.19.6 Site elevation: 114 ft

2.19.1 ILS type: Inner Marker for runway 24.
Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−57−12.08N /
72−40−00.00W
2.19.6 Site elevation: 141 ft

2.19.1 ILS type: Glide Slope for runway 24.
Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−56−53.58N /
72−40−25.96W
2.19.6 Site elevation: 157 ft

2.19.1 ILS type: Middle Marker for runway 24.
Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−57−20.88N /
72−39−55.38W
2.19.6 Site elevation: 159 ft

General Remarks:

NUMEROUS BIRDS FREQUENTLY ON OR IN VICINITY OF AIRPORT.

OPERATIONS CONTACT AUTOVON 636−8385; COMMERCIAL 860−627−3001

ANG − OPR 0700−1530 TUES/FRI/SAT; 0700−2300 WED/THUR.

ANG − PRIOR PERMISSION REQUIRED V220−2356.

NO DE−ICING AVAILABLE AT ANG.

TAXIWAY J CLOSED BETWEEN S & R TO AIRCRAFT WITH WINGSPANS IN EXCESS OF 170 FT.

NO TRAINING FLIGHTS; NO PRACTICE APPROACHES; NO TOUCH AND GO LANDING BETWEEN: 2300 − 0700 MON THRU SAT & 2300 − 1200 SUN.

(E117) CT ANG AND U.S. ARMY NATIONAL GUARD.

ASDE−X SURVEILLANCE SYSTEM IN USE. PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE ’C’ ON ALL TAXIWAYS & RUNWAYS.

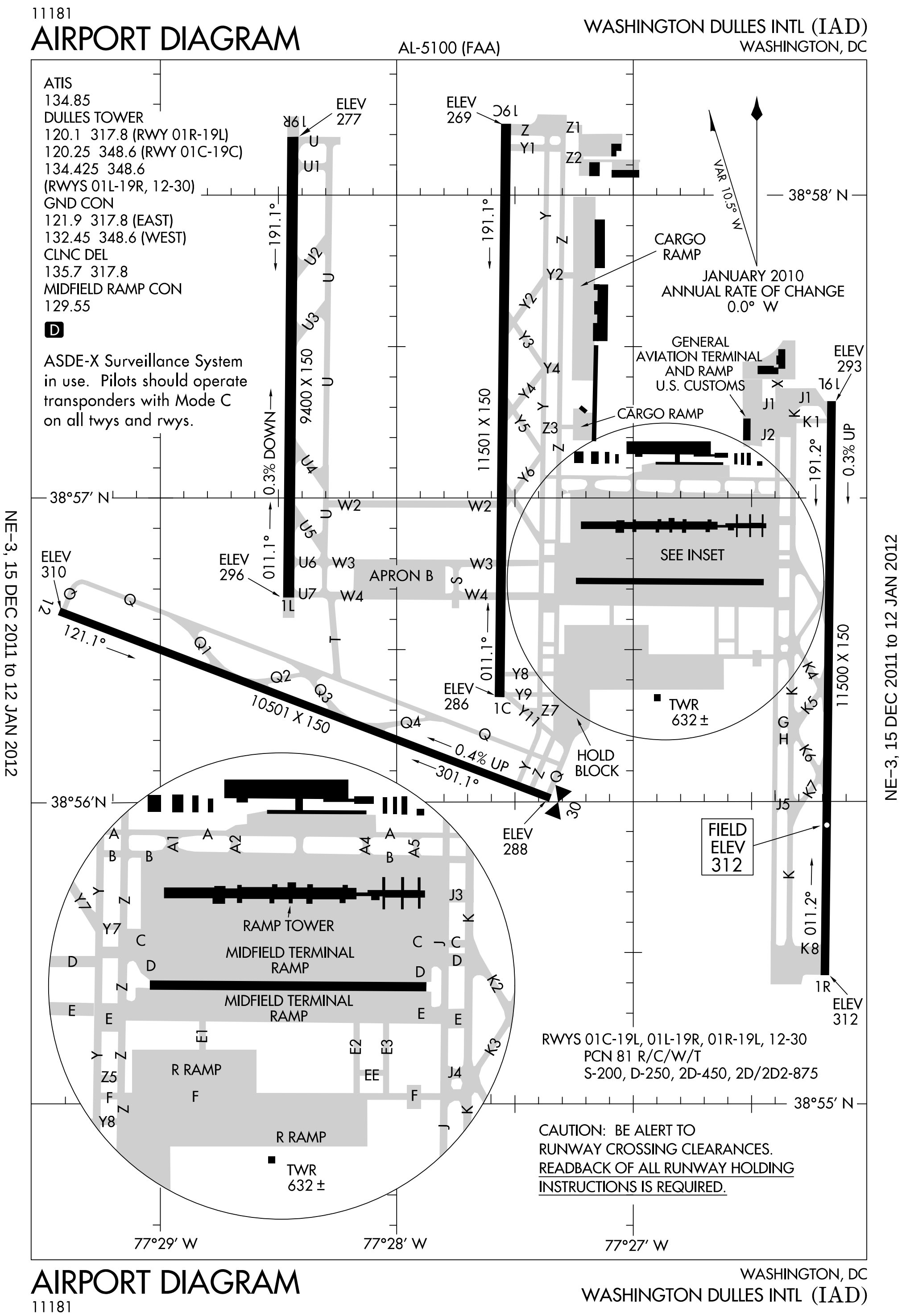
RUNWAY 01/19 OPEN FOR AIRCRAFT WITH WINGSPAN LESS THAN 79 FT.

RUNWAY 01 IS CLOSED FOR ARRS TO ALL FIXED WING AIRCRAFT.

RUNWAY 19 CLOSED FOR DEPS TO ALL FIXED WING AIRCRAFT.

RAMP AIR NATIONAL GUARD RAMP PERSONNEL AND EQUIPMENT WORKING BARRICADED ADJACENT NE SIDE.

Washington, District of Columbia
Washington Dulles International
ICAO Identifier KIAD



Washington, DC
Washington Dulles Intl
ICAO Identifier KIAD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−56−50.80N / 77−27−35.80W
2.2.2 From City: 20 Miles W Of Washington, VA
2.2.3 Elevation: 312 ft
2.2.5 Magnetic variation: 10W (2000)
2.2.6 Airport Contact: Christopher Browne
1 SAARINEN CIRCLE
Dulles, VA 20166
(703−572−2730)
2.2.7 Traffic: IFR/VFR
2.2.8 Remarks: Located In Both Fairfax County Va And Loudoun County Va.

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 01R
2.10.1.b Type of obstacle: Bldg (16 ft). Lighted
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 19L
2.10.1.b Type of obstacle: Pole (38 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 720 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 12
2.12.2 True Bearing: 111
2.12.3 Dimensions: 10501 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−37.58N / 77−29−25.60W
2.12.6 Threshold elevation: 310 ft
2.12.6 Touchdown zone elevation: 310 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 291
2.12.3 Dimensions: 10501 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−00.00N / 77−27−21.23W
2.12.6 Threshold elevation: 288 ft
2.12.6 Touchdown zone elevation: 288 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 01C
2.12.2 True Bearing: 1
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38-56-20.64N / 77-27-35.21W
2.12.6 Threshold elevation: 286 ft
2.12.6 Touchdown zone elevation: 286 ft

2.12.1 Designation: 19C
2.12.2 True Bearing: 181
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38-58-14.30N / 77-27-33.57W
2.12.6 Threshold elevation: 269 ft
2.12.6 Touchdown zone elevation: 272 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 9400 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−41.88N / 77−28−29.32W
2.12.6 Threshold elevation: 296 ft
2.12.6 Touchdown zone elevation: 296 ft
2.12.7 Slope: 0.3DOWN

2.12.1 Designation: 19R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 9400 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−58−14.78N / 77−28−27.98W
2.12.6 Threshold elevation: 277 ft
2.12.6 Touchdown zone elevation: 278 ft

2.12.1 Designation: 01R

2.12.2 True Bearing: 1
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−55−25.53N / 77−26−11.22W
2.12.6 Threshold elevation: 312 ft
2.12.6 Touchdown zone elevation: 312 ft
2.12.7 Slope: 0.3DOWN

2.12.1 Designation: 19L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−57−19.19N / 77−26−00.00W
2.12.6 Threshold elevation: 293 ft
2.12.6 Touchdown zone elevation: 302 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 01C
2.12.2 True Bearing: 1
2.12.3 Dimensions: 11501 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−20.64N / 77−27−35.21W
2.12.6 Threshold elevation: 286 ft
2.12.6 Touchdown zone elevation: 286 ft

2.12.1 Designation: 19C
2.12.2 True Bearing: 181
2.12.3 Dimensions: 11501 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−58−14.30N / 77−27−33.57W
2.12.6 Threshold elevation: 269 ft
2.12.6 Touchdown zone elevation: 272 ft

AD 2.13 Declared distances
2.13.1 Designation: 12
2.13.2 Takeoff run available: 10501
2.13.3 Takeoff distance available: 10501
2.13.4 Accelerate−stop distance available: 10501
2.13.5 Landing distance available: 10501

2.13.1 Designation: 30
2.13.2 Takeoff run available: 10501
2.13.3 Takeoff distance available: 10501
2.13.4 Accelerate−stop distance available: 10501
2.13.5 Landing distance available: 10501

2.13.1 Designation: 01C
2.13.2 Takeoff run available: 11501
2.13.3 Takeoff distance available: 11501
2.13.4 Accelerate-stop distance available: 11501
2.13.5 Landing distance available: 11501

2.13.1 Designation: 19C
2.13.2 Takeoff run available: 11501
2.13.3 Takeoff distance available: 11501
2.13.4 Accelerate-stop distance available: 11501
2.13.5 Landing distance available: 11501

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 9400
2.13.3 Takeoff distance available: 9400
2.13.4 Accelerate−stop distance available: 9400
2.13.5 Landing distance available: 9400

2.13.1 Designation: 19R
2.13.2 Takeoff run available: 9400
2.13.3 Takeoff distance available: 9400
2.13.4 Accelerate−stop distance available: 9400
2.13.5 Landing distance available: 9400

2.13.1 Designation: 01R
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate−stop distance available: 11500
2.13.5 Landing distance available: 11500

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate−stop distance available: 11500
2.13.5 Landing distance available: 11500

AD 2.14 Approach and runway lighting
2.14.1 Designation: 12
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 19C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on right

2.14.1 Designation: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 19L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 125.8 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 128.42 MHz

2.18.1 Service designation: MIDFLD RAMP CTL
2.18.3 Service designation: 129.55 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 132.45 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 132.45 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.85 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 135.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 120.25 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 134.425 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38-55-57.51N / 77-27-00.00W
2.19.6 Site elevation: 281 ft

2.19.1 ILS type: Glide Slope for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38-56-30.40N / 77-29-15.54W
2.19.6 Site elevation: 304 ft

2.19.1 ILS type: Middle Marker for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38-56-47.20N / 77-29-58.37W
2.19.6 Site elevation: 319 ft

2.19.1 ILS type: Outer Marker for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38-58-35.61N / 77-36-00.00W
2.19.6 Site elevation: 382 ft

2.19.1 ILS type: Localizer for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38-58-24.68N / 77-27-33.42W
2.19.6 Site elevation: 263 ft

2.19.1 ILS type: Outer Marker for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38-50-31.20N / 77-27-35.06W
2.19.6 Site elevation: 219 ft

2.19.1 ILS type: Glide Slope for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38-56-31.06N / 77-27-40.75W
2.19.6 Site elevation: 282 ft

2.19.1 ILS type: Middle Marker for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38-55-53.17N / 77-27-35.57W
2.19.6 Site elevation: 272 ft

2.19.1 ILS type: Glide Slope for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38-58-00.00N / 77-27-38.02W
2.19.6 Site elevation: 265 ft

2.19.1 ILS type: Middle Marker for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38-58-46.70N / 77-27-33.10W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 39-01-50.27N / 77-27-29.64W
2.19.6 Site elevation: 234 ft

2.19.1 ILS type: Localizer for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38-56-14.61N / 77-27-35.30W
2.19.6 Site elevation: 284 ft

2.19.1 ILS type: Inner Marker for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38-58-23.00N / 77-27-33.44W
2.19.6 Site elevation: 264 ft

2.19.1 ILS type: Inner Marker for runway 01L. Magnetic variation: 10W
2.19.2 ILS identification: OIU
2.19.5 Coordinates: 38-56-33.39N / 77-28-29.45W
2.19.6 Site elevation: 275 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 10W
2.19.2 ILS identification: OIU
2.19.5 Coordinates: 38-58-24.77N / 77-28-27.84W
2.19.6 Site elevation: 277 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 10W
2.19.2 ILS identification: OIU
2.19.5 Coordinates: 38-56-52.87N / 77-28-34.35W
2.19.6 Site elevation: 288 ft

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 10W
2.19.2 ILS identification: OIU
2.19.5 Coordinates: 38-58-25.08N / 77-28-31.16W
2.19.6 Site elevation: 279 ft

2.19.1 ILS type: Inner Marker for runway 19R. Magnetic variation: 10W
2.19.2 ILS identification: ISU
2.19.5 Coordinates: 38-58-23.51N / 77-28-27.86W
2.19.6 Site elevation: 276 ft

2.19.1 ILS type: Localizer for runway 19R. Magnetic variation: 10W
2.19.2 ILS identification: ISU
2.19.5 Coordinates: 38-56-31.90N / 77-28-29.46W
2.19.6 Site elevation: 298 ft

2.19.1 ILS type: Glide Slope for runway 19R. Magnetic variation: 10W
2.19.2 ILS identification: ISU
2.19.5 Coordinates: 38-58-00.00N / 77-28-33.32W
2.19.6 Site elevation: 272 ft

2.19.1 ILS type: DME for runway 19R. Magnetic variation: 10W
2.19.2 ILS identification: ISU
2.19.5 Coordinates: 38-58-25.08N / 77-28-31.16W
2.19.6 Site elevation: 279 ft

2.19.1 ILS type: Localizer for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38-57-30.87N / 77-26-00.00W
2.19.6 Site elevation: 302 ft

2.19.1 ILS type: Inner Marker for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38-55-17.13N / 77-26-11.35W
2.19.6 Site elevation: 319 ft

2.19.1 ILS type: Middle Marker for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38-54-53.77N / 77-26-11.67W
2.19.6 Site elevation: 317 ft

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38-55-11.08N / 77-26-00.00W
2.19.6 Site elevation: 314 ft

2.19.1 ILS type: Outer Marker for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38-50-50.18N / 77-26-16.38W
2.19.6 Site elevation: 242 ft

2.19.1 ILS type: Glide Slope for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38-55-35.85N / 77-26-00.00W
2.19.6 Site elevation: 307 ft

2.19.1 ILS type: Outer Marker for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 39-01-14.61N / 77-25-55.33W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38-55-11.81N / 77-26-11.43W
2.19.6 Site elevation: 315 ft

2.19.1 ILS type: DME for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38-55-11.08N / 77-26-00.00W
2.19.6 Site elevation: 314 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38-57-00.00N / 77-26-00.00W
2.19.6 Site elevation: 291 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38-57-43.15N / 77-26-00.00W
2.19.6 Site elevation: 99999 ft

General Remarks:

ITINERANT AIRCRAFT CONTACT FBO ON 122.95 FOR SERVICES.

AIR CARRIER PUSH BACKS & POWER FROM ALL APRON POSITIONS REQUIRE CLEARANCE

FROM MWAA RAMP TOWER.

DEER/LARGE FLOCKS OF BIRDS ON & IN THE VICINITY OF AIRPORT.

DURING PERIODS OF AIRCRAFT SATURATION LONG TERM PARKING MAY NOT BE AVAILABLE. SERVICES FOR FUEL AND GO ONLY WILL BE AVAILABLE.

FLIGHT TRAINING BETWEEN 2200−0700 IS PROHIBITED.

TAXILANE ’C’ ACTIVE; PUSHBACK CLEARANCES ON NORTH SIDE OF MIDFIELD TERMINAL ARE ONTO TAXILANE ’D’ ONLY UNLESS OTHERWISE AUTH.

PERSONNEL AND EQUIPMENT WORKING ADJACENT ALL RUNWAYS & TAXIWAYS INDEFINITELY.

ALL AIRCRAFT WITH WINGSPAN EXCEEDING 118 FT ARE RESTRICTED FROM USING TAXILANE A BETWEEN A1 & A5.

RUNUP BLOCKS FOR RUNWAY 30 DESIGNATED AS NON−MOVEMENT AREA.

ALL 180 DEGREE TURNS OUT OF APRON POSITIONS SHALL BE MADE USING MINIMUM POWER.

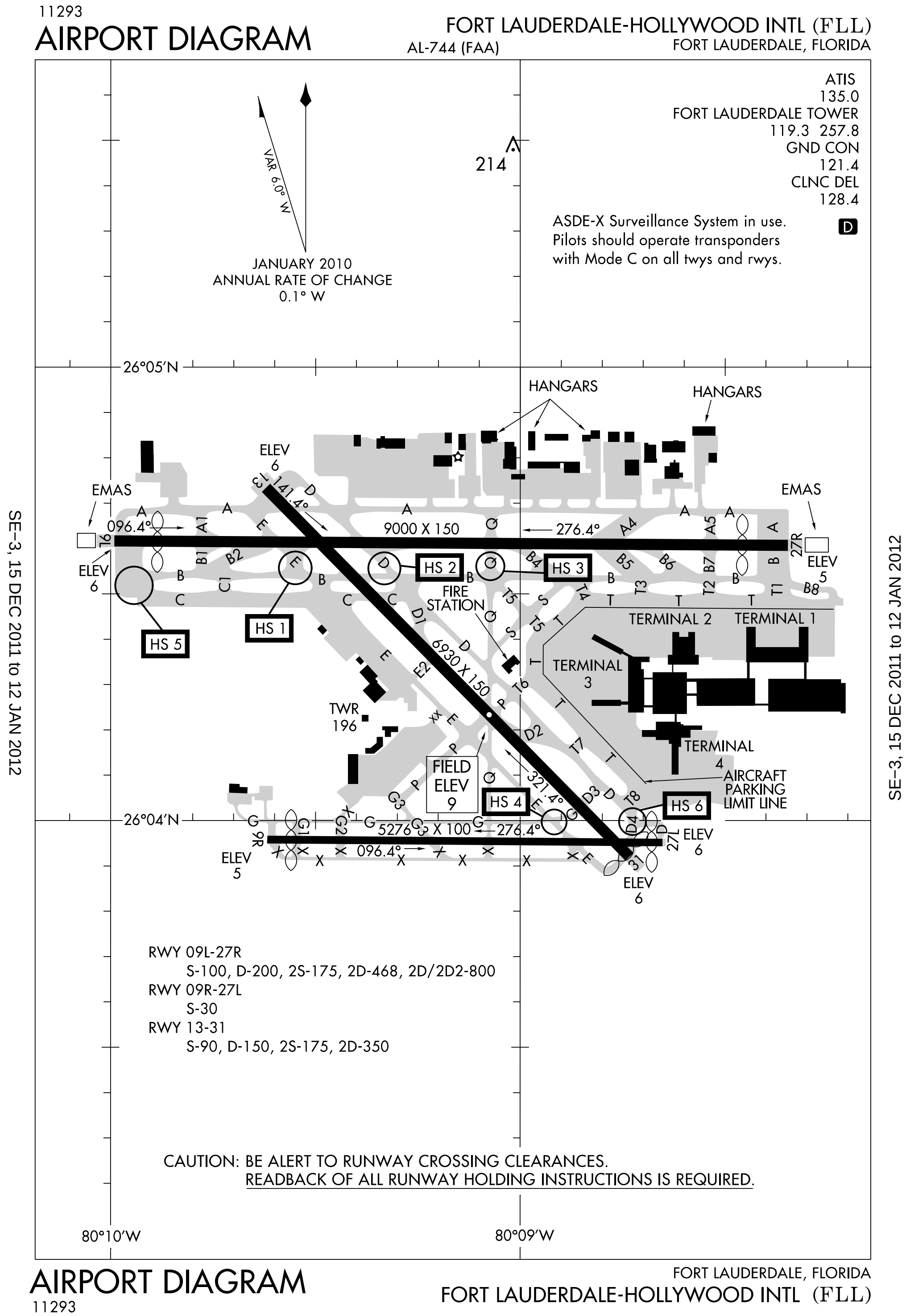
LANDING FEE. FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE. NOTE: SEE SPECIAL NOTICES −−CONTINUOUS POWER FACILITIES.

ASDE−X SURVEILLANCE SYSTEM IN USE: PIILOTS SHOULD OPERATE ADDED TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

TAXIWAY E1 RESTRICTED TO AIRCRAFT WITH A WINGSPAN LESS THAN 79 FT.

IAD TAXIWAY J CLOSED NORTH OF TAXIWAY J1.

Fort Lauderdale, Florida
Fort Lauderdale−Hollywood International
ICAO Identifier KFLL



Fort Lauderdale, FL
Fort Lauderdale/Hollywood Intl
ICAO Identifier KFLL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26−04−21.30N / 80−09−00.00W
2.2.2 From City: 3 Miles SW Of Fort Lauderdale, FL
2.2.3 Elevation: 9 ft
2.2.5 Magnetic variation: 3W (1985)
2.2.6 Airport Contact: Kent George
100 AVIATION BLVD
Ft Lauderdale, FL 33315
(954−359−6100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 4/25/2005

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Road (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 27R
2.10.1.b Type of obstacle: Rr (33 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 530 ft from Centerline

2.10.1.a. Runway designation: 09R
2.10.1.b Type of obstacle: Tree (35 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 50 ft from Centerline

2.10.1.a. Runway designation: 27L
2.10.1.b Type of obstacle: Pole (42 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 150 ft from Centerline

2.10.1.a. Runway designation: 31
2.10.1.b Type of obstacle: Rr (49 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 10 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 26−04−37.02N / 80−09−59.54W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 7 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 26−04−36.45N / 80−08−20.84W
2.12.6 Threshold elevation: 5 ft
2.12.6 Touchdown zone elevation: 7 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 5276 ft x 100 ft
2.12.5 Coordinates: 26−03−57.51N / 80−09−37.14W
2.12.6 Threshold elevation: 5 ft
2.12.6 Touchdown zone elevation: 6 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 5276 ft x 100 ft
2.12.5 Coordinates: 26−03−57.16N / 80−08−39.29W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 6 ft

2.12.1 Designation: 13
2.12.2 True Bearing: 135
2.12.3 Dimensions: 6930 ft x 150 ft
2.12.5 Coordinates: 26−04−44.05N / 80−09−37.40W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 7 ft

2.12.1 Designation: 31
2.12.2 True Bearing: 315
2.12.3 Dimensions: 6930 ft x 150 ft
2.12.5 Coordinates: 26−03−55.21N / 80−08−44.00W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 9 ft

AD 2.13 Declared distances
2.13.1 Designation: 09L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 8423

2.13.1 Designation: 27R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 8396

2.13.1 Designation: 09R
2.13.2 Takeoff run available: 5276
2.13.3 Takeoff distance available: 5276
2.13.4 Accelerate−stop distance available: 5276
2.13.5 Landing distance available: 4956

2.13.1 Designation: 27L
2.13.2 Takeoff run available: 5276
2.13.3 Takeoff distance available: 5276
2.13.4 Accelerate−stop distance available: 5276
2.13.5 Landing distance available: 5134

2.13.1 Designation: 13
2.13.2 Takeoff run available: 6930
2.13.3 Takeoff distance available: 6930
2.13.4 Accelerate−stop distance available: 6930
2.13.5 Landing distance available: 6930

2.13.1 Designation: 31
2.13.2 Takeoff run available: 6930
2.13.3 Takeoff distance available: 6930
2.13.4 Accelerate−stop distance available: 6930
2.13.5 Landing distance available: 6860

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 09R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 13
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 31
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 120.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.4 MHz

2.18.1 Service designation: GND/ALTERNATE
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: RAMP CTL
2.18.3 Service designation: 118.175 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: LHI
2.19.5 Coordinates: 26−04−36.42N / 80−08−15.66W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: DME for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: LHI
2.19.5 Coordinates: 26−04−40.17N / 80−08−15.66W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Glide Slope for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: LHI
2.19.5 Coordinates: 26−04−39.64N / 80−09−42.33W
2.19.6 Site elevation: 3 ft

2.19.1 ILS type: Middle Marker for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: LHI
2.19.5 Coordinates: 26−04−37.62N / 80−10−35.57W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26−04−37.04N / 80−10−00.00W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: DME for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26−04−34.53N / 80−10−00.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26−04−36.29N / 80−07−54.09W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26−04−39.62N / 80−08−39.06W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: FLL
2.19.5 Coordinates: 26−03−57.14N / 80−08−36.11W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Outer Marker for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: FLL
2.19.5 Coordinates: 26−03−53.37N / 80−16−26.27W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Localizer for runway 13. Magnetic variation: 3W
2.19.2 ILS identification: LID
2.19.5 Coordinates: 26−03−50.87N / 80−08−39.26W
2.19.6 Site elevation: 5 ft

General Remarks:

CLOSED TO AIR CARRIER TRAINING. CLOSED TO LARGE AIRCRAFT TRAINING OVER 58000 LBS MAX CERTIFIED GROSS TAKE-OFF WEIGHT. CLOSED TO ALL TRAINING 2300−0700.

NOISE ABATEMENT IN EFFECT CONTACT AIRPORT NOISE ABATEMENT OFFICE−954−359−6181 FOR DETAILS.

JET RUNUPS PROHIBITED 2300−0700.

ALL RUNWAYS ARE NOISE SENSITIVE.

FLOCKS OF BIRDS ON AND IN THE VICINITY OF THE AIRPORT.

ALL WIDE BODY TYPE AIRCRAFT DEPARTING RUNWAY 9L SHOULD FOLLOW TAXIWAY CENTERLINE INTO POSITION ON RUNWAY.

TAXIWAYS SOUTH OF TAXIWAY C AND WEST OF RUNWAY 13/31 EXCEPT FOR TAXIWAYS P & E ARE 50 FT WIDE OR LESS; DESIGN CRITERIA FOR LARGE AIRCRAFT NOT MAINTAINED.

RUNWAY 09R/27L CLOSED TO AIRCRAFT IN EXCESS OF 58000 LBS MAX CERTIFICATED GROSS TAKE-OFF WEIGHT.

PRIOR PERMISSION REQUIRED FOR AIRCRAFT WITH EXPLOSIVES.

AIRCRAFT WITH WINGSPANS GREATER THAN 112 FT MAY UTILIZE TAXIWAY ’E’ BETWEEN TAXIWAYS ’B’/’P’ BY PRIOR PERMISSION REQUIRED ONLY.

ARR AIRCRAFT FROM THE NORTH MAINTAIN 6000 FT UNTIL ABEAM RUNWAY 09L ON DOWNWIND.

ARR AIRCRAFT FROM ’N’ & ’W’ MAINTAIN 6000 FT UNTIL ABEAM RUNWAY 27L, RUNWAY 27R ON DOWNWIND.

NO VFR APPROACHES OR BASE LEGS UNTIL OFFSHORE.

AIRCRAFT HOLDING SHORT FOR RUNWAY 27L AT D4 BE ALERT; RUNWAYS 31 AND 27L CAN BE CONFUSING.

BE ALERT: INTERSECTION OF TAXIWAY ’G’ AND ’Q’ NOT VISIBLE FROM TOWER.

TAXIWAY B6 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 126 FT AND TAIL HEIGHT GREATER THAN 46 FT.

AIR CARRIER AIRCRAFT USE RAMP PUSH BACK PROCEDURES AS PRESCRIBED BY AIRPORT OPERATIONS.

EAST SIDE OF CONCOURSE B AVAILBLE ONLY TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 124.9 FT.

AIRCRAFT OPERATING FROM TERMINAL 1, 2 AND GATES E1, E5, E7, E9, E10 AT TERMINAL 3 MUST CONTACT RAMP CONTROL. RAMP CONTROL EFFECTIVE 0600−2200.

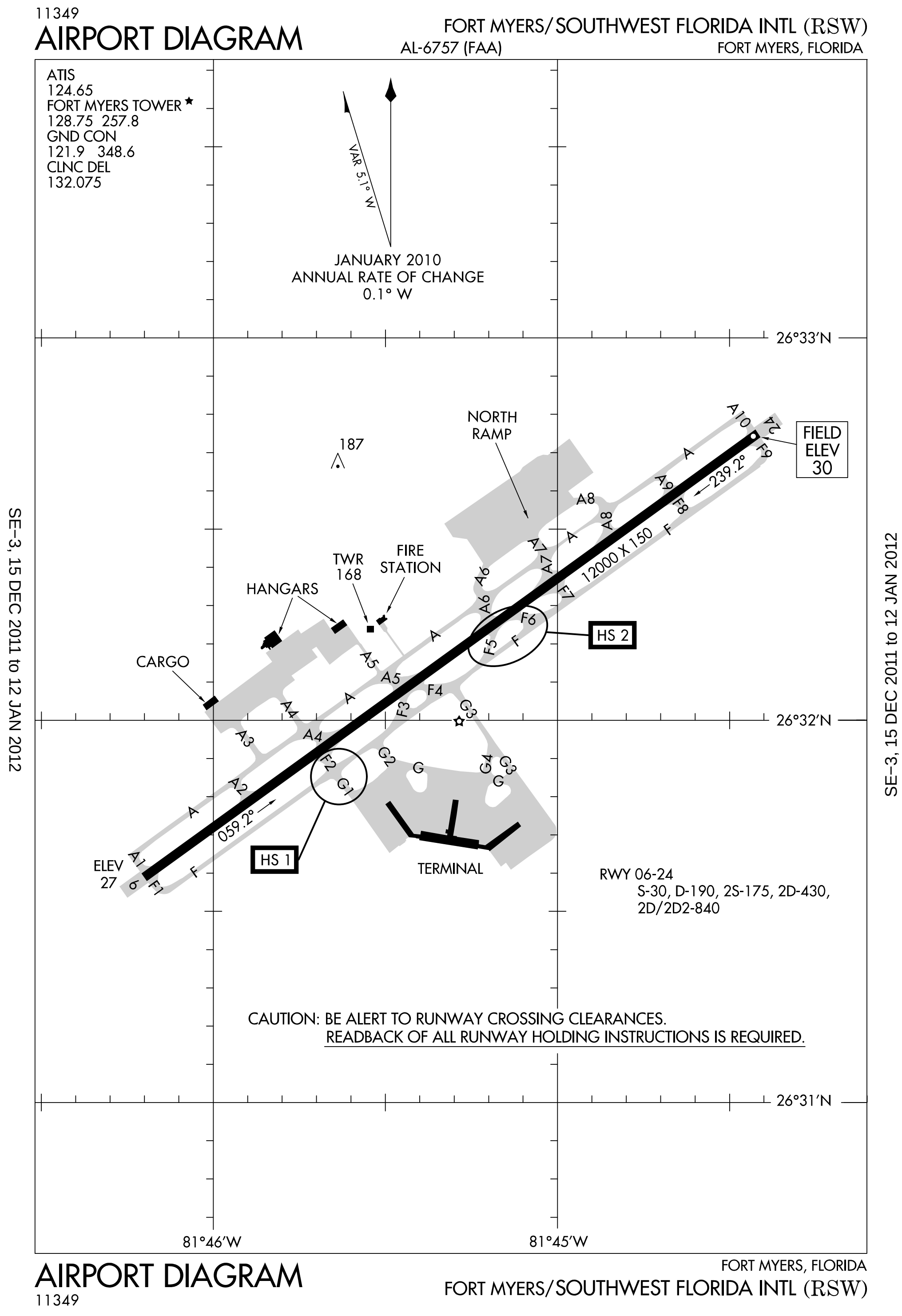
ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE ’C’ ON ALL TAXIWAYS AND RUNWAYS.

CONCENTRATION OF BIRDS BELOW 500 FT, 2.0 NAUTICAL MILE WEST OF THE APPROACH ENDS OF RUNWAYS 9L & 9R.

CENTER 50 FT RUNWAY 09R/27L NOT GROOVED.

TURBULENCE BELOW 1000 FT OVER LANDFILL LOCATED 2NM W, AND OVER ELECTRIC POWER PLANT LOCATED 1 1/4 NAUTICAL MILE ENE.

Fort Myers, Florida
Southwest Florida International
ICAO Identifier KRSW



Fort Myers, FL
Southwest Florida Intl
ICAO Identifier KRSW

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26−32−10.20N / 81−45−18.60W
2.2.2 From City: 10 Miles SE Of Fort Myers, FL
2.2.3 Elevation: 30 ft
2.2.5 Magnetic variation: 4W (2000)
2.2.6 Airport Contact: Robert M. Ball
11000 TERMINAL ACCESS RD.
Fort Myers, FL 33913
(239−−590−4800)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1983
2.6.4 Remarks: Closed To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats Except Prior Permission Required Call Airport Manager (239) 590−4810.

AD 2.12 Runway physical characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 54
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 26−31−35.35N / 81−46−12.07W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 27 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 234
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 26−32−45.02N / 81−44−25.03W
2.12.6 Threshold elevation: 30 ft
2.12.6 Touchdown zone elevation: 30 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 125.15 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 132.075 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 306.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 327.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 343.75 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 06. Magnetic variation: 4W
2.19.2 ILS identification: RSW
2.19.5 Coordinates: 26−31−43.49N / 81−46−00.00W
2.19.6 Site elevation: 26 ft

2.19.1 ILS type: Localizer for runway 06. Magnetic variation: 4W
2.19.2 ILS identification: RSW
2.19.5 Coordinates: 26−32−51.12N / 81−44−15.66W
2.19.6 Site elevation: 28 ft

2.19.1 ILS type: Outer Marker for runway 06. Magnetic variation: 4W
2.19.2 ILS identification: RSW
2.19.5 Coordinates: 26−29−00.00N / 81−50−00.00W
2.19.6 Site elevation: 10 ft

General Remarks:

PRIOR PERMISSION REQUIRED FOR TERMINAL RAMP CALL (239−590−4810)

AIR CARRIER PILOTS USE RAMP PROC AS PRESCRIBED BY AIRPORT OPERATIONS.

BIRDS & WILDLIFE ON AND IN THE VICINITY OF AIRPORT.

NO HELICOPTER OPERATIONS PERMITTED ON TERMINAL APRON.

LIGHTS ON PARALLEL ROAD & PARKING LOT NW OF RUNWAY 06/24 CAN BE MISTAKEN FOR THE RUNWAY & APPROACH ENVIRONMENT.

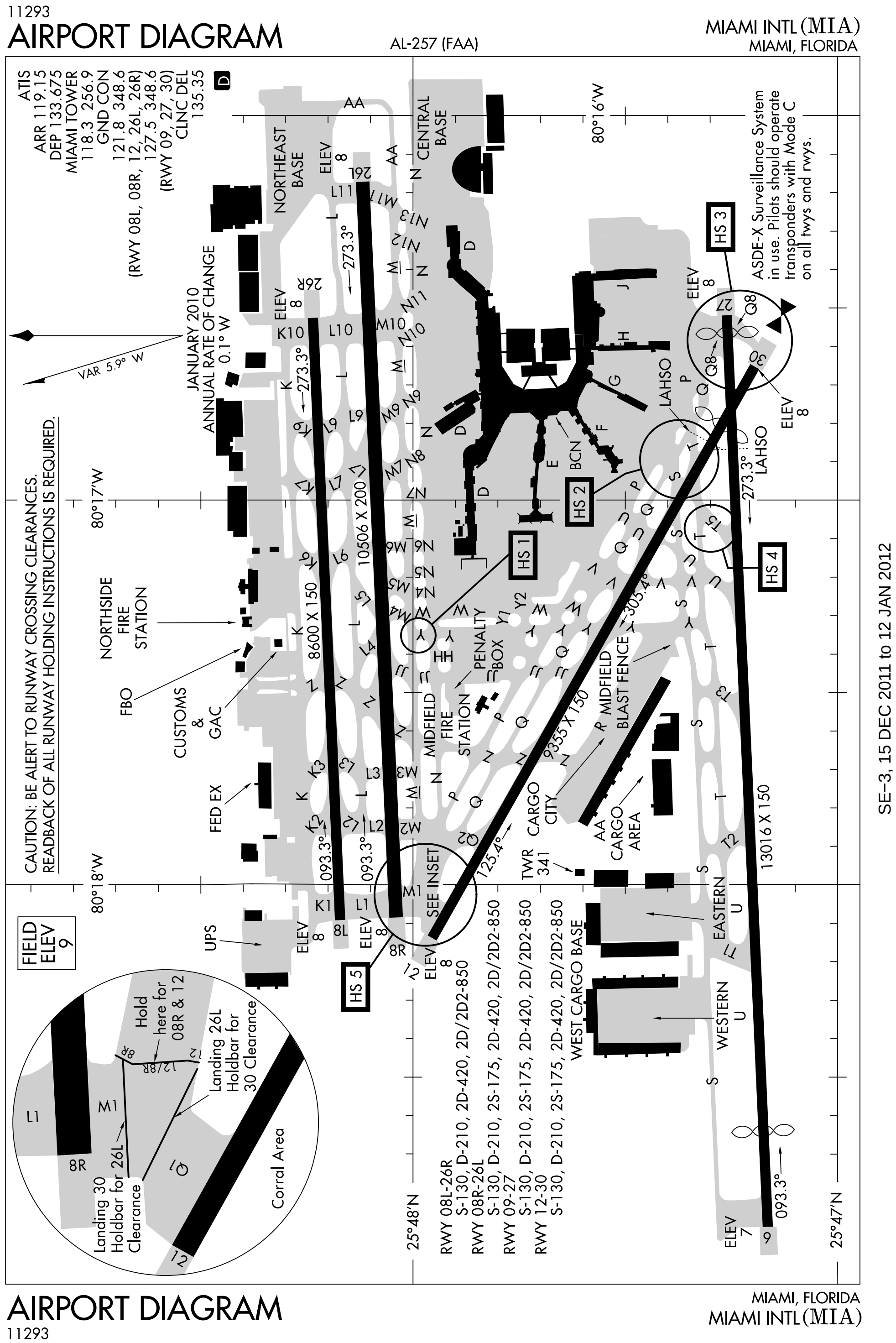
ATCT CLEARANCE REQUIRED PRIOR TO ENTERING TAXIWAY ’F’.

AIRPORT HAS RUNWAY USE PROGRAM. USE DISTANT NOISE ABATEMENT DEP PROFILE. VISUAL APPROACHES TO RUNWAY 06 W OF FORT MYERS BEACH ARE REQUESTED TO MAINTAIN 3000 FT UNTIL CROSSING FORT MYERS BEACH SHORELINE 12 NAUTICAL MILE SW OF AIRPORT. FOR NOISE ABATEMENT PROCEDURES CONTACT AIRPORT MANAGER 239−590−4810

CAUTION: OPEN BAGGAGE BAYS WITHIN TERMINAL AREA. AIRCREWS SHOULD USE MINIMUM THRUST SETTINGS IN THESE AREAS, ESPECIALLY DURING SINGLE ENGINE TAXI. CROSS−BLEED STARTS ONLY ALLOWED AFTER REACHING THE TUG RELEASE POINT.

DO NOT CONTACT GROUND CONTROL FOR PUSHBACK.

Miami, Florida
Miami International
ICAO Identifier KMIA



Miami, FL
Miami Intl
ICAO Identifier KMIA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 25−47−43.30N / 80−17−24.40W
2.2.2 From City: 8 Miles NW Of Miami, FL
2.2.3 Elevation: 9 ft
2.2.5 Magnetic variation: 5W (2000)
2.2.6 Airport Contact: Jose Abreu, P.E.
PO BOX 025504
Miami, FL 33102
(305−876−7077)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 30
2.10.1.b Type of obstacle: Tree (52 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 12
2.10.1.b Type of obstacle: Tower (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Rr (23 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 580 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 12
2.12.2 True Bearing: 119
2.12.3 Dimensions: 9355 ft x 150 ft
2.12.5 Coordinates: 25−47−57.43N / 80−18−00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 299
2.12.3 Dimensions: 9355 ft x 150 ft
2.12.5 Coordinates: 25−47−11.85N / 80−16−39.14W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 87
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.5 Coordinates: 25−48−00.00N / 80−18−00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 267
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.5 Coordinates: 25−48−00.00N / 80−16−10.33W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 87
2.12.3 Dimensions: 8600 ft x 150 ft
2.12.5 Coordinates: 25-48-10.43N / 80-18-00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 267
2.12.3 Dimensions: 8600 ft x 150 ft
2.12.5 Coordinates: 25-48-14.32N / 80-16-31.55W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 87
2.12.3 Dimensions: 13016 ft x 150 ft
2.12.5 Coordinates: 25-47-00.00N / 80-18-53.42W

2.12.6 Threshold elevation: 7 ft
2.12.6 Touchdown zone elevation: 7 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 267
2.12.3 Dimensions: 13016 ft x 150 ft
2.12.5 Coordinates: 25-47-15.83N / 80-16-31.17W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

AD 2.13 Declared distances
2.13.1 Designation: 12
2.13.2 Takeoff run available: 9355
2.13.3 Takeoff distance available: 9355
2.13.4 Accelerate-stop distance available: 8579
2.13.5 Landing distance available: 8579

2.13.1 Designation: 30
2.13.2 Takeoff run available: 9355
2.13.3 Takeoff distance available: 9355
2.13.4 Accelerate-stop distance available: 8853
2.13.5 Landing distance available: 7913

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 10506
2.13.3 Takeoff distance available: 10506
2.13.4 Accelerate-stop distance available: 10506
2.13.5 Landing distance available: 10506

2.13.1 Designation: 26L
2.13.2 Takeoff run available: 10506
2.13.3 Takeoff distance available: 10506
2.13.4 Accelerate-stop distance available: 10506
2.13.5 Landing distance available: 10506

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 8600
2.13.3 Takeoff distance available: 8600
2.13.4 Accelerate-stop distance available: 8600
2.13.5 Landing distance available: 8600

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 8600
2.13.3 Takeoff distance available: 8600
2.13.4 Accelerate-stop distance available: 8600
2.13.5 Landing distance available: 8600

2.13.1 Designation: 09
2.13.2 Takeoff run available: 13016
2.13.3 Takeoff distance available: 13016
2.13.4 Accelerate-stop distance available: 12755
2.13.5 Landing distance available: 11397

2.13.1 Designation: 27
2.13.2 Takeoff run available: 13016
2.13.3 Takeoff distance available: 13016
2.13.4 Accelerate-stop distance available: 13016
2.13.5 Landing distance available: 12755

AD 2.14 Approach and runway lighting
2.14.1 Designation: 12
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08L
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 26R
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system

with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 119.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.45 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 124.85 MHz

2.18.1 Service designation: RTIS(120−300 WITHIN 25 NM)
2.18.3 Service designation: 125.25 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: CD/P IC
2.18.3 Service designation: 135.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 290.325 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 263.025 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 322.3 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 354.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 379.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.675 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 120.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 119.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.45 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: APCH/P DEP/P

CLASS B IC
2.18.3 Service designation: 124.85 MHz

2.18.1 Service designation: RTIS(120−300 WITHIN 25 NM)
2.18.3 Service designation: 125.25 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: CD/P IC
2.18.3 Service designation: 135.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 290.325 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 263.025 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 322.3 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 354.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 379.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.675 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 120.35 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 30. Magnetic variation: 5W
2.19.2 ILS identification: DCX
2.19.5 Coordinates: 25−47−59.88N / 80−18−13.04W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: DME for runway 30. Magnetic variation: 5W
2.19.2 ILS identification: DCX
2.19.5 Coordinates: 25−47−57.77N / 80−18−14.51W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Glide Slope for runway 30. Magnetic variation: 5W
2.19.2 ILS identification: DCX
2.19.5 Coordinates: 25−47−17.64N / 80−16−59.57W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Glide Slope for runway 12. Magnetic variation: 5W
2.19.2 ILS identification: GEM
2.19.5 Coordinates: 25−47−49.35N / 80−17−59.90W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: DME for runway 12. Magnetic variation: 5W
2.19.2 ILS identification: GEM
2.19.5 Coordinates: 25−47−11.28N / 80−16−32.41W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: Localizer for runway 12. Magnetic variation: 5W
2.19.2 ILS identification: GEM
2.19.5 Coordinates: 25−47−00.00N / 80−16−34.81W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Localizer for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N / 80−16−00.00W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Middle Marker for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N /

80−18−43.38W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: DME for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N / 80−16−00.00W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Glide Slope for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N / 80−17−54.81W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−16−22.51W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−18−13.77W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−18−13.80W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−15−44.08W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−18.83N / 80−11−42.26W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: ROY
2.19.5 Coordinates: 25-48-17.24N / 80-16-20.63W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: ROY
2.19.5 Coordinates: 25-48-14.77N / 80-16-20.62W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: DME for runway 26R. Magnetic variation: 5W
2.19.2 ILS identification: CNV
2.19.5 Coordinates: 25-48-00.00N / 80-18-16.47W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 5W
2.19.2 ILS identification: CNV
2.19.5 Coordinates: 25-48-00.00N / 80-18-16.48W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−47−17N / 80−16−23.05W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−46−59.33N / 80−23−00.00W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−47−00.00N / 80−19−00.00W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−47−00.00N / 80−18−26.71W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA
2.19.5 Coordinates: 25−47−11.73N / 80−16−45.40W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA
2.19.5 Coordinates: 25−47−26.47N / 80−11−39.14W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA
2.19.5 Coordinates: 25−47−00.00N / 80−19−00.00W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA
2.19.5 Coordinates: 25−47−16.87N / 80−16−12.26W
2.19.6 Site elevation: 5 ft

General Remarks:

CLOSED NON ENGINE AIRCRAFT.

AIRCRAFT WITH A WINGSPAN GREATER THAN 171 FT ARE PROHIBITED FROM TAXIING ON TAXIWAY P EAST OF TAXIWAY U. AIRCRAFT WITH A WINGSPAN GREATER THAN 143 FT ARE PROHIBITED FROM USING TAXIWAY AA.

ALL TURBOJET AIRCRAFT USE DISTANT NOISE ABATEMENT DEP PROFILE FROM ALL RUNWAYS EXCEPT A320, B727, B737−800, B767−400, AND DC9 WHICH SHOULD USE CLOSE−IN NOISE ABATEMENT ABATEMENT PROFILE.

BIRDS ON & IN THE VICINITY OF AIRPORT.

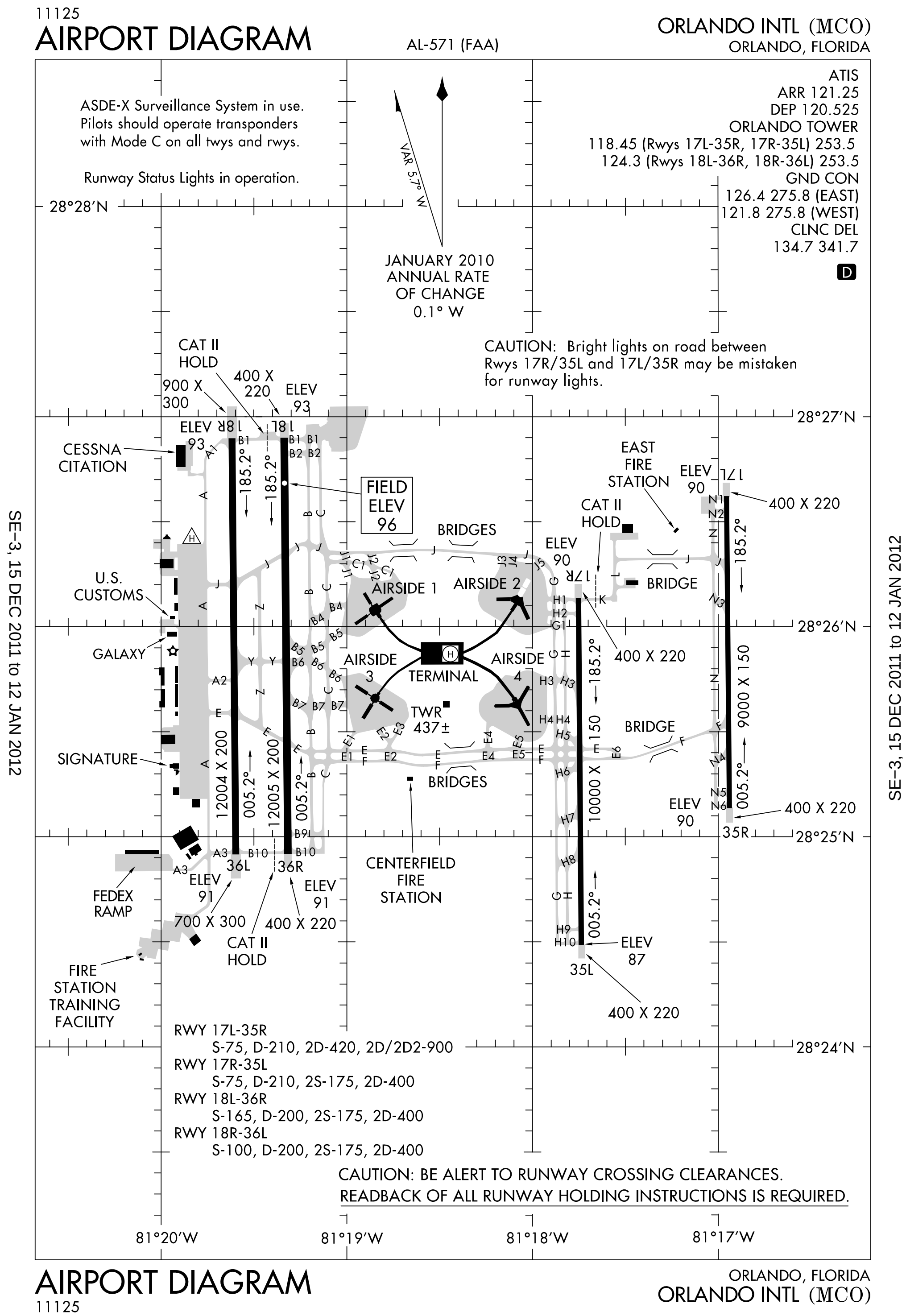
PRIOR PERMISSION REQUIRED 3 HRS PRIOR TO ALL ARRIVALS ON THE GENERAL AVIATION CENTER (GAC) RAMP. CONTACT RAMP CONTROL AT 305−876−7550 AND UPON ARRIVAL ON FREQ 130.5. AIRCRAFT WITH WINGSPAN GREATER THAN 78 FT ARE PROHIBITED FROM ENTERING THE GENERAL AVIATION AIRCRAFT RAMP.

ALL MEDICAL EMERGENCIES ARRIVALS, WITH THE EXCEPTION OF AIR AMBULANCE FLIGHTS, MUST SECURE DOORS UNTIL AIRCRAFT RESCUE AND FIRE FIGHTING IS ON SCENE.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

PRIOR PERMISSION REQUIRED FOR INBOUND MILITARY FLIGHTS 100 NAUTICAL MILE ON FREQ 130.5.

Orlando, Florida
Orlando International
ICAO Identifier KMCO



Orlando, FL
Orlando Intl
ICAO Identifier KMCO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 28−25−45.82N / 81−18−32.38W
2.2.2 From City: 6 Miles SE Of Orlando, FL
2.2.3 Elevation: 96 ft
2.2.5 Magnetic variation: 5W (2000)
2.2.6 Airport Contact: Phil Brown
ONE AIRPORT BLVD
Orlando, FL 32827
(407−825−2001)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 4/1/2005

AD 2.12 Runway physical characteristics
2.12.1 Designation: 17R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 28−26−00.00N / 81−17−45.17W
2.12.6 Threshold elevation: 90 ft
2.12.6 Touchdown zone elevation: 90 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 28−24−29.20N / 81−17−44.13W
2.12.6 Threshold elevation: 87 ft
2.12.6 Touchdown zone elevation: 88 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 179
2.12.3 Dimensions: 12005 ft x 200 ft
2.12.5 Coordinates: 28−26−54.00N / 81−19−20.30W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 96 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 12005 ft x 200 ft
2.12.5 Coordinates: 28−24−55.15N / 81−19−19.04W
2.12.6 Threshold elevation: 91 ft
2.12.6 Touchdown zone elevation: 92 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 12004 ft x 200 ft
2.12.5 Coordinates: 28−26−53.86N / 81−19−37.11W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 94 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 12004 ft x 200 ft
2.12.5 Coordinates: 28−24−55.01N / 81−19−35.83W
2.12.6 Threshold elevation: 91 ft
2.12.6 Touchdown zone elevation: 93 ft

2.12.1 Designation: 17L
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 28−26−37.31N / 81−16−57.29W
2.12.6 Threshold elevation: 90 ft
2.12.6 Touchdown zone elevation: 90 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 28−25−00.00N / 81−16−56.38W
2.12.6 Threshold elevation: 90 ft
2.12.6 Touchdown zone elevation: 90 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 44 ft x 44 ft

AD 2.13 Declared distances
2.13.1 Designation: 18L

2.13.2 Takeoff run available: 12005
2.13.3 Takeoff distance available: 12005
2.13.4 Accelerate−stop distance available: 12005
2.13.5 Landing distance available: 12005

2.13.1 Designation: 36R
2.13.2 Takeoff run available: 12005
2.13.3 Takeoff distance available: 12005
2.13.4 Accelerate−stop distance available: 11601
2.13.5 Landing distance available: 11601

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 12004
2.13.3 Takeoff distance available: 12004
2.13.4 Accelerate−stop distance available: 12004
2.13.5 Landing distance available: 12004

2.13.1 Designation: 36L
2.13.2 Takeoff run available: 12004
2.13.3 Takeoff distance available: 12004
2.13.4 Accelerate−stop distance available: 11621
2.13.5 Landing distance available: 11621

AD 2.14 Approach and runway lighting
2.14.1 Designation: 17R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 35L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 18L
2.14.4 Visual approach slope indicator system: 6−box VASI on left
2.14.10 Remarks: VASI Upwind Threshold Crossing Height 89.7’ GA 3.25 Degs Downwind Threshold Crossing Height 52.4’ GA 3.00 Degs.

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 18R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 36L
2.14.4 Visual approach slope indicator system: 6−box VASI on left
2.14.10 Remarks: VASI Upwind Threshold Crossing Height 94’ GA 3.25 Degs; Downwind Threshold Crossing Height 52’ GA 3.00 Degs.

2.14.1 Designation: 17L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 119.4 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 120.15 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: D−ATIS ARR
2.18.3 Service designation: 121.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 123.85 MHz

2.18.1 Service designation: LCL/P (RYS 18L/36R

& 18R/36L)
2.18.3 Service designation: 124.3 MHz

2.18.1 Service designation: APCH/P DEP/P IC CLASS B
2.18.3 Service designation: 124.8 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 125.55 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 134.05 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 134.7 MHz

2.18.1 Service designation: AR OPS
2.18.3 Service designation: 148.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: APCH/P DEP/P IC CLASS B
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 339.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 341.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 351.9 MHz

2.18.1 Service designation: AR OPS
2.18.3 Service designation: 41.5 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 120.525 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 253.5 MHz

2.18.1 Service designation: LCL/P (RYS 17L/35R & 17R/35L)
2.18.3 Service designation: 118.45 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 119.475 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 17R. Magnetic variation: 5W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28−24−18.77N / 81−17−44.02W
2.19.6 Site elevation: 82 ft

2.19.1 ILS type: DME for runway 17R. Magnetic variation: 5W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28−24−18.95N / 81−17−47.07W
2.19.6 Site elevation: 86 ft

2.19.1 ILS type: Glide Slope for runway 17R. Magnetic variation: 5W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28−25−57.84N / 81−17−40.58W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: Inner Marker for runway 17R. Magnetic variation: 5W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28−26−16.70N / 81−17−45.26W
2.19.6 Site elevation: 86 ft

2.19.1 ILS type: Middle Marker for runway 17R. Magnetic variation: 5W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28−26−34.25N / 81−17−45.43W
2.19.6 Site elevation: 82 ft

2.19.1 ILS type: DME for runway 35L. Magnetic variation: 5W
2.19.2 ILS identification: DDO
2.19.5 Coordinates: 28−26−18.45N / 81−17−48.12W
2.19.6 Site elevation: 100 ft

2.19.1 ILS type: Glide Slope for runway 35L. Magnetic variation: 5W
2.19.2 ILS identification: DDO
2.19.5 Coordinates: 28−24−39.53N / 81−17−39.76W
2.19.6 Site elevation: 84 ft

2.19.1 ILS type: Inner Marker for runway 35L. Magnetic variation: 5W
2.19.2 ILS identification: DDO
2.19.5 Coordinates: 28−24−20.54N / 81−17−44.05W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: Middle Marker for runway 35L. Magnetic variation: 5W
2.19.2 ILS identification: DDO
2.19.5 Coordinates: 28−24−00.00N / 81−17−43.84W
2.19.6 Site elevation: 83 ft

2.19.1 ILS type: Localizer for runway 35L. Magnetic variation: 5W
2.19.2 ILS identification: DDO
2.19.5 Coordinates: 28−26−18.60N / 81−17−45.27W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 5W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28−25−00.00N / 81−19−23.63W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 5W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28−24−46.65N / 81−19−18.94W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: Outer Marker for runway 36R. Magnetic variation: 5W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28−20−38.35N / 81−19−18.23W
2.19.6 Site elevation: 68 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 5W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28−27−00.00N / 81−19−20.38W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 5W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28−24−31.89N / 81−19−18.77W
2.19.6 Site elevation: 85 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 5W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28−27−00.00N / 81−19−18.03W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 5W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28−24−42.58N / 81−19−35.70W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 5W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28−26−43.50N / 81−19−32.52W
2.19.6 Site elevation: 89 ft

2.19.1 ILS type: Outer Marker for runway 18R. Magnetic variation: 5W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28−33−00.00N / 81−19−38.75W
2.19.6 Site elevation: 103 ft

2.19.1 ILS type: Middle Marker for runway 18R. Magnetic variation: 5W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28−27−20.04N /

81−19−37.39W
2.19.6 Site elevation: 90 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 5W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28−24−42.05N / 81−19−38.48W
2.19.6 Site elevation: 86 ft

2.19.1 ILS type: DME for runway 17L. Magnetic variation: 5W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28−24−58.00N / 81−16−51.68W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Glide Slope for runway 17L. Magnetic variation: 5W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28−26−27.05N / 81−16−52.59W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Inner Marker for runway 17L. Magnetic variation: 5W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28−26−45.82N / 81−16−57.38W
2.19.6 Site elevation: 90 ft

2.19.1 ILS type: Localizer for runway 17L. Magnetic variation: 5W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28−24−57.81N / 81−16−56.27W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Middle Marker for runway 17L. Magnetic variation: 5W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28−26−59.78N / 81−16−57.52W
2.19.6 Site elevation: 90 ft

2.19.1 ILS type: Glide Slope for runway 35R. Magnetic variation: 5W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28−25−18.63N / 81−16−51.89W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Inner Marker for runway 35R. Magnetic variation: 5W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28−24−59.68N / 81−16−56.29W
2.19.6 Site elevation: 90 ft

2.19.1 ILS type: DME for runway 35R. Magnetic variation: 5W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28−26−48.23N / 81−16−52.81W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Localizer for runway 35R. Magnetic variation: 5W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28−26−47.70N / 81−16−57.40W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Middle Marker for runway 35R. Magnetic variation: 5W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28−24−45.67N / 81−16−56.15W
2.19.6 Site elevation: 90 ft

General Remarks:

BIRDS & DEER ON & IN THE VICINITY OF AIRPORT.

24 HR PRIOR PERMISSION REQUIRED FOR HELIPAD LANDING CALL 407−825−2036. COMMERCIAL OPERATIONS ONLY, NO PRIVATE OPERATIONS.

AVOID CONTACT WITH TAXIWAY EDGE LIGHTS; ALL AIRCRAFT DETERMINED TO BE FAA DESIGN GROUP IV AND ABOVE MUST PERFORM JUDGEMENTAL OVERSTEERING INSTEAD

OF COCKPIT CENTERLINE STEERING WHEN TAXIING.

WHEN OVERRUN LIGHTS ILS RUNWAY 7 AND MCO ILS RUNWAYS 17 & 18R SIMULTANEOUS OPERATIONS ARE CONDUCTED, ATC RADAR REQUIRED.

BRIGHT LIGHTS ON ROAD BETWEEN RUNWAY 17R/35L AND RUNWAY 17L/35R MAY BE MISTAKEN FOR RUNWAY LIGHTS.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE ’C’ ON ALL TAXIWAYS & RUNWAYS.

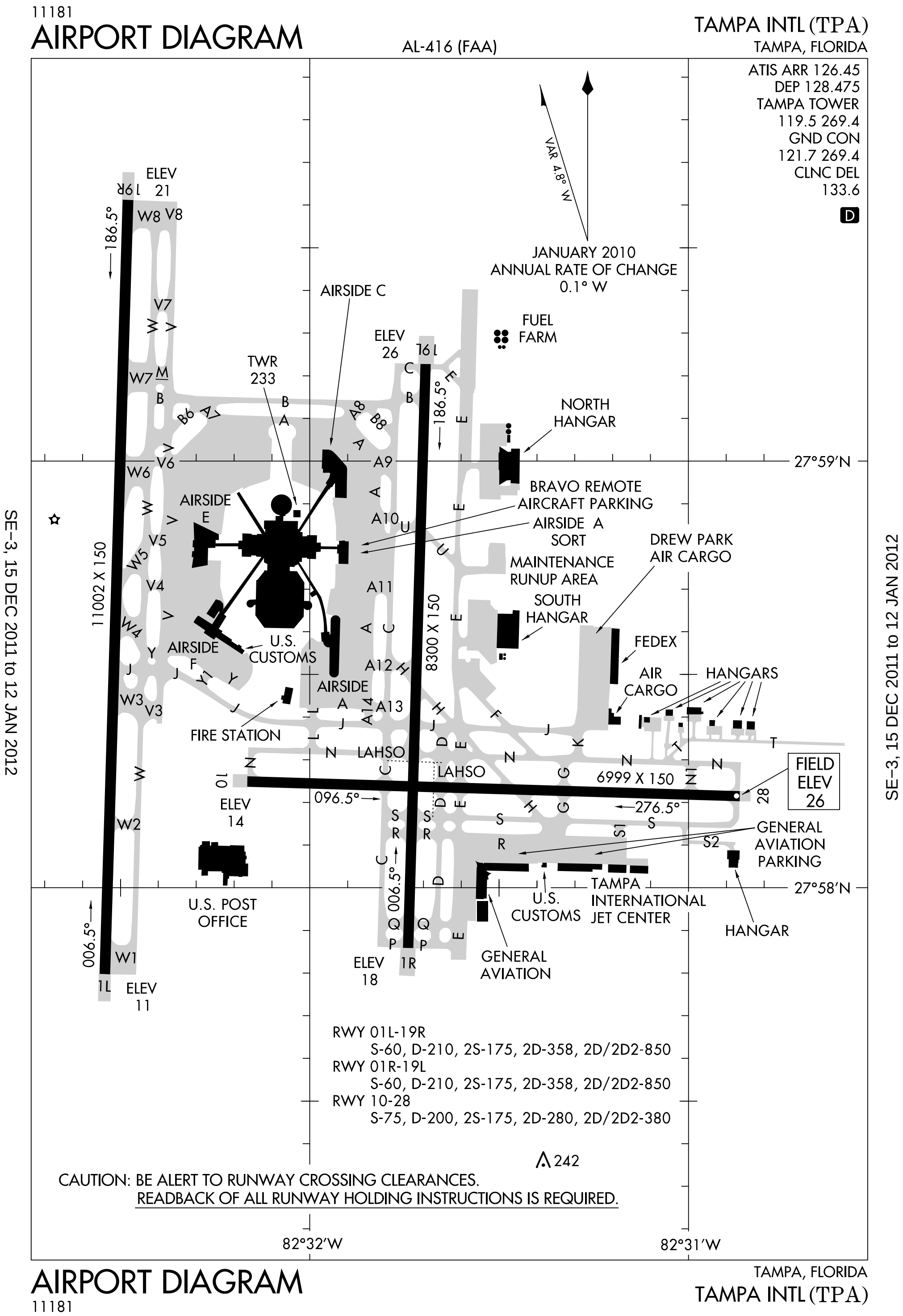
AIRCRAFT PARKED ON AIRSIDE 2 CENTERLINE WEST OF TAXIWAY G1 AND/OR SOUTH OF TAXIWAY J3 BETWEEN 2200 & 0700.

GROUND OPERATIONS OF AIRCRAFT WITH WINGSPAN GREATER THAT 213 FT MUST USE TAXIWAYS WEST OF RUNWAY 18L/36R EXCEPT NORTH OF TAXIWAY A WHICH IS RESTRICTED TO WINGSPAN LESS THAT 213 FT.

USE CAUTION IN VICINITY OF TAXIWAY “A” ALONG WEST RAMP.

UNLESS ADV BY AUTOMATIC TERMINAL INFORMATION SERVICE, DEP FLIGHTS ON INITIAL CONTACT WITH GROUND CONTROL: AIRCRAFT ON WEST RAMP, AIRSIDE 1 & 3 (GATES 1−59) USE GROUND CONTROL 121.8. AIRCRAFT AT AIRSIDE 2 & 4 (GATES 60 AND HIGHER), USE GROUND CONTROL 126.4.

Tampa, Florida
Tampa International
ICAO Identifier KTPA



Tampa, FL
Tampa Intl
ICAO Identifier KTPA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 27−58−31.70N / 82−31−59.70W
2.2.2 From City: 6 Miles W Of Tampa, FL
2.2.3 Elevation: 26 ft
2.2.5 Magnetic variation: 5W (2010)
2.2.6 Airport Contact: Ed Cooley
PO BOX 22287
Tampa, FL 33622
(813−870−8700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Trees (26 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 301 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 92
2.12.3 Dimensions: 6999 ft x 150 ft
2.12.5 Coordinates: 27−58−14.99N / 82−32−00.00W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 20 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 272
2.12.3 Dimensions: 6999 ft x 150 ft
2.12.5 Coordinates: 27−58−12.89N / 82−30−51.89W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 2
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.5 Coordinates: 27−57−51.52N / 82−31−44.37W
2.12.6 Threshold elevation: 18 ft
2.12.6 Touchdown zone elevation: 20 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 182
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.5 Coordinates: 27−59−13.66N / 82−31−41.57W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 2
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.5 Coordinates: 27−57−47.86N / 82−32−32.48W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 11 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 182
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.5 Coordinates: 27−59−36.74N / 82−32−28.78W
2.12.6 Threshold elevation: 21 ft
2.12.6 Touchdown zone elevation: 21 ft

AD 2.13 Declared distances
2.13.1 Designation: 10
2.13.2 Takeoff run available: 6999
2.13.3 Takeoff distance available: 6999
2.13.4 Accelerate−stop distance available: 6999
2.13.5 Landing distance available: 6999

2.13.1 Designation: 28
2.13.2 Takeoff run available: 6999
2.13.3 Takeoff distance available: 6999
2.13.4 Accelerate−stop distance available: 6500
2.13.5 Landing distance available: 6500

2.13.1 Designation: 01R

2.13.2 Takeoff run available: 8300
2.13.3 Takeoff distance available: 8300
2.13.4 Accelerate−stop distance available: 8300
2.13.5 Landing distance available: 8300

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 8300
2.13.3 Takeoff distance available: 8300
2.13.4 Accelerate−stop distance available: 8300
2.13.5 Landing distance available: 8300

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 11002
2.13.3 Takeoff distance available: 11002
2.13.4 Accelerate−stop distance available: 10800
2.13.5 Landing distance available: 10800

2.13.1 Designation: 19R
2.13.2 Takeoff run available: 11002
2.13.3 Takeoff distance available: 11002
2.13.4 Accelerate−stop distance available: 11002
2.13.5 Landing distance available: 11002

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 118.15 MHz

2.18.1 Service designation: FINAL−CTL IC
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 118.8 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 119.05 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 119.65 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.9 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.35 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 126.45 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 128.475 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: GND/P LCL/P
2.18.3 Service designation: 269.4 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 290.3 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 285.625 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 353.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 316.05 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 353.75 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27−59−00.00N / 82−31−37.46W
2.19.6 Site elevation: 23 ft

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27−57−40.97N / 82−31−44.73W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27−59−40.38N / 82−31−40.66W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27−59−23.66N / 82−31−41.23W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 28−05−00.00N / 82−31−30.91W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 5W
2.19.2 ILS identification: TWJ
2.19.5 Coordinates: 27−59−22.99N / 82−31−38.43W
2.19.6 Site elevation: 36 ft

2.19.1 ILS type: Localizer for runway 01R. Magnetic variation: 5W
2.19.2 ILS identification: TWJ
2.19.5 Coordinates: 27−59−23.93N / 82−31−41.22W
2.19.6 Site elevation: 26 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27−59−44.79N / 82−32−28.51W
2.19.6 Site elevation: 21 ft

2.19.1 ILS type: Inner Marker for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27−57−39.62N / 82−32−32.76W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27−57−15.71N / 82−32−33.57W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP

2.19.5 Coordinates: 27−57−58.24N / 82−32−36.59W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27−51−40.26N / 82−32−44.87W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Localizer for runway 19R. Magnetic variation: 5W
2.19.2 ILS identification: JRT
2.19.5 Coordinates: 27−57−38.21N / 82−32−32.81W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Glide Slope for runway 19R. Magnetic variation: 5W
2.19.2 ILS identification: JRT
2.19.5 Coordinates: 27−59−26.45N / 82−32−33.59W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: Middle Marker for runway 19R. Magnetic variation: 5W
2.19.2 ILS identification: JRT
2.19.5 Coordinates: 28−00−00.00N / 82−32−27.94W
2.19.6 Site elevation: 21 ft

2.19.1 ILS type: DME for runway 19R. Magnetic variation: 5W
2.19.2 ILS identification: JRT
2.19.5 Coordinates: 27−57−38.34N / 82−32−30.27W
2.19.6 Site elevation: 12 ft

General Remarks:

RUNWAY 19L IS NOISE SENSITIVE TO TURBOJET DEPARTURES. RUNWAY 01R IS NOISE SENSITIVE TO TURBOJET ARRIVALS. PUBLISHED NOISE ABATEMENT PROCEDURES IN EFFECT.

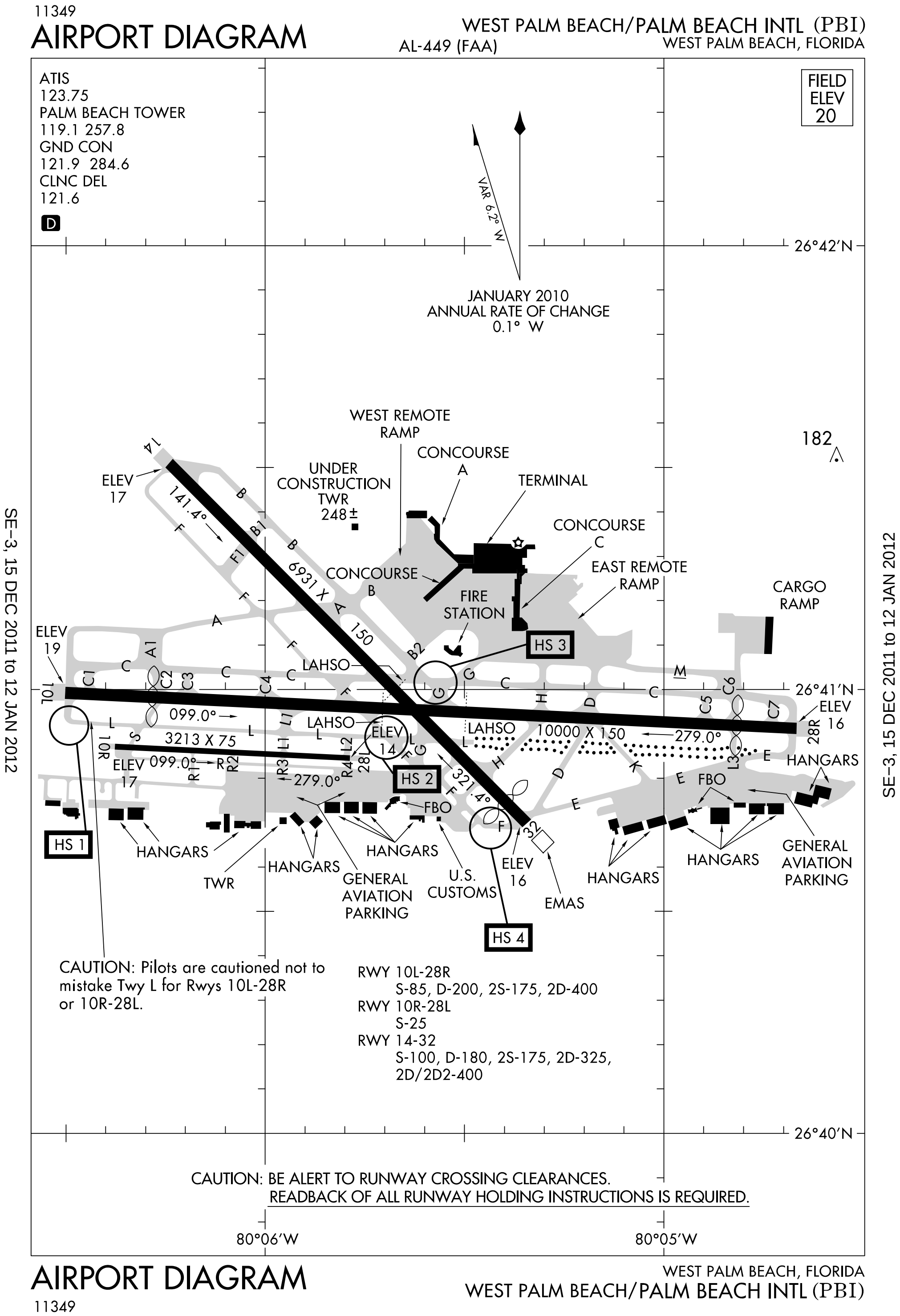
ONLY AIRCRAFT WITH PRIOR PERMISSION MAY USE TERMINAL APRON; ALL OTHERS USE GA APRON.

BIRD ACTIVITY ON AND IN VICINITY OF AIRPORT.

TAXIWAY RSTRS: AIRPLANE DESIGN GRP V OR LGR − TAXIWAY N WEST OF TAXIWAY L UNAVAILABLE. NORTH 1500 FT TAXIWAY E ALSO UNAVAILABLE FOR WINGSPAN GREATER THAN 171 FT UNLESS PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS.

TAXIWAY RSTRS: GRP IV AIRCRAFT WITH WINGSPAN GREATER THAN 117 FT −− TAXIWAY LANE E SOUTH OF TAXIWAY S, AND TAXIWAY R EAST OF TAXIWAY D ARE NON−MOVEMENT AREAS AND UNAVAILABLE WO PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS.

West Palm Beach, Florida
Palm Beach International
ICAO Identifier KPBI



West Palm Beach, FL
Palm Beach Intl
ICAO Identifier KPBI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26−40−59.40N / 80−05−44.10W
2.2.2 From City: 3 Miles W Of West Palm Beach, FL
2.2.3 Elevation: 20 ft
2.2.5 Magnetic variation: 6W (2010)
2.2.6 Airport Contact: Bruce V Pelly
BLDG 846−PALM BEACH INTL
West Palm Beach, FL 33406
(561−471−7412)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 4/29/2005

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Trees (84 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 150 ft from Centerline

2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Road (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 10L
2.12.2 True Bearing: 93
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 26−40−59.55N / 80−06−30.13W
2.12.6 Threshold elevation: 19 ft
2.12.6 Touchdown zone elevation: 20 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 273
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 26−40−54.74N / 80−04−40.01W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 18 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 93
2.12.3 Dimensions: 3213 ft x 75 ft
2.12.5 Coordinates: 26−40−52.28N / 80−06−22.64W
2.12.6 Threshold elevation: 17 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 273
2.12.3 Dimensions: 3213 ft x 75 ft
2.12.5 Coordinates: 26−40−50.74N / 80−05−47.26W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 6931 ft x 150 ft
2.12.5 Coordinates: 26−41−30.60N / 80−06−14.48W
2.12.6 Threshold elevation: 17 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 6931 ft x 150 ft
2.12.5 Coordinates: 26−40−41.91N / 80−05−20.62W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 16 ft

AD 2.13 Declared distances
2.13.1 Designation: 10L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 8800

2.13.1 Designation: 28R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 9187

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 3213
2.13.3 Takeoff distance available: 3213
2.13.4 Accelerate−stop distance available: 3213
2.13.5 Landing distance available: 3213

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 3213
2.13.3 Takeoff distance available: 3213
2.13.4 Accelerate−stop distance available: 3213
2.13.5 Landing distance available: 3213

2.13.1 Designation: 14
2.13.2 Takeoff run available: 6931
2.13.3 Takeoff distance available: 6931
2.13.4 Accelerate−stop distance available: 5999
2.13.5 Landing distance available: 5999

2.13.1 Designation: 32
2.13.2 Takeoff run available: 6931
2.13.3 Takeoff distance available: 6931
2.13.4 Accelerate−stop distance available: 6931
2.13.5 Landing distance available: 6513

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 28R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/S
2.18.3 Service designation: 118.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 123.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 124.6 MHz

2.18.1 Service designation: FINAL APCH
2.18.3 Service designation: 125 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: CLASS C /S
2.18.3 Service designation: 127.35 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 317.4 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 343.6 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 384.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 28R.
Magnetic variation: 6W
2.19.2 ILS identification: PWB
2.19.5 Coordinates: 26-40-59.91N / 80-06-38.53W
2.19.6 Site elevation: 18 ft

2.19.1 ILS type: Glide Slope for runway 28R.
Magnetic variation: 6W
2.19.2 ILS identification: PWB
2.19.5 Coordinates: 26-40-51.94N / 80-05-00.00W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: Outer Marker for runway 10L.
Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−41−15.72N / 80−12−36.74W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: Glide Slope for runway 10L.
Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−40−55.98N / 80−06−00.00W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: Localizer for runway 10L.
Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−40−54.27N / 80−04−28.92W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Middle Marker for runway 10L.
Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−41−00.00N / 80−06−56.66W
2.19.6 Site elevation: 18 ft

General Remarks:

MIGRATORY BIRDS ON AND IN THE VICINITY OF AIRPORT.

NOISE ABATEMENT PROCEDURES IN EFFECTLTIENGINE FLIGHT TRAINING PROHIBITED SS TO SR SUN AND HOLIDAY; STRICT ENVIRONMENTAL OPERATING STAGE 2 AIRCRAFT 0300-1200Z CALL NOISE ABATEMENT OFFICER 561-471-7467.

ULTRALIGHT ACTIVITY IN THE VICINITY OF AIRPORT.

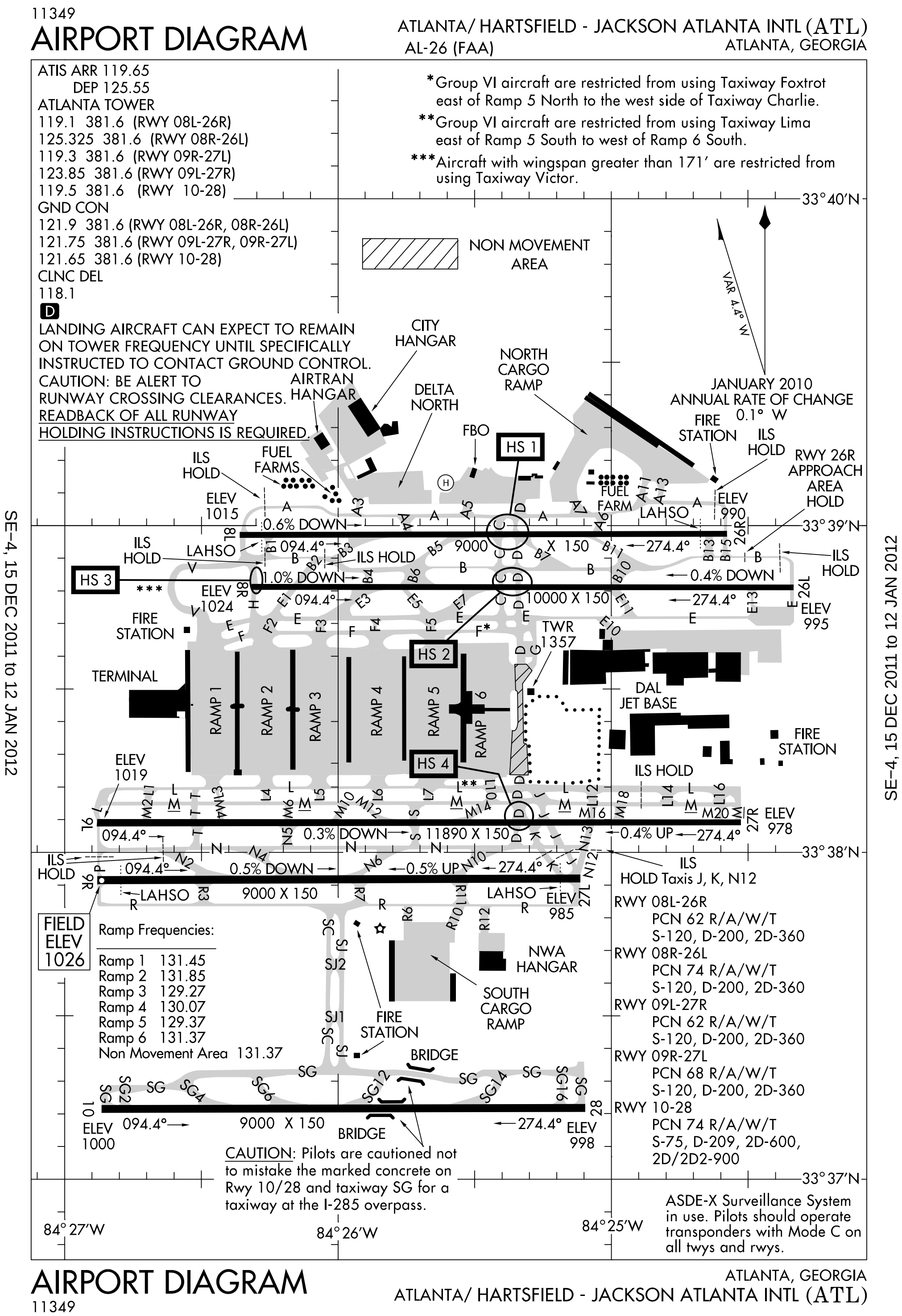
PORTIONS OF TAXIWAY ’F’ S OF TAXIWAY ’G’ TO APPROACH END RUNWAY 32 NOT VISIBLE FROM ATCT DUE TO BUILDINGS & PARKED AIRCRAFT.

BE ALERT; RUNWAYS 28L & 28R THRESHOLDS STAGGERED BY 5400 FT.

RUNWAY 10R/28L NON-AIR CARRIER AIRCRAFT ONLY.

BE ALERT: TAXIWAY L IS LOCATED BETWEEN RUNWAYS 10L/28R & 10R/28L. TAXIWAY L IS WIDER AND LONGER THAN RUNWAY 10R/28L - DO NOT CONFUSE TAXIWAY L FOR RUNWAY. AIRCRAFT WITH WINGSPAN OF 118 FT OR GREATER IS PROHIBITED ON TAXIWAY L.

Atlanta, Georgia
Hartsfield−Jackson Atlanta International
ICAO Identifier KATL



Atlanta, GA
Hartsfield - Jackson Atlanta Intl
ICAO Identifier KATL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33−38−12.19N / 84−25−41.04W
2.2.2 From City: 7 Miles S Of Atlanta, GA
2.2.3 Elevation: 1026 ft
2.2.5 Magnetic variation: 2W (1985)
2.2.6 Airport Contact: Louis E. Miller
PO BOX 20509 AIRPORT OPNS
Atlanta, GA 30320
(404−530−6600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Other (108 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 09R
2.10.1.b Type of obstacle: Tower (88 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1000 ft from Centerline

2.10.1.a. Runway designation: 08L
2.10.1.b Type of obstacle: Sign (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 26R
2.10.1.b Type of obstacle: Ant (53 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 800 ft from Centerline

2.10.1.a. Runway designation: 08R
2.10.1.b Type of obstacle: Rr (64 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 26L
2.10.1.b Type of obstacle: Vent (13 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 560 ft from Centerline

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Sign (51 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 770 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Tower (136 ft). Lighted
2.10.1.c Location of obstacle: 410 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: H1
2.12.3 Dimensions: 52 ft x 52 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 11890 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33−38−00.00N / 84−26−52.68W
2.12.6 Threshold elevation: 1019 ft
2.12.6 Touchdown zone elevation: 1019 ft
2.12.7 Slope: 0.3DOWN

2.12.1 Designation: 27R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 11890 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33−38−00.00N / 84−24−32.07W
2.12.6 Threshold elevation: 978 ft
2.12.6 Touchdown zone elevation: 985 ft

2.12.7 Slope: 0.4UP

2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 68 R/A/W/T
2.12.5 Coordinates: 33−37−54.53N / 84−26−52.68W
2.12.6 Threshold elevation: 1026 ft
2.12.6 Touchdown zone elevation: 1026 ft
2.12.7 Slope: 0.4DOWN

2.12.1 Designation: 27L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 68 R/A/W/T
2.12.5 Coordinates: 33−37−54.56N / 84−25−00.00W
2.12.6 Threshold elevation: 985 ft
2.12.6 Touchdown zone elevation: 999 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33−38−58.32N / 84−26−20.49W
2.12.6 Threshold elevation: 1015 ft
2.12.6 Touchdown zone elevation: 1015 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33−38−58.35N / 84−24−34.03W
2.12.6 Threshold elevation: 990 ft
2.12.6 Touchdown zone elevation: 990 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−38−48.43N / 84−26−18.11W
2.12.6 Threshold elevation: 1024 ft
2.12.6 Touchdown zone elevation: 1024 ft
2.12.7 Slope: 1DOWN

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−38−48.46N / 84−24−19.83W
2.12.6 Threshold elevation: 995 ft
2.12.6 Touchdown zone elevation: 995 ft
2.12.7 Slope: 0.4DOWN

2.12.1 Designation: 10
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−37−12.98N / 84−26−52.36W
2.12.6 Threshold elevation: 1000 ft
2.12.6 Touchdown zone elevation: 1000 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−37−13.02N / 84−25−00.00W
2.12.6 Threshold elevation: 998 ft
2.12.6 Touchdown zone elevation: 998 ft

AD 2.13 Declared distances
2.13.1 Designation: 09L
2.13.2 Takeoff run available: 11890
2.13.3 Takeoff distance available: 11890
2.13.4 Accelerate−stop distance available: 11730
2.13.5 Landing distance available: 11730

2.13.1 Designation: 27R
2.13.2 Takeoff run available: 11890
2.13.3 Takeoff distance available: 11890
2.13.4 Accelerate−stop distance available: 11690
2.13.5 Landing distance available: 11690

2.13.1 Designation: 09R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 27L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 8865

2.13.5 Landing distance available: 8865

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 8800
2.13.5 Landing distance available: 8800

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 8800
2.13.5 Landing distance available: 8800

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 09R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27L
2.14.2 Approach lighting system: F2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on right

2.14.1 Designation: 08L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 28
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 119.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.55 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG

2.18.3 Service designation: 243 MHz
2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 125.325 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 123.85 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: LCL/P GND/P
2.18.3 Service designation: 381.6 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 126.9 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 132.55 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 133.425 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 135.375 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 09L. Magnetic variation: 2W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33−37−57.07N / 84−32−34.28W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 09L. Magnetic variation: 2W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33−38−00.00N / 84−24−24.40W
2.19.6 Site elevation: 968 ft

2.19.1 ILS type: Glide Slope for runway 09L. Magnetic variation: 2W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33−38−00.00N / 84−26−39.67W
2.19.6 Site elevation: 1017 ft

2.19.1 ILS type: Middle Marker for runway 09L. Magnetic variation: 2W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33−38−00.00N / 84−27−20.50W
2.19.6 Site elevation: 987 ft

2.19.1 ILS type: DME for runway 09L. Magnetic variation: 2W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33−38−00.00N / 84−24−44.38W
2.19.6 Site elevation: 978 ft

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 2W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33−38−00.00N / 84−23−54.35W
2.19.6 Site elevation: 954 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 2W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33−38−00.00N / 84−18−36.44W
2.19.6 Site elevation: 905 ft

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 2W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33−38−00.00N / 84−27−00.00W
2.19.6 Site elevation: 1020 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 2W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33−38−00.00N / 84−24−44.13W
2.19.6 Site elevation: 978 ft

2.19.1 ILS type: DME for runway 09R. Magnetic

variation: 2W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33−37−56.63N /
84−24−54.23W
2.19.6 Site elevation: 987 ft

2.19.1 ILS type: Outer Marker for runway 09R.
Magnetic variation: 2W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33−37−57.07N /
84−32−34.28W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 09R.
Magnetic variation: 2W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33−37−54.52N /
84−27−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 09R.
Magnetic variation: 2W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33−37−54.57N /
84−24−52.61W
2.19.6 Site elevation: 976 ft

2.19.1 ILS type: Glide Slope for runway 09R.
Magnetic variation: 2W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33−37−58.49N /
84−26−39.06W
2.19.6 Site elevation: 1017 ft

2.19.1 ILS type: Middle Marker for runway 09R.
Magnetic variation: 2W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33−37−55.50N /
84−27−19.55W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 27L.
Magnetic variation: 4W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33−37−54.53N /
84−27−00.00W
2.19.6 Site elevation: 1022 ft

2.19.1 ILS type: Glide Slope for runway 27L.
Magnetic variation: 4W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33−37−58.52N /
84−25−16.60W
2.19.6 Site elevation: 986 ft

2.19.1 ILS type: Outer Marker for runway 27L.
Magnetic variation: 4W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33−38−00.00N /
84−18−36.44W
2.19.6 Site elevation: 905 ft

2.19.1 ILS type: Middle Marker for runway 27L.
Magnetic variation: 4W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33−37−53.22N /
84−24−32.44W
2.19.6 Site elevation: 940 ft

2.19.1 ILS type: Inner Marker for runway 27L.
Magnetic variation: 4W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33−37−54.59N /
84−24−52.99W
2.19.6 Site elevation: 984 ft

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 4W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33−37−52.64N /
84−27−00.00W
2.19.6 Site elevation: 1025 ft

2.19.1 ILS type: Localizer for runway 08L.
Magnetic variation: 4W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33−38−58.35N /
84−24−23.39W
2.19.6 Site elevation: 985 ft

2.19.1 ILS type: Outer Marker for runway 08L.
Magnetic variation: 4W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33−38−48.52N /
84−32−31.60W
2.19.6 Site elevation: 956 ft
2.19.1 ILS type: Inner Marker for runway 08L.
Magnetic variation: 4W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33−38−58.32N /
84−26−30.52W
2.19.6 Site elevation: 985 ft

2.19.1 ILS type: DME for runway 08L. Magnetic variation: 4W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33−39−00.00N / 84−24−24.70W
2.19.6 Site elevation: 993 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 4W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33−39−00.00N / 84−26−00.00W
2.19.6 Site elevation: 1002 ft

2.19.1 ILS type: Middle Marker for runway 08L. Magnetic variation: 4W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33−38−58.31N / 84−26−47.75W
2.19.6 Site elevation: 1024 ft

2.19.1 ILS type: Glide Slope for runway 26R. Magnetic variation: 4W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33−39−00.00N / 84−24−47.63W
2.19.6 Site elevation: 979 ft

2.19.1 ILS type: Outer Marker for runway 26R. Magnetic variation: 4W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33−38−43.61N / 84−18−39.88W
2.19.6 Site elevation: 834 ft

2.19.1 ILS type: Inner Marker for runway 26R. Magnetic variation: 4W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33−38−58.36N / 84−24−22.79W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 26R. Magnetic variation: 4W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33−39−00.00N / 84−26−27.65W
2.19.6 Site elevation: 1016 ft

2.19.1 ILS type: Middle Marker for runway 26R. Magnetic variation: 4W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33−38−56.36N / 84−23−56.86W
2.19.6 Site elevation: 945 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 4W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33−38−58.32N / 84−26−28.21W
2.19.6 Site elevation: 1012 ft

2.19.1 ILS type: Localizer for runway 08R. Magnetic variation: 2W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−48.46N / 84−24−00.00W
2.19.6 Site elevation: 987 ft

2.19.1 ILS type: DME for runway 08R. Magnetic variation: 2W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33-38-45.79N / 84-24-00.00W
2.19.6 Site elevation: 990 ft

2.19.1 ILS type: Outer Marker for runway 08R. Magnetic variation: 2W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−48.52N / 84−32−31.60W
2.19.6 Site elevation: 956 ft

2.19.1 ILS type: Middle Marker for runway 08R. Magnetic variation: 2W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−49.70N / 84−26−48.56W
2.19.6 Site elevation: 1008 ft

2.19.1 ILS type: Inner Marker for runway 08R. Magnetic variation: 2W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−48.43N / 84−26−28.57W
2.19.6 Site elevation: 1033 ft

2.19.1 ILS type: Glide Slope for runway 08R. Magnetic variation: 2W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−52.40N /

84−26−00.00W
2.19.6 Site elevation: 1006 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 2W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33-38-49.06N / 84-26-30.15W
2.19.6 Site elevation: 1004 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 2W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−43.61N / 84−18−39.88W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 2W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−52.41N / 84−24−32.84W
2.19.6 Site elevation: 988 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 2W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33-38-48.42N / 84-26-30.15W
2.19.6 Site elevation: 1004 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 2W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−48.55N / 84−23−43.60W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 4W
2.19.2 ILS identification: OMO
2.19.5 Coordinates: 33−37−13.02N / 84−24−53.99W
2.19.6 Site elevation: 970 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 4W
2.19.2 ILS identification: OMO
2.19.5 Coordinates: 33−37−12.45N / 84−24−53.96W
2.19.6 Site elevation: 970 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 4W
2.19.2 ILS identification: OMO
2.19.5 Coordinates: 33−37−00.00N / 84−26−38.76W
2.19.6 Site elevation: 985 ft

2.19.1 ILS type: Inner Marker for runway 10. Magnetic variation: 4W
2.19.2 ILS identification: OMO
2.19.5 Coordinates: 33−37−12.98N / 84−27−00.00W
2.19.6 Site elevation: 993 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 4W
2.19.2 ILS identification: PKU
2.19.5 Coordinates: 33−37−12.41N / 84−27−00.00W
2.19.6 Site elevation: 970 ft

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 4W
2.19.2 ILS identification: PKU
2.19.5 Coordinates: 33−37−12.97N / 84−27−00.00W
2.19.6 Site elevation: 970 ft

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 4W
2.19.2 ILS identification: PKU
2.19.5 Coordinates: 33−37−17.07N / 84−25−19.84W
2.19.6 Site elevation: 990 ft

2.19.1 ILS type: Inner Marker for runway 28. Magnetic variation: 4W
2.19.2 ILS identification: PKU
2.19.5 Coordinates: 33−37−13.02N / 84−24−55.77W
2.19.6 Site elevation: 974 ft

General Remarks:

BE ALERT TO RUNWAY CROSSING CLEARANCES. READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

PREFERENTIAL RUNWAY USE IN EFFECT, EXPECT TO USE RUNWAYS 08R/26L, 09L/27R FOR DEPS; RUNWAYS 08L/26R, 09R/27L ARE USED PRIMARILY FOR ARRIVALS.

RUNUPS ARE PERMITTED AT VARIOUS SITES; COORDINATE USE OF CITY FACILITIES, MOVEMENT AREAS, ALLOWABLE NON−MOVEMENT AREAS WITH DEPT OF AVIATION OPERATIONS, 404−530−6620; AND COORDINATE THE USE OF THE AIRLINES' FACILITIES WITH THEM.

NOISE & OPERATIONS MONITORING SYSTEM (NOMS) PROGRAM IN EFFECT; CALL THE ATLANTA DEPT OF AVIATION 770−43−NOISE OR 770−436−6473 FOR MORE INFORMATION.

ALL RUNWAYS, TOUCH AND GO OPERATIONS, LOW APPROACHES, AND PRACTICE INSTRUMENT APPROACHES NOT PERMITTED.

GROUP VI AIRCRAFT(LOCKHEED GALAXY C−5; ANTONOV AN−124 & AN−125) WITH A WINGSPAN OF GREATER THAN 214 FT ARE RESTRICTED FROM USING TAXIWAY 'L' EAST OF RAMP 5 SOUTH TO THE WEST SIDE OF RAMP 6 SOUTH, AND TAXIWAY 'F' EAST OF RAMP 5 NORTH AND WEST OF TAXIWAY DIXIE.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FROM USING TAXIWAY V.

RUNWAY 9L DEPARTURES CAN EXPECT INTERSECTION DEPARTURE FROM M2 WITH RUNWAY REMAINING 10,940 FT.

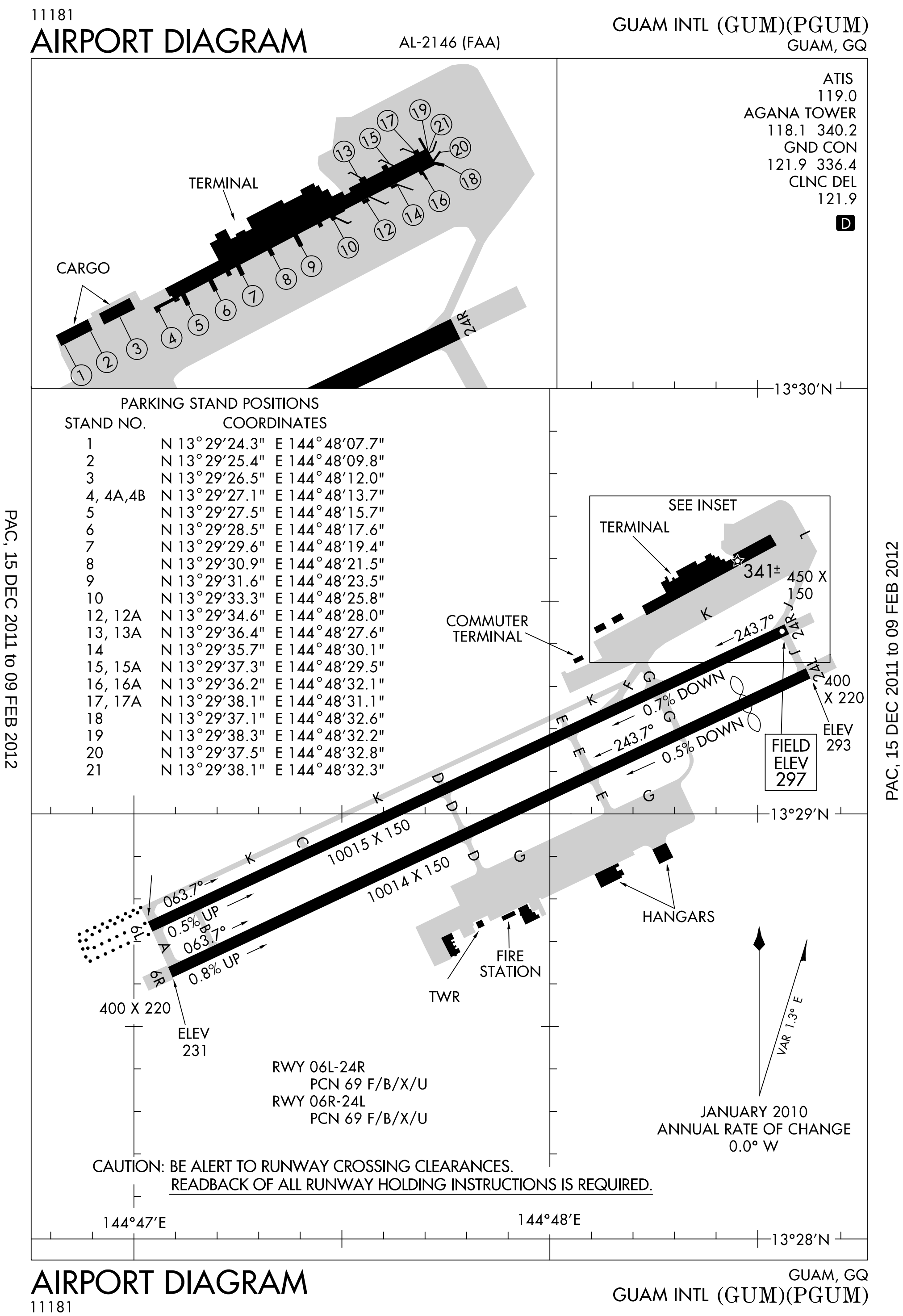
ALL AIRCRAFT WITH WINGSPANS GREATER THAN 199 FT ARE REQUIRED TO USE TAXI SPEEDS NOT GREATER THAN 15 MPH AT ALL TIMES ON ALL TAXIING AIRFIELD PAVEMENT SURFACES.

WHEN AIRCRAFT WITH WINGSPANS GREATER THAN 214 FT ARE PRESENT ON THE FIELD, ALL OTHER AIRCRAFT MUST ADHERE TO THE TAXIWAY CENTERLINE ON TAXIWAYS L AND M, TAXIWAYS E AND F, AND TAXIWAYS STRATOCUMULUS AND SJ BETWEEN SNOW GRAINS AND R DUE TO SEPARATION BETWEEN THE PARALLEL TAXIWAYS.

AIRCRAFT WITH WINGSPANS GREATER THAN 214 FT SHOULD EXPECT TO USE RUNWAYS 09L/27R, 9R/27L, AND 10/28.

TWO AIRCRAFT WITH WINGSPANS GREATER THAN 214 FT MAY NOT TAXI SIMULTANEOUSLY ON ADJACENT PARALLEL TAXIWAYS (L/M, E/F, AND SC/SJ BETWEEN SNOW GRAINS AND R) WITHOUT GUIDANCE FROM THE ATL TOWER.

Agana, Guam
Guam International
ICAO Identifier PGUM



Agana, GU
Guam Intl
ICAO Identifier PGUM

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 13−29−00.00N / 144−47−49.81E
2.2.2 From City: 3 Miles NE Of Agana, GU
2.2.3 Elevation: 297 ft
2.2.5 Magnetic variation: 2E (2000)
2.2.6 Airport Contact: Mary C. Torres
P.O. BOX 8770
Tamuning, GU 96931
(671−646−0300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 4/1/1995

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 06L
2.10.1.b Type of obstacle: Tower (420 ft). Marked
2.10.1.c Location of obstacle: 1500 ft from Centerline

2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Tower (420 ft). Marked
2.10.1.c Location of obstacle: 1500 ft from Centerline

2.10.1.a. Runway designation: 24L
2.10.1.b Type of obstacle: Hill (220 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1200 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing: 65
2.12.3 Dimensions: 10015 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−28−44.07N / 144−47−00.00E
2.12.6 Threshold elevation: 239 ft
2.12.6 Touchdown zone elevation: 256 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 245
2.12.3 Dimensions: 10015 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−29−26.12N / 144−48−34.29E
2.12.6 Threshold elevation: 297 ft
2.12.6 Touchdown zone elevation: 297 ft

2.12.1 Designation: 06R
2.12.2 True Bearing: 65
2.12.3 Dimensions: 10014 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−28−37.78N / 144−47−00.00E
2.12.6 Threshold elevation: 231 ft
2.12.6 Touchdown zone elevation: 258 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 245
2.12.3 Dimensions: 10014 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−29−19.82N / 144−48−37.29E
2.12.6 Threshold elevation: 293 ft
2.12.6 Touchdown zone elevation: 289 ft

AD 2.13 Declared distances
2.13.1 Designation: 06L
2.13.2 Takeoff run available: 10015
2.13.3 Takeoff distance available: 10015
2.13.4 Accelerate-stop distance available: 10015
2.13.5 Landing distance available: 10015

2.13.1 Designation: 24R
2.13.2 Takeoff run available: 10015
2.13.3 Takeoff distance available: 10015
2.13.4 Accelerate-stop distance available: 10015
2.13.5 Landing distance available: 10015

2.13.1 Designation: 06R
2.13.2 Takeoff run available: 10014
2.13.3 Takeoff distance available: 10014

2.13.4 Accelerate-stop distance available: 10014
2.13.5 Landing distance available: 10014

2.13.1 Designation: 24L
2.13.2 Takeoff run available: 10014
2.13.3 Takeoff distance available: 10014
2.13.4 Accelerate-stop distance available: 10014
2.13.5 Landing distance available: 9014

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 06R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.1 Designation: 24L
2.14.4 Visual approach slope indicator system: PVASI on left

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13−29−30.59N / 144−48−44.07E
2.19.6 Site elevation: 308 ft

2.19.1 ILS type: Glide Slope for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13−28−51.82N / 144−47−00.00E
2.19.6 Site elevation: 246 ft

2.19.1 ILS type: Outer Marker for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13−26−41.70N / 144−42−29.30E
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13−28−33.30N / 144−46−31.80E
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13−29−34.10N / 144−48−42.94E
2.19.6 Site elevation: 317 ft

2.19.1 ILS type: Glide Slope for runway 06R. Magnetic variation: 2E
2.19.2 ILS identification: AWD
2.19.5 Coordinates: 13−28−38.00N / 144−47−15.40E
2.19.6 Site elevation: 237 ft

2.19.1 ILS type: Localizer for runway 06R. Magnetic variation: 2E
2.19.2 ILS identification: AWD
2.19.5 Coordinates: 13−29−24.23N / 144−48−46.93E
2.19.6 Site elevation: 311 ft

2.19.1 ILS type: DME for runway 06R. Magnetic variation: 2E
2.19.2 ILS identification: AWD
2.19.5 Coordinates: 13−29−21.74N / 144−48−48.12E
2.19.6 Site elevation: 316 ft

General Remarks:

1000’ OVERRUN S END & 450’ OVERRUN N END RUNWAY 6L−24R.

FOR PARKING INFORMATION ALL AIRCRAFT CONTACT RAMP CONTROL. ALL AIRCRAFT DEP TERMINAL PARKING CONTACT RAMP CONTROL FOR ENGINE START AND PUSHBACK.

TRANSIENT AIRCRAFT PROVIDE 24 HRS ADVANCE INFORMATION TO EXECUTIVE MANAGER GUAM INTL AIRPORT AUTHORITY; 1−671−646−0300/01/02 MON−FRI 0800−1700 OR FAX

1−671−646−8823.

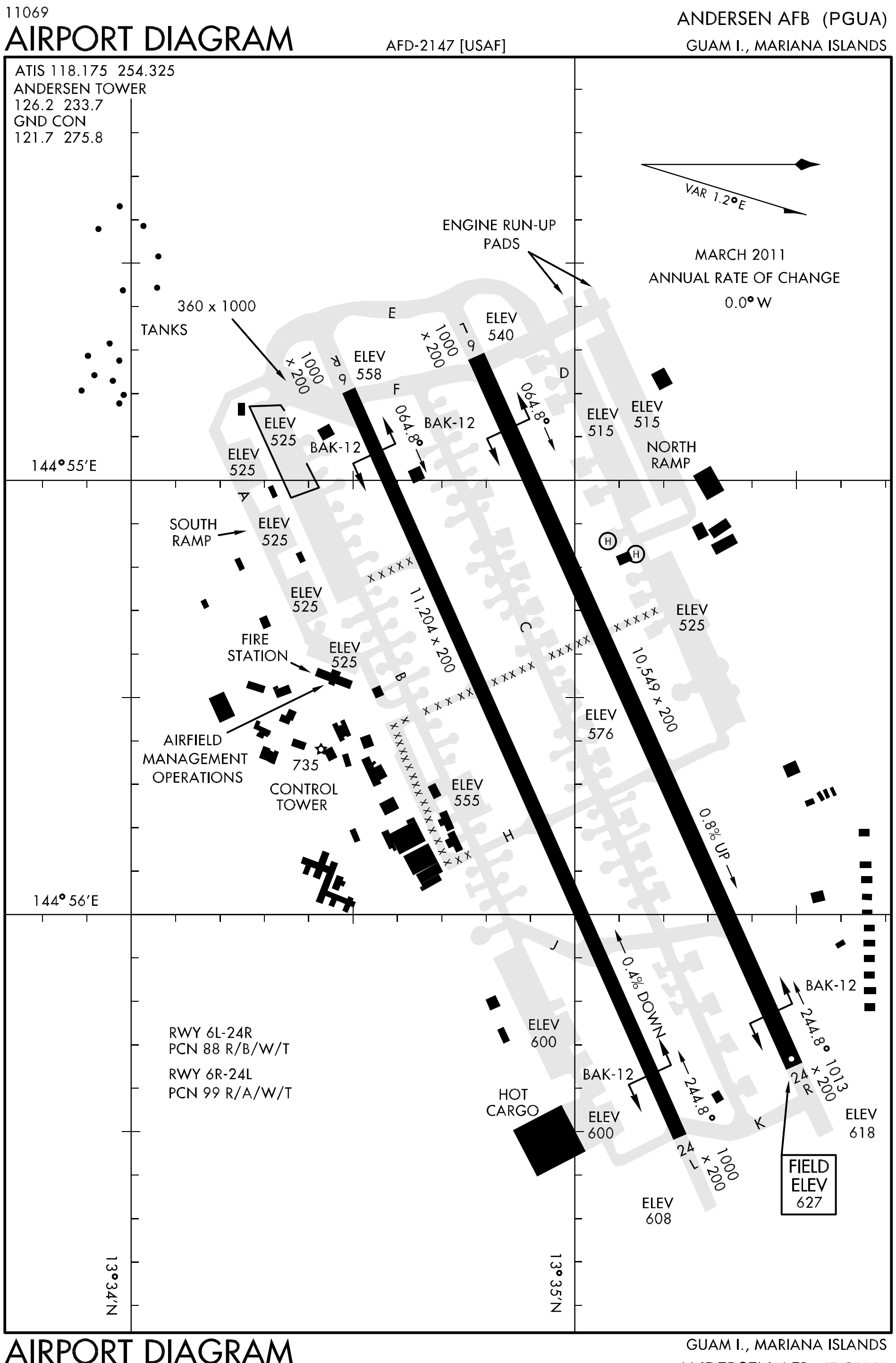
EFFECTIVE RUNWAY GRADIENT RUNWAY 06L 0.46% UP NE; RUNWAY 24R 0.70% DOWN SW; RUNWAY 06R 0.80 % UP NE; RUNWAY 24L 0.52% DOWN SW.

LIGHTED TOWER 780 FT 1.3 NAUTICAL MILE ENE OF RUNWAY 24L THRESHOLD.

RISING TERRAIN 75 FT FROM RUNWAY 24L THRESHOLD 140 FT EAST OF CENTERLINE EXTENDED +8 FT.

DEP VFR AIRCRAFT MAINT RUNWAY HEADING UNTIL PAST DEP END OF RUNWAY AND REACHING 1000 FT AGL; RIGHT PATTERN 24L/R DO NOT EXCEED 1500 FT AGL IN TRAFFIC PATTERN.

Guam Island, Guam
Andersen AFB
ICAO Identifier PGUA



Effective 15 DEC 2011 − 9 FEB 2012

Andersen,Mariana Island, GU
Andersen AFB
ICAO Identifier PGUA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 13−35−00.00N / 144−55−48.24E
2.2.2 From City: 0 Miles N Of Andersen,Mariana Island, GU
2.2.3 Elevation: 612 ft
2.2.5 Magnetic variation: 2E (1980)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: None
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: None

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Tower−L. Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 06L
2.12.3 Dimensions: 10549 ft x 200 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 13−34−49.24N / 144−54−56.24E
2.12.6 Threshold elevation: 535 ft

2.12.1 Designation: 24R
2.12.3 Dimensions: 10549 ft x 200 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 13−35−31.98N / 144−56−33.86E
2.12.6 Threshold elevation: 613 ft

2.12.1 Designation: 06R
2.12.3 Dimensions: 11204 ft x 200 ft
2.12.4 PCN: 99 R/A/W/T
2.12.5 Coordinates: 13−34−31.15N / 144−54−59.35E
2.12.6 Threshold elevation: 558 ft
2.12.6 Touchdown zone elevation: 558 ft

2.12.1 Designation: 24L
2.12.3 Dimensions: 11204 ft x 200 ft
2.12.4 PCN: 99 R/A/W/T
2.12.5 Coordinates: 13−35−16.58N / 144−56−43.01E
2.12.6 Threshold elevation: 608 ft
2.12.6 Touchdown zone elevation: 608 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06L
2.14.2 Approach lighting system: SALS: Short approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24R
2.14.2 Approach lighting system: ALSF1: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category 1 configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 06R
2.14.2 Approach lighting system: ALSF1: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category 1 configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24L
2.14.2 Approach lighting system: SALS: Short approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Mod 1300’ Length.

General Remarks:

FREQUENT RAIN SHOWERS OF SHORT DURATION, EXPECT WET RUNWAY BRAKING ACTION.

HAZARDOUS AIR TURBULENCE FINAL APPROACH RUNWAYS 24L/24R. NO VISIBILITY REFERENCE AVAILABLE ON NIGHT TAKE-OFF BEYOND END RUNWAY 6.

ARRESTING GEAR BAK−12 RUNWAYS 06L & 06R 30 MIN NOTICE REQUIRE.

AREA BETWEEN 1000’ ROLL BAR AND THU LIGHT RUNWAY 06R AND 06L UNLIGHTED. LAST 642’ PRIOR TO THU LIGHT 24R UNLIGHTED.

MAINT AVAILABLE 0100−0400 WEEKDAY ONLY; CLOSED WEEKEND & HOLIDAY.

BASE OPERATIONS V366−4188; FAX V366−6217.

TAXIWAY B AND C BETWEEN TAXIWAY J AND K CLOSED DUE TO CONSTRUCTION.

NO ARRESTING GEAR MARKERS LOCATED ON THE LEFT SIDE OF ALL APPROACH END BARRIERS.

RESTRICTED: BRAKING ACTION ON BOTH RUNWAYS MAY BE LESS THAN EXPECT DUE TO RUBBER BUILD−UP; PROBABILITY OF HYDROPLANING EXISTS.

RESTRICTED: PRIOR PERMISSION NOT REQUIRED FOR AIR MOBILITY COMMAND MSN. ALL AEROMEDICAL EVACUATION MISSIONS ARE REQUIRED TO CONTACT AMCC (DSN 366−2961, C671−366−2961) BY ANY MEANS AVAIL 3 HRS PRIOR TO ARR. ALL AIR MOBILITY COMMAND AIRCRAFT REQUIRE TO MAKE UHF CALL 30 MIN PRIOR ARR.

MISC: AIRFIELD MANAGEMENT HAS NO COMSEC STORAGE AVAILABLE FOR TRANSIENT AIRCREWS. TRANSMIT AIRCREWS CAN STORE COMSEC AT 36WG CIRCULAR POLARIZATION; AIR MOBILITY COMMAND AIRCREWS CAN STORE COMSEC AT AMCC.

MISC: ALL NON−AMC AIRCREWS INTENDING TO REMAINING OVERNIGHT MUST CHECK INTO AIRFIELD MANAGEMENT OPERATIONS AND PROVIDE POC INFORMATION UPON ARRIVAL.

MISC: BASE WX STATION PROVIDES CONTINUOUS 24-HOUR SERVICE OBSN, LIMITED WX BRIEF SUPPORT. WX OBSERVERS VIEW OBSTRUCTED BY BUILDINGS N-SSW. REMOTE BRIEF AVAILABLE CONTINUOUS 24-HOUR SERVICE FOR USN/USMC FR FWCAD PH AT DSN 315-449-8333/7950.

RESTRICTED: ALL NON−AMC AIRCRAFT CONTACT 36 WG COMMAND POST 90 MIN OUT AND AT 30 MIN OUT PRIOR TO ARR.

MISC: AIRCRAFT EXCEEDING AIRFIELD WEIGHTS MUST REQUEST WEIGHT BEARING CAPACITY WAIVER WITH 24 HR NOTICE TO AIRFIELD OPERATIONS TO PROCESS ANY APPROVALS NEEDED. IF REQUESTS ARE NOT MADE WITHIN 24 HRS EXPECT DELAYS.

RESTRICTED #1 PART A: ALL AIRCRAFT DEP PGUA ARE REQUIRED TO HAVE A BROWN TREE SNAKE INSPECTION CONDUCTED BY USDA PRIOR TO ENGINE START.

RESTRICTED #1 PART B: OUTBND AIRCRAFT MUST CONTACT 36 WG COMMAND POST DSN 366−2981 3 HR PRIOR TO DEP AND/OR 3 HR PRIOR TO ESTIMATED TIME OF DEPARTURE CHANGE.

RESTRICTED #1 PART C: CONTACT 36 WG COMMAND POST AT DSN 366−2981 TO SCHEDULE BTS INSPECTIONS. FAILURE TO RECEIVE THIS INSPECTION WILL RESULT IN UNNECESSARY DELAYS AND PROBABLE DENIAL OF DEPARTURE CLEARANCE.

SERVICE−A−GEAR: CONTACT CONTROL TOWER 30 MIN PRIOR FOR DEPARTURE END BAK12 CABLE CONFIGURATION. 30 MIN PRIOR NOTICE REQ FOR CHANGE CONFIGURATION. BAK12 HOUSING LOCATED 317’ FROM RUNWAY CENTERLINE, 217’ FROM RUNWAY EDGE, MAX HEIGHT 8’. NO ARRESTING−GEAR MARKER LOCATED ON LEFT SIDE OF ALL APPROACH END BARRIERS.

RESTRICTED: PRIOR PERMISSION REQUIRED DSN 366−4188/2260.

MISC: ATTENTION: ALL DRY ICE REQ MUST BE MADE THRU 734TH MS/ATOC DSN 315−366−3125/3137/3162 OR C671−366−3125/3137/3162. REQ MUST BE MADE AT LEAST 24 HR IN ADVANCE FOR AIRCRAFT LANDING TUE−FRI AND 72 HR IN ADVANCE FOR AIRCRAFT LANDING SAT−MON. DUR HOLIDAY, ADD 2 HR TO COORD TIME.

RESTRICTED: RESTRICTIONS TO FLIGHT OPERATIONS DUR EA BIRD WATCH CONDITION. MODERATE: NO TOUCH AND GO LANDING. RESTRICTED LOW APPROACH NO LOWER THAN 200’ OR AS DETERMINED BY SOF. SEVERE: RESTRICTED LOW APPROACH NO LOWER THAN 200’ OR AS DETERMINED BY SOF. EMERGENCY LANDING AND 36 OG/CC APPROVE DEP ONLY. PHASE I: PHASE I:1 APR − 31 JUL. PHASE II: 1 AUG − 31 AT SEA.

RESTRICTED 1 OF 2: THERE WILL BE NO OVERFLIGHT OF MARIANA CROW TERRITORIES BELOW 1,000 FT AGL FROM SEP−MAY. OVERFLIGHT BELOW 1,000 FT AGL IS ALLOWED BETWEEN JUNE AND AUG, THE CROW NON−BREEDING SEASON.

RESTRICTED 2 OF 2: CROW NESTING TERRITORIES ARE IDENT BY DEPARTMENT OF AQUATIC AND WILDLIFE RESOURCES (DAWR) AND UPDATES WILL BE PROVIDED TO 36 CES/CEV AND 36TH OSS STAFFS.

MISC: RUNWAY 06L AND 06R UNDERRUNS 1000’ AVAILABLE FOR TWY/TKOF. RUNWAY 24R UNDERRUN AVAILABLE 500’ FOR TAXI/TKOF.

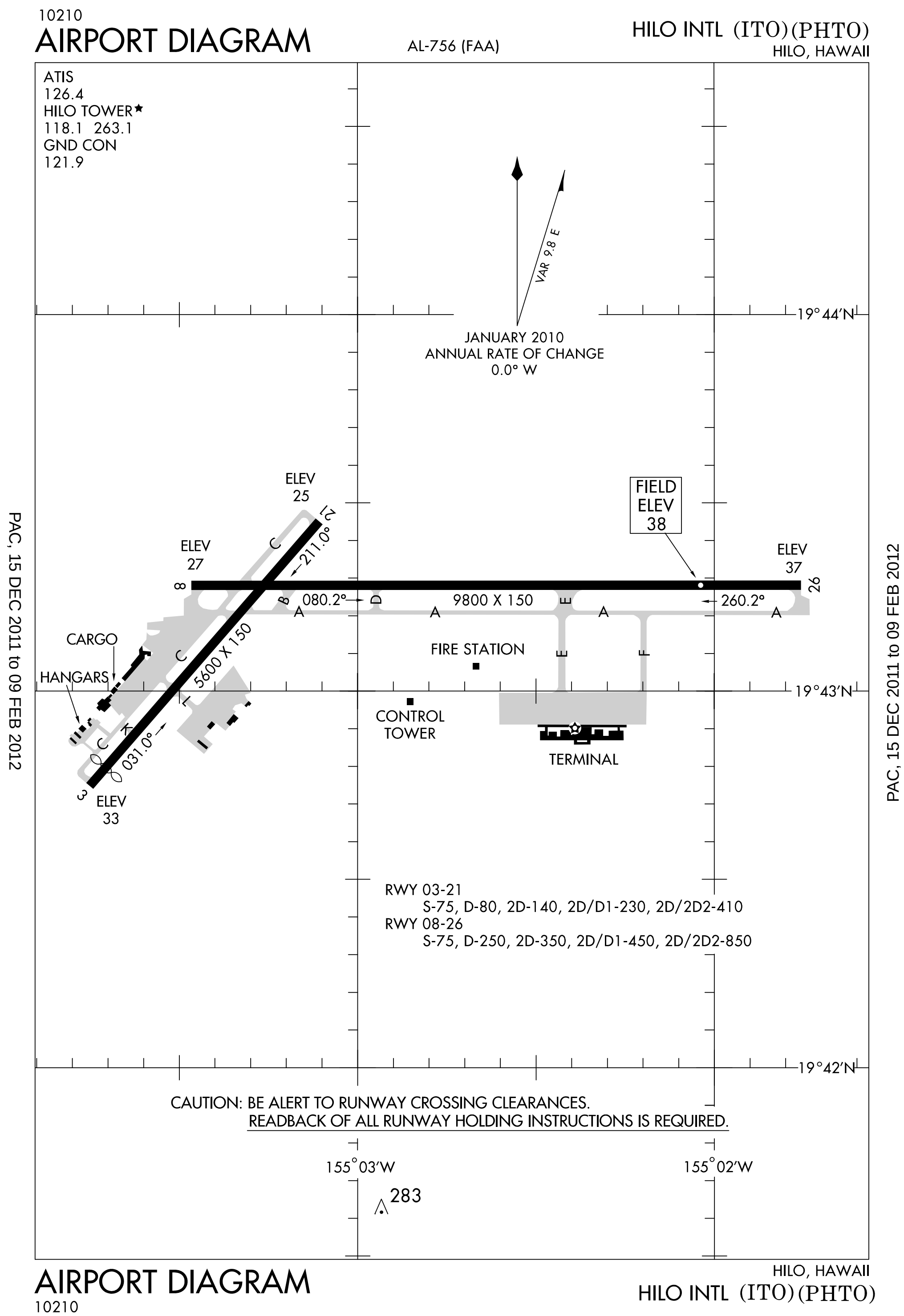
CAUTION: USE EXTREME CAUTION FOR EXTV UAS OPERATIONS IN VICINITY OF ANDERSEN AFB.

NS ABATEMENT: QUIET HR 1200-2000Z (2200-0600L) DAILY. NO AFTERBURNER, OR OVER FLIGHT OF BASE AND LOCAL POPULATED AREAS. OTHER RESTRICTIONS BY NOTAM.

CAUTION: 47’ TACAN ANTENNAE LOCATED 1,300 FT NE OF RUNWAY 24L & 1,300 FT SE OF RUNWAY 24R THRESHOLDS.

CAUTION: NONSTANDARD DSPLCD THRESHOLD MARKINGS FOR RUNWAYS 06R, 06L, AND 24R.

Hilo, Hawaii
Hilo International
ICAO Identifier PHTO



Hilo, HI
Hilo Intl
ICAO Identifier PHTO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 19−43−12.95N / 155−02−54.49W
2.2.2 From City: 2 Miles E Of Hilo, HI
2.2.3 Elevation: 38 ft
2.2.5 Magnetic variation: 11E (1985)
2.2.6 Airport Contact: Steven J. Santiago
ASSISTANT AIRPORT DISTRICT MANAGER
Hilo, HI 96720 (808−961−9300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 0700−2030 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Tree (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Tree (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 03
2.10.1.b Type of obstacle: Fence (7 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 21
2.10.1.b Type of obstacle: Pole (37 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 20 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9800 ft x 150 ft
2.12.5 Coordinates: 19−43−16.93N / 155−03−27.99W
2.12.6 Threshold elevation: 27 ft
2.12.6 Touchdown zone elevation: 30 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9800 ft x 150 ft
2.12.5 Coordinates: 19−43−16.92N / 155−01−45.41W
2.12.6 Threshold elevation: 37 ft
2.12.6 Touchdown zone elevation: 38 ft

2.12.1 Designation: 03
2.12.2 True Bearing: 41
2.12.3 Dimensions: 5600 ft x 150 ft
2.12.5 Coordinates: 19−42−44.96N / 155−03−44.78W
2.12.6 Threshold elevation: 33 ft
2.12.6 Touchdown zone elevation: 34 ft
2.12.7 Slope: 0.1DOWN

2.12.1 Designation: 21
2.12.2 True Bearing: 221
2.12.3 Dimensions: 5600 ft x 150 ft
2.12.5 Coordinates: 19−43−26.99N / 155−03−00.00W
2.12.6 Threshold elevation: 25 ft
2.12.6 Touchdown zone elevation: 31 ft
2.12.7 Slope: 0.1UP

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08
2.14.2 Approach lighting system: Omnidirectional approach lighting system
2.14.4 Visual approach slope indicator system: 6−box VASI on left
2.14.10 Remarks: VASI Upwind Threshold Crossing Height 110.3' Glide Angle 3.25 Degs; Downwind Threshold Crossing Height 59.6' Glide Angle 3.00 Degs.

2.14.1 Designation: 26

2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 03
2.14.4 Visual approach slope indicator system: 4−box VASI on left
2.14.10 Remarks: VASI Usable Dist Limited To 4 Nm From Threshold Due Obstruction.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 126.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 263.1 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 269.2 MHz
2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 323 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 120.25 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 26. Magnetic variation: 11E
2.19.2 ILS identification: ITO
2.19.5 Coordinates: 19−43−13.74N / 155−03−39.51W
2.19.6 Site elevation: 39 ft

2.19.1 ILS type: Glide Slope for runway 26. Magnetic variation: 11E
2.19.2 ILS identification: ITO
2.19.5 Coordinates: 19−43−20.89N / 155−01−58.10W
2.19.6 Site elevation: 33 ft

2.19.1 ILS type: Middle Marker for runway 26. Magnetic variation: 11E
2.19.2 ILS identification: ITO
2.19.5 Coordinates: 19−43−16.90N / 155−01−00.00W
2.19.6 Site elevation: 26 ft

2.19.1 ILS type: Localizer for runway 26. Magnetic variation: 11E
2.19.2 ILS identification: ITO
2.19.5 Coordinates: 19−43−16.93N / 155−03−38.78W
2.19.6 Site elevation: 26 ft

General Remarks:

RUNWAY 08 PAVED 1325’ MARKED BY CHEVRONS, UNUSABLE FOR LANDING/TAKEOFF/ OVERUN/STY; CANNOT BE USED IN COMPUTING TAKE-OFF DATA.

ATCT CONTROLS ENTRY/EXIT TRAFFIC ON TAXIWAYS F&E TO EAST TERMINAL RAMP.

181’ LIGHTED SMOKE STACK 1/2 STATUTE MILE SOUTH OF FIELD.

PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER FOR TRANSIENT PARKING.

BE ALERT OCCASIONAL BIRD FLOCKS ON AIRPORT AND IN FLIGHT ACROSS RUNWAY 08/26 AND 03/21.

(A70A) JET FUEL AVAILABLE MON−SAT 0800−1700 CALL (808) 935−6881/6122 OR 961−6601.

(E93) NO MARKED PAD, HELICOPTER OPER FROM FBO HANGER AREA.

CLASS A AND B EXPLOSIVES PROHIBITED.

PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER FOR TRANSPORTATION OF CLASS C EXPLOSIVES AND HAZARDOUS MATERIAL IN OR OUT OF AIRPORT.

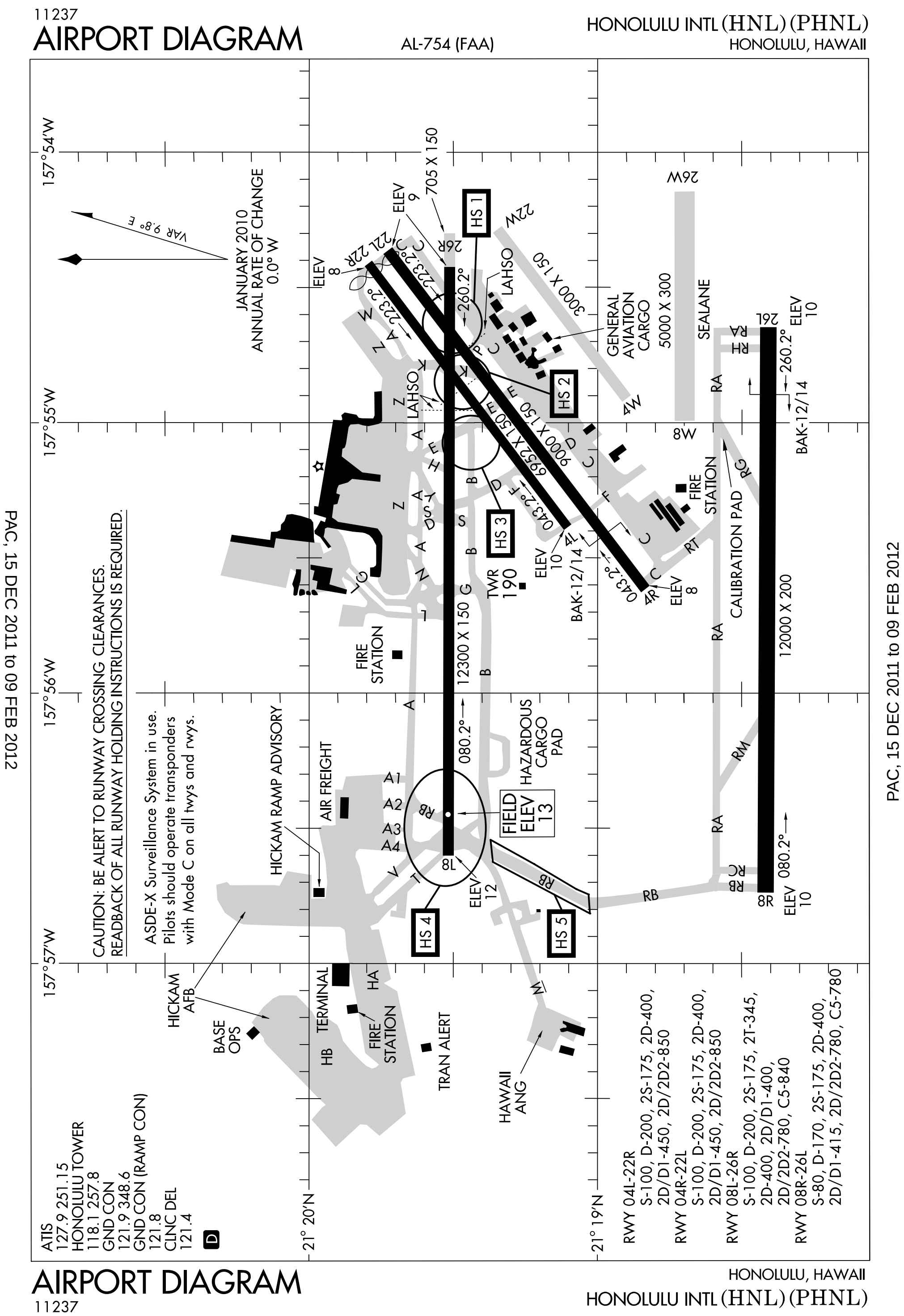
NOISE ABATEMENT: AVOID OVERFLIGHT OF NOISE SENSITIVE RESIDENTIAL AREAS N, W AND SW OF AIRPORT.

RUNWAY 3/21 CLOSED TO TURBINE AIRCRAFT 1800−0600.

RUNWAY 08/26 SINGLE−BELLY TWIN TANDEM (SBTT) GROSS WEIGHT 450,000 LBS.

RUNWAY 03/21 SINGLE−BELLY TWIN TANDEM (SBTT) GROSS WEIGHT 230,000 LBS.

Honolulu, Hawaii
Honolulu International
ICAO Identifier PHNL



Honolulu, HI
Honolulu Intl
ICAO Identifier PHNL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 21−19−00.00N / 157−55−20.74W
2.2.2 From City: 3 Miles NW Of Honolulu, HI
2.2.3 Elevation: 13 ft
2.2.5 Magnetic variation: 11E (1990)
2.2.6 Airport Contact: Jim Pratt
300 RODGERS BLVD. #12
Honolulu, HI 96819
(808−836−6533)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,80,A,A1+,B
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Stack (74 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 475 ft from Centerline

2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Tree (20 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 26R
2.10.1.b Type of obstacle: Road (15 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Ant (50 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 20 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12000 ft x 200 ft
2.12.5 Coordinates: 21−18−24.49N / 157−56−45.07W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12000 ft x 200 ft
2.12.5 Coordinates: 21−18−24.48N / 157−54−38.15W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 53
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 21−18−50.10N / 157−55−37.69W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 233
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 21−19−43.76N / 157−54−21.65W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12300 ft x 150 ft
2.12.5 Coordinates: 21−19−30.89N / 157−56−35.64W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12300 ft x 150 ft
2.12.5 Coordinates: 21−19−30.88N / 157−54−25.54W

2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 04L
2.12.2 True Bearing: 53
2.12.3 Dimensions: 6952 ft x 150 ft
2.12.5 Coordinates: 21−19−00.00N / 157−55−23.95W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 233
2.12.3 Dimensions: 6952 ft x 150 ft
2.12.5 Coordinates: 21−19−47.45N / 157−54−25.22W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 04W
2.12.2 True Bearing: 51
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.5 Coordinates: 21−18−53.09N / 157−54−46.44W

2.12.1 Designation: 22W
2.12.2 True Bearing: 231
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.5 Coordinates: 21−19−11.80N / 157−54−21.78W

2.12.1 Designation: 08W
2.12.2 True Bearing: 91
2.12.3 Dimensions: 5000 ft x 300 ft
2.12.5 Coordinates: 21−18−40.85N / 157−55−00.00W

2.12.1 Designation: 26W
2.12.2 True Bearing: 271
2.12.3 Dimensions: 5000 ft x 300 ft
2.12.5 Coordinates: 21−18−39.98N / 157−54−00.00W

AD 2.13 Declared distances
2.13.1 Designation: 04L
2.13.2 Takeoff run available: 6948
2.13.3 Takeoff distance available: 6948
2.13.4 Accelerate−stop distance available: 6398
2.13.5 Landing distance available: 6398

2.13.1 Designation: 22R
2.13.2 Takeoff run available: 6948
2.13.3 Takeoff distance available: 6948
2.13.4 Accelerate−stop distance available: 6948
2.13.5 Landing distance available: 6798

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 26L
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 04R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22L
2.14.4 Visual approach slope indicator system: 4−box VASI on left
2.14.10 Remarks: VASI Unusable Beyond 2 Nm From Threshold
ry 22L VASI GA 3.0deg Threshold Crossing Height 52 Ft.

2.14.1 Designation: 08L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26R
2.14.4 Visual approach slope indicator system: 6−box VASI on left
2.14.10 Remarks: VASI Upper GA 3.25 Degrees Threshold Crossing Height 96 Ft ; Lower GA 3.00 Degrees Threshold Crossing Height 52 Ft .

2.14.1 Designation: 04L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 121.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: HONOLULU RAMP ADVISORY
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 124.8 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: PTD
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: HICKAM ADVSY RAMP
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: CP
2.18.3 Service designation: 141.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 269 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 269 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 281.4 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 285.4 MHz

2.18.1 Service designation: ANG−OPNS
2.18.3 Service designation: 293.7 MHz

2.18.1 Service designation: SAC−OPNS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 317.6 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 338.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: COMD POST
2.18.3 Service designation: 292.5 MHz

2.18.1 Service designation: SHAKA OPS
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: SHAKA OPS
2.18.3 Service designation: 349.4 MHz

2.18.1 Service designation: HICKAM RAMP ADVISORY
2.18.3 Service designation: 234.8 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 251.15 MHz
2.18.4 Hours of operation: 24
2.18.1 Service designation: CLASS B
2.18.3 Service designation: 239.05 MHz

2.18.1 Service designation: LCL/S

2.18.3 Service designation: 273.575 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 11E
2.19.2 ILS identification: EPC
2.19.5 Coordinates: 21-19-34.96N / 157-54-28.18W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 11E
2.19.2 ILS identification: EPC
2.19.5 Coordinates: 21-19-36.96N / 157-54-25.90W
2.19.6 Site elevation: 21 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 11E
2.19.2 ILS identification: IUM
2.19.5 Coordinates: 21−19−49.82N / 157−54−13.05W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 11E
2.19.2 ILS identification: IUM
2.19.5 Coordinates: 21−19−47.83N / 157−54−12.09W
2.19.6 Site elevation: 21 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 11E
2.19.2 ILS identification: IUM
2.19.5 Coordinates: 21−18−53.99N / 157−55−26.90W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 11E
2.19.2 ILS identification: IUM
2.19.5 Coordinates: 21−18−33.00N / 157−55−59.70W
2.19.6 Site elevation: 4 ft

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−30.88N / 157−54−16.41W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Middle Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−31.00N / 157−57−10.30W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−26.68N / 157−56−22.59W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Outer Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−29.70N / 158−02−55.90W
2.19.6 Site elevation: 99999 ft

General Remarks:

REMAIN AT LEAST 1 MILE OFF SHORE OF WAIKIKI DIAMOND HEAD KOKO HEAD & EWA BEACH. ARR RUNWAY 08L; FLY ILS APPROACH PROC OR A CLOSE−IN BASE LEG REMAINING OVER CENTER OF PEARL HARBOR CHANNEL. ARR 26L/R; RNM AT TRAFFIC PATTERN ALTITUDES AS LONG AS POSSIBLE BEFORE BEGINNING DESCENT FOR LANDING.

RUNWAY 04R/22L DC10 450000+; L−1011 450000+; RUNWAY 04L/22R DC10 450000; L−1011 450000+; RUNWAY 08L/26R DC10 400000; L−1011 410000; RUNWAY 08R/26L DC10 415000; L−1011 400000.

PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER FOR TRANSPORATION OF CLASS A OR B EXPLOSIVES IN AND/OR OUT OF HNL.

DUE TO NON−VISIBILITY TOWER UNABLE TO DETERMINE IF THE FOLLOWING AREAS ARE

CLEAR OF OBSTRUCTIONS AND/OR TRAFFIC: PORTIONS OF TAXIWAY RB BETWEEN TAXIWAY B & RUNWAY 08R; PORTIONS OF INTER−ISLAND AIRCRAFT PARKING RAMP.

MILITARY: PRIOR PERMISSION REQUIRED ALL AIRCRAFT UNITS PLANNING TO STAGE OPERATIONS FROM HICKAM AFB MUST CONTACT 15 OSS/OSX DSN 315−449−3129 NOT LATER THAN 3 WEEKS PRIOR REGARDLESS.

PERSONNEL AND EQUIPMENT WORKING 600−1300 FT EAST RUNWAY 22L & 22R THRESHOLD, 0700−1530 MON−FRI.

DUE TO LOCATION OF ATCT, CONTROLLERS UNABLE TO DETERMINE WHETHER AIRCRAFT ARE ON CORRECT FINAL APPROACH TO RUNWAYS 04L−04R AND 22L−22R.

TAXIWAYS G AND L BETWEEN TAXIWAY A AND INTER−ISLAND RAMP CLOSED TO WIDE−BODIED AND 4−ENGINE TURBO−JET AIRCRAFT UNDER POWER WITHOUT PRIOR PERMISSION FROM AIRPORT OPERATIONS MANAGER (808) 836−6428 MON−FRI 0745−1630.

RUNWAYS CLOSED 0730−0930 EVERY MONTH AS FOLLOWS; RUNWAY 04R/22L FIRST TUE; RUNWAY 08R/26L SECOND TUE; AND RUNWAY 08L/26R THIRD TUE.

CAUTION: DURING PERIODS OF REPEATED PRECIPITATION ANTICIPATE WET RUNWAY CONDTIONS, IF CURRENT CONDITIONS REQUIRE CONFIRMATION CONTACT HONOLULU TOWER ON INITIAL CONTACT.

CAUTION: RECREATIONAL BOATING ACTIVITIES ON AND IN THE VICINITY OF WATERWAYS.

MILITARY: ALL AIRCRAFT INBOUND TO HICKAM SHOULD ADDRESS FLIGHT PLAN TO PHIK.

MILITARY: ALL MILITARY AIRCRAFT WITH VIP CODE 7 OR ABOVE CONTACT 15AB COMMAND POST OR RELAY THRU HF/SSB AIRWAY 1 HOUR OUT TO CONFIRM BLOCKTIME.

TRAFFIC PATTERN OVERHEAD ALTITUDE 2000 FT, RESTRICTED TO HIANG AIRCRAFT.

MILITARY: ALL MILITARY AIRCRAFT REQUIRE CUSTOMS/AGRICULTURE/IMIGRATION INSPECTION MUST CONTACT HICKAM PILOT TO DISPATCH OR IF AIR MOBILITY COMMAND CONTACT HICKAM AMCC, NOT LATER THAN 3 HRS PRIOR TO ARR WITH ESTIMATE BLOCK TIME, NR OF CIV/MIL PAX/FOREIGN NATIONALS/AND DV CODES.*

RUNWAYS 04W/22W AND 08W/26W RECREATIONAL BOATING ACTIVITIES ON AND IN THE VICINITY OF WATERWAYS.

BIRD STRIKE HAZARD ALL RUNWAYS.

MILITARY ARRESTING GEAR: HOOK MB100(B) LOCATED 200 FT FROM THRESHOLD RUNWAY 26R.

MILITARY: TO MINIMIZE FOREIGN OBJECT DAMAGE POTENTIAL, ALL AIRCRAFT SHOULD USE MINIMUM THRUST, EXPECIALLY OUTBOARD ENGINES, WHEN TAXIING PAST THE F−15 ALERT FACILITY ON TAXIWAY TANGO.

MILITARY CAUTION: FOREIGN OBJECT DAMAGE HAZARD EXISTS ON ALL MOVEMENT

AREAS EAST OF TAXIWAY SIERRA. FIGHTER AIRCRAFT EXERCISE EXTREME CAUTION WHEN TAXING.

MILITARY CAUTION: A FOREIGN OBJECT DAMAGE HAZARD EXISTS ON ALL TAXIWAYS AND RUNWAYS BUT ESPECIALLY ON RUNWAY 4L/22R AND TAXIWAYS NORTH OF RUNWAY 8L/26R.

MILITARY CAUTION: NO F−16 TRANSIENT SUPPORT AVAILABLE IN ACCORDANCE WITH AREA CONTROL CENTER LSET FLASH SAFETY 06−02. TRANSIENT F−16 UNITS SHOULD PROVIDE THEIR OWN MAINTENANCE SUPPORT.

MILITARY RESTRICTED: ALL TRANSIENT AIRCRAFT, NOT ON AN AIR MOBILITY COMMAND MSN, WILL PROVIDE A 2−3 HR OUT CALL, AS WELL AS 20−30 MIN OUT CALL ON 292.5 TO THE 15 AW/CP (KOA CONTROL). UPON ARRIVAL, CREWS WILL PROCEED DIRECTLY TO COMMAND POST (BLDG 2050) AND COMPLETE AN OUTBOUND SETUP SHEET TO FACILITATE DEPARTURE REQUIREMENTS.

MILITARY/COMMUNICATIONS: BEDTIME ”(613AOC/AMD CORONET MSN COMMANDER WILL MEET AIRCRAFT UPON ARR; ALL CORONET W TANKERS USE 311.0 FOR TANKER−FIGHTER INTER−PLANE ON LAUNCH DAY. AFTER DUTY HR DSN 448−8888 613AOC/AMD, FLIGHT MANAGEMENT.)

MILITARY MISC (1 OF 2): HICKAM BASE WX STATION OPEN MON−FRI 1400Z−0800Z; CLOSED WEEKENDS/HOL EXCEPT DUR LOCAL FLYING, AS MANNING PERMITS.

MILITARY MISC (2 OF 2 CONT’D): LIMITED WX BRIEF SUPPORT.OTE FLIGHT WX BRIEFINGS CONTACT 17TH WX SQUALL CONTINUOUS 24-HOUR SERVICE, DSN 315-449-7950/8333, FAX DSN 315-449-8336; 2 HR PRIOR NOTICE REQUIRE FOR TIMELY BRIEF.OFFICIAL OBSN TAKEN BY FAA. COOPERATIVE WX WATCH PROCEDURES DO NOT EXIST BETWEEN WX AND ATC.

MILITARY MISC: NO COMSEC MATERIAL AVAILABLE THRU HICKAM AIRFIELD OPERATIONS. TRANSIENT AIRCREWS SHOULD PLAN TO ARR WITH APPROPRIATE AMOUNT OF COMSEC TO COMPLETE ENTIRE MSN.

MILITARY REMARKS: SEE FLIGHT INFORMATION PUBLICATION AP/3 SUPPLEMENTARY AIRPORT INFORMATION, ROUTE AND AREA RESTRICTED, AND OAKLAND FIR FLIGHT HAZARD.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

MILITARY CAUTION: USE CAUTION FOR OBST 76¿ FR TAXIWAY “M” CENTERLINE ON OCEANSIDE, APPROXIMATELY 200¿ FR PARK APRON.
MILITARY MISC: AIRFIELD OPERATIONS DSN 449−0046/0048 FAX DSN 449−7624.

MILITARY RESTRICTED: WIDE BODY AND 4 ENGINE TURBO−JETS LANDING ON RUNWAY 04R ROLL TO END OF RUNWAY, NO LEFT TURN AT TAXIWAY K WITHOUT TOWER APPROVAL. TAXIWAY K NOT A HIGH SPEED EXIT TAXIWAY. TAXIWAY RA HOLD SHORT APPROACH ZONE RUNWAY 04L/R AT HOLD LINE. TAXIWAY P CLOSED TO AIRCRAFT OVER 12,500 LB.

MILITARY SERVICE-A-GEAR: RUNWAY 4R/22L AND 8R/26L SURFACE GROOVED WITHIN 10 FT OF A-G SYSTEM. POTENTIAL FOR FIGHTER AIRCRAFT TAIL HOOK SKIP EXISTS.

MILITARY MISC 1 OF 2: DUE TO SENSITIVITIES OF CITIZENS, FIGHTER AIRCRAFT AND WATER-AUGMENTED AIRCRAFT DEP ONLY AUTHORIZED FR 1700-0700Z MON-SAT, AND 1800-0700Z SUN AND HOLIDAY. ALL REQ FOR WAIVERS WILL BE SENT TO THE 15/OG/CC AT LEAST 5 WORKING DAYS IN ADVANCE.

MILITARY MISC 2 OF 2: WAIVERS WILL BE GRANTED ON EXTREME NECESSARY. IF SHORT NOTICE MSN ESSENTIAL WAIVERS ARE NECESSARY, CONTACT 15OG/CC BY TELEPHONE THRU 15 WG COMMAND POST(15 WG/CP). 15 WG COMP POST WILL PASS APPROVAL TO HICKAM FLIGHT SERVICE AND HICKAM RAMP ADVSY.

MILITARY TRANSIENT ALERT: 15 WG CAN PROVIDE EQUIPMENT BUT CREWS MUST PROVIDE OWN PERS WHEN NEEDED.
MILITARY RESTRICTED: BPH-H IS PRIOR PERMISSION REQUIRED TO ALL NON-AMC AIRCRAFT AND AIR MOBILITY COMMAND TRAINING MSN (QEN KEN PEN AEN).

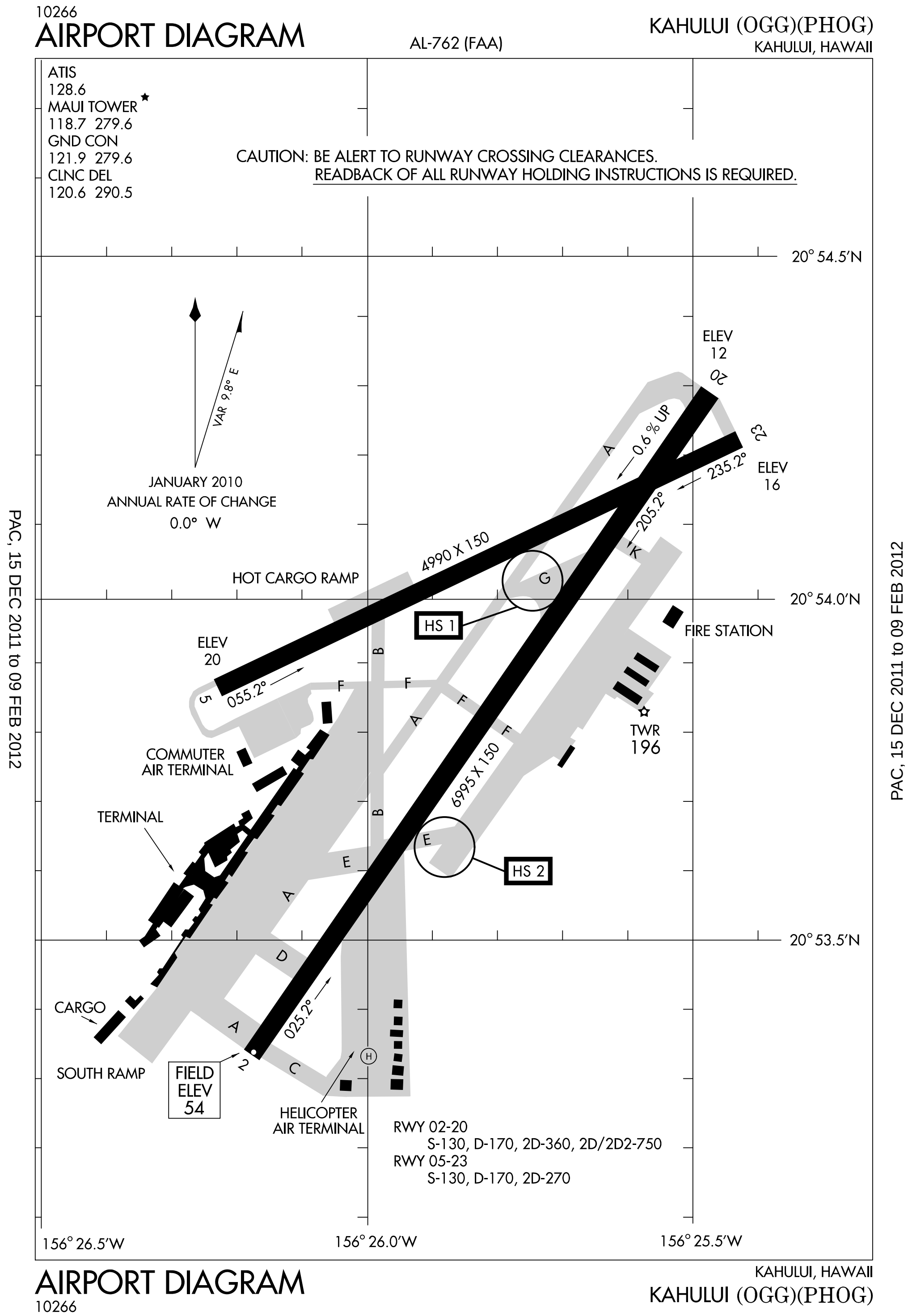
MILITARY RESTRICTED 1 OF 2: ALL TRANSIENT AIRCRAFT NOT ON AN AMC/TWCF MSN AND HOME STATION AIRCRAFT TERMINATING AT JBPH-H, WILL PROVIDE A 3 HR OUT CALL (COMM 808-448-6900) AS WELL AS A 20-30 MIN OUT CALL ON 292.5 TO THE 15 WG/CP (KOA CONTROL).

MILITARY RESTRICTED 2 OF 2: ALL TRANSIENT AIRCRAFT, NOT ON AIR MOBILITY COMMAND MSN, WILL PROVIDE 2-3 HR OUT CALL, AS WELL AS 20-30 MIN OUT CALL ON 292.5 TO 15 WG/CP (KOA CONTROL).

MILITARY RESTRICTED: MILITARY AIRCRAFT OPR DUR BIRD WATCH CONDITION MODERATE (INITIAL TAKE-OFF OR FULL STOP LANDING ONLY, NO MULTIPLE IFR/VFR APCH) AND SEVERE (TKOF AND LANDING PROH WO 15 OG/CC APPROVAL OR 154 OG/CC APPROVAL FOR HIANG ACFT) CONTACT HIK RAMP, PILOT TO DISPATCH, 15 WG COMMAND POST, 735 AIR MOBILITY COMMAND COMMAND POST, 154 WG COMMAND POST FOR CURRENT CONDITION.

ALL JET AIRCRAFT CONTACT RAMP CONTROL PRIOR TO ENGINE START.

Kahului, Hawaii
Kahului
ICAO Identifier PHOG



Kahului, HI
Kahului
ICAO Identifier PHOG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 20−53−55.14N / 156−25−49.65W
2.2.2 From City: 3 Miles E Of Kahului, HI
2.2.3 Elevation: 54 ft
2.2.5 Magnetic variation: 11E (1990)
2.2.6 Airport Contact: Marvin Moniz
1 KAHULUI AIRPORT ROAD, UNIT 5
Kahului, HI 96732 (808−872−3808)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 02
2.10.1.b Type of obstacle: Stack (198 ft). Lighted
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 20
2.10.1.b Type of obstacle: Bldg (5 ft). Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

2.10.1.a. Runway designation: 05
2.10.1.b Type of obstacle: Trees (31 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 23
2.10.1.b Type of obstacle: Pole (35 ft). Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 02
2.12.2 True Bearing: 35
2.12.3 Dimensions: 6995 ft x 150 ft
2.12.5 Coordinates: 20−53−20.90N / 156−26−10.75W
2.12.6 Threshold elevation: 54 ft
2.12.6 Touchdown zone elevation: 54 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 215
2.12.3 Dimensions: 6995 ft x 150 ft
2.12.5 Coordinates: 20−54−17.71N / 156−25−28.47W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 25 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 125 ft x 125 ft

2.12.1 Designation: 05
2.12.2 True Bearing: 65
2.12.3 Dimensions: 4990 ft x 150 ft
2.12.5 Coordinates: 20−53−52.88N / 156−26−13.56W
2.12.6 Threshold elevation: 20 ft
2.12.6 Touchdown zone elevation: 20 ft

2.12.1 Designation: 23
2.12.2 True Bearing: 245
2.12.3 Dimensions: 4990 ft x 150 ft
2.12.5 Coordinates: 20−54−13.75N / 156−25−25.85W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 17 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 02
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 20
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 05
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.10 Remarks: VASI Unusable Beyond 4 Nm From Threshold Due To Rapidly Rising Terrain.

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 120.2 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 120.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 128.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 290.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 322.4 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 225.4 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−54−22.18N / 156−25−25.15W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Glide Slope for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−53−29.55N / 156−25−59.23W
2.19.6 Site elevation: 48 ft

2.19.1 ILS type: Middle Marker for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−52−59.70N / 156−26−26.50W
2.19.6 Site elevation: 66 ft

2.19.1 ILS type: Outer Marker for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−48−13.30N / 156−29−59.30W
2.19.6 Site elevation: 39 ft

2.19.1 ILS type: DME for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−54−18.74N / 156−25−23.97W
2.19.6 Site elevation: 9 ft

General Remarks:

570’ LIGHTED TOWER APPROXIMATE 3 MI. W.

24 HRS PRIOR PERMISSION REQUIRED FOR CLASS A & B EXPLOSIVES AND 4 HRS PRIOR PERMISSION REQUIRED FOR OTHER HAZARDOUS CARGO IN/OUT OF AIRPORT; CONTACT (808) 872−3830 0745−1630 OTHER TIMES (808) 872−3888.

RAMP AREA E SIDE RUNWAY 02 UNDER STATE AUTHORITY. FAA NOT RESPONSIBLE FOR

DIRECTION & CONTROL GROUND TRAFFIC IN AREA.

MIGRATORY BIRD ACTIVITY BELOW 1500 FT WITHIN 5 NAUTICAL MILE RADIUS OF AIRPORT DURING AUG−MAY.

MILITARY HELICOPTER OPERATIONS RESTRICTED TO HAZMAT AREA N OF RUNWAY 05/23.

COMMUTER TERMINAL RAMP RESTRICTED TO AIRCRAFT 140000 LBS OR LESS.

AREA E OF APPROACH END RUNWAY 02 DESIGNATED AS HELICOPTER OPER AREA. NO FIXED WING AIRCRAFT MAY OPER ON HELIPAD DURING OPERATIONAL HRS SR−SS.

PRIOR PERMISSION REQUIRED FOR FIXED WING AIRCRAFT OPERATIONS ON HELIPAD DURING NON−OPERATIONAL HRS CALL (808) 872−3880 5:15A−10:00P.

ACCESS TO HELIPAD FROM TAXIWAY C ONLY.

DUE TO NONVISIBILITY ATCT UNABLE TO DETERMINE IF FOLLOWING AREA IS CLEAR OF OBSTRUCTIONS AND/OR TRAFFIC: PORTION OF TAXIWAY F BETWEEN THE COMMUTER AIR TERMINAL & APPROACH END RUNWAY 05.

DUE TO NONVISIBILITY ATCT UNABLE TO PROVIDE ATC SERVICE BETWEEN AIRCRAFT & GROUND VEHICLES ON THE COMMUTER AIR TERMINAL S OF TAXIWAY F AND THE HELICOPTER AIR TERMINAL E OF APPROACH END RUNWAY 02.

TRANSIENT PARKING LOCATED ON NE SECTION OF E RAMP.

RUNWAY 02/20 SINGLE−BELLY TWIN TANDEM (SBTT) GROSS WEIGHT 460,000 LBS.

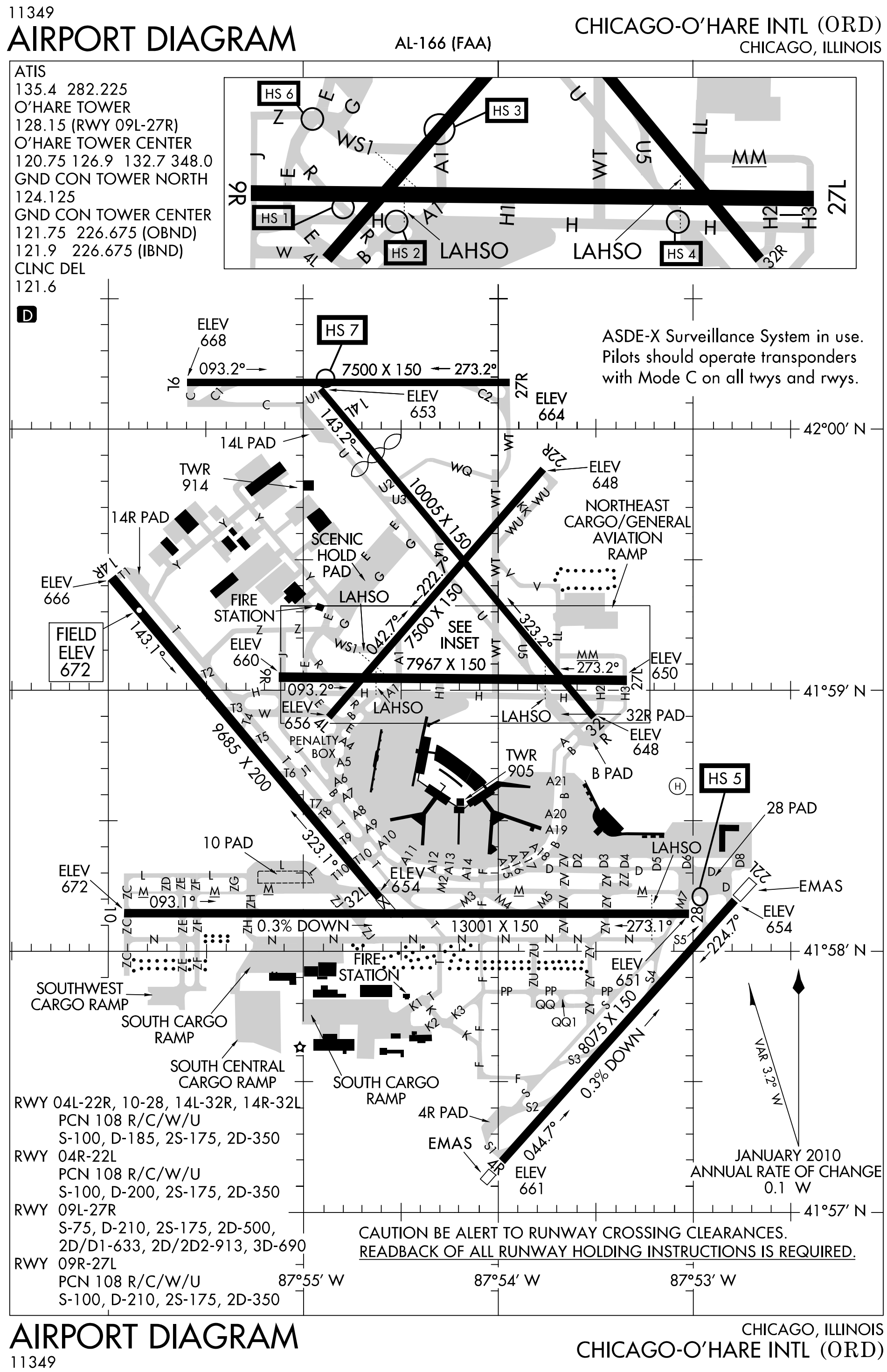
TAXIWAY G CLOSED TO AIRCRAFT OVER 30,000 LBS.

AIRCRAFT ABOVE 80,000 LBS LANDING RUNWAY 02 UNABLE TO TURN OFF ONTO RUNWAY 05 DUE TO RUNWAY 05 PAVEMENT CONDITION.

TAXIWAY F CLOSED TO LEFT TURNS FROM RUNWAY 02 AIRCRAFT ABOVE 80,000 LBS.

Chicago, Illinois
Chicago−O'Hare International
ICAO Identifier KORD

EC−3, 15 DEC 2011 to 12 JAN 2012



EC−3, 15 DEC 2011 to 12 JAN 2012

Chicago, IL
Chicago O'Hare Intl
ICAO Identifier KORD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41−58−53.94N / 87−54−24.02W
2.2.2 From City: 14 Miles NW Of Chicago, IL
2.2.3 Elevation: 672 ft
2.2.5 Magnetic variation: 3W (2010)
2.2.7 Traffic: IFR/VFR
2.2.8 Remarks: And Du Page Co.

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 14R
2.10.1.b Type of obstacle: Trees (63 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 56 ft from Centerline

2.10.1.a. Runway designation: 32R
2.10.1.b Type of obstacle: Pole (43 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 725 ft from Centerline

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Pole (43 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 630 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Sign (56 ft). Lighted
2.10.1.c Location of obstacle: 723 ft from Centerline

2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Ant (743 ft). Marked and Lighted
2.10.1.c Location of obstacle: 4443 ft from Centerline

2.10.1.a. Runway designation: 27R
2.10.1.b Type of obstacle: Ant (87 ft). Marked and Lighted
2.10.1.c Location of obstacle: 118 ft from Centerline

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Lt Std (29 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 411 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Ant (109 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 545 ft from Centerline

2.10.1.a. Runway designation: 27L
2.10.1.b Type of obstacle: Ant (24 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 587 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 14R
2.12.2 True Bearing: 140
2.12.3 Dimensions: 9685 ft x 200 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−59−25.57N / 87−55−59.30W
2.12.6 Threshold elevation: 666 ft
2.12.6 Touchdown zone elevation: 668 ft

2.12.1 Designation: 32L
2.12.2 True Bearing: 320
2.12.3 Dimensions: 9685 ft x 200 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−58−12.30N / 87−54−36.84W
2.12.6 Threshold elevation: 654 ft

2.12.1 Designation: 14L
2.12.2 True Bearing: 140

2.12.3 Dimensions: 10005 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 42−00−00.00N / 87−54−55.33W
2.12.6 Threshold elevation: 653 ft
2.12.6 Touchdown zone elevation: 653 ft

2.12.1 Designation: 32R
2.12.2 True Bearing: 320
2.12.3 Dimensions: 10005 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−58−53.06N / 87−53−30.17W
2.12.6 Threshold elevation: 648 ft
2.12.6 Touchdown zone elevation: 653 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 200 ft x 100 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 90
2.12.3 Dimensions: 13001 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41-58-00.00N / 87-55-53.51W
2.12.6 Threshold elevation: 672 ft
2.12.6 Touchdown zone elevation: 672 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 270
2.12.3 Dimensions: 13001 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41-58-00.00N / 87-53-00.00W
2.12.6 Threshold elevation: 651 ft
2.12.6 Touchdown zone elevation: 652 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.5 Coordinates: 42−00−10.19N / 87−55−36.03W
2.12.6 Threshold elevation: 668 ft
2.12.6 Touchdown zone elevation: 668 ft
2.12.7 Slope: 0.1DOWN

2.12.1 Designation: 27R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.5 Coordinates: 42−00−10.19N / 87−53−56.70W
2.12.6 Threshold elevation: 664 ft
2.12.6 Touchdown zone elevation: 664 ft
2.12.7 Slope: 0.1UP

2.12.1 Designation: 04L
2.12.2 True Bearing: 39
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−58−53.96N / 87−54−50.10W
2.12.6 Threshold elevation: 656 ft
2.12.6 Touchdown zone elevation: 658 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 219
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−59−51.13N / 87−53−46.94W
2.12.6 Threshold elevation: 648 ft
2.12.6 Touchdown zone elevation: 651 ft
2.12.1 Designation: 04R
2.12.2 True Bearing: 42
2.12.3 Dimensions: 8075 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−57−11.98N / 87−53−57.91W
2.12.6 Threshold elevation: 661 ft
2.12.6 Touchdown zone elevation: 661 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 222
2.12.3 Dimensions: 8075 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−58−11.72N / 87−52−47.08W
2.12.6 Threshold elevation: 654 ft
2.12.6 Touchdown zone elevation: 654 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 7967 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−59−00.00N / 87−55−00.00W
2.12.6 Threshold elevation: 660 ft
2.12.6 Touchdown zone elevation: 660 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7967 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−59−00.00N /

87−53−20.58W
2.12.6 Threshold elevation: 650 ft
2.12.6 Touchdown zone elevation: 653 ft

AD 2.13 Declared distances
2.13.1 Designation: 14R
2.13.2 Takeoff run available: 9685
2.13.3 Takeoff distance available: 9685
2.13.4 Accelerate−stop distance available: 9662
2.13.5 Landing distance available: 8650

2.13.1 Designation: 32L
2.13.2 Takeoff run available: 9685
2.13.3 Takeoff distance available: 9685
2.13.4 Accelerate−stop distance available: 9685

2.13.1 Designation: 14L
2.13.2 Takeoff run available: 10005
2.13.3 Takeoff distance available: 10005
2.13.4 Accelerate−stop distance available: 10005
2.13.5 Landing distance available: 8007

2.13.1 Designation: 32R
2.13.2 Takeoff run available: 10005
2.13.3 Takeoff distance available: 10005
2.13.4 Accelerate−stop distance available: 10005
2.13.5 Landing distance available: 10005

2.13.1 Designation: 10
2.13.2 Takeoff run available: 13000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate-stop distance available: 13000
2.13.5 Landing distance available: 12246

2.13.1 Designation: 28
2.13.2 Takeoff run available: 13000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate-stop distance available: 13000
2.13.5 Landing distance available: 13000

2.13.1 Designation: 09L
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 27R
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 22R
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 8075
2.13.3 Takeoff distance available: 8075
2.13.4 Accelerate−stop distance available: 8075
2.13.5 Landing distance available: 8075

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 8075
2.13.3 Takeoff distance available: 8075
2.13.4 Accelerate−stop distance available: 8075
2.13.5 Landing distance available: 8075

2.13.1 Designation: 09R
2.13.2 Takeoff run available: 7967
2.13.3 Takeoff distance available: 7967
2.13.4 Accelerate−stop distance available: 7967
2.13.5 Landing distance available: 7967

2.13.1 Designation: 27L
2.13.2 Takeoff run available: 7967
2.13.3 Takeoff distance available: 7967
2.13.4 Accelerate−stop distance available: 7967
2.13.5 Landing distance available: 7967

AD 2.14 Approach and runway lighting
2.14.1 Designation: 14R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 14L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 10
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 28
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 09L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 27R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 22R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Vgsi And ILS Glidepath Not Coincident.

2.14.1 Designation: 04R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 22L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 09R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 119 MHz

2.18.1 Service designation: CD/S PTC/S
2.18.3 Service designation: 119.25 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 120.55 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 121.15 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND METERING
2.18.3 Service designation: 121.675 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.4 MHz

2.18.1 Service designation: VFR ADV
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 133.5 MHz

2.18.1 Service designation: CLASS B/S
2.18.3 Service designation: 134.4 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: ALCP
2.18.3 Service designation: 252.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 269.5 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 284 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 290.2 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 307.2 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 337.4 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 393.1 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 349 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 133.625 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: O’HARE TWR CENTER LCL/P
2.18.3 Service designation: 126.9 MHz

2.18.1 Service designation: O’HARE TWR CENTER LCL/P
2.18.3 Service designation: 120.75 MHz

2.18.1 Service designation: O’HARE TWR CENTER LCL/P
2.18.3 Service designation: 132.7 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 127.925 MHz

2.18.1 Service designation: CLNC DEL/P
2.18.3 Service designation: 121.6 MHz

2.18.1 Service designation: O’HARE TWR NORTH GC/P
2.18.3 Service designation: 124.125 MHz

2.18.1 Service designation: O’HARE TWR LCL/P
2.18.3 Service designation: 128.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 126.625 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 282.225 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND CON CENTER (INBOUND)
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND CON CENTER (OUTBOUND)
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: O’HARE TWR CENTER GND/P
2.18.3 Service designation: 226.675 MHz

2.18.1 Service designation: O’HARE TWR CENTER LCL/P
2.18.3 Service designation: 348 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 377.15 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 14R. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−57−37.71N / 87−54−00.00W
2.19.6 Site elevation: 665 ft

2.19.1 ILS type: Glide Slope for runway 14R. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−59−15.81N / 87−55−55.22W
2.19.6 Site elevation: 662 ft

2.19.1 ILS type: Outer Marker for runway 14R. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 42−03−21.36N / 88−00−28.05W
2.19.6 Site elevation: 693 ft

2.19.1 ILS type: Inner Marker for runway 14R. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−59−32.74N / 87−56−00.00W
2.19.6 Site elevation: 659 ft

2.19.1 ILS type: Localizer for runway 14R. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−58−00.00N / 87−54−28.47W
2.19.6 Site elevation: 653 ft

2.19.1 ILS type: Middle Marker for runway 14R. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−59−46.54N / 87−56−22.90W
2.19.6 Site elevation: 674 ft

2.19.1 ILS type: Localizer for runway 32L. Magnetic variation: 3W
2.19.2 ILS identification: RVG
2.19.5 Coordinates: 41−59−30.50N / 87−56−00.00W
2.19.6 Site elevation: 663 ft

2.19.1 ILS type: DME for runway 32L. Magnetic variation: 3W
2.19.2 ILS identification: RVG
2.19.5 Coordinates: 41−59−34.48N / 87−56−00.00W
2.19.6 Site elevation: 677 ft

2.19.1 ILS type: Glide Slope for runway 32L. Magnetic variation: 3W
2.19.2 ILS identification: RVG
2.19.5 Coordinates: 41−57−52.64N / 87−54−21.11W
2.19.6 Site elevation: 648 ft

2.19.1 ILS type: Outer Marker for runway 32L. Magnetic variation: 3W
2.19.2 ILS identification: RVG
2.19.5 Coordinates: 41−53−39.91N / 87−49−34.69W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 32L. Magnetic variation: 3W
2.19.2 ILS identification: RVG
2.19.5 Coordinates: 41−57−22.13N / 87−53−40.44W
2.19.6 Site elevation: 653 ft

2.19.1 ILS type: DME for runway 14L. Magnetic variation: 3W
2.19.2 ILS identification: OHA
2.19.5 Coordinates: 41−58−43.19N / 87−53−23.65W
2.19.6 Site elevation: 665 ft

2.19.1 ILS type: Inner Marker for runway 14L. Magnetic variation: 3W
2.19.2 ILS identification: OHA
2.19.5 Coordinates: 42−00−00.00N / 87−54−43.27W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 14L. Magnetic variation: 3W
2.19.2 ILS identification: OHA
2.19.5 Coordinates: 41−59−48.18N / 87−54−25.13W
2.19.6 Site elevation: 648 ft

2.19.1 ILS type: Middle Marker for runway 14L. Magnetic variation: 3W
2.19.2 ILS identification: OHA
2.19.5 Coordinates: 42−00−29.46N / 87−55−18.64W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 14L. Magnetic variation: 3W
2.19.2 ILS identification: OHA
2.19.5 Coordinates: 42−04−00.00N /

87−59−27.18W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 14L. Magnetic variation: 3W
2.19.2 ILS identification: OHA
2.19.5 Coordinates: 41−58−44.36N / 87−53−20.39W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Glide Slope for runway 32R. Magnetic variation: 3W
2.19.2 ILS identification: IDN
2.19.5 Coordinates: 41−59−00.00N / 87−53−36.78W
2.19.6 Site elevation: 646 ft

2.19.1 ILS type: Outer Marker for runway 32R. Magnetic variation: 3W
2.19.2 ILS identification: IDN
2.19.5 Coordinates: 41−54−17.50N / 87−48−24.90W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 32R. Magnetic variation: 3W
2.19.2 ILS identification: IDN
2.19.5 Coordinates: 42−00−16.11N / 87−55−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 32R. Magnetic variation: 3W
2.19.2 ILS identification: IDN
2.19.5 Coordinates: 42−00−17.04N / 87−55−00.00W
2.19.6 Site elevation: 648 ft

2.19.1 ILS type: Middle Marker for runway 32R. Magnetic variation: 3W
2.19.2 ILS identification: IDN
2.19.5 Coordinates: 41−58−33.83N / 87−53−00.00W
2.19.6 Site elevation: 645 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41-58-00.00N / 87-52-39.69W
2.19.6 Site elevation: 645 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41-58-00.00N / 87-52-41.69W
2.19.6 Site elevation: 656 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41-58-00.00N / 87-55-52.10W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 10. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41-58-00.00N / 88-01-35.55W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41-58-00.00N / 87-55-38.76W
2.19.6 Site elevation: 665 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41-58-00.00N / 87-52-41.69W
2.19.6 Site elevation: 656 ft

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41-58-00.00N / 87-53-15.05W
2.19.6 Site elevation: 648 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41-58-00.00N / 87-47-22.63W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 28. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41-58-00.00N / 87-52-49.13W
2.19.6 Site elevation: 649 ft

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 3W
2.19.2 ILS identification: TSL

2.19.5 Coordinates: 41-58-00.00N / 87-52-23.76W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41-58-00.00N / 87-56-00.00W
2.19.6 Site elevation: 661 ft

2.19.1 ILS type: DME for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: SAJ
2.19.5 Coordinates: 42−00−14.10N / 87−55−48.23W
2.19.6 Site elevation: 670 ft

2.19.1 ILS type: Glide Slope for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: SAJ
2.19.5 Coordinates: 42−00−14.22N / 87−55−20.67W
2.19.6 Site elevation: 651 ft

2.19.1 ILS type: Localizer for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: SAJ
2.19.5 Coordinates: 42−00−10.19N / 87−53−43.32W
2.19.6 Site elevation: 661 ft

2.19.1 ILS type: Inner Marker for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: SAJ
2.19.5 Coordinates: 42−00−10.18N / 87−55−47.42W
2.19.6 Site elevation: 668 ft

2.19.1 ILS type: Inner Marker for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: ABU
2.19.5 Coordinates: 42−00−10.20N / 87−53−44.38W
2.19.6 Site elevation: 663 ft

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: ABU
2.19.5 Coordinates: 42−00−10.19N / 87−55−50.20W
2.19.6 Site elevation: 668 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: ABU
2.19.5 Coordinates: 42−00−14.21N / 87−54−11.75W
2.19.6 Site elevation: 648 ft

2.19.1 ILS type: DME for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: ABU
2.19.5 Coordinates: 42−00−14.10N / 87−55−48.23W
2.19.6 Site elevation: 670 ft

2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 3W
2.19.2 ILS identification: HNA
2.19.5 Coordinates: 41−59−56.39N / 87−53−41.13W
2.19.6 Site elevation: 644 ft

2.19.1 ILS type: Outer Marker for runway 04L. Magnetic variation: 3W
2.19.2 ILS identification: HNA
2.19.5 Coordinates: 41−54−51.77N / 87−59−19.46W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 3W
2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 41−58−46.49N / 87−54−58.36W
2.19.6 Site elevation: 662 ft

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 3W
2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 41−59−45.44N / 87−53−58.39W
2.19.6 Site elevation: 645 ft

2.19.1 ILS type: Outer Marker for runway 22R. Magnetic variation: 3W
2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 42−03−20.68N / 87−50−00.00W
2.19.6 Site elevation: 665 ft

2.19.1 ILS type: Middle Marker for runway 22R. Magnetic variation: 3W

2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 42−00−10.86N / 87−53−25.14W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 3W
2.19.2 ILS identification: FJU
2.19.5 Coordinates: 41−57−16.86N / 87−53−44.35W
2.19.6 Site elevation: 654 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 3W
2.19.2 ILS identification: FJU
2.19.5 Coordinates: 41−56−48.83N / 87−54−28.68W
2.19.6 Site elevation: 655 ft
2.19.1 ILS type: Outer Marker for runway 04R. Magnetic variation: 3W
2.19.2 ILS identification: FJU
2.19.5 Coordinates: 41−53−54.57N / 87−57−51.36W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 3W
2.19.2 ILS identification: FJU
2.19.5 Coordinates: 41−58−16.20N / 87−52−41.76W
2.19.6 Site elevation: 647 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 42−02−16.02N / 87−47−46.00W
2.19.6 Site elevation: 629 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 41−57−00.00N / 87−54−00.00W
2.19.6 Site elevation: 653 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 41−58−00.00N / 87−52−52.61W
2.19.6 Site elevation: 646 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 41−58−34.71N / 87−52−19.73W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Glide Slope for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−53−34.35W
2.19.6 Site elevation: 646 ft

2.19.1 ILS type: Outer Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−47−20.48W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−52−41.36W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−55−17.98W
2.19.6 Site elevation: 664 ft

2.19.1 ILS type: Inner Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−53−00.00W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41-59-00.00N / 87-53-10.21W
2.19.6 Site elevation: 654 ft

2.19.1 ILS type: Localizer for runway 09R.

Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41−59−00.00N / 87−53−10.49W
2.19.6 Site elevation: 643 ft

2.19.1 ILS type: Outer Marker for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41−59−00.00N / 88−01−39.29W
2.19.6 Site elevation: 717 ft

2.19.1 ILS type: DME for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41−59−00.00N / 87−53−10.21W
2.19.6 Site elevation: 654 ft

2.19.1 ILS type: Glide Slope for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41−59−00.00N / 87−54−51.31W
2.19.6 Site elevation: 658 ft

2.19.1 ILS type: Middle Marker for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41−59−00.00N / 87−55−54.53W
2.19.6 Site elevation: 659 ft

General Remarks:

AIRPORT NIGHTTIME NOISE ABATEMENT PROCEDURES ARE IN EFFECT FROM 2200 TO 0700; CONTACT AIRPORT MANAGER ON 773−686−2255.

BIRDS ON & IN THE VICINITY OF AIRPORT. PYROTECHNICS & BIRD CANNONS IN USE FOR BIRD CONTROL.

AIRCRAFT WITH WINGSPAN GREATER THAN 214 FT REQUIRE 48 HRS PRIOR PERMISSION REQUIRED − CALL 773−686−2255.

SEE LAND AND HOLD SHORT OPERATIONS SECTION.

DURING PERIODS OF COLD WEATHER; THE APPROACH CONTROL END OF RUNWAY 32R MAY NOT BE VISIBLE FROM THE ATCT DUE TO STEAM PLUME FROM AIRPORT HEATING PLANT.

BE ALERT: OF DUPLICATE ALPHA−NUMERIC TAXIWAY DESIGNATORS & TERMINAL GATE DESIGNATIONS INVOLVING THE LETTERS G, H, K L & M.

MAGNETIC DEVIATION POSSIBLE IMMEDIATELY WEST OF TAXIWAY M7 & RUNWAY 22L APPROACH ON TAXIWAY M.

PERSONNEL AND EQUIPMENT WORKING NEAR VARIOUS TAXIWAYS.

PERIODIC FIRE DEPT TRAINING AT N SECTOR OF THE AIRPORT.

PRIMARY RUN−UP LOCATION GROUND RUN UP ENCLOSURE; SECONDARY RUN UP LOCATIONS AVAILABLE UPON REQ CONTACT CITY OPERATIONS 773−686−2255.

LINE UP & WAIT WAIVER IN EFFECT AFTER DARK AT THE FOLLOWING INTERSECTIONS; RUNWAY 32L AT IWAY T-10, RUNWAY 28 AT TAXIWAY ZY AND ZV, RUNWAY 14L AT TAXIWAY U2 & RUNWAY 10 AT TAXIWAY ZH. THESE RUNWAYS WILL BE USED FOR DEPS ONLY WHEN EXERCISING THE PROVISIONS OF THIS WAIVER.

ALL PART 91 & UNSCHEDULED PART 125, 133 & 135 CHARTER OPERATORS CONTACT SIGNATURE FLIGHT SUPPORT AT 773-686-7000 REGARDING NEW SECURITY REGULATIONS PRIOR TO DEP.

RUNWAY H1, APPROACH/ DEP PATHS ARE EAST & WEST.

B747-400, B777-300ER, B777-200LR(F), A340-600 OR A340-500 CANNOT PASS ON TAXIWAYS ’A’ & ’B’ INSUFFICIENT WINGTIP CLEARANCE.

BE ALERT: THE NORTHEAST/SOUTHWEST PORTION OF TAXIWAY Y IS NOT VISIBLE FROM THE CENTER ATCT. TAXIWAY ’ZE’ SOUTH OF TAXIWAY ’N’ NOT VISIBLE FROM CENTER TOWER DUE TO BLAST FENCE.

GENERAL AVIATION RAMP AND FBO LOCATED AT THE NORTH EAST RAMP VICINITY OF RUNWAY 27L APPROACH.

ATCT IS AUTHORIZED TO CONDUCT ARRS TO RUNWAYS 14L & 14R WHILE CONDUCTING SIMULTANEOUS OPPOSITE DIRECTION DEPS OFF OF RUNWAY 09R & RUNWAY 28 DURING IFR WEATHER CONDITIONS. ATCT IS AUTHORIZED TO CONDUCT SIMULTANEOUS CONVERGING INSTRUMENT APPROACHES TO RUNWAY 14R & RUNWAY 22R WHILE CONDUCTING SIMULTANEOUS OPPOSITE DIRECTION DEPS OFF OF RUNWAY 09R & 28 DURING IFR WEATHER CONDITIONS.

ATCT IS AUTHORIZED TO CONDUCT SIMULTANEOUS OPPOSITE DIRECTION DEPS ON RUNWAY 09R AND RUNWAY 28 DURING INSTRUMENT FLIGHT RULES (IFR) WX CONDITIONS.

ASDE-X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS & RUNWAYS.

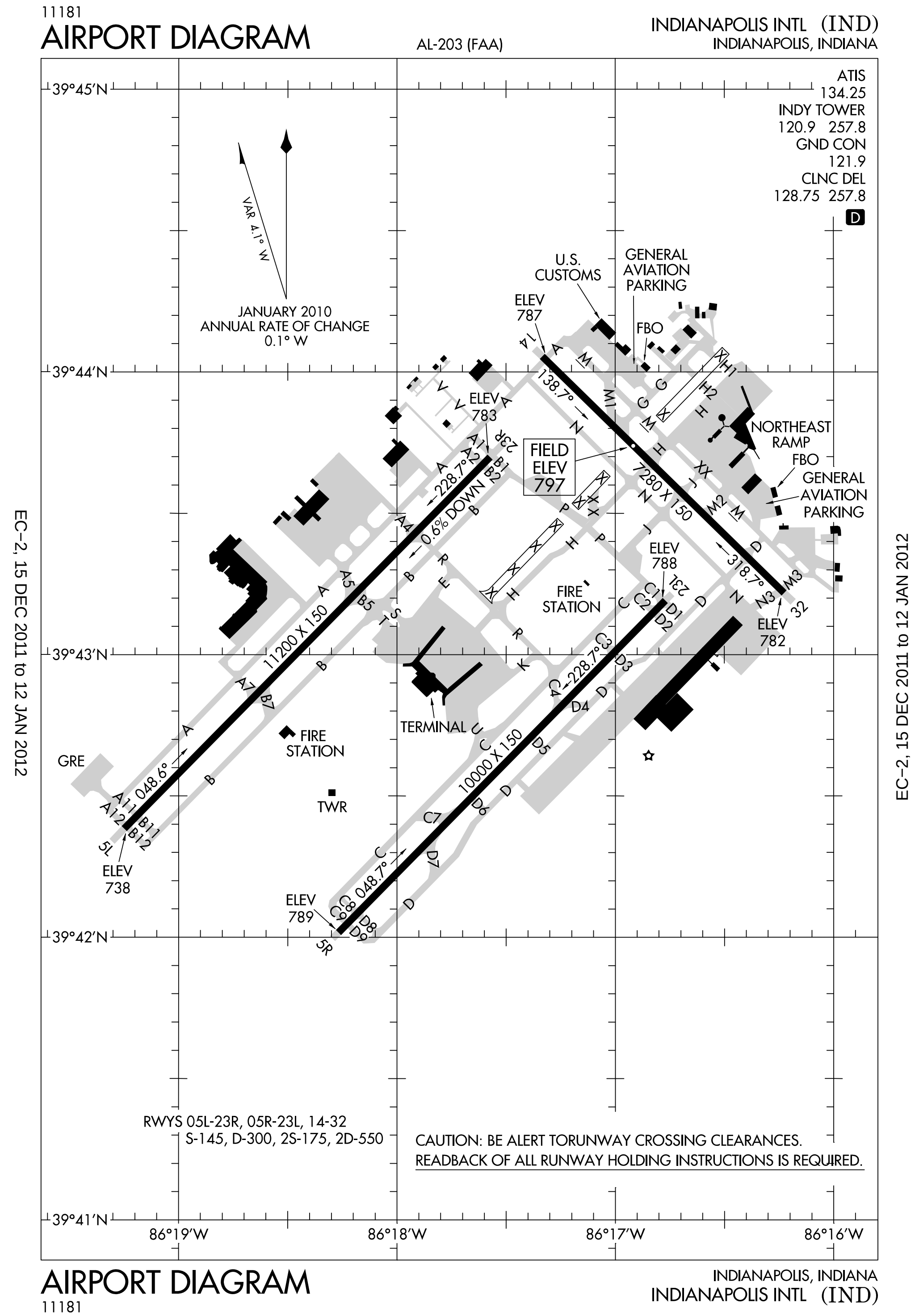
RUNWAY 9L/27R TRIPLE DUAL TANDEM 690,000 LBS; DUAL TANDUM W/DUAL WHEEL (2D/D1) 633,000 LBS.

YANKEE ECHO GATE IS MANNED 24 HRS A DAY. YANKEE TANGO GATE IS MANNED 24 HRS A DAY.

RUNWAY 32L CLOSED TO ARRIVALS.

ATC IS AUTHORIZED TO CONDUCT SIMULTANEOUS DEPS FROM RUNWAYS 14R/14L, 32L/32R, 4L/4R, 22R/22L, 9R WITH 9L OR 10, AND 27L WITH 28 OR 27R WITH COURSE DIVERGENCE BEGINNING NO LATER THAN 4 MILES FROM RUNWAY END.

Indianapolis, Indiana
Indianapolis International
ICAO Identifier KIND



Indianapolis, IN
Indianapolis Intl
ICAO Identifier KIND

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−43−00.00N / 86−17−40.78W
2.2.2 From City: 7 Miles SW Of Indianapolis, IN
2.2.3 Elevation: 797 ft
2.2.5 Magnetic variation: 2W (1985)
2.2.6 Airport Contact: John Clark
7800 COL. H. WEIR COOK MEMORIAL DR.
Indianapolis, IN 46241 (317−487−9594)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Ant (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 756 ft from Centerline

2.10.1.a. Runway designation: 23R
2.10.1.b Type of obstacle: Ant (140 ft). Lighted
2.10.1.c Location of obstacle: 138 ft from Centerline

2.10.1.a. Runway designation: 23L
2.10.1.b Type of obstacle: Ant (78 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 484 ft from Centerline

2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Trees (56 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 391 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 05L
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11200 ft x 150 ft
2.12.5 Coordinates: 39−42−23.03N / 86−19−14.94W
2.12.6 Threshold elevation: 738 ft
2.12.6 Touchdown zone elevation: 748 ft

2.12.1 Designation: 23R
2.12.2 True Bearing: 225
2.12.3 Dimensions: 11200 ft x 150 ft
2.12.5 Coordinates: 39−43−41.91N / 86−17−34.40W
2.12.6 Threshold elevation: 783 ft
2.12.6 Touchdown zone elevation: 783 ft

2.12.1 Designation: 05R
2.12.2 True Bearing: 45
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 39−42−00.00N / 86−18−15.94W
2.12.6 Threshold elevation: 789 ft
2.12.6 Touchdown zone elevation: 791 ft

2.12.1 Designation: 23L
2.12.2 True Bearing: 225
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 39−43−11.28N / 86−16−46.17W
2.12.6 Threshold elevation: 788 ft
2.12.6 Touchdown zone elevation: 790 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 7280 ft x 150 ft
2.12.5 Coordinates: 39−44−00.00N / 86−17−19.81W
2.12.6 Threshold elevation: 787 ft
2.12.6 Touchdown zone elevation: 796 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 7280 ft x 150 ft
2.12.5 Coordinates: 39−43−12.73N / 86−16−13.42W
2.12.6 Threshold elevation: 782 ft

2.12.6 Touchdown zone elevation: 792 ft

AD 2.13 Declared distances
2.13.1 Designation: 05L
2.13.2 Takeoff run available: 11200
2.13.3 Takeoff distance available: 11200
2.13.4 Accelerate−stop distance available: 11200
2.13.5 Landing distance available: 11200

2.13.1 Designation: 23R
2.13.2 Takeoff run available: 11200
2.13.3 Takeoff distance available: 11200
2.13.4 Accelerate−stop distance available: 11200
2.13.5 Landing distance available: 11200

2.13.1 Designation: 05R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 23L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 14
2.13.2 Takeoff run available: 7280
2.13.3 Takeoff distance available: 7280
2.13.4 Accelerate−stop distance available: 7280
2.13.5 Landing distance available: 7280

2.13.1 Designation: 32
2.13.2 Takeoff run available: 7280
2.13.3 Takeoff distance available: 7280
2.13.4 Accelerate−stop distance available: 7280
2.13.5 Landing distance available: 7280

AD 2.14 Approach and runway lighting
2.14.1 Designation: 05L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 05R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 14
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Unusable Beyond 8 Degrees Right Of Course.

2.14.1 Designation: 32
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 124.65 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 127.15 MHz

2.18.1 Service designation: CD PRE TAXI CLNC
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CD LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.05 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 124.95 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.9 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 05L. Magnetic variation: 2W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−42−32.78N / 86−19−00.00W
2.19.6 Site elevation: 735 ft

2.19.1 ILS type: Outer Marker for runway 05L. Magnetic variation: 2W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−37−44.40N / 86−25−00.00W
2.19.6 Site elevation: 689 ft

2.19.1 ILS type: DME for runway 05L. Magnetic variation: 2W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−43−51.36N / 86−17−27.60W
2.19.6 Site elevation: 784 ft

2.19.1 ILS type: Inner Marker for runway 05L. Magnetic variation: 2W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−42−15.71N / 86−19−24.44W
2.19.6 Site elevation: 736 ft

2.19.1 ILS type: Localizer for runway 05L. Magnetic variation: 2W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−43−49.02N / 86−17−25.33W
2.19.6 Site elevation: 788 ft

2.19.1 ILS type: Middle Marker for runway 05L. Magnetic variation: 2W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−42−00.00N / 86−19−43.10W
2.19.6 Site elevation: 726 ft

2.19.1 ILS type: Localizer for runway 23R. Magnetic variation: 2W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−42−15.92N / 86−19−24.00W
2.19.6 Site elevation: 737 ft

2.19.1 ILS type: Glide Slope for runway 23R. Magnetic variation: 2W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−43−36.51N / 86−17−48.46W
2.19.6 Site elevation: 772 ft

2.19.1 ILS type: Outer Marker for runway 23R. Magnetic variation: 2W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−47−44.67N / 86−12−24.00W
2.19.6 Site elevation: 731 ft

2.19.1 ILS type: Middle Marker for runway 23R. Magnetic variation: 2W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−44−24.76N / 86−16−00.00W
2.19.6 Site elevation: 789 ft

2.19.1 ILS type: DME for runway 23R. Magnetic variation: 2W

2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−43−51.36N / 86−17−27.60W
2.19.6 Site elevation: 784 ft

2.19.1 ILS type: Outer Marker for runway 05R. Magnetic variation: 2W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39−37−00.00N / 86−24−28.30W
2.19.6 Site elevation: 789 ft

2.19.1 ILS type: DME for runway 05R. Magnetic variation: 2W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39−43−20.20N / 86−16−39.55W
2.19.6 Site elevation: 788 ft

2.19.1 ILS type: Middle Marker for runway 05R. Magnetic variation: 2W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39−42−00.00N / 86−19−43.10W
2.19.6 Site elevation: 770 ft

2.19.1 ILS type: Inner Marker for runway 05R. Magnetic variation: 2W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39−41−54.66N / 86−18−23.77W
2.19.6 Site elevation: 776 ft

2.19.1 ILS type: Localizer for runway 05R. Magnetic variation: 2W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39−43−18.37N / 86−16−37.12W
2.19.6 Site elevation: 785 ft

2.19.1 ILS type: Glide Slope for runway 05R. Magnetic variation: 2W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39−42−00.00N / 86−18−00.00W
2.19.6 Site elevation: 789 ft

2.19.1 ILS type: Localizer for runway 23L. Magnetic variation: 2W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39−41−54.18N / 86−18−24.47W
2.19.6 Site elevation: 779 ft

2.19.1 ILS type: Glide Slope for runway 23L. Magnetic variation: 2W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39−43−00.00N / 86−16−54.54W
2.19.6 Site elevation: 785 ft

2.19.1 ILS type: Middle Marker for runway 23L. Magnetic variation: 2W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39−43−30.36N / 86−16−21.76W
2.19.6 Site elevation: 785 ft

2.19.1 ILS type: DME for runway 23L. Magnetic variation: 2W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39−43−20.20N / 86−16−39.55W
2.19.6 Site elevation: 788 ft

2.19.1 ILS type: Outer Marker for runway 23L. Magnetic variation: 2W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39−47−11.15N / 86−11−46.46W
2.19.6 Site elevation: 710 ft

2.19.1 ILS type: Middle Marker for runway 14. Magnetic variation: 2W
2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39-44-19.96N / 86-17-42.27W
2.19.6 Site elevation: 776 ft

2.19.1 ILS type: Outer Marker for runway 14. Magnetic variation: 2W
2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39-47-34.36N / 86-22-00.00W
2.19.6 Site elevation: 865 ft

2.19.1 ILS type: Glide Slope for runway 14. Magnetic variation: 2W
2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39-43-59.30N / 86-17-00.00W
2.19.6 Site elevation: 792 ft

2.19.1 ILS type: Localizer for runway 14. Magnetic variation: 2W

2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39-43-00.00N / 86-16-00.00W
2.19.6 Site elevation: 764 ft

2.19.1 ILS type: Glide Slope for runway 32. Magnetic variation: 2W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39-43-16.26N / 86-16-25.54W
2.19.6 Site elevation: 783 ft

2.19.1 ILS type: Outer Marker for runway 32. Magnetic variation: 2W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39-39-24.69N / 86-11-00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 32. Magnetic variation: 2W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39-42-52.06N / 86-15-44.56W
2.19.6 Site elevation: 752 ft

2.19.1 ILS type: Localizer for runway 32. Magnetic variation: 2W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39-44-10.34N / 86-17-29.16W
2.19.6 Site elevation: 782 ft

General Remarks:

PRIMARY STUDENT TOUCH AND GO LANDING NOT PERMITTED.

LARGE FLOCKS OF BIRDS ON & IN THE VICINITY OF AIRPORT.

NOISE ABATEMENT PROCEDURES IN EFFECT CONTACT AIRPORT MANAGEMENT ON 317−487−9594.

TAXIWAY V CLOSED TO AIR CARRIER OPERATIONS WITH MORE THAN 30 PASSENGER SEATS.

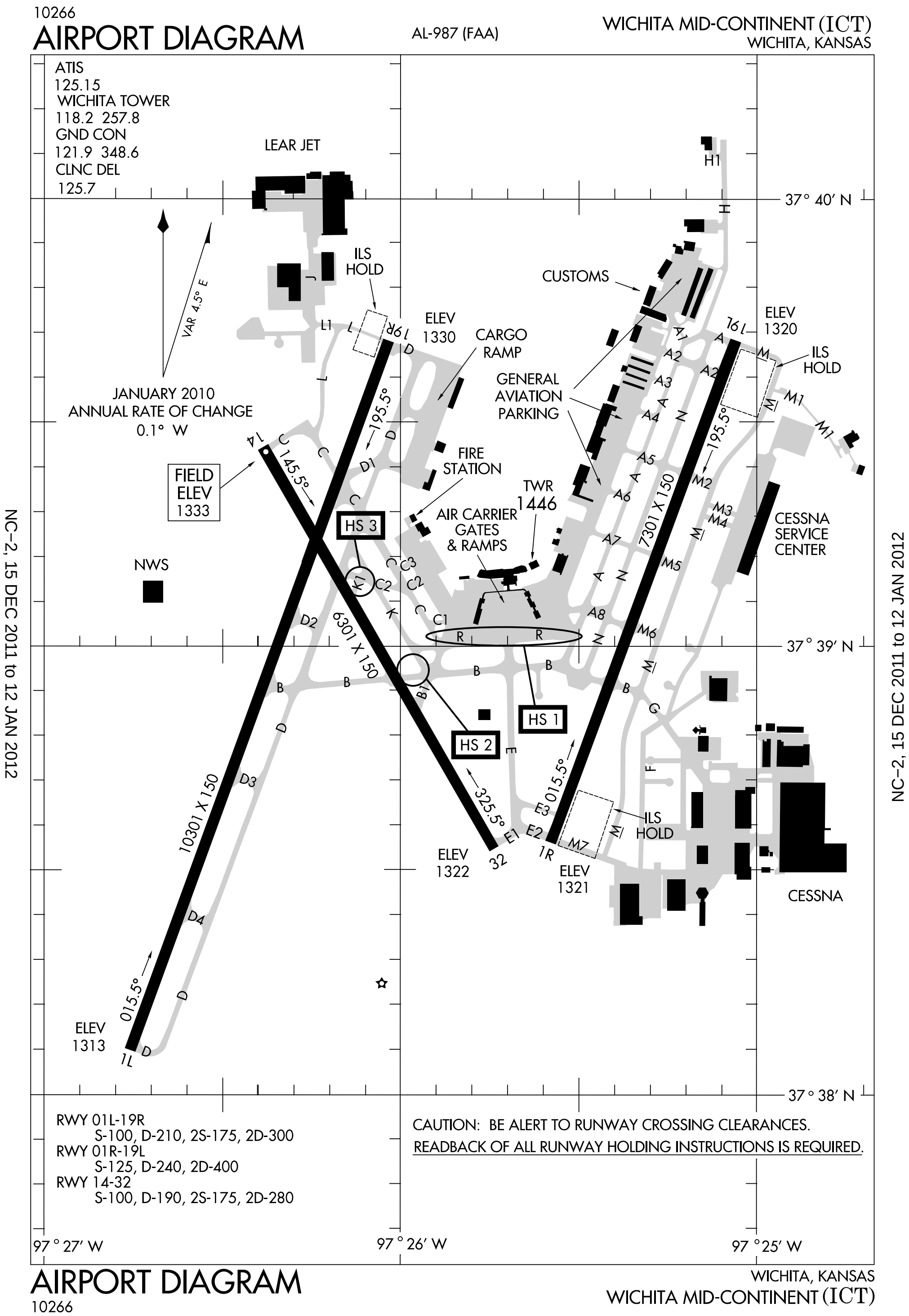
BE ALERT TO CLOSE PROXIMITY OF RUNWAY 14/32 TO NORTHEAST RAMP.

TAXIWAY ’H’ RUNS CONTIGUOUS AT NORTHEAST RAMP.

TAXIWAY H NE OF TAXIWAY M NOT AVAILABLE FOR GROUP V AIRCRAFT.

RUNWAY 05R/23L & RUNWAY 14/32 HAVE 200 FT BLAST PADS BOTH ENDS. RUNWAY 5L/23R HAS 400 FT BLAST PAD AT BOTH ENDS.

Wichita, Kansas
Wichita Mid−Continent
ICAO Identifier KICT



Wichita, KS
Wichita Mid-Continent
ICAO Identifier KICT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−38−59.80N / 97−25−59.00W
2.2.2 From City: 5 Miles SW Of Wichita, KS
2.2.3 Elevation: 1333 ft
2.2.5 Magnetic variation: 7E (1985)
2.2.6 Airport Contact: Mr. Victor White, A.A.E.
2173 AIR CARGO ROAD
Wichita, KS 67209
(316−946−4700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway physical characteristics
2.12.1 Designation: 14
2.12.2 True Bearing: 150
2.12.3 Dimensions: 6301 ft x 150 ft
2.12.5 Coordinates: 37-39-27.16N / 97-26-24.27W
2.12.6 Threshold elevation: 1332 ft
2.12.6 Touchdown zone elevation: 1332 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 330
2.12.3 Dimensions: 6301 ft x 150 ft
2.12.5 Coordinates: 37-38-33.22N / 97-25-45.10W
2.12.6 Threshold elevation: 1322 ft
2.12.6 Touchdown zone elevation: 1322 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 20
2.12.3 Dimensions: 10301 ft x 150 ft
2.12.5 Coordinates: 37−38−00.00N / 97−26−45.59W
2.12.6 Threshold elevation: 1313 ft
2.12.6 Touchdown zone elevation: 1314 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 200
2.12.3 Dimensions: 10301 ft x 150 ft
2.12.5 Coordinates: 37−39−41.76N / 97−26−00.00W
2.12.6 Threshold elevation: 1330 ft
2.12.6 Touchdown zone elevation: 1330 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 20
2.12.3 Dimensions: 7301 ft x 150 ft
2.12.5 Coordinates: 37−38−33.95N / 97−25−34.63W
2.12.6 Threshold elevation: 1321 ft
2.12.6 Touchdown zone elevation: 1321 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 200
2.12.3 Dimensions: 7301 ft x 150 ft
2.12.5 Coordinates: 37−39−41.77N / 97−25−00.00W
2.12.6 Threshold elevation: 1320 ft
2.12.6 Touchdown zone elevation: 1320 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4-light PAPI on left
2.14.10 Remarks: PAPI Out Of Service Indefinitely.

2.14.1 Designation: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 19R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 01R
2.14.2 Approach lighting system: MALSR: 1400

feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 19L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 134.85 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 134.85 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 325.8 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 327.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 353.5 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 385.55 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 385.55 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 134.8 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 125.15 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 7E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37−38−16.71N / 97−26−46.01W
2.19.6 Site elevation: 1310 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 7E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37−37−39.47N / 97−26−57.83W
2.19.6 Site elevation: 1323 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 7E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37−33−33.95N / 97−28−51.78W
2.19.6 Site elevation: 1310 ft

2.19.1 ILS type: Inner Marker for runway 01L. Magnetic variation: 7E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37−37−57.14N / 97−26−49.69W
2.19.6 Site elevation: 1317 ft
2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 7E

2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37−39−51.34N / 97−25−57.41W
2.19.6 Site elevation: 1320 ft

2.19.1 ILS type: Localizer for runway 19R. Magnetic variation: 7E
2.19.2 ILS identification: HOV
2.19.5 Coordinates: 37−37−54.74N / 97−26−50.78W
2.19.6 Site elevation: 1319 ft

2.19.1 ILS type: Glide Slope for runway 19R. Magnetic variation: 7E
2.19.2 ILS identification: HOV
2.19.5 Coordinates: 37−39−33.86N / 97−26−10.83W
2.19.6 Site elevation: 1326 ft

2.19.1 ILS type: Middle Marker for runway 19R. Magnetic variation: 7E
2.19.2 ILS identification: HOV
2.19.5 Coordinates: 37−40−00.00N / 97−25−49.89W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 19R. Magnetic variation: 7E
2.19.2 ILS identification: HOV
2.19.5 Coordinates: 37−44−16.61N / 97−24−00.00W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Localizer for runway 01R. Magnetic variation: 7E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37−39−50.13N / 97−24−59.73W
2.19.6 Site elevation: 1312 ft

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 7E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37−39−52.04N / 97−25−00.00W
2.19.6 Site elevation: 1327 ft

2.19.1 ILS type: Glide Slope for runway 01R. Magnetic variation: 7E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37−38−42.64N / 97−25−24.70W
2.19.6 Site elevation: 1315 ft

2.19.1 ILS type: Middle Marker for runway 01R. Magnetic variation: 7E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37−38−00.00N / 97−25−49.07W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 01R. Magnetic variation: 7E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37−34−41.50N / 97−27−21.09W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 19L. Magnetic variation: 7E
2.19.2 ILS identification: MVP
2.19.5 Coordinates: 37−38−21.53N / 97−25−43.26W
2.19.6 Site elevation: 1320 ft

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 7E
2.19.2 ILS identification: MVP
2.19.5 Coordinates: 37-38-21.32N / 97-25-40.42W
2.19.6 Site elevation: 1318 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 7E
2.19.2 ILS identification: MVP
2.19.5 Coordinates: 37−39−30.78N / 97−25−00.00W
2.19.6 Site elevation: 1312 ft

General Remarks:

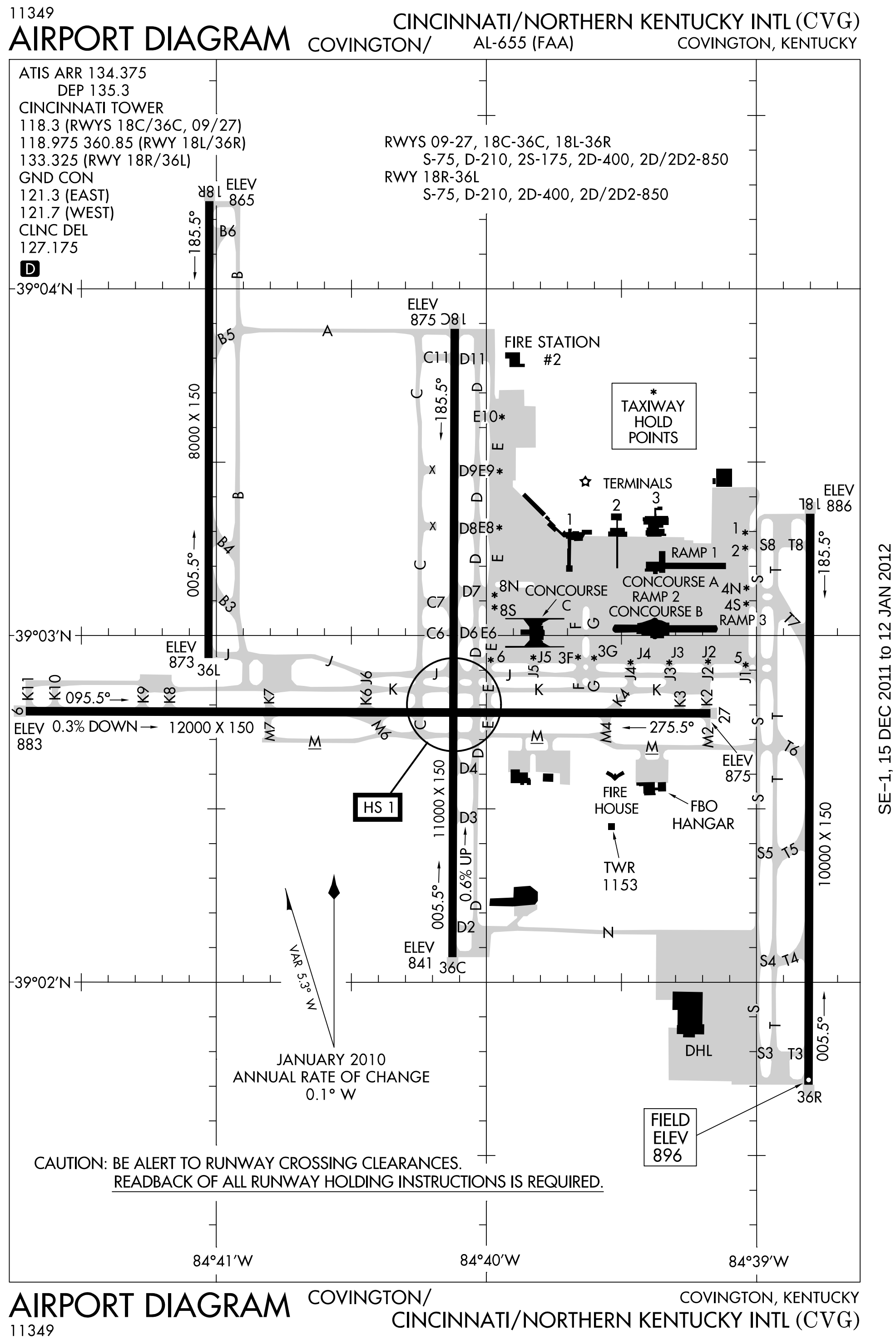
MIGRATORY BIRDS ON & IN THE VICINITY OF AIRPORT.

PRIOR PERMISSION REQUIREDUIRED FOR AIRCRAFT CARRYING CLASS 1 − DIVISION 1.1; 1.2 OR 1.3 EXPLOSIVES AS DEFINED BY 49 CODE OF FEDERAL REGULATIONS 173.50.

TAXIWAYS F, G, H, J, M1 AND ALL PARKING RAMPS ARE NON−MOVEMENT AREAS.

PUSHBACK CLEARANCE REQUIRED AT TERMINAL GATES 5, 6, 11 AND 12. PUSHBACK ENTERS TAXIWAY R.

Covington, Kentucky
Cincinnati/Northern Kentucky International
ICAO Identifier KCVG



Covington, KY
Cincinnati/Northern Kentucky Intl
ICAO Identifier KCVG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−02−55.81N / 84−40−00.00W
2.2.2 From City: 8 Miles SW Of Covington, KY
2.2.3 Elevation: 896 ft
2.2.5 Magnetic variation: 4W (1995)
2.2.6 Airport Contact: Candace Mcgraw
PO BOX 752000
Cincinnati, OH 45275
(859−767−3151)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway physical characteristics
2.12.1 Designation: 18L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 39−03−21.08N / 84−38−48.00W
2.12.6 Threshold elevation: 886 ft
2.12.6 Touchdown zone elevation: 889 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 39−01−42.24N / 84−38−48.46W
2.12.6 Threshold elevation: 896 ft
2.12.6 Touchdown zone elevation: 896 ft

2.12.1 Designation: 18C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 39−03−53.07N / 84−40−00.00W
2.12.6 Threshold elevation: 875 ft
2.12.6 Touchdown zone elevation: 875 ft

2.12.1 Designation: 36C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 39−02−00.00N / 84−40−00.00W
2.12.6 Threshold elevation: 841 ft
2.12.6 Touchdown zone elevation: 851 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39−02−46.91N / 84−41−42.36W
2.12.6 Threshold elevation: 883 ft
2.12.6 Touchdown zone elevation: 883 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 39−02−46.54N / 84−39−10.26W
2.12.6 Threshold elevation: 875 ft
2.12.6 Touchdown zone elevation: 875 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 39−04−15.18N / 84−41−00.00W
2.12.6 Threshold elevation: 865 ft
2.12.6 Touchdown zone elevation: 868 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 39−02−56.11N / 84−41−00.00W
2.12.6 Threshold elevation: 873 ft
2.12.6 Touchdown zone elevation: 873 ft

AD 2.13 Declared distances
2.13.1 Designation: 18L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate-stop distance available: 10000

2.13.5 Landing distance available: 10000

2.13.1 Designation: 36R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate-stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 18C
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate-stop distance available: 11000
2.13.5 Landing distance available: 11000

2.13.1 Designation: 36C
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate-stop distance available: 11000
2.13.5 Landing distance available: 11000

2.13.1 Designation: 09
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 11880
2.13.5 Landing distance available: 11880

2.13.1 Designation: 27
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate-stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 36L
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate-stop distance available: 8000
2.13.5 Landing distance available: 8000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 18L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 18C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on right

2.14.1 Designation: 36C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 18R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 36L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication

facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.975 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 123.875 MHz

2.18.1 Service designation: (001−180)
2.18.3 Service designation: 126.65 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.175 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 128.7 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.375 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.3 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 360.85 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 254.25 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 363.15 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 133.325 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39−01−31.58N / 84−38−45.41W
2.19.6 Site elevation: 915 ft

2.19.1 ILS type: Localizer for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39−01−31.79N / 84−38−48.50W
2.19.6 Site elevation: 899 ft

2.19.1 ILS type: Glide Slope for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39−03−10.88N / 84−38−42.98W
2.19.6 Site elevation: 881 ft

2.19.1 ILS type: Middle Marker for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39−03−47.57N / 84−38−48.51W
2.19.6 Site elevation: 872 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 4W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39−03−30.88N / 84−38−51.18W
2.19.6 Site elevation: 905 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 4W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39−01−16.54N / 84−38−48.58W
2.19.6 Site elevation: 915 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 4W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39−03−31.50N / 84−38−47.96W

2.19.6 Site elevation: 892 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 4W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39−01−52.80N / 84−38−43.34W
2.19.6 Site elevation: 890 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 4W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39−01−33.56N / 84−38−48.50W
2.19.6 Site elevation: 899 ft

2.19.1 ILS type: Localizer for runway 36C. Magnetic variation: 4W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39-04-00.00N / 84-40-00.00W
2.19.6 Site elevation: 882 ft

2.19.1 ILS type: DME for runway 36C. Magnetic variation: 4W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39-04-00.00N / 84-40-10.17W
2.19.6 Site elevation: 886 ft

2.19.1 ILS type: Glide Slope for runway 36C. Magnetic variation: 4W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39-02-15.48N / 84-40-12.49W
2.19.6 Site elevation: 834 ft

2.19.1 ILS type: Inner Marker for runway 36C. Magnetic variation: 4W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39-01-54.05N / 84-40-00.00W
2.19.6 Site elevation: 956 ft

2.19.1 ILS type: Middle Marker for runway 36C. Magnetic variation: 4W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39-01-31.79N / 84-40-00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−01−59.67N / 84−40−00.00W
2.19.6 Site elevation: 839 ft

2.19.1 ILS type: Middle Marker for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−04−10.50N / 84−40−00.00W
2.19.6 Site elevation: 99999 ft
2.19.1 ILS type: DME for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−01−59.68N / 84−40−00.00W
2.19.6 Site elevation: 845 ft

2.19.1 ILS type: Outer Marker for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−07−30.20N / 84−40−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−03−42.65N / 84−40−12.14W
2.19.6 Site elevation: 868 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39−02−42.92N / 84−41−28.27W
2.19.6 Site elevation: 874 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39−02−44.69N / 84−46−22.67W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39−02−46.92N / 84−41−27.61W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 09. Magnetic

variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39−02−46.53N / 84−39−00.00W
2.19.6 Site elevation: 874 ft

2.19.1 ILS type: DME for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39−02−43.95N / 84−39−00.00W
2.19.6 Site elevation: 872 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP
2.19.5 Coordinates: 39−02−46.94N / 84−41−55.34W
2.19.6 Site elevation: 884 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP
2.19.5 Coordinates: 39−02−46.46N / 84−38−37.56W
2.19.6 Site elevation: 890 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP
2.19.5 Coordinates: 39−02−46.53N / 84−32−59.24W
2.19.6 Site elevation: 860 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP
2.19.5 Coordinates: 39−02−42.63N / 84−39−25.16W
2.19.6 Site elevation: 867 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 4W
2.19.2 ILS identification: VAC
2.19.5 Coordinates: 39−04−25.03N / 84−41−00.00W
2.19.6 Site elevation: 848 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 4W
2.19.2 ILS identification: VAC
2.19.5 Coordinates: 39−04−25.49N / 84−41−00.00W
2.19.6 Site elevation: 855 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 4W
2.19.2 ILS identification: VAC
2.19.5 Coordinates: 39−03−00.00N / 84−41−00.00W
2.19.6 Site elevation: 867 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 4W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−02−41.27N / 84−41−00.00W
2.19.6 Site elevation: 871 ft

2.19.1 ILS type: Inner Marker for runway 18R. Magnetic variation: 4W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−04−23.57N / 84−41−00.00W
2.19.6 Site elevation: 856 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 4W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−04−00.00N / 84−41−00.00W
2.19.6 Site elevation: 861 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 4W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−02−41.52N / 84−41−00.00W
2.19.6 Site elevation: 869 ft

General Remarks:

NOISE SENSITIVE AREAS NORTH & SOUTH OF AIRPORT. RUNWAY ASSIGNMENTS BETWEEN 2200−0700 WILL BE PREDICATED ON NOISE ABATEMENT CONSIDERATIONS.

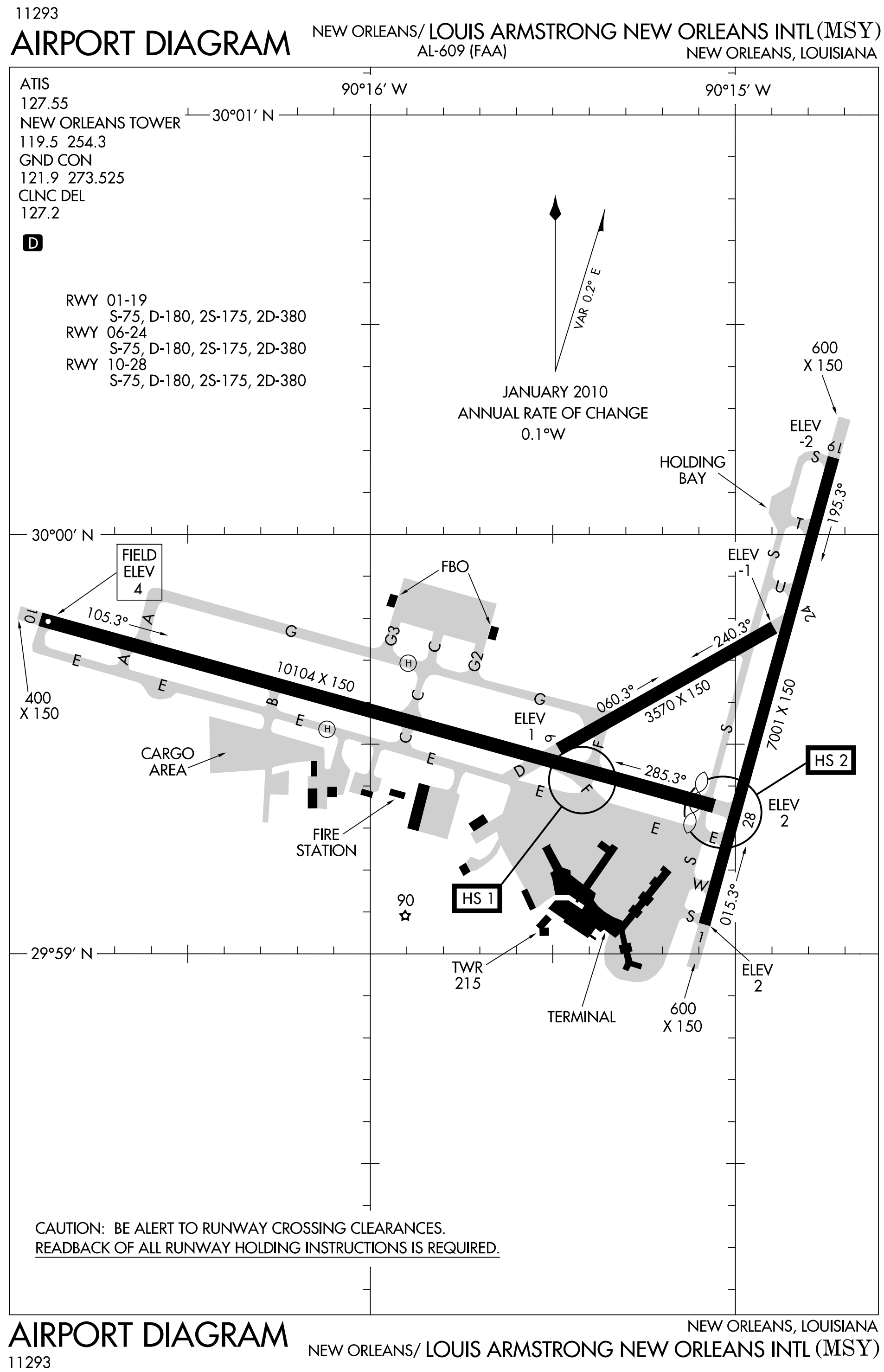
SUCCESSIVE OR SIMULTANEOUS DEPS FROM RUNWAYS 18L AND RUNWAY 18C ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FROM END OF RUNWAY DUE TO NOISE ABATEMENT RESTRICTIONS.

RUNWAY 09/27 WEST 4200 FT CONCRETE; EAST 750 FT CONCRETE; REMAINDER ASPHALT OVERLAY.

SUCCESSIVE OR SIMULTANEOUS DEPS FROM RUNWAY 36C & RUNWAY 36R ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FROM END OF RUNWAY DUE TO NOISE ABATEMENT RESTRICTIONS.

TAXIWAY S SOUTH OF TAXIWAY N TO TAXIWAY S3 CLOSED TO AIRCRAFT WITH WINGSPANS 171 FT AND GREATER.

New Orleans, Louisana
Louis Armstrong New Orleans International
ICAO Identifier KMSY



New Orleans, LA
Louis Armstrong New Orleans Intl
ICAO Identifier KMSY

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 29−59−36.20N / 90−15−28.90W
2.2.2 From City: 10 Miles W Of New Orleans, LA
2.2.3 Elevation: 4 ft
2.2.5 Magnetic variation: 2E (1990)
2.2.6 Airport Contact: Iftikhar Ahmad
PO BOX 20007
New Orleans, LA 70141
(504−628−2426)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 01
2.10.1.b Type of obstacle: Road (12 ft). Lighted
2.10.1.c Location of obstacle: 365 ft from Centerline

2.10.1.a. Runway designation: 19
2.10.1.b Type of obstacle: Road (13 ft). Lighted
2.10.1.c Location of obstacle: 289 ft from Centerline

2.10.1.a. Runway designation: 06
2.10.1.b Type of obstacle: Pole (30 ft). Lighted
2.10.1.c Location of obstacle: 343 ft from Centerline

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Tree (33 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 315 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Tree (53 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 694 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 01
2.12.2 True Bearing: 15
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.5 Coordinates: 29−59−00.00N / 90−15−00.00W
2.12.6 Threshold elevation: 2 ft
2.12.6 Touchdown zone elevation: 3 ft

2.12.1 Designation: 19
2.12.2 True Bearing: 195
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.5 Coordinates: 30−00−10.99N / 90−14−43.84W
2.12.6 Threshold elevation: −2 ft
2.12.6 Touchdown zone elevation: 0 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 60
2.12.3 Dimensions: 3570 ft x 150 ft
2.12.5 Coordinates: 29−59−29.27N / 90−15−28.99W
2.12.6 Threshold elevation: 1 ft
2.12.6 Touchdown zone elevation: 1 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 240
2.12.3 Dimensions: 3570 ft x 150 ft
2.12.5 Coordinates: 29−59−46.68N / 90−14−53.67W
2.12.6 Threshold elevation: −1 ft
2.12.6 Touchdown zone elevation: 1 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 105
2.12.3 Dimensions: 10104 ft x 150 ft
2.12.5 Coordinates: 29−59−47.86N / 90−16−54.22W
2.12.6 Threshold elevation: 4 ft
2.12.6 Touchdown zone elevation: 4 ft

2.12.1 Designation: 28

2.12.2 True Bearing: 285
2.12.3 Dimensions: 10104 ft x 150 ft
2.12.5 Coordinates: 29−59−21.17N / 90−15−00.00W
2.12.6 Threshold elevation: 2 ft
2.12.6 Touchdown zone elevation: 3 ft

AD 2.13 Declared distances
2.13.1 Designation: 01
2.13.2 Takeoff run available: 7001
2.13.3 Takeoff distance available: 7001
2.13.4 Accelerate−stop distance available: 7001
2.13.5 Landing distance available: 7001

2.13.1 Designation: 19
2.13.2 Takeoff run available: 7001
2.13.3 Takeoff distance available: 7001
2.13.4 Accelerate−stop distance available: 7001
2.13.5 Landing distance available: 7001

2.13.1 Designation: 06
2.13.2 Takeoff run available: 3570
2.13.3 Takeoff distance available: 3570
2.13.4 Accelerate−stop distance available: 3570
2.13.5 Landing distance available: 3570

2.13.1 Designation: 24
2.13.2 Takeoff run available: 3570
2.13.3 Takeoff distance available: 3570
2.13.4 Accelerate−stop distance available: 3570
2.13.5 Landing distance available: 3570

2.13.1 Designation: 10
2.13.2 Takeoff run available: 10104
2.13.3 Takeoff distance available: 10104
2.13.4 Accelerate−stop distance available: 10104
2.13.5 Landing distance available: 10104

2.13.1 Designation: 28
2.13.2 Takeoff run available: 10104
2.13.3 Takeoff distance available: 10104
2.13.4 Accelerate−stop distance available: 10104
2.13.5 Landing distance available: 9800

AD 2.14 Approach and runway lighting
2.14.1 Designation: 01
2.14.2 Approach lighting system: LDIN: Lead−in light system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 28
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 123.85 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.55 MHz

2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 133.15 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 254.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 269.2 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 290.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 350.35 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 273.525 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 01. Magnetic variation: 2E
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 30−00−21.65N / 90−14−43.24W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Glide Slope for runway 01. Magnetic variation: 2E
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 29−59−13.61N / 90−14−58.55W
2.19.6 Site elevation: 0 ft

2.19.1 ILS type: Outer Marker for runway 01. Magnetic variation: 2E
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 29−54−53.36N / 90−16−26.35W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 01. Magnetic variation: 2E
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 30−00−20.51N / 90−14−40.81W
2.19.6 Site elevation: −4 ft

2.19.1 ILS type: Middle Marker for runway 01. Magnetic variation: 2E
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 29−58−28.53N / 90−15−15.88W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 19. Magnetic variation: 2E
2.19.2 ILS identification: ONW
2.19.5 Coordinates: 30−00−21.65N / 90−14−43.24W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Localizer for runway 19. Magnetic variation: 2E
2.19.2 ILS identification: ONW
2.19.5 Coordinates: 29−58−56.76N / 90−15−00.00W
2.19.6 Site elevation: 2 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 2E
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29−59−48.61N / 90−16−39.25W
2.19.6 Site elevation: −3 ft

2.19.1 ILS type: Outer Marker for runway 10. Magnetic variation: 2E
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 30−01−30.85N / 90−23−59.58W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 10. Magnetic variation: 2E
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29−59−50.26N / 90−17−00.00W

2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 2E
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29−59−17.34N / 90−14−56.02W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 2E
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29−59−19.32N / 90−14−55.85W
2.19.6 Site elevation: 0 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 2E
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29−59−56.63N / 90−17−22.12W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 2E
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29−59−17.34N / 90−14−56.02W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 2E
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29−59−27.97N / 90−15−16.78W
2.19.6 Site elevation: 1 ft

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 2E
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29−59−15.11N / 90−14−37.70W
2.19.6 Site elevation: 1 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 2E
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29−58−12.35N / 90−10−27.99W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 2E
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29−59−50.53N / 90−17−00.00W
2.19.6 Site elevation: 5 ft

General Remarks:

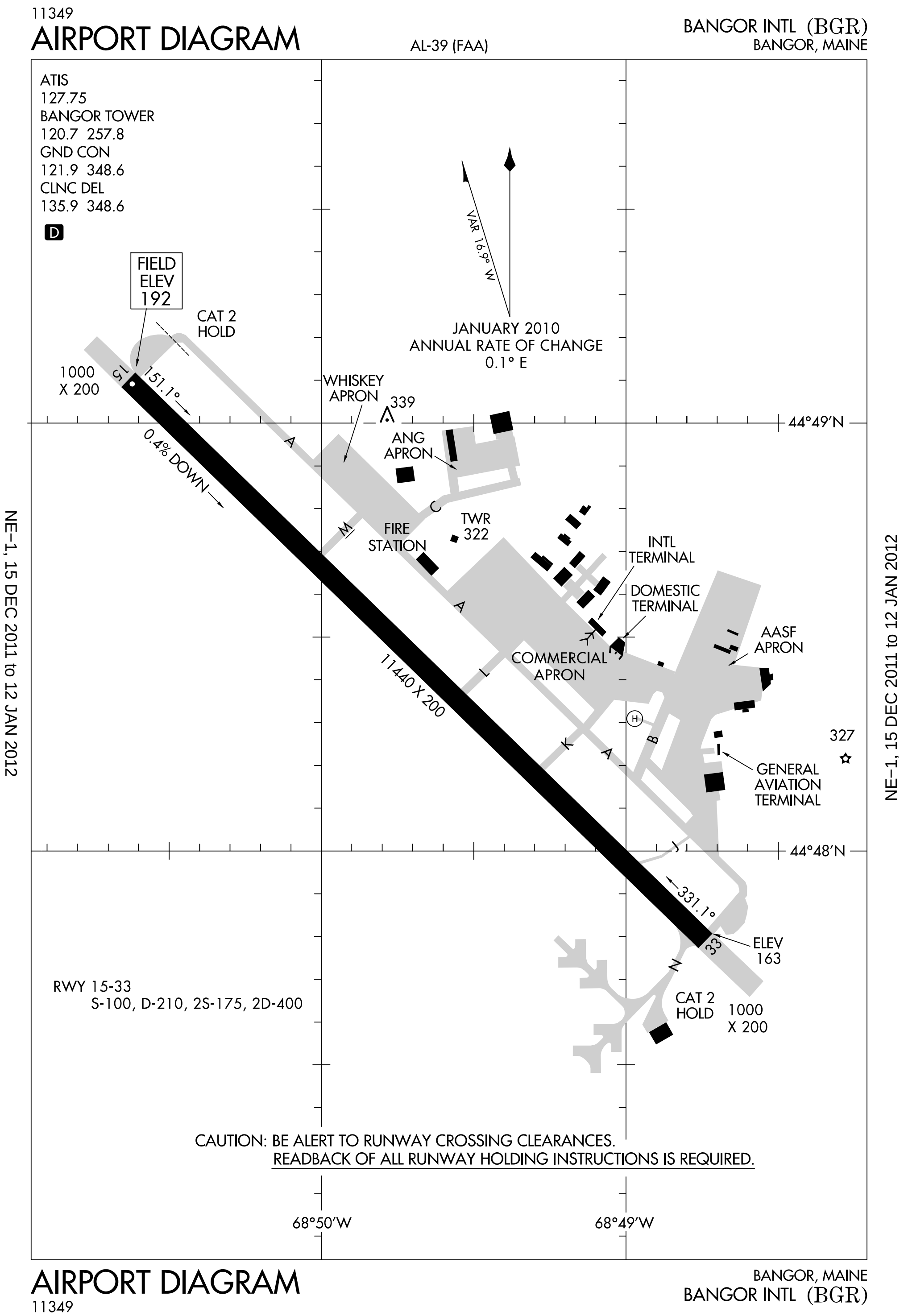
180 DEGREE & LOCKED WHEEL TURNS PROHIBITED ON ASPHALT SURFACE AIRCRAFT 12500 LBS & OVER.

FLOCKS OF BIRDS ON & IN VICINITY OF AIRPORT.

RUNWAY 10 NOISE SENSITIVE FOR DEP; AVAILABLE FOR OPERATIONAL NECESSITY. ALL RUNWAYS NOISE SENSITIVE FOR ARR. ARRIVING TURBOJETS MUST MAKE 5 MILE FINAL APPROACH TO MINIMIZE NOISE.

RUNWAY 06/24 CLOSED TO TAKEOFFS AND LANDINGS INDEFINITELY.

Bangor, Maine
Bangor International
ICAO Identifier KBGR



Bangor, ME
Bangor Intl
ICAO Identifier KBGR

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 44−48−26.80N / 68−49−41.30W
2.2.2 From City: 3 Miles W Of Bangor, ME
2.2.3 Elevation: 192 ft
2.2.5 Magnetic variation: 19W (1985)
2.2.6 Airport Contact: Rebecca Hupp
BANGOR INTERNATIONAL ARPT
Bangor, ME 4401 (207−992−4600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 33
2.10.1.b Type of obstacle: Trees (76 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: H1
2.12.3 Dimensions: 100 ft x 100 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 134
2.12.3 Dimensions: 11440 ft x 200 ft
2.12.5 Coordinates: 44−49−00.00N / 68−50−38.15W
2.12.6 Threshold elevation: 192 ft
2.12.6 Touchdown zone elevation: 192 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 11440 ft x 200 ft
2.12.5 Coordinates: 44−47−47.41N / 68−48−44.36W
2.12.6 Threshold elevation: 163 ft
2.12.6 Touchdown zone elevation: 163 ft

AD 2.13 Declared distances
2.13.1 Designation: 15
2.13.2 Takeoff run available: 11440
2.13.3 Takeoff distance available: 11440
2.13.4 Accelerate−stop distance available: 11440
2.13.5 Landing distance available: 11440

AD 2.14 Approach and runway lighting
2.14.1 Designation: 15
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 124.5 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 127.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 135.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 41.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 118.925 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 33. Magnetic variation: 19W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44−49−13.62N / 68−50−48.98W
2.19.6 Site elevation: 182 ft

2.19.1 ILS type: Outer Marker for runway 33. Magnetic variation: 19W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44-43-39.19N / 68-42-46.33W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 33. Magnetic variation: 19W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44−43−39.19N / 68−42−46.33W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 33. Magnetic variation: 19W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44−47−53.70N / 68−48−59.71W
2.19.6 Site elevation: 149 ft

2.19.1 ILS type: DME for runway 33. Magnetic variation: 19W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44−47−42.50N / 68−48−31.81W
2.19.6 Site elevation: 166 ft

2.19.1 ILS type: Localizer for runway 15. Magnetic variation: 19W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44−47−40.37N / 68−48−34.19W
2.19.6 Site elevation: 162 ft

2.19.1 ILS type: Glide Slope for runway 15. Magnetic variation: 19W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44−49−00.00N / 68−50−22.48W
2.19.6 Site elevation: 188 ft

2.19.1 ILS type: Inner Marker for runway 15. Magnetic variation: 19W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44−49−12.06N / 68−50−46.72W
2.19.6 Site elevation: 184 ft

2.19.1 ILS type: DME for runway 15. Magnetic variation: 19W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44−47−42.50N / 68−48−31.81W
2.19.6 Site elevation: 166 ft

2.19.1 ILS type: Outer Marker for runway 15. Magnetic variation: 19W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44−52−49.62N / 68−55−59.54W
2.19.6 Site elevation: 129 ft

2.19.1 ILS type: Middle Marker for runway 15. Magnetic variation: 19W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44−49−23.69N / 68−51−00.00W
2.19.6 Site elevation: 158 ft

General Remarks:

TAXIWAY J LIMITED TO AIRCRAFT 75000 LBS GROSS TAKEOFF WEIGHT

TRANSIENT AIRCRAFT MAY BE DIVERTED TO CIVILIAN SIDE DURING NON−DUTY HRS & WEEKENDS. FEE REQUIRED; NO ANG TRANSIENT ALERT.

RESTRICTED: TAXIWAY ’J’ CLOSED DURING WINTER.

TRAFFIC PATTERN: RUNWAY 33 LEFT TRAFFIC, TURBO JET TRAFFIC 2000’ MSL UNLESS OTHERWISE INSTR.

MISC: RUNWAY 15−33 GROOVED.

ANG: PRIOR PERMISSION REQUIREDUIRED DSN 698−7232 (COMM 207−990−7232), 3 HR OUT CALL (HF 6761) & 30 MIN OUT CALL (311.0) REQUIRED TO ENSURE CUSTOMS/AG AVAIL & TIMELY TRANSIENT SERVICE. TRANSIENT MAINT AVAILABLE BY PRIOR PERMISSION REQUIRED. TRANSIENT AIRCRAFT MAY BE DIVERTED TO CIVIL SIDE DUR OPERATING HRS.

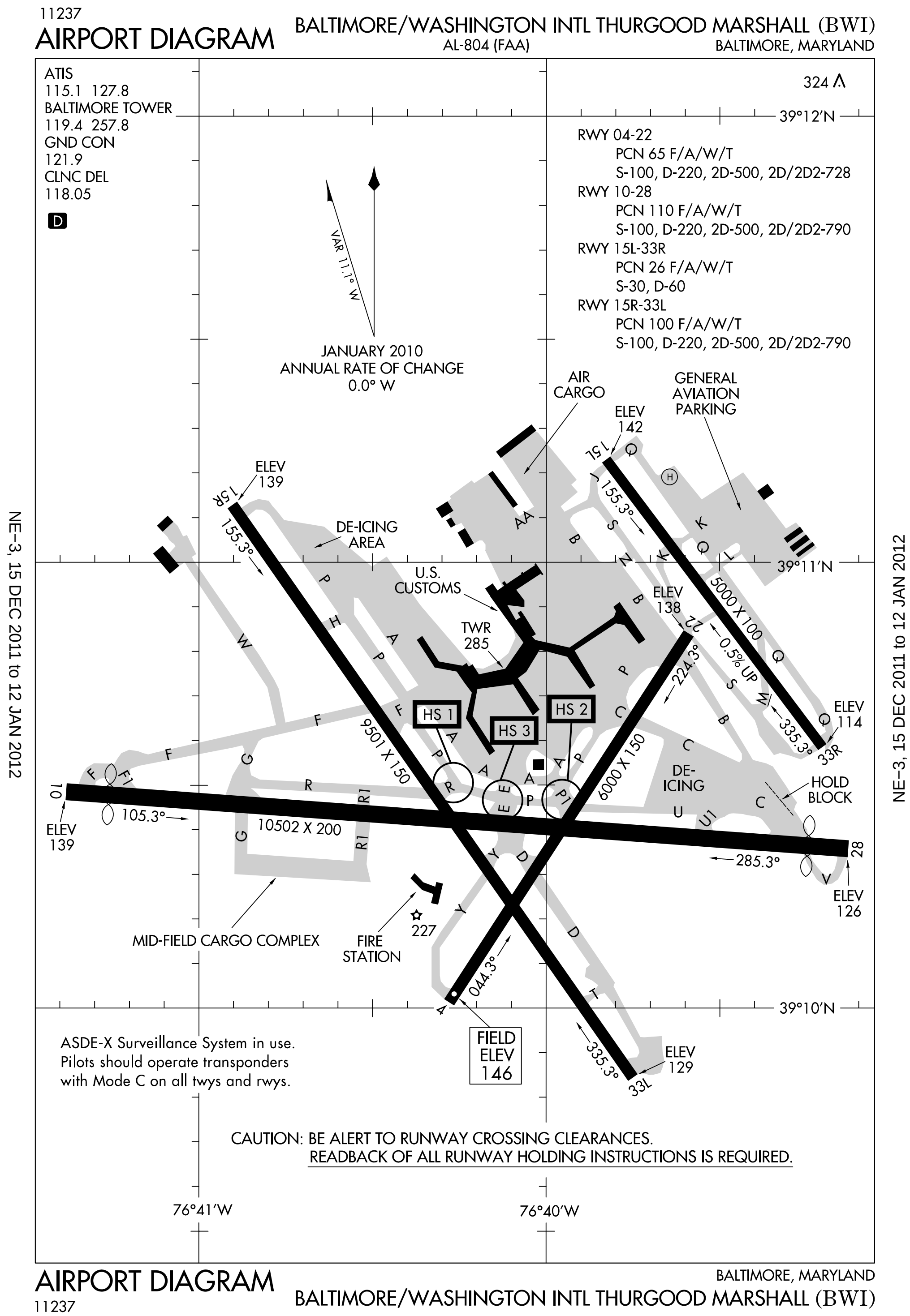
ANG: FEE REQUIRE. ANG NOT EQUIPMENT OR MANNED WITH AN AERIAL PORT FLIGHT 30 OR MORE PASSENGER WILL BE SENT TO CITY FOR PROCESSING. CAN HANDLE ALL AIR MOBILITY COMMAND AIRCRAFT. SERVICE AVAILABLE 24/7.ALL HAZARD CARGO SHOULD BE PRE−COORD FOR SAFETY REASONS, NO HOT CARGO PAD AVAILABLE.

ARRANGE: OPR 1230−2100Z++ MON−FRI EXCEPT HOLIDAY. LIMITED MAINT. J8. PRIOR PERMISSION REQUIRED MAY−OCT SERVICE DSN 626−1100.

CAUTION: BASH PHASE II PERIOD OCT−NOV, APR−MAY. EXPECT INCREASED BIRD ACTIVITY. CONTACT BASE OPS/COMMAND POST/SOF FOR CURRENT BIRDWATCH CONDITION.

SERVICE−FLUID: REMARKS: FOREIGN MILITARY ONLY: ON BASE LOX SERVICE UNAVAILABLE. OFF−BASE CONTRACTED LOX AVAILABLE 24/7, CONTACT ADVANTAGE GAS (207−942−6393) FOR PRECOORDINATION.

Baltimore, Maryland
Baltimore−Washington International Thurgood Marshall
ICAO Identifier KBWI



Baltimore, MD

Baltimore/Washington Intl Thurgood Marshal
ICAO Identifier KBWI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−10−31.30N / 76−40−00.00W
2.2.2 From City: 9 Miles S Of Baltimore, MD
2.2.3 Elevation: 146 ft
2.2.5 Magnetic variation: 11W (2000)
2.2.6 Airport Contact: John Stewart
PO BOX 8766
BWI Airport, MD 21240
(410−859−7018)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: RWY 28 De−Ice Pad Lane 1 R Standard To Aircraft With Wingspan 171 Ft Or Less, Lane 2 R Standard To Aircraft With Wingspan 135 Ft Or Less, Lane 3 Is Used By Large Aircraft Max Wingspan 215 Ft And When In Use− Lanes 2 And 4 Are Unavailable. Lanes 4, 5 And 6 Are R Standard To Aircraft Wingspan 135 Ft Or Less.
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 15L
2.10.1.b Type of obstacle: Pole (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 615 ft from Centerline

2.10.1.a. Runway designation: 33R
2.10.1.b Type of obstacle: Tree (39 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 585 ft from Centerline

2.10.1.a. Runway designation: 15R
2.10.1.b Type of obstacle: Ant (126 ft). Lighted
2.10.1.c Location of obstacle: 908 ft from Centerline

2.10.1.a. Runway designation: 33L
2.10.1.b Type of obstacle: Tower (154 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 906 ft from Centerline

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Tree (35 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 305 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Tree (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 425 ft from Centerline

2.10.1.a. Runway designation: 04
2.10.1.b Type of obstacle: Tree (51 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 22
2.10.1.b Type of obstacle: Pole (60 ft). Lighted
2.10.1.c Location of obstacle: 328 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: H1
2.12.3 Dimensions: 100 ft x 100 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 144
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 26 F/A/W/T
2.12.5 Coordinates: 39−11−14.54N / 76−39−48.74W
2.12.6 Threshold elevation: 142 ft
2.12.6 Touchdown zone elevation: 142 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 324
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 26 F/A/W/T

2.12.5 Coordinates: 39−10−34.45N / 76−39−11.63W
2.12.6 Threshold elevation: 114 ft
2.12.6 Touchdown zone elevation: 124 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 144
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 100 F/A/W/T
2.12.5 Coordinates: 39−11−00.00N / 76−40−55.14W
2.12.6 Threshold elevation: 139 ft
2.12.6 Touchdown zone elevation: 139 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 324
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 100 F/A/W/T
2.12.5 Coordinates: 39−09−51.15N / 76−39−44.58W
2.12.6 Threshold elevation: 129 ft
2.12.6 Touchdown zone elevation: 142 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 94
2.12.3 Dimensions: 10502 ft x 200 ft
2.12.4 PCN: 110 F/A/W/T
2.12.5 Coordinates: 39−10−29.09N / 76−41−22.63W
2.12.6 Threshold elevation: 139 ft
2.12.6 Touchdown zone elevation: 143 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 274
2.12.3 Dimensions: 10502 ft x 200 ft
2.12.4 PCN: 110 F/A/W/T
2.12.5 Coordinates: 39−10−21.48N / 76−39−00.00W
2.12.6 Threshold elevation: 126 ft
2.12.6 Touchdown zone elevation: 142 ft

2.12.1 Designation: 04
2.12.2 True Bearing: 33
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 65 F/A/W/T
2.12.5 Coordinates: 39−10−00.00N / 76−40−16.92W
2.12.6 Threshold elevation: 146 ft
2.12.6 Touchdown zone elevation: 146 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 213
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 65 F/A/W/T
2.12.5 Coordinates: 39−10−50.38N / 76−39−35.21W
2.12.6 Threshold elevation: 138 ft
2.12.6 Touchdown zone elevation: 143 ft

AD 2.13 Declared distances
2.13.1 Designation: 15L
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate−stop distance available: 5000
2.13.5 Landing distance available: 5000

2.13.1 Designation: 33R
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate−stop distance available: 5000
2.13.5 Landing distance available: 5000

2.13.1 Designation: 15R
2.13.2 Takeoff run available: 9501
2.13.3 Takeoff distance available: 9501
2.13.4 Accelerate−stop distance available: 9501
2.13.5 Landing distance available: 9501

2.13.1 Designation: 33L
2.13.2 Takeoff run available: 9501
2.13.3 Takeoff distance available: 9501
2.13.4 Accelerate−stop distance available: 9501
2.13.5 Landing distance available: 9501

2.13.1 Designation: 10
2.13.2 Takeoff run available: 10502
2.13.3 Takeoff distance available: 10502
2.13.4 Accelerate−stop distance available: 10502
2.13.5 Landing distance available: 9952

2.13.1 Designation: 28
2.13.2 Takeoff run available: 10502
2.13.3 Takeoff distance available: 10502
2.13.4 Accelerate−stop distance available: 10502
2.13.5 Landing distance available: 10002

2.13.1 Designation: 04
2.13.2 Takeoff run available: 6000
2.13.3 Takeoff distance available: 6000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 6000

2.13.1 Designation: 22
2.13.2 Takeoff run available: 6000
2.13.3 Takeoff distance available: 6000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 6000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 15L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 15R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 33L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 10
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 28
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 04
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 22
2.14.4 Visual approach slope indicator system: 4−box VASI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 115.1 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.05 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 15L. Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−10−31.22N / 76−39−00.00W
2.19.6 Site elevation: 102 ft

2.19.1 ILS type: Outer Marker for runway 15L. Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−14−55.34N / 76−43−16.63W
2.19.6 Site elevation: 301 ft

2.19.1 ILS type: Glide Slope for runway 15L. Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−11−00.00N / 76−39−44.24W
2.19.6 Site elevation: 138 ft

2.19.1 ILS type: Middle Marker for runway 15L.

Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−11−37.14N / 76−40−00.00W
2.19.6 Site elevation: 180 ft

2.19.1 ILS type: Localizer for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−11−16.97N / 76−39−50.99W
2.19.6 Site elevation: 135 ft

2.19.1 ILS type: Glide Slope for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−10−40.05N / 76−39−21.19W
2.19.6 Site elevation: 110 ft

2.19.1 ILS type: Middle Marker for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−10−00.00N / 76−38−48.58W
2.19.6 Site elevation: 80 ft

2.19.1 ILS type: DME for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−11−18.90N / 76−39−48.50W
2.19.6 Site elevation: 129 ft

2.19.1 ILS type: Localizer for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−09−36.97N / 76−39−31.44W
2.19.6 Site elevation: 102 ft

2.19.1 ILS type: Glide Slope for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−10−56.54N / 76−40−49.44W
2.19.6 Site elevation: 132 ft

2.19.1 ILS type: Middle Marker for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−11−33.15N / 76−41−19.11W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−14−13.45N / 76−43−52.10W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39−11−10.77N / 76−40−58.34W
2.19.6 Site elevation: 132 ft

2.19.1 ILS type: Glide Slope for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39−10−00.00N / 76−39−48.83W
2.19.6 Site elevation: 129 ft

2.19.1 ILS type: Outer Marker for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39−06−36.92N / 76−36−43.69W
2.19.6 Site elevation: 151 ft

2.19.1 ILS type: Middle Marker for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39−09−29.15N / 76−39−26.74W
2.19.6 Site elevation: 92 ft

2.19.1 ILS type: DME for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39−11−00.00N / 76−41−00.00W
2.19.6 Site elevation: 127 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39−10−20.59N / 76−38−54.29W

2.19.6 Site elevation: 138 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39−10−24.02N / 76−41−00.00W
2.19.6 Site elevation: 138 ft

2.19.1 ILS type: Outer Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39−10−45.89N / 76−46−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39−10−31.24N / 76−41−27.11W
2.19.6 Site elevation: 131 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39−10−30.85N / 76−41−53.99W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 11W
2.19.2 ILS identification: OEH
2.19.5 Coordinates: 39−10−29.45N / 76−41−28.96W
2.19.6 Site elevation: 137 ft

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 11W
2.19.2 ILS identification: OEH
2.19.5 Coordinates: 39−10−18.69N / 76−38−22.68W
2.19.6 Site elevation: 55 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 11W
2.19.2 ILS identification: OEH
2.19.5 Coordinates: 39−09−56.02N / 76−31−00.00W
2.19.6 Site elevation: 39 ft

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 11W
2.19.2 ILS identification: OEH
2.19.5 Coordinates: 39−10−18.84N / 76−39−28.42W
2.19.6 Site elevation: 130 ft

General Remarks:

AIRCRAFT PARKED AT GATE POSITIONS D−15; 16; ENCROACH RUNWAY 04/22 7:1 (FAR 77) TO HEIGHT OF 58’.

PRACTICE LANDING & APPROACH BY TURBO−POWERED AIRCRAFT PROHIBITED 2200−0600; PRACTICE LANDING & TAKE-OFF BY B−747 AIRCRAFT PROHIBITED RUNWAY 15R/33L.

CONT MOWING OPERATIONS ADJACENT ALL RUNWAYS & TAXIWAYS − APR THRU NOV.

NO APRON PARKING FOR UNSCHEDULED AIR CARRIER.

DEER & BIRDS OCCASIONALLY ON & IN THE VICINITY OF AIRPORT.

DISTRACTING LIGHTS (GOLF DRIVING RANGE) RIGHT SIDE EXTENDED CENTERLINE RUNWAY 33L FROM APPROACH END RUNWAY TO 1/4 MI FINAL.

NOISE ABATEMENT PROCEDURES IN EFFECT − RESTRICTION FOR RUNWAY 15L/33R EXCEPT FOR EMERGENCIES OR MERCY FLIGHTS CONTACT AIRPORT MANAGER FOR INFORMATION.

MAJOR CONSTRUCTION ON AIRPORT DAILY; AIRCRAFT MOVEMENT & PARKING AREAS

SUBJECT TO SHORT NOTICE CHANGE/CLOSURE. FOR CURRENT INFORMATION PHONE BWI OPERATIONS CENTER 410−859−7018.

AIRCRAFT ON VISUAL APPROACHES EXPECT TO MAINTAIN 3000 FT UNTIL 10 DME FROM BALANCE VORTAC; DEPARTURE AIRCRAFT SHOULD EXPECT TURNS BASED ON BALTIMORE DME.

TAXIING PROHIBITED BETWEEN GATE C16 & ADJACENT BUILDING STRUCTURE SW OF PIER C.

RUNWAY 15R DEICE PAD, POSITION # 1, 2 & 3 ARE RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF 135 FT OR LESS, POSITION #4 IS RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF 156 FT OR LESS & POSITION #5 IS RESTRICTED TO AIRCRAFT WITH 214 FT OR LESS.

TAXIWAY “S”, SOUTH OF RUNWAY 22, RESTRICTED TO AIRCRAFT 60000 LBS. & LESS

GENERAL AVIATION AIRCRAFT CONTACT UNICOM PRIOR TO ARRIVING AT GENERAL AVIATION RAMP FOR SECURITY PURPOSES.

TAXIWAY “A” RESTRICTED TO AIRCRAFT WITH WINGSPAN OF 171 FT OR LESS. DESIGN GROUP IV.

TAXILANES A−1 AND H, RESTRICTED TO GROUP III AIRCRAFT WITH MAX WINGSPAN OF 118 FEET.

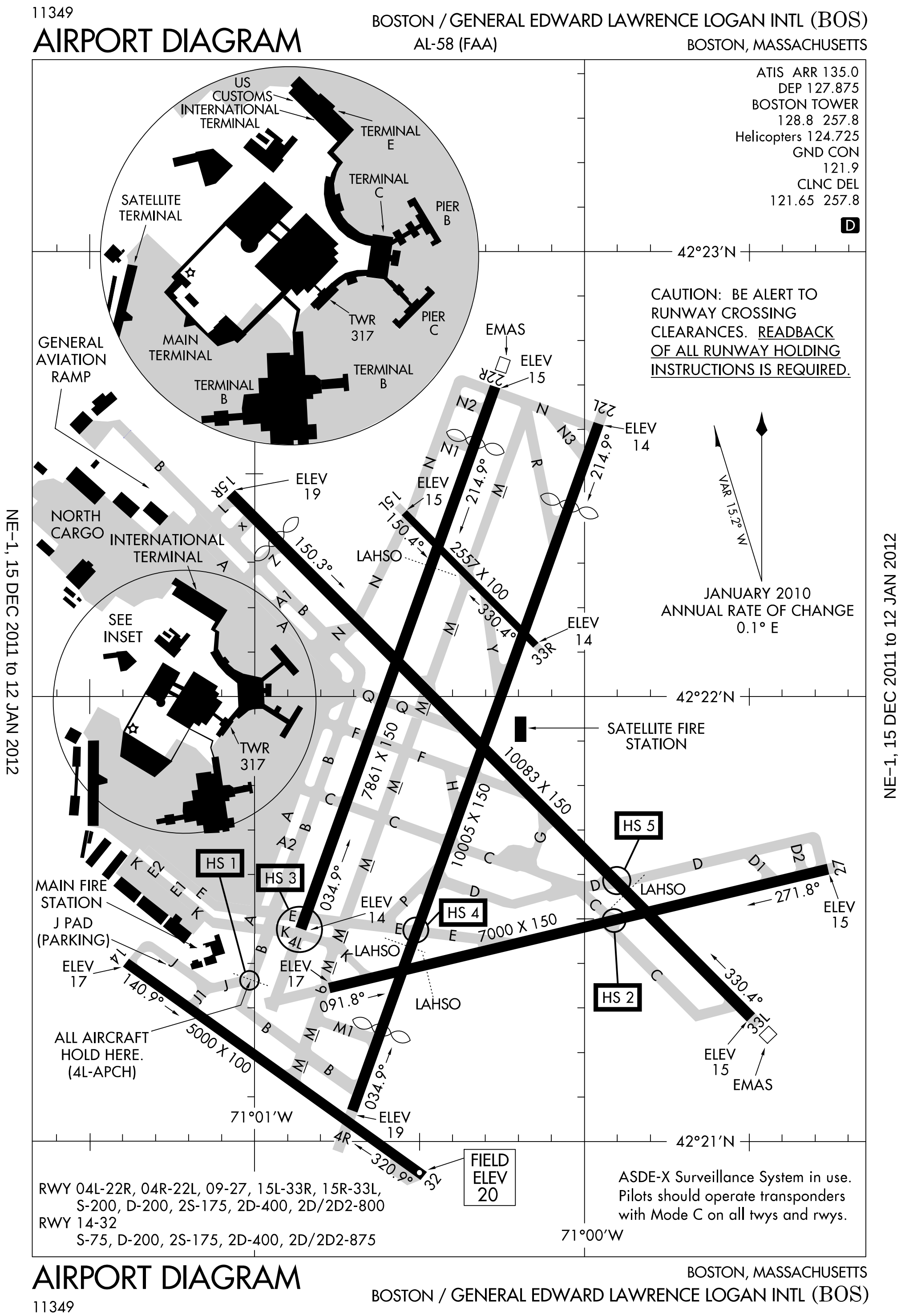
CONCOURSE A − ALTERNATE DEICING AREA IS RESTRICTED TO B737−800 SIZE AIRCRAFT WITH WINGLETS OR SMALLER ON SPOTS 6, 7A, AND 8A. B737−700 SIZE AIRCRAFT WITH WINGLETS OR SMALLER ARE RESTRICTED TO SPOTS 7B AND 8B.

RUNWAY 28 DE−ICE PAD LANE 1 RESTRICTED TO AIRCRAFT WITH WINGSPAN 171 FT OR LESS, LANE 2 RESTRICTED TO AIRCRAFT WITH WINGSPAN 135 FT OR LESS, LANE 3 IS USED BY LARGE AIRCRAFT MAX WINGSPAN 215 FT AND WHEN IN USE− LANES 2 AND 4 ARE UNAVAILABLE. LANES 4, 5 AND 6 ARE RESTRICTED TO AIRCRAFT WINGSPAN 135 FT OR LESS.

TAXIWAY “P” BETWEEN TAXIWAY “P1” & TAXIWAY “C” RESTRICTED TO WINGSPANS OF 171 FT OR LESS.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE−C ON ALL TAXIWAYS AND RUNWAYS.

Boston, Massachusetts
General Edward Lawrence Logan International
ICAO Identifier KBOS



Boston, MA
General Edward Lawrence Logan Intl
ICAO Identifier KBOS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 42−21−46.70N / 71−00−23.10W
2.2.2 From City: 1 Miles E Of Boston, MA
2.2.3 Elevation: 20 ft
2.2.5 Magnetic variation: 16W (1995)
2.2.6 Airport Contact: Edward Freni
LOGAN INTERNATIONAL AIRPORT
East Boston, MA 2128
(617−567−5400)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 9/1/1972

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Boat (158 ft). Lighted

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Boat (45 ft). Lighted

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Boat (161 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Boat (44 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Boat (157 ft). Lighted

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Boat (45 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 15R
2.10.1.b Type of obstacle: Trees (62 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 140 ft from Centerline

2.10.1.a. Runway designation: 33L
2.10.1.b Type of obstacle: Boat (160 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Bldg (174 ft). Lighted
2.10.1.c Location of obstacle: 70 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 77
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 42−21−20.72N / 71−00−46.42W
2.12.6 Threshold elevation: 17 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 257
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 42−21−36.78N / 70−59−15.73W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 04L
2.12.2 True Bearing: 20
2.12.3 Dimensions: 7861 ft x 150 ft
2.12.5 Coordinates: 42−21−28.76N / 71−00−51.62W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 14 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 200
2.12.3 Dimensions: 7861 ft x 150 ft
2.12.5 Coordinates: 42−22−41.85N / 71−00−16.26W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 15 ft

2.12.1 Designation: 04R

2.12.2 True Bearing: 20
2.12.3 Dimensions: 10005 ft x 150 ft
2.12.5 Coordinates: 42−21−00.00N / 71−00−42.46W
2.12.6 Threshold elevation: 19 ft
2.12.6 Touchdown zone elevation: 18 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 200
2.12.3 Dimensions: 10005 ft x 150 ft
2.12.5 Coordinates: 42−22−36.84N / 70−59−57.45W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 16 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 2557 ft x 100 ft
2.12.5 Coordinates: 42−22−24.89N / 71−00−32.86W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 15 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 315
2.12.3 Dimensions: 2557 ft x 100 ft
2.12.5 Coordinates: 42−22−00.00N / 71−00−00.00W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 15 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 135
2.12.3 Dimensions: 10083 ft x 150 ft
2.12.5 Coordinates: 42−22−27.38N / 71−01−00.00W
2.12.6 Threshold elevation: 19 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 315
2.12.3 Dimensions: 10083 ft x 150 ft
2.12.5 Coordinates: 42−21−16.74N / 70−59−29.71W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 16 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 125
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.5 Coordinates: 42−21−23.75N / 71−01−23.79W
2.12.6 Threshold elevation: 17 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 305
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.5 Coordinates: 42−20−54.96N / 71−00−29.69W
2.12.6 Threshold elevation: 20 ft
2.12.6 Touchdown zone elevation: 20 ft

AD 2.13 Declared distances
2.13.1 Designation: 09
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 7000
2.13.5 Landing distance available: 7000

2.13.1 Designation: 27
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 7000
2.13.5 Landing distance available: 7000

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 7861
2.13.3 Takeoff distance available: 7861
2.13.4 Accelerate−stop distance available: 7861
2.13.5 Landing distance available: 7861

2.13.1 Designation: 22R
2.13.2 Takeoff run available: 7861
2.13.3 Takeoff distance available: 7861
2.13.4 Accelerate−stop distance available: 7861
2.13.5 Landing distance available: 7046

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 10005
2.13.3 Takeoff distance available: 10005
2.13.4 Accelerate−stop distance available: 10005
2.13.5 Landing distance available: 8851

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 10005
2.13.3 Takeoff distance available: 10005
2.13.4 Accelerate−stop distance available: 10005
2.13.5 Landing distance available: 8806

2.13.1 Designation: 15L
2.13.2 Takeoff run available: 2557
2.13.3 Takeoff distance available: 2557

2.13.4 Accelerate−stop distance available: 2557
2.13.5 Landing distance available: 2557

2.13.1 Designation: 33R
2.13.2 Takeoff run available: 2557
2.13.3 Takeoff distance available: 2557
2.13.4 Accelerate−stop distance available: 2557
2.13.5 Landing distance available: 2557

2.13.1 Designation: 15R
2.13.2 Takeoff run available: 10083
2.13.3 Takeoff distance available: 10083
2.13.4 Accelerate−stop distance available: 10083
2.13.5 Landing distance available: 9203

2.13.1 Designation: 33L
2.13.2 Takeoff run available: 10083
2.13.3 Takeoff distance available: 10083
2.13.4 Accelerate−stop distance available: 10083
2.13.5 Landing distance available: 10083

2.13.1 Designation: 14
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate−stop distance available: 5000
2.13.5 Landing distance available: 5000

2.13.1 Designation: 32
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate−stop distance available: 5000
2.13.5 Landing distance available: 5000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 27
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 15R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 124.725 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P (ARR/DEP RYS 04R/22L 09/27)
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: LCL/P (ARR/DEP RYS 4L/22R 15R/33L 15L/33R)
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: LCL/P (ARR/DEP RY 14/32)
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: GATE CTL
2.18.3 Service designation: 134.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P CD/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND CTL/S
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: LCL/S (ARR/DEP RYS 04R/22L, 09/27)
2.18.3 Service designation: 132.225 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.875 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 16W
2.19.2 ILS identification: DGU
2.19.5 Coordinates: 42-21-48N / 71-00-59.05W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: DME for runway 27. Magnetic variation: 16W
2.19.2 ILS identification: DGU
2.19.5 Coordinates: 42-21-15.70N / 71-00-55.78W
2.19.6 Site elevation: 15 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 16W
2.19.2 ILS identification: DGU
2.19.5 Coordinates: 42-21-31.29N / 70-59-28.37W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42-22-55.97N / 70-59-48.19W
2.19.6 Site elevation: 18 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42-21-21.82N / 71-00-24.55W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Outer Marker for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42-16-25.52N / 71-02-56.95W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42-21-00.00N / 71-00-39.91W
2.19.6 Site elevation: 118 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42-20-53.18N / 71-00-47.62W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42-22-57.47N / 70-59-50.81W
2.19.6 Site elevation: 35 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42-21-00.00N / 71-00-44.29W
2.19.6 Site elevation: 15 ft

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42-22-57.47N / 70-59-50.81W
2.19.6 Site elevation: 35 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42-27-00.00N / 70-57-47.83W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42-22-17.00N / 71-00-11.99W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Localizer for runway 15R. Magnetic variation: 16W
2.19.2 ILS identification: MDC
2.19.5 Coordinates: 42-21-26.35N / 70-59-37.05W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Glide Slope for runway 15R. Magnetic variation: 16W
2.19.2 ILS identification: MDC
2.19.5 Coordinates: 42-22-14.70N / 71-00-42.42W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: DME for runway 15R. Magnetic variation: 16W
2.19.2 ILS identification: MDC
2.19.5 Coordinates: 42-21-26.66N / 70-59-35.05W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: DME for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42-21-26.66N / 70-59-35.05W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Middle Marker for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42-20-58.45N / 70-59-00.00W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: Localizer for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42-22-37.57N / 71-01-18.09W
2.19.6 Site elevation: 16 ft

2.19.1 ILS type: Glide Slope for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42-21-26.64N / 70-59-34.71W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Outer Marker for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42-18-11.14N / 70-55-18.75W
2.19.6 Site elevation: 99999 ft

General Remarks:

BIRDS ON & IN THE VICINITY OF AIRPORT.

NOISE SENSITIVE AREA − HELICOPTERS OPERATING WITHIN THE CONTROL ZONE ARE REQUIRED TO MAINT THE HIGHEST POSSIBLE ALTITUDE.

BETWEEN 0000−0600 − RUNWAY 15R IS PREFERENTIAL NIGHT RUNWAY FOR TAKE-OFF & RUNWAY 33L IS PREFERENTIAL NIGHT RUNWAY FOR LANDING.

FOR NOISE ABATEMENT PROCEDURES CALL 617−561−1636 0900−1700 MON−FRI.

NO REMAINING OVERNIGHT PARKING FOR NON−TENANT CHARTER AIRCRAFT WITHOUT PRIOR MASSPORT PERMISSION.

TERMINAL E; NORTH & SOUTH CARGO ARRIVALS CONTACT MASSPORT GATE CONTROL ON FREQ 131.1 BEFORE ENTERING/DEPARTING RAMP AREA.

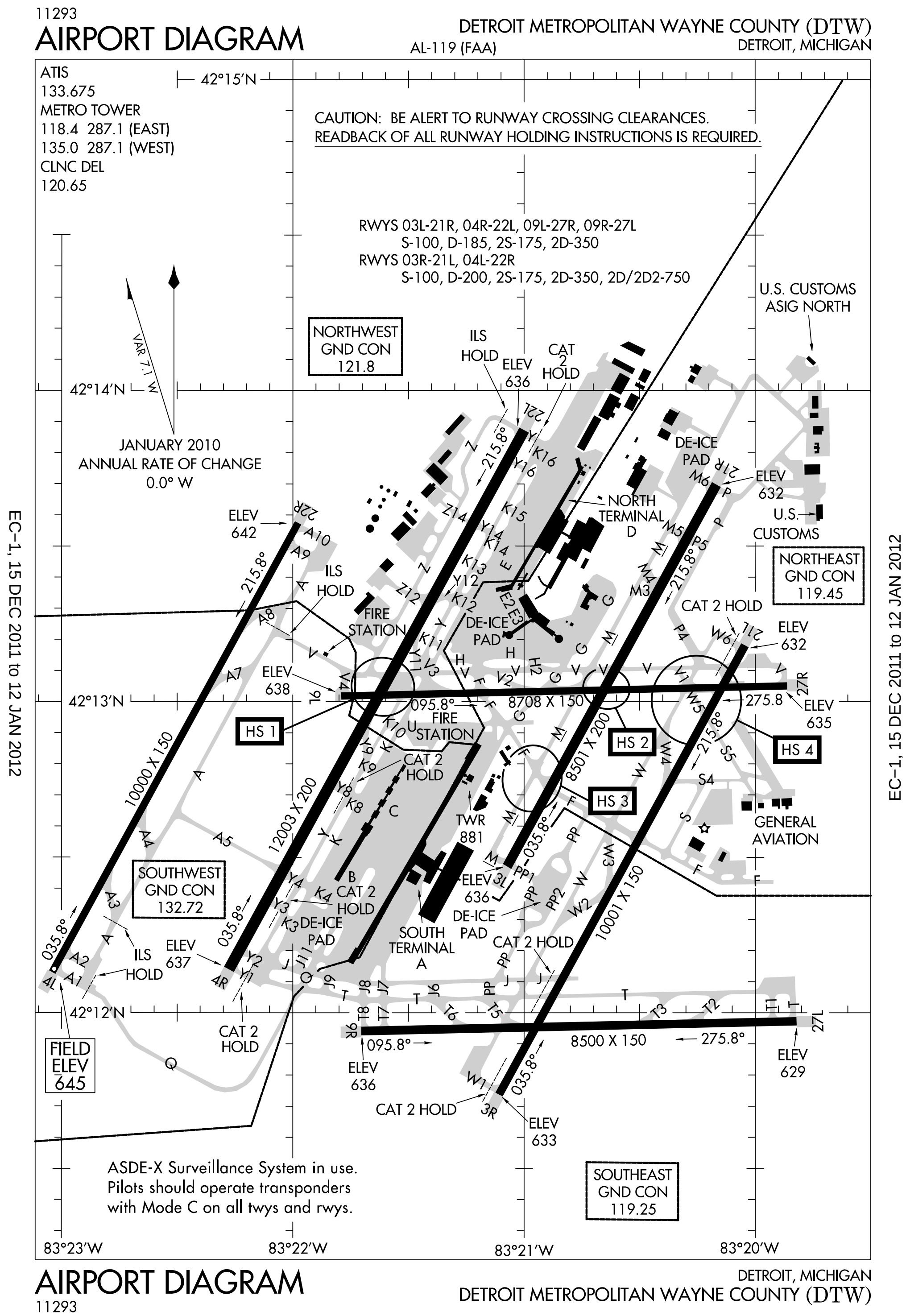
NUMEROUS CRANES ON & IN THE VICINITY OF OF AIRPORT UP TO & INCLUDING 250 FT. MSL.

RY14/32 UNIDIRECTIONAL; NO LANDINGS RUNWAY 14; NO TAKEOFFS RUNWAY 32.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

PILOTS SHOULD COMPLETE ALL CALCULATIONS PRIOR TO PUSHBACK FROM GATE.

Detroit, Michigan
Detroit Metropolitan Wayne County
ICAO Identifier KDTW



Detroit, MI
Detroit Metropolitan Wayne County
ICAO Identifier KDTW

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 42−12−44.80N / 83−21−12.20W
2.2.2 From City: 15 Miles S Of Detroit, MI
2.2.3 Elevation: 645 ft
2.2.5 Magnetic variation: 6W (1990)
2.2.6 Airport Contact: Turkia Awada Mullin
L C SMITH TERMINAL MEZZANINE
Detroit, MI 48242 (734−942−3550)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A, A+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Tree (88 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1059 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Rr (26 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 632 ft from Centerline

2.10.1.a. Runway designation: 03R
2.10.1.b Type of obstacle: Trees (69 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 935 ft from Centerline

2.10.1.a. Runway designation: 21L
2.10.1.b Type of obstacle: Berm (5 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 496 ft from Centerline

2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Ant (116 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 459 ft from Centerline

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Pole (60 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 372 ft from Centerline

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Ant (73 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 831 ft from Centerline

2.10.1.a. Runway designation: 03L
2.10.1.b Type of obstacle: Pole (21 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 576 ft from Centerline

2.10.1.a. Runway designation: 21R
2.10.1.b Type of obstacle: Pole (74 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 557 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 04R
2.12.2 True Bearing: 29
2.12.3 Dimensions: 12003 ft x 200 ft
2.12.5 Coordinates: 42−12−00.00N / 83−22−16.57W
2.12.6 Threshold elevation: 637 ft
2.12.6 Touchdown zone elevation: 638 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 209
2.12.3 Dimensions: 12003 ft x 200 ft
2.12.5 Coordinates: 42−13−52.37N / 83−20−59.97W
2.12.6 Threshold elevation: 636 ft
2.12.6 Touchdown zone elevation: 637 ft

2.12.1 Designation: 03R
2.12.2 True Bearing: 29
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.5 Coordinates: 42−11−44.21N / 83−21−00.00W
2.12.6 Threshold elevation: 633 ft
2.12.6 Touchdown zone elevation: 633 ft

2.12.1 Designation: 21L
2.12.2 True Bearing: 209
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.5 Coordinates: 42−13−10.86N / 83−20−00.00W
2.12.6 Threshold elevation: 632 ft
2.12.6 Touchdown zone elevation: 632 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 89
2.12.3 Dimensions: 8708 ft x 150 ft
2.12.5 Coordinates: 42−13−00.00N / 83−21−47.40W
2.12.6 Threshold elevation: 638 ft
2.12.6 Touchdown zone elevation: 640 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 269
2.12.3 Dimensions: 8708 ft x 150 ft
2.12.5 Coordinates: 42−13−00.00N / 83−19−51.71W
2.12.6 Threshold elevation: 635 ft
2.12.6 Touchdown zone elevation: 635 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 89
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.5 Coordinates: 42−11−56.46N / 83−21−42.22W
2.12.6 Threshold elevation: 636 ft
2.12.6 Touchdown zone elevation: 636 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 269
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.5 Coordinates: 42−11−58.34N / 83−19−49.33W
2.12.6 Threshold elevation: 629 ft
2.12.6 Touchdown zone elevation: 630 ft

2.12.1 Designation: 04L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 42−12−00.00N / 83−23−00.00W
2.12.6 Threshold elevation: 645 ft
2.12.6 Touchdown zone elevation: 645 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 209
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 42−13−34.48N / 83−21−58.61W
2.12.6 Threshold elevation: 642 ft
2.12.6 Touchdown zone elevation: 642 ft

2.12.1 Designation: 04X
2.12.2 True Bearing: 29
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 22X
2.12.2 True Bearing: 209
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 03L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 8501 ft x 200 ft
2.12.5 Coordinates: 42−12−28.20N / 83−21−00.00W
2.12.6 Threshold elevation: 636 ft
2.12.6 Touchdown zone elevation: 636 ft

2.12.1 Designation: 21R
2.12.2 True Bearing: 209
2.12.3 Dimensions: 8501 ft x 200 ft
2.12.5 Coordinates: 42−13−41.85N / 83−20−10.11W
2.12.6 Threshold elevation: 632 ft
2.12.6 Touchdown zone elevation: 634 ft

AD 2.13 Declared distances
2.13.1 Designation: 04R
2.13.2 Takeoff run available: 12003
2.13.3 Takeoff distance available: 12003
2.13.4 Accelerate−stop distance available: 12003
2.13.5 Landing distance available: 12003

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 12003
2.13.3 Takeoff distance available: 12003
2.13.4 Accelerate−stop distance available: 12003
2.13.5 Landing distance available: 12003

2.13.1 Designation: 03R

2.13.2 Takeoff run available: 10001
2.13.3 Takeoff distance available: 10001
2.13.4 Accelerate−stop distance available: 10001
2.13.5 Landing distance available: 10001

2.13.1 Designation: 21L
2.13.2 Takeoff run available: 10001
2.13.3 Takeoff distance available: 10001
2.13.4 Accelerate−stop distance available: 10001
2.13.5 Landing distance available: 10001

2.13.1 Designation: 09L
2.13.2 Takeoff run available: 8708
2.13.3 Takeoff distance available: 8708
2.13.4 Accelerate−stop distance available: 8618
2.13.5 Landing distance available: 8618

2.13.1 Designation: 27R
2.13.2 Takeoff run available: 8708
2.13.3 Takeoff distance available: 8708
2.13.4 Accelerate−stop distance available: 8708
2.13.5 Landing distance available: 8708

2.13.1 Designation: 09R
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 27L
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 22R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 03L
2.13.2 Takeoff run available: 8501
2.13.3 Takeoff distance available: 8501
2.13.4 Accelerate−stop distance available: 8501
2.13.5 Landing distance available: 8501

2.13.1 Designation: 21R
2.13.2 Takeoff run available: 8501
2.13.3 Takeoff distance available: 8501
2.13.4 Accelerate−stop distance available: 8501
2.13.5 Landing distance available: 8501

AD 2.14 Approach and runway lighting
2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.10 Remarks: Also Has SSALR.

2.14.1 Designation: 22L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 03R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: ALSF2 Required When RVR/Visibility Is 6000/1 Mile Or Less. SSALR Operated When RVR/Visibility Is 6000/1 Mile. Runway 03R, PAPI Unusable Beyond 8 Degrees Left Of Course.

2.14.1 Designation: 21L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system

with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 22R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4-light PAPI on right

2.14.1 Designation: 03L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: Unusable 8 Degrees Left/Right Course.

2.14.1 Designation: 21R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 118.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.95 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.95 MHz

2.18.1 Service designation: CD PRE TAXI CLNC
2.18.3 Service designation: 120.65 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 124.05 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 125.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.525 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.85 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 132.025 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 132.72 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.675 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 134.3 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 134.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: AIR−EVAC
2.18.3 Service designation: 259.6 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 363.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 119.25 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 119.45 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 239.275 MHz

2.18.1 Service designation: APCH/P

2.18.3 Service designation: 124.975 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 124.25 MHz

2.18.1 Service designation: PRM RY 4L/22R
2.18.3 Service designation: 127.05 MHz

2.18.1 Service designation: PRM RY 4R/22L
2.18.3 Service designation: 135.775 MHz

2.18.1 Service designation: PRM RY 3R/21L
2.18.3 Service designation: 128.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 287.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.125 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 04R. Magnetic variation: 6W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−07−12.37N / 83−25−54.19W
2.19.6 Site elevation: 631 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 6W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−13−59.69N / 83−20−50.36W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 6W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−11−44.10N / 83−22−34.50W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 6W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−14−00.00N / 83−20−53.38W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 6W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−12−18.94N / 83−22−14.84W
2.19.6 Site elevation: 634 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 6W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−12−00.00N / 83−22−22.38W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 6W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−11−59.54N / 83−22−23.06W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 6W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−13−59.69N / 83−20−50.36W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 6W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−18−20.74N / 83−17−40.65W
2.19.6 Site elevation: 626 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 6W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−13−43.86N / 83−21−12.29W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 6W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−14−21.64N / 83−20−38.75W

2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 03R. Magnetic variation: 6W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−13−20.38N / 83−19−55.63W
2.19.6 Site elevation: 635 ft

2.19.1 ILS type: Glide Slope for runway 03R. Magnetic variation: 6W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−11−51.13N / 83−20−54.98W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Outer Marker for runway 03R. Magnetic variation: 6W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−06−27.60N / 83−24−57.66W
2.19.6 Site elevation: 625 ft

2.19.1 ILS type: Middle Marker for runway 03R. Magnetic variation: 6W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−11−20.09N / 83−21−24.29W
2.19.6 Site elevation: 633 ft

2.19.1 ILS type: Inner Marker for runway 03R. Magnetic variation: 6W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−11−36.55N / 83−21−12.14W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: DME for runway 03R. Magnetic variation: 6W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−11−34.31N / 83−21−00.00W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Localizer for runway 21L. Magnetic variation: 6W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42−11−34.94N / 83−21−13.32W
2.19.6 Site elevation: 631 ft

2.19.1 ILS type: Glide Slope for runway 21L. Magnetic variation: 6W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42−12−58.50N / 83−20−00.00W
2.19.6 Site elevation: 629 ft

2.19.1 ILS type: Middle Marker for runway 21L. Magnetic variation: 6W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42−13−38.34N / 83−19−46.25W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Outer Marker for runway 21L. Magnetic variation: 6W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42−18−00.00N / 83−16−20.34W
2.19.6 Site elevation: 604 ft

2.19.1 ILS type: DME for runway 21L. Magnetic variation: 6W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42−11−34.31N / 83−21−00.00W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 6W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42−13−00.00N / 83−22−00.00W
2.19.6 Site elevation: 639 ft

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 6W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42−13−00.00N / 83−19−10.55W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 6W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42−13−12.02N / 83−12−11.92W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 6W

2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42−12−58.36N / 83−20−00.00W
2.19.6 Site elevation: 629 ft

2.19.1 ILS type: Outer Marker for runway 27L. Magnetic variation: 6W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42−12−00.00N / 83−12−39.63W
2.19.6 Site elevation: 600 ft

2.19.1 ILS type: Localizer for runway 27L. Magnetic variation: 6W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42−11−56.23N / 83−21−55.64W
2.19.6 Site elevation: 634 ft

2.19.1 ILS type: Middle Marker for runway 27L. Magnetic variation: 6W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42−11−59.00N / 83−19−11.92W
2.19.6 Site elevation: 626 ft

2.19.1 ILS type: Glide Slope for runway 27L. Magnetic variation: 6W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42−11−54.66N / 83−20−00.00W
2.19.6 Site elevation: 626 ft

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 6W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42-11-53.87N / 83-21-55.11W
2.19.6 Site elevation: 635 ft

2.19.1 ILS type: DME for runway 04L. Magnetic variation: 6W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−13−41.92N / 83−21−48.73W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 6W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−13−43.23N / 83−21−52.16W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Glide Slope for runway 04L. Magnetic variation: 6W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−12−18.95N / 83−23−00.00W
2.19.6 Site elevation: 641 ft

2.19.1 ILS type: Inner Marker for runway 04L. Magnetic variation: 6W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−12−00.00N / 83−23−00.00W
2.19.6 Site elevation: 646 ft

2.19.1 ILS type: DME for runway 22R. Magnetic variation: 6W
2.19.2 ILS identification: JKI
2.19.5 Coordinates: 42−13−41.92N / 83−21−48.73W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 6W
2.19.2 ILS identification: JKI
2.19.5 Coordinates: 42−11−59.07N / 83−23−00.00W
2.19.6 Site elevation: 645 ft

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 6W
2.19.2 ILS identification: JKI
2.19.5 Coordinates: 42−13−27.23N / 83−22−10.00W
2.19.6 Site elevation: 637 ft

2.19.1 ILS type: DME for runway 04X. Magnetic variation: 6W
2.19.2 ILS identification: ALA
2.19.5 Coordinates: 42−11−57.11N / 83−23−00.00W
2.19.6 Site elevation: 643 ft

2.19.1 ILS type: Glide Slope for runway 04X. Magnetic variation: 6W
2.19.2 ILS identification: ALA
2.19.5 Coordinates: 42−12−19.05N / 83−23−00.00W
2.19.6 Site elevation: 644 ft

2.19.1 ILS type: Localizer for runway 04X.
Magnetic variation: 6W
2.19.2 ILS identification: ALA
2.19.5 Coordinates: 42−13−33.40N / 83−21−50.94W
2.19.6 Site elevation: 639 ft

2.19.1 ILS type: Localizer for runway 22X.
Magnetic variation: 6W
2.19.2 ILS identification: BZB
2.19.5 Coordinates: 42−11−56.26N / 83−23−00.00W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Glide Slope for runway 22X.
Magnetic variation: 6W
2.19.2 ILS identification: BZB
2.19.5 Coordinates: 42−13−27.35N / 83−22−10.30W
2.19.6 Site elevation: 638 ft

2.19.1 ILS type: DME for runway 22X. Magnetic variation: 6W
2.19.2 ILS identification: BZB
2.19.5 Coordinates: 42−11−57.11N / 83−23−00.00W
2.19.6 Site elevation: 643 ft

General Remarks:

BRIGHTLY LIGHTED PARKING LOT 2.6 NAUTICAL MILE SW OF AIRPORT.

BE ALERT BIRDS, WATERFOWL, ON & IN THE VICINITY OF AIRPORT.

RUNWAY 21R DEPS BE ALERT FOR ’OPTICAL ILLUSION’, AIRCRAFT TAXIING ON TAXIWAY ’T’ MAY APPEAR AS THOUGH CROSSING RUNWAY 21R CENTERLINE.

AIRCRAFT ON TAXIWAY ’F’ AND TAXIWAY ’V’ DO NOT BLOCK FIRE STATION EXITS.

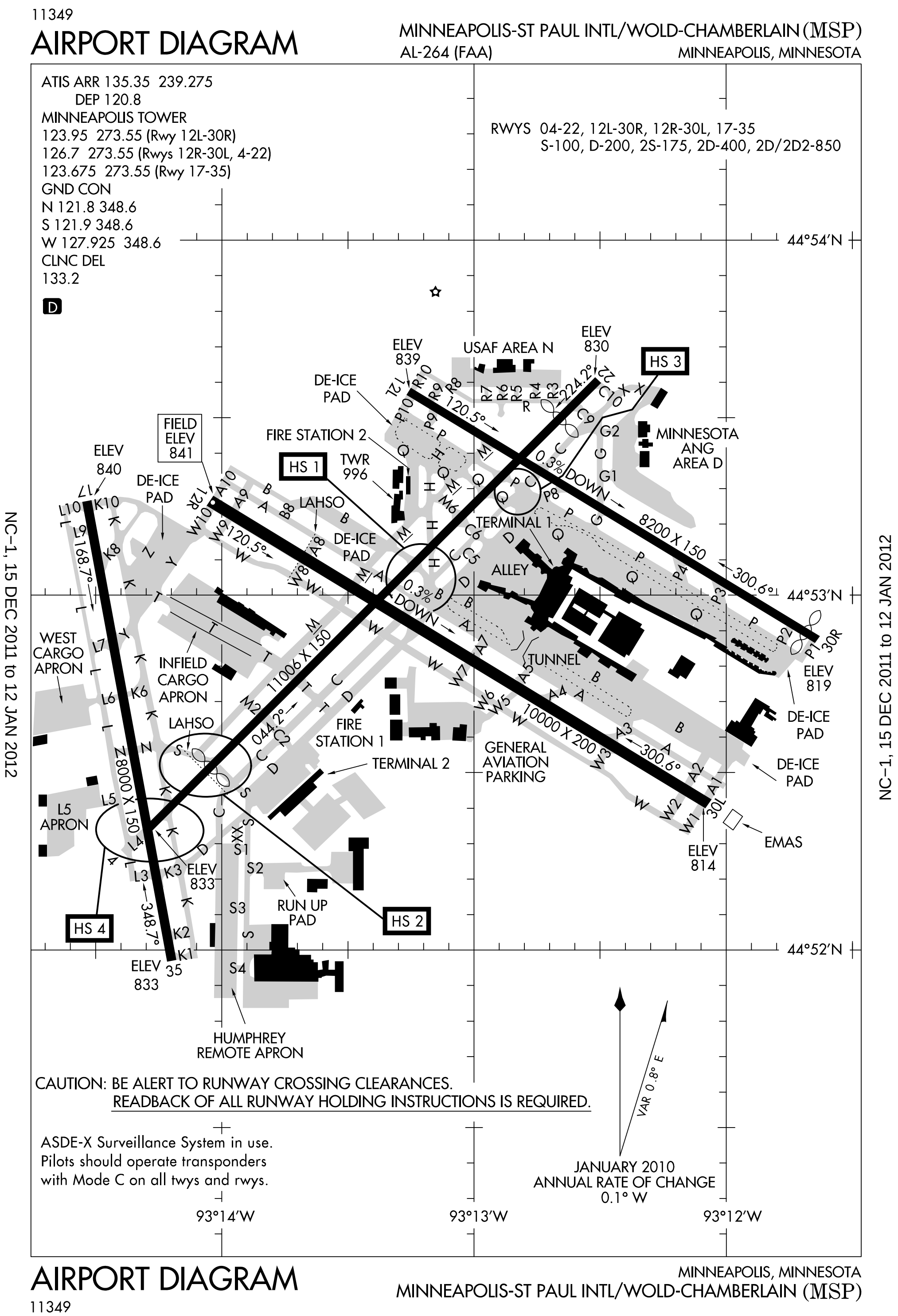
TAXIWAY ’G’ N OF TAXIWAY ’V’ IS A NON−MOVEMENT AREA.

RUNWAY 22L DEPS BE ALERT FOR OPTICAL ILLUSION, AIRCRAFT TAXIING ON TAXIWAY Q MAY APPEAR AS THOUGH CROSSING RUNWAY 22L CENTERLINE.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS & RUNWAYS.

UNIDIRECTIONAL STOPBARS ON RUNWAY 27R WHEN BEING USED FOR TAXI.

Minneapolis, Minnesota
Minneapolis−St. Paul International (Wold−Chamberlain)
ICAO Identifier KMSP



Minneapolis, MN
Minneapolis-St Paul Intl/Wold-Chamberlain
ICAO Identifier KMSP

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 44−52−55.04N / 93−13−18.36W
2.2.2 From City: 6 Miles SW Of Minneapolis, MN
2.2.3 Elevation: 841 ft
2.2.5 Magnetic variation: 2E (1995)
2.2.6 Airport Contact: Steve Wareham
4300 GLUMACK SUITE 3000
St Paul, MN 55111
(612−725−6464)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.10.1.a. Runway designation: 04
2.10.1.b Type of obstacle: Tree (101 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 834 ft from Centerline

2.10.1.a. Runway designation: 22
2.10.1.b Type of obstacle: Tree (66 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 636 ft from Centerline

2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 12L
2.10.1.b Type of obstacle: Tree (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 667 ft from Centerline

2.10.1.a. Runway designation: 30R
2.10.1.b Type of obstacle: Tree (13 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 272 ft from Centerline

2.10.1.a. Runway designation: 12R
2.10.1.b Type of obstacle: Tree (36 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 634 ft from Centerline

2.10.1.a. Runway designation: 30L
2.10.1.b Type of obstacle: Tree (36 ft). Lighted
2.10.1.c Location of obstacle: 562 ft from Centerline

2.10.1.a. Runway designation: 17
2.10.1.b Type of obstacle: Tree (52 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 732 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 04
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11006 ft x 150 ft
2.12.5 Coordinates: 44-52-20.15N / 93-14-17.92W
2.12.6 Threshold elevation: 833 ft
2.12.6 Touchdown zone elevation: 832 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 225
2.12.3 Dimensions: 11006 ft x 150 ft
2.12.5 Coordinates: 44-53-36.98N / 93-12-29.83W
2.12.6 Threshold elevation: 830 ft
2.12.6 Touchdown zone elevation: 828 ft

2.12.1 Designation: 12L
2.12.2 True Bearing: 121
2.12.3 Dimensions: 8200 ft x 150 ft
2.12.5 Coordinates: 44−53−34.62N / 93−13−15.55W
2.12.6 Threshold elevation: 838 ft
2.12.6 Touchdown zone elevation: 839 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 301
2.12.3 Dimensions: 8200 ft x 150 ft
2.12.5 Coordinates: 44−52−52.51N / 93−11−38.27W

2.12.6 Threshold elevation: 819 ft
2.12.6 Touchdown zone elevation: 823 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 121
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.5 Coordinates: 44−53−16.04N / 93−14−00.00W
2.12.6 Threshold elevation: 841 ft
2.12.6 Touchdown zone elevation: 841 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 301
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.5 Coordinates: 44−52−24.67N / 93−12−00.00W
2.12.6 Threshold elevation: 814 ft
2.12.6 Touchdown zone elevation: 823 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 170
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 44−53−15.91N / 93−14−32.10W
2.12.6 Threshold elevation: 840 ft
2.12.6 Touchdown zone elevation: 840 ft
2.12.7 Slope: 0.1DOWN

2.12.1 Designation: 35
2.12.2 True Bearing: 350
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 44−51−58.24N / 93−14−11.92W
2.12.6 Threshold elevation: 833 ft
2.12.6 Touchdown zone elevation: 834 ft
2.12.7 Slope: 0.1UP

AD 2.13 Declared distances
2.13.1 Designation: 04
2.13.2 Takeoff run available: 11006
2.13.3 Takeoff distance available: 11006
2.13.4 Accelerate-stop distance available: 11006
2.13.5 Landing distance available: 9456

2.13.1 Designation: 22
2.13.2 Takeoff run available: 11006
2.13.3 Takeoff distance available: 11006
2.13.4 Accelerate-stop distance available: 11006
2.13.5 Landing distance available: 10006

2.13.1 Designation: 12L
2.13.2 Takeoff run available: 8200
2.13.3 Takeoff distance available: 8200
2.13.4 Accelerate−stop distance available: 7620
2.13.5 Landing distance available: 7620

2.13.1 Designation: 30R
2.13.2 Takeoff run available: 8200
2.13.3 Takeoff distance available: 8200
2.13.4 Accelerate−stop distance available: 8200
2.13.5 Landing distance available: 8000

2.13.1 Designation: 12R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate-stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 30L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate-stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 17
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate-stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 35
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate-stop distance available: 8000
2.13.5 Landing distance available: 8000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 04
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 22
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 12L

2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 12R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 35
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 120.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CLASS B IC
2.18.3 Service designation: 121.2 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.95 MHz

2.18.1 Service designation: CLASS B IC
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 133.2 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.35 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 273.55 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 335.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 357.4 MHz

2.18.1 Service designation: GND METERING
2.18.3 Service designation: 133.57 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.7 MHz

2.18.1 Service designation: GND/P

2.18.3 Service designation: 127.925 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 282.675 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 118.72 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.675 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 132.975 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 126.95 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 324.3 MHz

2.18.1 Service designation: CLASS B IC
2.18.3 Service designation: 134.7 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 239.275 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ARS CMD POST
2.18.3 Service designation: 138.6 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 04. Magnetic variation: 1E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44-52-40.53N / 93-13-55.93W
2.19.6 Site elevation: 826 ft

2.19.1 ILS type: Outer Marker for runway 04. Magnetic variation: 1E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44-49-26.67N / 93-18-21.81W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 04. Magnetic variation: 1E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44-53-44.00N / 93-12-19.96W
2.19.6 Site elevation: 830 ft

2.19.1 ILS type: Middle Marker for runway 04. Magnetic variation: 1E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44-52-19.77N / 93-14-18.50W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 22. Magnetic variation: 1E
2.19.2 ILS identification: SIJ
2.19.5 Coordinates: 44-52-12.80N / 93-14-28.30W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: Outer Marker for runway 22. Magnetic variation: 1E
2.19.2 ILS identification: SIJ
2.19.5 Coordinates: 44-57-00.00N / 93-07-23.39W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 22. Magnetic variation: 1E
2.19.2 ILS identification: SIJ
2.19.5 Coordinates: 44-53-55.58N / 93-12-00.00W
2.19.6 Site elevation: 821 ft

2.19.1 ILS type: Localizer for runway 12L. Magnetic variation: 1E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44-52-50.33N / 93-11-33.25W
2.19.6 Site elevation: 813 ft

2.19.1 ILS type: Outer Marker for runway 12L. Magnetic variation: 1E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44-56-37.77N / 93-20-26.52W
2.19.6 Site elevation: 900 ft

2.19.1 ILS type: Glide Slope for runway 12L. Magnetic variation: 1E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44-53-31.06N / 93-12-56.64W
2.19.6 Site elevation: 831 ft

2.19.1 ILS type: DME for runway 12L. Magnetic variation: 1E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44-53-00.00N / 93-11-48.84W
2.19.6 Site elevation: 813 ft

2.19.1 ILS type: Middle Marker for runway 12L. Magnetic variation: 1E

2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44-53-47.98N / 93-13-46.30W
2.19.6 Site elevation: 832 ft

2.19.1 ILS type: Inner Marker for runway 12L. Magnetic variation: 1E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44-53-39.68N / 93-13-25.89W
2.19.6 Site elevation: 833 ft

2.19.1 ILS type: Outer Marker for runway 30R. Magnetic variation: 1E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44-49-57.40N / 93-05-00.00W
2.19.6 Site elevation: 821 ft

2.19.1 ILS type: DME for runway 30R. Magnetic variation: 1E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44-53-00.00N / 93-11-48.84W
2.19.6 Site elevation: 813 ft

2.19.1 ILS type: Glide Slope for runway 30R. Magnetic variation: 1E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44-53-00.00N / 93-11-48.83W
2.19.6 Site elevation: 813 ft

2.19.1 ILS type: Middle Marker for runway 30R. Magnetic variation: 1E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44-52-38.68N / 93-11-00.00W
2.19.6 Site elevation: 705 ft

2.19.1 ILS type: Localizer for runway 30R. Magnetic variation: 1E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44-53-40.84N / 93-13-29.90W
2.19.6 Site elevation: 846 ft

2.19.1 ILS type: Glide Slope for runway 12R. Magnetic variation: 1E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44-53-00.00N / 93-13-53.53W
2.19.6 Site elevation: 835 ft

2.19.1 ILS type: Outer Marker for runway 12R. Magnetic variation: 1E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44-56-14.87N / 93-21-00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 1E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44-53-29.37N / 93-14-33.50W
2.19.6 Site elevation: 819 ft

2.19.1 ILS type: DME for runway 12R. Magnetic variation: 1E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44-52-26.95N / 93-12-20.57W
2.19.6 Site elevation: 809 ft

2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 1E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44-52-20.40N / 93-11-54.35W
2.19.6 Site elevation: 809 ft

2.19.1 ILS type: Inner Marker for runway 12R. Magnetic variation: 1E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44-53-20.87N / 93-14-12.67W
2.19.6 Site elevation: 839 ft

2.19.1 ILS type: Glide Slope for runway 30L. Magnetic variation: 2E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44-52-26.97N / 93-12-20.22W
2.19.6 Site elevation: 812 ft

2.19.1 ILS type: Inner Marker for runway 30L. Magnetic variation: 2E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44-52-19.46N / 93-11-52.18W
2.19.6 Site elevation: 809 ft

2.19.1 ILS type: Localizer for runway 30L. Magnetic variation: 2E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44-53-19.63N / 93-14-11.16W
2.19.6 Site elevation: 832 ft

2.19.1 ILS type: DME for runway 30L. Magnetic variation: 2E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44-52-26.95N / 93-12-20.57W
2.19.6 Site elevation: 809 ft

2.19.1 ILS type: Middle Marker for runway 30L. Magnetic variation: 2E

2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44-52-10.08N / 93-11-30.30W
2.19.6 Site elevation: 698 ft

2.19.1 ILS type: Outer Marker for runway 30L. Magnetic variation: 2E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44-49-32.68N / 93-05-28.78W
2.19.6 Site elevation: 880 ft

2.19.1 ILS type: Localizer for runway 17. Magnetic variation: 1E
2.19.2 ILS identification: TJZ
2.19.5 Coordinates: 44-51-48.38N / 93-14-00.00W
2.19.6 Site elevation: 830 ft

2.19.1 ILS type: DME for runway 17. Magnetic variation: 1E
2.19.2 ILS identification: TJZ
2.19.5 Coordinates: 44-53-25.29N / 93-14-38.30W
2.19.6 Site elevation: 822 ft

2.19.1 ILS type: DME for runway 35. Magnetic variation: 1E
2.19.2 ILS identification: BMA
2.19.5 Coordinates: 44-53-25.29N / 93-14-38.30W
2.19.6 Site elevation: 822 ft

2.19.1 ILS type: Localizer for runway 35. Magnetic variation: 1E
2.19.2 ILS identification: BMA
2.19.5 Coordinates: 44-53-25.72N / 93-14-34.65W
2.19.6 Site elevation: 840 ft

2.19.1 ILS type: Inner Marker for runway 35. Magnetic variation: 1E
2.19.2 ILS identification: BMA
2.19.5 Coordinates: 44-51-48.33N / 93-14-00.00W
2.19.6 Site elevation: 833 ft

2.19.1 ILS type: Glide Slope for runway 35. Magnetic variation: 1E
2.19.2 ILS identification: BMA
2.19.5 Coordinates: 44-52-00.00N / 93-14-19.75W
2.19.6 Site elevation: 832 ft

General Remarks:

TRAINING FLIGHTS PROHIBITED. GA FLIGHTS MUST TERMINATE AT THE FBO OR US CUSTOMS UNLESS APPROVED BY AIRPORT MANAGER.

FOR NOISE ABATEMENT PROCEDURES CALL (612) 726−9411; NO STAGE 1 CATEGORY CIVIL AIRCRAFT; NIGHTTIME HRS ARE 2230−0600.

BIRDS ON & IN THE VICINITY OF AIRPORT.

SIGNATURE FLIGHT SUPPORT 128.95

MILITARY REMARKS: ARFC 934 AW: OPR 1300−−400Z++ MON−THU, 1300−2230Z++ FRI, CLOSED WEEKEND AND HOLIDAY, CONTACT BASE OPERATIONS FOR OPR HRS DURING UNIT TRAINING ASSEMBLY WEEKEND. TRANSMIT AIRCRAFT MUST OPR 1300−2145Z++ MON−FRI, EXCEPT HOLIDAY UNLESS DIRECTLY SUPPORTING 934 AW OR OTHER SPECIAL CIRCUMSTANCES.

MILITARY RESTRICTED: NO HAZARD CL/DIV1.1 OR 1.2 EXPLOSIVES PERMITTED. LOADING OR UNLOADING OF HAZARD CL/DIV 1.3, 1.4, 1.5 0R 1.6 MUST BE APPROVE BY AIRPORT DIRECT PRIOR TO FLIGHT.

COMPLEX GEOMETRY AT RUNWAY 04 APPROACH END. RUNWAY 04 DEPARTURES CHECK COMPASS TO VERIFY CORRECT RUNWAY HEADING.

VEHICLES PARKED ALONG SOUTH END OF TAXIWAY ’S’.

133 AW BASE OPERATIONS − 324.3 REMARKS: (CALL LIGHTHOUSE).

COMMUNICATIONS: MINNEAPOLIS AIR RESERVE STATION JOINT COMMAND POST − 252.1 REMARKS: CALL NORTHSTAR.

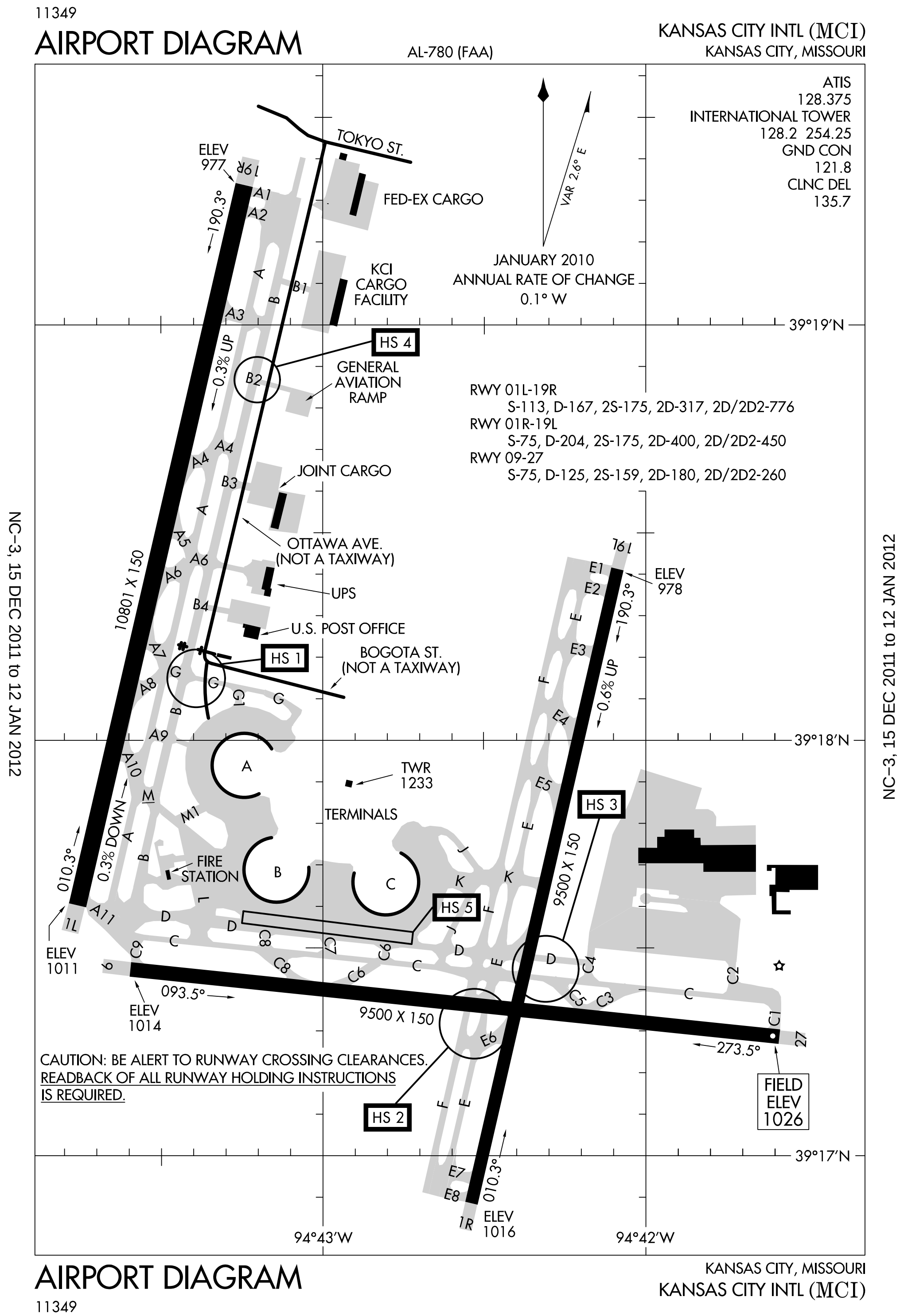
934 AW BASE OPERATIONS − PILOT TO DISPATCH 282.675 REMARKS: (CALL VIKING OPS).

REMARKS: AFRC 934 AW: CONTACT PILOT TO DISPATCH (VIKING OPS) 20 MIN PRIOR LANDING.

ASDE−X SURVEILLANCE SYSTEM IN USE. PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS

ALL UNSCHEDULED AIRCRAFT AT TERMINAL 2−HUMPHREY ARE REQUIRED TO CONTACT TERMINAL 2 GATE CONTROL ON 122.95 OR CALL 612−726−5742 PRIOR TO ARR.

Kansas City, Missouri
Kansas City International
ICAO Identifier KMCI



Kansas City, MO
Kansas City Intl
ICAO Identifier KMCI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−17−51.38N / 94−42−50.06W
2.2.2 From City: 15 Miles NW Of Kansas City, MO
2.2.3 Elevation: 1026 ft
2.2.5 Magnetic variation: 5E (1990)
2.2.6 Airport Contact: Mr. David W. Bowen
P.O. BOX 20047
Kansas City, MO 64195
(816−243−5248)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 96
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.5 Coordinates: 39−17−27.10N / 94−43−35.73W
2.12.6 Threshold elevation: 1014 ft
2.12.6 Touchdown zone elevation: 1014 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 276
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.5 Coordinates: 39−17−17.08N / 94−41−35.59W
2.12.6 Threshold elevation: 1026 ft
2.12.6 Touchdown zone elevation: 1026 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 13
2.12.3 Dimensions: 10801 ft x 150 ft
2.12.5 Coordinates: 39−17−36.01N / 94−43−45.54W
2.12.6 Threshold elevation: 1011 ft
2.12.6 Touchdown zone elevation: 1011 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 193
2.12.3 Dimensions: 10801 ft x 150 ft
2.12.5 Coordinates: 39−19−20.05N / 94−43−14.79W
2.12.6 Threshold elevation: 977 ft
2.12.6 Touchdown zone elevation: 988 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 13
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.5 Coordinates: 39−16−53.24N / 94−42−32.39W
2.12.6 Threshold elevation: 1016 ft
2.12.6 Touchdown zone elevation: 1016 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 193
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.5 Coordinates: 39−18−24.74N / 94−42−00.00W
2.12.6 Threshold elevation: 978 ft
2.12.6 Touchdown zone elevation: 994 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R

2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 01R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 19L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.9 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.7 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.7 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.2 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 135.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 254.25 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 294.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 294.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 120.95 MHz

2.18.1 Service designation: DEP/P IC
2.18.3 Service designation: 123.95 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 128.375 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 5E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−17−16.02N / 94−41−22.95W
2.19.6 Site elevation: 1020 ft

2.19.1 ILS type: DME for runway 09. Magnetic variation: 5E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−17−18.91N / 94−41−21.70W
2.19.6 Site elevation: 1032 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 5E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−17−30.00N / 94−44−10.10W

2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 5E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−17−21.08N / 94−43−22.95W
2.19.6 Site elevation: 1010 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 5E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−18−00.00N / 94−51−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 5E
2.19.2 ILS identification: UQY
2.19.5 Coordinates: 39−17−28.63N / 94−43−54.07W
2.19.6 Site elevation: 1014 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 5E
2.19.2 ILS identification: UQY
2.19.5 Coordinates: 39−17−15.72N / 94−41−50.27W
2.19.6 Site elevation: 1016 ft

2.19.1 ILS type: DME for runway 27. Magnetic variation: 5E
2.19.2 ILS identification: UQY
2.19.5 Coordinates: 39−17−25.69N / 94−43−54.58W
2.19.6 Site elevation: 1014 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 5E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−19−31.13N / 94−43−11.52W
2.19.6 Site elevation: 970 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 5E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−17−48.27N / 94−43−47.13W
2.19.6 Site elevation: 1002 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 5E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−13−15.20N / 94−44−59.70W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 5E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−17−00.00N / 94−43−53.30W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 5E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−19−30.05N / 94−43−00.00W
2.19.6 Site elevation: 976 ft

2.19.1 ILS type: Localizer for runway 19R. Magnetic variation: 3E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39−17−23.80N / 94−43−49.14W
2.19.6 Site elevation: 1021 ft

2.19.1 ILS type: Glide Slope for runway 19R. Magnetic variation: 3E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39−19−11.06N / 94−43−22.67W
2.19.6 Site elevation: 976 ft

2.19.1 ILS type: Outer Marker for runway 19R. Magnetic variation: 3E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39−24−51.80N / 94−41−36.10W
2.19.6 Site elevation: 893 ft

2.19.1 ILS type: Inner Marker for runway 19R. Magnetic variation: 3E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39−19−30.10N / 94−43−11.80W
2.19.6 Site elevation: 969 ft

2.19.1 ILS type: Middle Marker for runway 19R. Magnetic variation: 3E

2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39−19−49.40N / 94−43−00.00W
2.19.6 Site elevation: 960 ft

2.19.1 ILS type: DME for runway 19R. Magnetic variation: 3E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39−17−25.77N / 94−43−51.97W
2.19.6 Site elevation: 1011 ft

2.19.1 ILS type: Localizer for runway 01R. Magnetic variation: 3E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39−18−34.40N / 94−42−00.00W
2.19.6 Site elevation: 963 ft

2.19.1 ILS type: Middle Marker for runway 01R. Magnetic variation: 3E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39−16−27.60N / 94−42−40.00W
2.19.6 Site elevation: 993 ft

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 3E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39−18−35.63N / 94−42−00.00W
2.19.6 Site elevation: 969 ft

2.19.1 ILS type: Inner Marker for runway 01R. Magnetic variation: 3E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39−16−45.10N / 94−42−34.80W
2.19.6 Site elevation: 1010 ft

2.19.1 ILS type: Glide Slope for runway 01R. Magnetic variation: 3E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39−17−00.00N / 94−42−24.22W
2.19.6 Site elevation: 1010 ft

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 5E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39−16−43.59N / 94−42−35.24W
2.19.6 Site elevation: 1011 ft

2.19.1 ILS type: DME for runway 19L. Magnetic variation: 5E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39−16−43.62N / 94−42−38.55W
2.19.6 Site elevation: 1016 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 5E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39−18−13.95N / 94−42−00.00W
2.19.6 Site elevation: 977 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 5E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39−18−51.60N / 94−41−57.40W
2.19.6 Site elevation: 958 ft

2.19.1 ILS type: Outer Marker for runway 19L. Magnetic variation: 5E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39−23−12.92N / 94−40−37.14W
2.19.6 Site elevation: 830 ft

General Remarks:

WATERFOWL ON AND IN THE VICINITY OF AIRPORT.

WINDSHEAR ALERT SYSTEM ON AIRPORT.

NOISE ABATEMENT PROCEDURES IN EFFECT 2200−0600 WITH LANDING ON RUNWAYS 01L & 19L; TAKEOFFS ON RUNWAYS 01R & 19R.

MILITARY AIRCRAFT MAY BE CHARGED RAMP/PARKING FEES.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE AT GATE 90.

COYOTE ON & IN THE VICINITY OF AIRPORT.

PRIOR PERMISSION REQUIRED TO PARK AT AIRLINE GATES CONTACT RESPECTIVE AIRLINE.

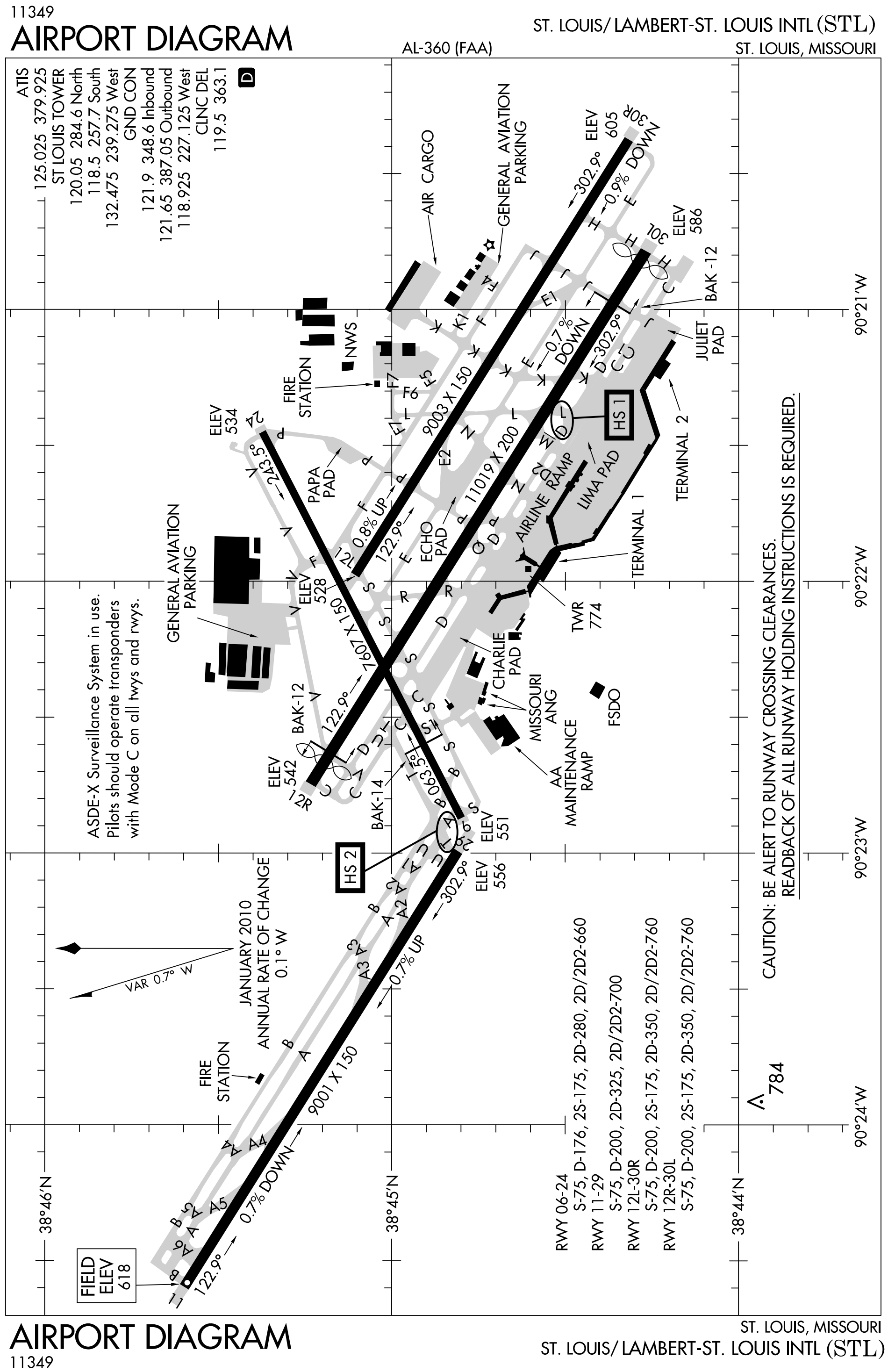
WHEN USING HIGH−SPEED EXITS C5 & C6 CONTINUE UNTIL FIRST PARALLEL TAXIWAY, THEN USE EXTREME CAUTION WHEN TURNING IN EXCESS OF 90 DEGREES.

NO AIRCRAFT PARKING ON POSTAL APRON.

PUSHBACK CLEARANCE REQUIRED AT GATES 45 THRU 57 IN TERMINAL B AND GATES 72, 73 AND 76 IN TERMINAL C, PUSHBACK FROM THESE GATES ENTERS TAXIWAY D.

NON CALIBRATED AIRPORT COMPASS ROSE LOCATED AT THE OVERHAUL BASE(OHB). READINGS MAY BE UNRELIABLE.

St. Louis, Missouri
Lambert−St. Louis International
ICAO Identifier KSTL



St Louis, MO
Lambert-St Louis Intl
ICAO Identifier KSTL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−44−55.31N / 90−22−12.10W
2.2.2 From City: 10 Miles NW Of St Louis, MO
2.2.3 Elevation: 618 ft
2.2.5 Magnetic variation: 0E (2000)
2.2.6 Airport Contact: Ms. Rhonda
Hamm−Niebruegge
BOX 10212
St Louis, MO 63145
(314−426−8000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 06
2.10.1.b Type of obstacle: Tree (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Sign (18 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 450 ft from Centerline

2.10.1.a. Runway designation: 12L
2.10.1.b Type of obstacle: Bldg (54 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 30R
2.10.1.b Type of obstacle: Twr (42 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 580 ft from Centerline

2.10.1.a. Runway designation: 12R
2.10.1.b Type of obstacle: Road (30 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 30L
2.10.1.b Type of obstacle: Sign (86 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 900 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 63
2.12.3 Dimensions: 7607 ft x 150 ft
2.12.5 Coordinates: 38−44−48.04N / 90−22−52.43W
2.12.6 Threshold elevation: 551 ft
2.12.6 Touchdown zone elevation: 551 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 243
2.12.3 Dimensions: 7607 ft x 150 ft
2.12.5 Coordinates: 38−45−22.38N / 90−21−27.02W
2.12.6 Threshold elevation: 534 ft
2.12.6 Touchdown zone elevation: 534 ft

2.12.1 Designation: 30X
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 12X
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 122
2.12.3 Dimensions: 9001 ft x 150 ft
2.12.5 Coordinates: 38−45−35.83N / 90−24−35.55W
2.12.6 Threshold elevation: 618 ft
2.12.6 Touchdown zone elevation: 618 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 302

2.12.3 Dimensions: 9001 ft x 150 ft
2.12.5 Coordinates: 38−44−48.46N / 90−22−59.39W
2.12.6 Threshold elevation: 556 ft
2.12.6 Touchdown zone elevation: 580 ft

2.12.1 Designation: 12L
2.12.2 True Bearing: 122
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.5 Coordinates: 38−45−00.00N / 90−21−58.66W
2.12.6 Threshold elevation: 528 ft
2.12.6 Touchdown zone elevation: 541 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 302
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.5 Coordinates: 38−44−18.99N / 90−20−22.51W
2.12.6 Threshold elevation: 604 ft
2.12.6 Touchdown zone elevation: 604 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 122
2.12.3 Dimensions: 11019 ft x 200 ft
2.12.5 Coordinates: 38−45−14.05N / 90−22−44.97W
2.12.6 Threshold elevation: 542 ft
2.12.6 Touchdown zone elevation: 540 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 302
2.12.3 Dimensions: 11019 ft x 200 ft
2.12.5 Coordinates: 38−44−16.01N / 90−20−47.27W
2.12.6 Threshold elevation: 586 ft
2.12.6 Touchdown zone elevation: 583 ft

AD 2.13 Declared distances
2.13.1 Designation: 06
2.13.2 Takeoff run available: 7602
2.13.3 Takeoff distance available: 7602
2.13.4 Accelerate−stop distance available: 7352
2.13.5 Landing distance available: 7352

2.13.1 Designation: 24
2.13.2 Takeoff run available: 7602
2.13.3 Takeoff distance available: 7602
2.13.4 Accelerate−stop distance available: 7602
2.13.5 Landing distance available: 7602

2.13.1 Designation: 11
2.13.2 Takeoff run available: 9001
2.13.3 Takeoff distance available: 9001
2.13.4 Accelerate−stop distance available: 9001
2.13.5 Landing distance available: 9001

2.13.1 Designation: 29
2.13.2 Takeoff run available: 9001
2.13.3 Takeoff distance available: 9001
2.13.4 Accelerate−stop distance available: 9001
2.13.5 Landing distance available: 9001

2.13.1 Designation: 12L
2.13.2 Takeoff run available: 9003
2.13.3 Takeoff distance available: 9003
2.13.4 Accelerate−stop distance available: 9003
2.13.5 Landing distance available: 9003

2.13.1 Designation: 30R
2.13.2 Takeoff run available: 9003
2.13.3 Takeoff distance available: 9003
2.13.4 Accelerate−stop distance available: 9003
2.13.5 Landing distance available: 9003

2.13.1 Designation: 12R
2.13.2 Takeoff run available: 11019
2.13.3 Takeoff distance available: 11019
2.13.4 Accelerate−stop distance available: 11019
2.13.5 Landing distance available: 10562

2.13.1 Designation: 30L
2.13.2 Takeoff run available: 11019
2.13.3 Takeoff distance available: 11019
2.13.4 Accelerate−stop distance available: 11019
2.13.5 Landing distance available: 10819

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 24
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 11

2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 29
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 12L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: ALSF2 Unmonitored Except When RVR Visbelow 1800 Ft.

2.14.1 Designation: 12R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: PAPI Offset 5 Degrees S To Accommodate LDA/DME Approach To Runway 30L.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 128.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 126.55 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND CTL OUTBOUND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND CTL INBOUND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 123.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.2 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 124.25 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 132.125 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 254.3 MHz
2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 257.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 307.05 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 306.2 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 338.25 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 335.5 MHz

2.18.1 Service designation: GND CTL INBOUND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 360.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 363.1 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 270.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 353.9 MHz

2.18.1 Service designation: GND METER EAST
2.18.3 Service designation: 127.55 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.025 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 379.925 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND CTL OUTBOUND/P
2.18.3 Service designation: 387.05 MHz
2.18.1 Service designation: GND METER EAST
2.18.3 Service designation: 360.2 MHz

2.18.1 Service designation: GND METER WEST
2.18.3 Service designation: 121.075 MHz

2.18.1 Service designation: GND METER WEST
2.18.3 Service designation: 346.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.475 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.275 MHz

2.18.1 Service designation: GND CTL/P
2.18.3 Service designation: 118.925 MHz

2.18.1 Service designation: GND CTL/P
2.18.3 Service designation: 227.125 MHz

2.18.1 Service designation: PRM
2.18.3 Service designation: 278.3 MHz

2.18.1 Service designation: PRM
2.18.3 Service designation: 351.9 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 121.02 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 06. Magnetic variation: 0E
2.19.2 ILS identification: JAK
2.19.5 Coordinates: 38−44−54.72N / 90−22−40.02W
2.19.6 Site elevation: 536 ft

2.19.1 ILS type: Localizer for runway 06. Magnetic variation: 0E
2.19.2 ILS identification: JAK
2.19.5 Coordinates: 38−45−25.79N / 90−21−18.61W
2.19.6 Site elevation: 541 ft

2.19.1 ILS type: DME for runway 06. Magnetic variation: 0E
2.19.2 ILS identification: JAK
2.19.5 Coordinates: 38−44−39.67N / 90−23−00.00W
2.19.6 Site elevation: 556 ft

2.19.1 ILS type: Localizer for runway 24. Magnetic variation: 0E

2.19.2 ILS identification: STL
2.19.5 Coordinates: 38−44−43.52N / 90−23−00.00W
2.19.6 Site elevation: 545 ft

2.19.1 ILS type: DME for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38−44−39.67N / 90−23−00.00W
2.19.6 Site elevation: 540 ft

2.19.1 ILS type: Glide Slope for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38−45−13.62N / 90−21−37.59W
2.19.6 Site elevation: 528 ft

2.19.1 ILS type: Middle Marker for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38−45−37.15N / 90−20−50.60W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38−47−16.98N / 90−16−43.91W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 30X. Magnetic variation: 0E
2.19.2 ILS identification: RMK
2.19.5 Coordinates: 38-45-34.14N / 90-23-30.20W
2.19.6 Site elevation: 583 ft

2.19.1 ILS type: Localizer for runway 30X. Magnetic variation: 0E
2.19.2 ILS identification: RMK
2.19.5 Coordinates: 38−45−33.46N / 90−23−28.96W
2.19.6 Site elevation: 580 ft

2.19.1 ILS type: Glide Slope for runway 30X. Magnetic variation: 0E
2.19.2 ILS identification: RMK
2.19.5 Coordinates: 38−44−28.10N / 90−21−00.00W
2.19.6 Site elevation: 564 ft

2.19.1 ILS type: DME for runway 12X. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−44−10.39N / 90−20−12.05W
2.19.6 Site elevation: 616 ft

2.19.1 ILS type: Glide Slope for runway 12X. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−44−58.22N / 90−21−50.34W
2.19.6 Site elevation: 534 ft

2.19.1 ILS type: Inner Marker for runway 12X. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−45−11.93N / 90−22−00.00W
2.19.6 Site elevation: 530 ft

2.19.1 ILS type: Middle Marker for runway 12X. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−45−21.22N / 90−22−28.71W
2.19.6 Site elevation: 545 ft

2.19.1 ILS type: Localizer for runway 12X. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−44−13.67N / 90−20−11.72W
2.19.6 Site elevation: 602 ft

2.19.1 ILS type: Outer Marker for runway 12X. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−48−00.00N / 90−28−29.10W
2.19.6 Site elevation: 446 ft

2.19.1 ILS type: Inner Marker for runway 11. Magnetic variation: 0E
2.19.2 ILS identification: OGZ
2.19.5 Coordinates: 38−45−40.35N / 90−24−44.74W
2.19.6 Site elevation: 614 ft
2.19.1 ILS type: DME for runway 11. Magnetic

variation: 0E
2.19.2 ILS identification: OGZ
2.19.5 Coordinates: 38−44−36.71N / 90−22−41.69W
2.19.6 Site elevation: 548 ft

2.19.1 ILS type: Glide Slope for runway 11. Magnetic variation: 0E
2.19.2 ILS identification: OGZ
2.19.5 Coordinates: 38−45−26.04N / 90−24−25.38W
2.19.6 Site elevation: 598 ft

2.19.1 ILS type: Localizer for runway 11. Magnetic variation: 0E
2.19.2 ILS identification: OGZ
2.19.5 Coordinates: 38−44−38.72N / 90−22−39.63W
2.19.6 Site elevation: 545 ft

2.19.1 ILS type: Inner Marker for runway 29. Magnetic variation: 0E
2.19.2 ILS identification: RQN
2.19.5 Coordinates: 38−44−41.36N / 90−22−44.97W
2.19.6 Site elevation: 541 ft

2.19.1 ILS type: Localizer for runway 29. Magnetic variation: 0E
2.19.2 ILS identification: RQN
2.19.5 Coordinates: 38−45−41.35N / 90−24−46.77W
2.19.6 Site elevation: 613 ft

2.19.1 ILS type: DME for runway 29. Magnetic variation: 0E
2.19.2 ILS identification: RQN
2.19.5 Coordinates: 38−45−43.83N / 90−24−44.64W
2.19.6 Site elevation: 608 ft

2.19.1 ILS type: Glide Slope for runway 29. Magnetic variation: 0E
2.19.2 ILS identification: RQN
2.19.5 Coordinates: 38−44−49.83N / 90−23−11.86W
2.19.6 Site elevation: 556 ft

2.19.1 ILS type: Localizer for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: ABW
2.19.5 Coordinates: 38−45−20.83N / 90−21−11.28W
2.19.6 Site elevation: 566 ft

2.19.1 ILS type: DME for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: ABW
2.19.5 Coordinates: 38−45−23.25N / 90−21−00.00W
2.19.6 Site elevation: 563 ft

2.19.1 ILS type: DME for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38−45−14.12N / 90−22−00.00W
2.19.6 Site elevation: 546 ft

2.19.1 ILS type: Middle Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38−44−00.00N / 90−19−57.56W
2.19.6 Site elevation: 534 ft

2.19.1 ILS type: Inner Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38-44-14.66N / 90-20-13.73W
2.19.6 Site elevation: 602 ft

2.19.1 ILS type: Outer Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38−41−46.48N / 90−15−44.59W
2.19.6 Site elevation: 530 ft

2.19.1 ILS type: Localizer for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38−45−11.41N / 90−22−00.00W
2.19.6 Site elevation: 530 ft

2.19.1 ILS type: Glide Slope for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38−44−21.96N / 90−20−38.02W
2.19.6 Site elevation: 592 ft

2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−44−11.62N / 90−20−38.31W
2.19.6 Site elevation: 589 ft

2.19.1 ILS type: Outer Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−48−00.00N / 90−28−29.10W
2.19.6 Site elevation: 446 ft

2.19.1 ILS type: Glide Slope for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−45−00.00N / 90−22−24.90W
2.19.6 Site elevation: 532 ft

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−45−32.78N / 90−23−23.72W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−44−10.45N / 90−20−42.27W
2.19.6 Site elevation: 597 ft

2.19.1 ILS type: Localizer for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−45−17.77N / 90−22−52.48W
2.19.6 Site elevation: 549 ft

2.19.1 ILS type: Glide Slope for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−44−27.94N / 90−21−00.00W
2.19.6 Site elevation: 564 ft

2.19.1 ILS type: Middle Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−44−00.00N / 90−20−20.21W
2.19.6 Site elevation: 590 ft

2.19.1 ILS type: Outer Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−41−45.98N / 90−15−44.21W
2.19.6 Site elevation: 530 ft

General Remarks:

NO DESIGNATED TAXILANES OR APRON TAXIWAYS LOCATED ON AIR CARRIER RAMPS.

WAIVER TO CONDUCT SIMULTANEOUS APPROACHES TO PARALLEL RUNWAYS SEPARATED BY 1,300 FT IN EFFECT.

WG TIP CLEARANCE WITH GROUND VEH NOT ADEQUATE ALONG N SIDE OF MAIN TERMINAL APRON.

MISC: MILITARY AIRCRAFT PLANNING TO ARR WHEN WX IS ANTICIPATED TO BE LESS THAN 1200'/5 MUST FILE F;T PLAN BEFORE 0900Z++.

ASDE−X SURVEILLANCE SYSTEM I USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

NO SERVICE AT MISSOURI ANG RAMP. BASE RE−ALIGNMENT IN PROCESS.

ARRESTING GEAR: A−G ARE KEPT IN RECESSED POSITION UNTIL REQ FOR USE. TOWER MUST BE NOTIFIED AT LEAST 5 SECOND PRIOR TO ENGAGEMENT SO THAT CABLE MAY BE RAISED.

ARRESTING GEAR: RUNWAY 06 1450 FT; RUNWAY 12R 1090 FT & RUNWAY 30L 1300 FT FROM THR.

TAXIWAY D OR TAXILANE C FROM TAXIWAY S TO TAXIWAY H, B-747 OR LARGER AIRCRAFT ARE NOT AUTHORIZED TO PASS OR BE PASSED BY B-767 OR LARGER AIRCRAFT OPERATING ON THE PARALLEL TWY/TAXILANE.

TAXIWAY P, EAST OF THE PAPA PAD TO TAXIWAY F, RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 79 FT (JS-41 AND E-120), WHEN AIRCRAFT ARE PARKED ON THE PAPA PAD. THIS AREA IS RESTRICTED TO ALL OPERATIONS WHEN AIRCRAFT ARE PERFORMING ENGINE RUN-UPS IN THE PAPA PAD.

TAXIWAY V, UNDERLYING THE RUNWAY 12L FINAL APPROACH COURSE IS RESTRICTED TO AIRCRAFT SMALLER THAN A DC-9 (25 FT OR LESS), WHEN AIRCRAFT ARE LANDING ON RUNWAY 12L.

TAXIWAY E, BETWEEN TAXIWAY P AND TAXIWAY N, RESTRICTED TO B-767 OR SMALLER AIRCRAFT (WINGSPAN LESS THAN 171 FT) WHEN AIRCRAFT ARE PARKED ON THE ECHO PAD.

TAXIWAY C, EAST OF TAXIWAY D ONE TO THE APPROACH END OF RUNWAY 30L, RESTRICTED TO B-727 OR SMALLER AIRCRAFT (WINGSPAN OF 118 FT OR LESS) WHEN AIRCRAFT ARE PARKED ON THE JULIET PAD.

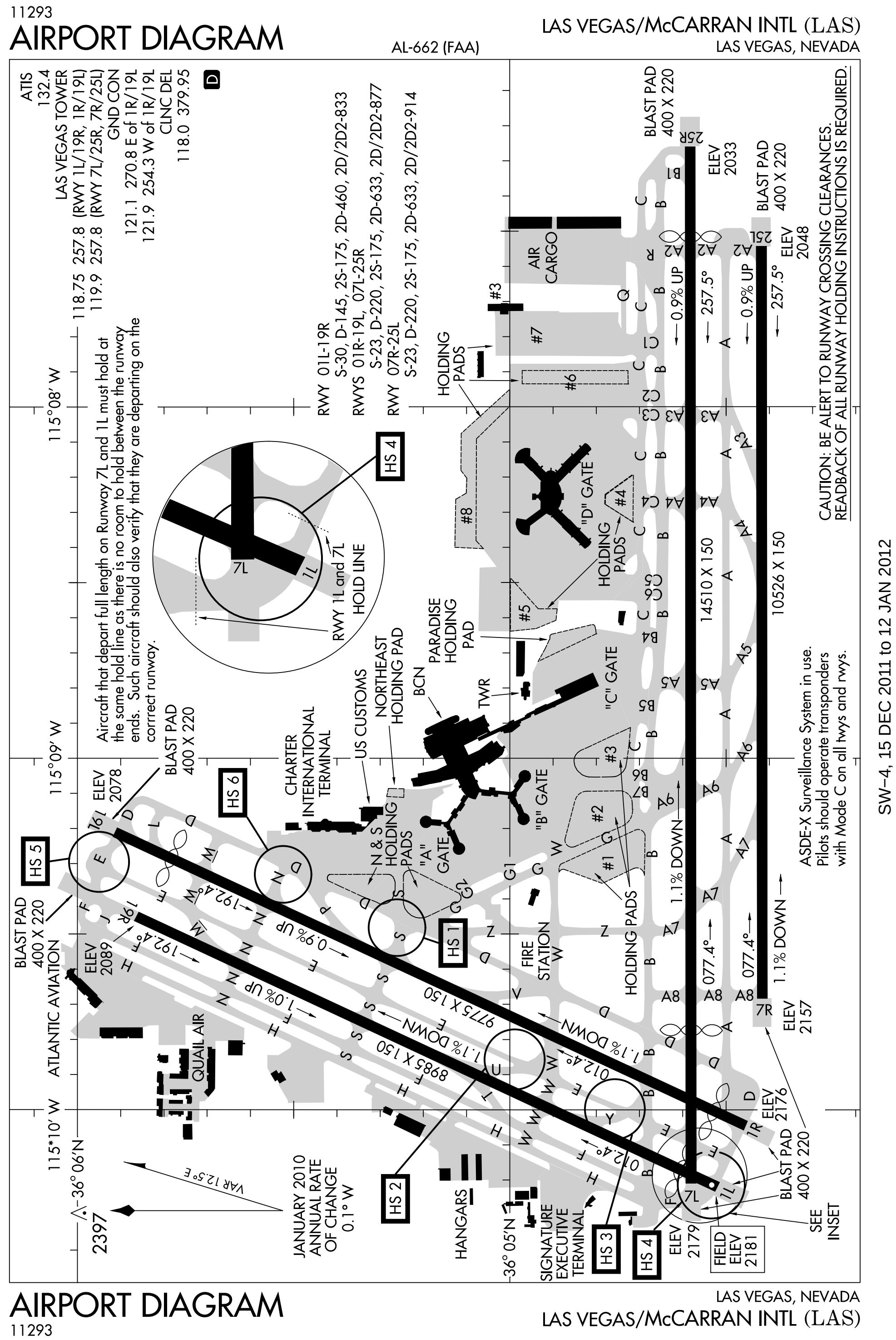
TAXILANE C, FROM TAXIWAY S TO TAXIWAY R, RESTRICTED TO B-767 OR SMALLER AIRCRAFT (156 FT AVBL) WHEN AFTER ARE PARKED IN THE CHARLIE PAD. RESTRICTION IS FOR TAXIING AIRCRAFT, LARGER AIRCRAFT MAY BE TOWED THROUGH THE AREA.

TAXILANE C FROM TAXIWAY P TO TAXIWAY L, RESTRICTED TO A B-757 300 SERIES OR SMALLER WHEN PASSING BEHIND AIRCRAFT THAT HAVE MADE THE INITIAL 10 FT PUSHBACK.

TAXIWAY A EAST OF TAXIWAY T, TAXIWAY S AND RUNWAY 06/24 SOUTH OF TAXIWAY B, NO AIRCRAFT OR VEHICLE OPERATIONS WHEN ARRIVING OR DEPARTING RUNWAY 11 OR ARRIVING RUNWAY 29.

TAXIWAY L NORTH OF RUNWAY 12L/30R, AIRCRAFT LARGER THAN A G5 TAXIING NORTHBOUND ARE PROHIBITED FROM MAKING A RIGHT TURN EASTBOUND ON TAXIWAY F.

Las Vegas, Nevada
McCarren International
ICAO Identifier KLAS



Las Vegas, NV
Mc Carran Intl
ICAO Identifier KLAS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36−04−48.20N / 115−09−00.00W
2.2.2 From City: 5 Miles S Of Las Vegas, NV
2.2.3 Elevation: 2181 ft
2.2.5 Magnetic variation: 15E (1980)
2.2.6 Airport Contact: Randall H. Walker
5757 WAYNE NEWTON BLVD
Las Vegas, NV 89119
(702−261−5211)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 07L
2.10.1.b Type of obstacle: Hangar (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Pole (53 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 540 ft from Centerline

2.10.1.a. Runway designation: 01L
2.10.1.b Type of obstacle: Rr (48 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 19R
2.10.1.b Type of obstacle: Fence (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 150 ft from Centerline

2.10.1.a. Runway designation: 01R
2.10.1.b Type of obstacle: Rr (41 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 19L
2.10.1.b Type of obstacle: Pole (17 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 17 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 14510 ft x 150 ft
2.12.5 Coordinates: 36−04−34.92N / 115−10−12.68W
2.12.6 Threshold elevation: 2179 ft
2.12.6 Touchdown zone elevation: 2155 ft
2.12.7 Slope: 1.1DOWN

2.12.1 Designation: 25R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 14510 ft x 150 ft
2.12.5 Coordinates: 36−04−35.06N / 115−07−15.96W
2.12.6 Threshold elevation: 2033 ft
2.12.6 Touchdown zone elevation: 2067 ft
2.12.7 Slope: 1.9UP

2.12.1 Designation: 07R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10526 ft x 150 ft
2.12.5 Coordinates: 36−04−25.06N / 115−09−41.16W
2.12.6 Threshold elevation: 2157 ft
2.12.6 Touchdown zone elevation: 2157 ft
2.12.7 Slope: 1.1DOWN

2.12.1 Designation: 25L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10526 ft x 150 ft
2.12.5 Coordinates: 36−04−25.16N / 115−07−32.96W
2.12.6 Threshold elevation: 2048 ft

2.12.6 Touchdown zone elevation: 2068 ft
2.12.7 Slope: 0.9UP

2.12.1 Designation: 01L
2.12.2 True Bearing: 25
2.12.3 Dimensions: 8985 ft x 150 ft
2.12.5 Coordinates: 36−04−31.20N / 115−10−13.29W
2.12.6 Threshold elevation: 2181 ft
2.12.6 Touchdown zone elevation: 2176 ft
2.12.7 Slope: 1.1DOWN

2.12.1 Designation: 19R
2.12.2 True Bearing: 205
2.12.3 Dimensions: 8985 ft x 150 ft
2.12.5 Coordinates: 36−05−51.76N / 115−09−27.19W
2.12.6 Threshold elevation: 2089 ft
2.12.6 Touchdown zone elevation: 2117 ft
2.12.7 Slope: 1UP

2.12.1 Designation: 01R
2.12.2 True Bearing: 25
2.12.3 Dimensions: 9775 ft x 150 ft
2.12.5 Coordinates: 36−04−27.28N / 115−10−00.00W
2.12.6 Threshold elevation: 2176 ft
2.12.6 Touchdown zone elevation: 2170 ft
2.12.7 Slope: 1.1DOWN

2.12.1 Designation: 19L
2.12.2 True Bearing: 205
2.12.3 Dimensions: 9775 ft x 150 ft
2.12.5 Coordinates: 36−05−54.93N / 115−09−12.78W
2.12.6 Threshold elevation: 2078 ft
2.12.6 Touchdown zone elevation: 2113 ft
2.12.7 Slope: 0.9UP

AD 2.13 Declared distances
2.13.1 Designation: 07L
2.13.2 Takeoff run available: 14510
2.13.3 Takeoff distance available: 15099
2.13.4 Accelerate−stop distance available: 14099
2.13.5 Landing distance available: 11966

2.13.1 Designation: 25R
2.13.2 Takeoff run available: 14510
2.13.3 Takeoff distance available: 15155
2.13.4 Accelerate−stop distance available: 14155
2.13.5 Landing distance available: 12755

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 8985
2.13.3 Takeoff distance available: 8985
2.13.4 Accelerate−stop distance available: 8985
2.13.5 Landing distance available: 8401

2.13.1 Designation: 19R
2.13.2 Takeoff run available: 8985
2.13.3 Takeoff distance available: 9397
2.13.4 Accelerate−stop distance available: 8397
2.13.5 Landing distance available: 8397

2.13.1 Designation: 01R
2.13.2 Takeoff run available: 9775
2.13.3 Takeoff distance available: 10172
2.13.4 Accelerate−stop distance available: 9441
2.13.5 Landing distance available: 8681

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 9775
2.13.3 Takeoff distance available: 10175
2.13.4 Accelerate−stop distance available: 9685
2.13.5 Landing distance available: 8745

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 07R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01R
2.14.4 Visual approach slope indicator system:
4−light PAPI on left

2.14.1 Designation: 19L
2.14.4 Visual approach slope indicator system:
4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.9 MHz

2.18.1 Service designation: VFR FINAL APCH
2.18.3 Service designation: 120.45 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: RAMP CON
2.18.3 Service designation: 124.4 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: RAMP CON
2.18.3 Service designation: 127.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 132.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 379.15 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 379.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 379.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 379.15 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 379.95 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 125.025 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.02 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.02 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.02 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 353.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 353.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 254.3 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 307.25 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 270.8 MHz

2.18.1 Service designation: RAMP CON
2.18.3 Service designation: 129.175 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−32.08N / 115−07−46.67W
2.19.6 Site elevation: 2047 ft

2.19.1 ILS type: Outer Marker for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−35.71N / 115−01−16.98W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−35.10N / 115−06−44.40W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−30.52N / 115−10−19.17W
2.19.6 Site elevation: 2203 ft

2.19.1 ILS type: Localizer for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−34.91N / 115−10−19.18W
2.19.6 Site elevation: 2187 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 15E
2.19.2 ILS identification: RLE
2.19.5 Coordinates: 36−04−25.05N / 115−09−53.34W
2.19.6 Site elevation: 2168 ft

2.19.1 ILS type: Glide Slope for runway 25L. Magnetic variation: 15E
2.19.2 ILS identification: RLE
2.19.5 Coordinates: 36−04−21.99N / 115−07−46.66W
2.19.6 Site elevation: 2051 ft

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 14E
2.19.2 ILS identification: CUA
2.19.5 Coordinates: 36−06−00.00N / 115−09−25.07W
2.19.6 Site elevation: 2093 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 14E
2.19.2 ILS identification: CUA
2.19.5 Coordinates: 36−04−49.14N / 115−10−00.00W
2.19.6 Site elevation: 2159 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 14E
2.19.2 ILS identification: CUA
2.19.5 Coordinates: 36−06−00.00N / 115−09−21.99W
2.19.6 Site elevation: 2079 ft

General Remarks:

EXTENSIVE GLIDER/SOARING OPERATIONS WEEKENDS & HOLS; SR−SS; LAS R187/020; ALTITUDES UP TO BUT NOT INCLUDING FL180. GLIDERS REMAIN CLEAR OF THE TCA BUT OTHERWISE OPERATE WITHIN THE ENTIRE SW QUADRANT OF THE TCA VEIL.

ALL NON−STD RUNWAY OPERATIONS PRIOR PERMISSION REQUIRED FROM DEPT OF AVIATION.

TURBOJET DEPS NOT PERMITTED ON RUNWAY 01R/19L OR RUNWAY 01L/19R 2000−0800. EXCEPTIONS FOR WX OR OPERATIONAL NECESSITY.

AIRCRAFT MAY EXPERIENCE REFLECTION OF SUN FROM GLASS HOTELS LOCATED NW OF AIRPORT. REFLECTION MAY OCCUR AT VARIOUS ALTITUDES HEADINGS & DISTANCES FROM AIRPORT.

DIRECTIONAL TAXIWAY SIGNS WILL BE INCOMPLETE DUE TO CONSTRUCTION.

GENERAL AVIATION PARKING VERY LIMITED. FOR PARKING AVAILABILITY CONTACT EITHER FBO (702) 736−1830 OR (702) 739−1100.

RUNWAY 01L/19R 496000 LBS GROSS WEIGHT FOR L−1011; 555000 LBS GROSS WEIGHT FOR DC−10; 602500 LBS GROSS WEIGHT FOR MD−11.

RUNWAY 07L 589 FT CLEARWAY; RUNWAY 25R 645 FT CLEARWAY.

LIGHTED GOLF RANGE 1400 FT SOUTH OF RUNWAYS 01L/19R AND O1R/19L.

TIEDOWN FEE.

(E98) PLUS 64 SHELTERS & 24 SHEDS.

AIRCRAFT USING FULL LENGTH DEP ON RUNWAY 07L USE MINIMAL POWER UNTIL PASSING THE POWER−UP POINT ON RUNWAY. POWER−UP POINT IS 348 FT EAST OF BALST PAD AND MARKED WITH SIGN AND STANDARD MARKINGS FOR BEGINNING OF RUNWAY.

TAXIWAY C NO CENTERLINE LIGHTS WEST OF TAXIWAY B4, HAS EDGE LIGHTS ON SOUTH SIDE OF TAXIWAY IN THIS AREA.

LARGE NUMBERS OF BIRDS AND BATS IN THE VICINITY OF OF AIRPORT BETWEEN SUNSET AND SUNRISE.

AIRCRAFT DEPARTING RUNWAY 19R USE MINIMAL POWER UNTIL PASSING THE RUNWAY THRESHOLD. RUNWAY 19R THRESHOLD HAS STANDARD RUNWAY MARKINGS AND IS 780 FT SOUTH OF THE BLAST PAD.

AIRCRAFT OPER NEAR THE INTERSECTION OF TAXIWAYS S, D, G AND THE NORTH END OF TAXIWAY Z SHOULD BE ALERT AS THERE ARE CLOSELY ALIGNED TAXIWAY CENTERLINES AND RADIUS TURNS.

AIRCRAFT THAT DEPART FULL LENGTH OF RUNWAYS 01L AND 07L MUST HOLD AT THE SAME HOLD LINE AS THERE IS NO ROOM TO HOLD BETWEEN THE RUNWAY ENDS AND SUCH AIRCRAFT SHOULD VERIFY THAT THEY ARE ON THE CORRECT RUNWAY.

GENERAL AVIATION CUSTOMS AND IMIGRATION LOCATED WEST SIDE OF AIRFIELD BETWEEN FBO'S.

AIRCRAFT LARGER THAN B757 PRIOR PERMISSION REQUIRED FROM DEPT OF AVIATION TO USE TAXIWAY H.

NUMEROUS HELICOPTER OPERATIONS ON WEST SIDE OF AIRPORT.

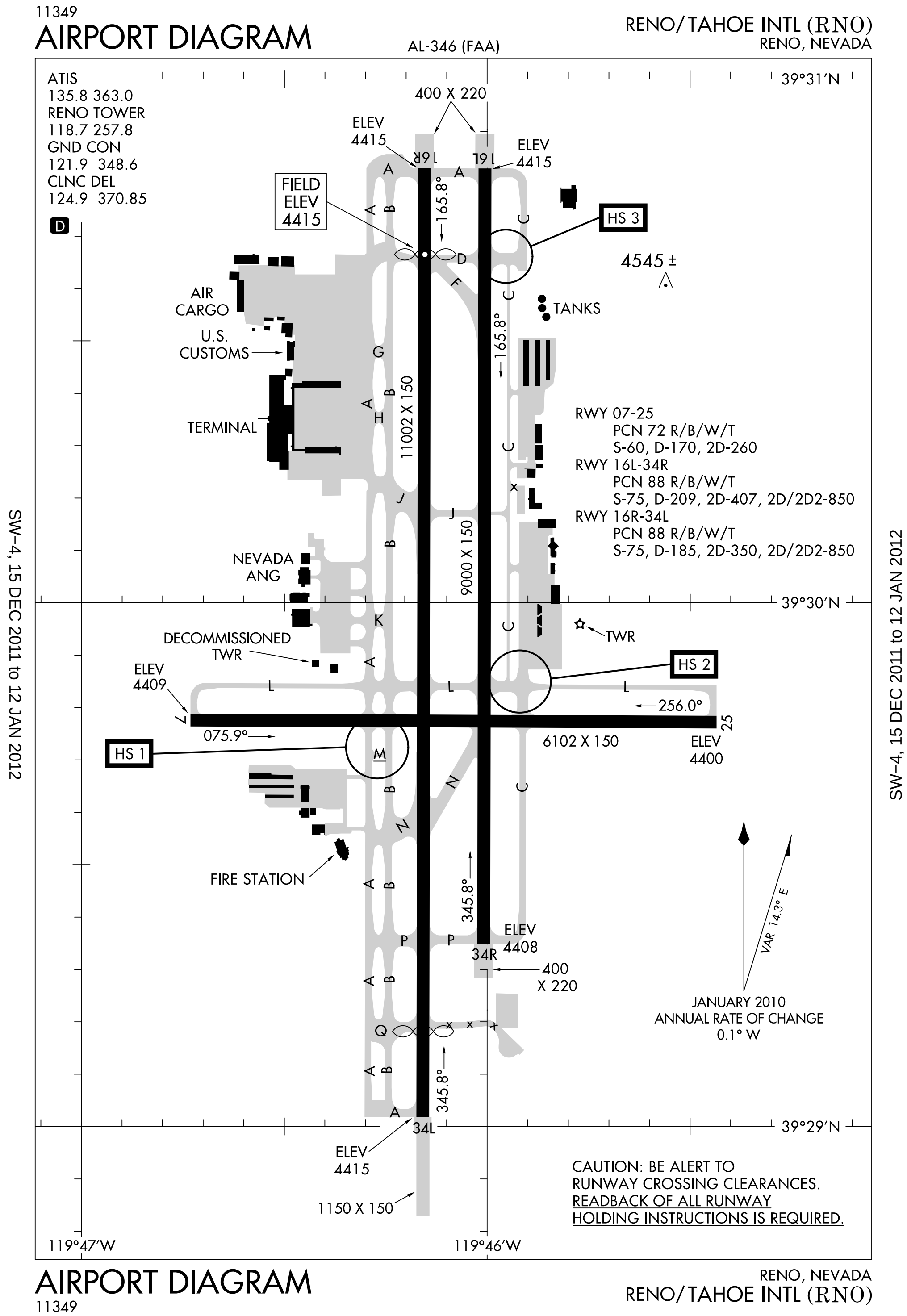
AIRCRAFT TAXIING WESTBOUND ON TAXIWAY B NEAR TAXIWAY E USE CAUTION NOT TO ENTER THE RUNWAY ON TAXIWAY Y. AIRCRAFT TAXIING WESTBOUND ON TAXIWAY W NEAR TAXIWAY E USE CAUTION NOT TO ENTER THE RUNWAY ON TAXIWAY U.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH

MODE C ON ALL TAXIWAYS AND RUNWAYS.

GENERAL AVIATION AIRCRAFT REQUIRING IMMIGRATION/CUSTOMS SERVICES MUST CONTACT DEPARTMENT OF AVIATION FOR PARKING ARRANGEMENTS MINIMUM 2 HRS PRIOR TO ARRIVAL 702-261-4411. GENERAL AVIATION AIRCRAFT USING THE WEST SIDE CUSTOMS FACILITY MUST CONTACT RAMP CONTROL 124.4.

Reno, Nevada
Reno/Tahoe International
ICAO Identifier KRNO



Reno, NV
Reno/Tahoe Intl
ICAO Identifier KRNO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−29−56.80N / 119−46−00.00W
2.2.2 From City: 3 Miles SE Of Reno, NV
2.2.3 Elevation: 4415 ft
2.2.5 Magnetic variation: 16E (1985)
2.2.6 Airport Contact: Krys T. Bart
P O BOX 12490
Reno, NV 89510
(775−328−6400)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 07
2.10.1.b Type of obstacle: Pole (118 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 25
2.10.1.b Type of obstacle: Tree (44 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 275 ft from Centerline

2.10.1.a. Runway designation: 34L
2.10.1.b Type of obstacle: Gnd (243 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1500 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07
2.12.2 True Bearing: 90
2.12.3 Dimensions: 6102 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 39−29−46.63N / 119−46−43.82W
2.12.6 Threshold elevation: 4409 ft
2.12.6 Touchdown zone elevation: 4409 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 270
2.12.3 Dimensions: 6102 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 39−29−46.37N / 119−45−25.99W
2.12.6 Threshold elevation: 4400 ft
2.12.6 Touchdown zone elevation: 4402 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−30−49.82N / 119−46−00.00W
2.12.6 Threshold elevation: 4415 ft
2.12.6 Touchdown zone elevation: 4415 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−29−20.89N / 119−46−00.00W
2.12.6 Threshold elevation: 4408 ft
2.12.6 Touchdown zone elevation: 4408 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−30−49.84N / 119−46−00.00W
2.12.6 Threshold elevation: 4415 ft
2.12.6 Touchdown zone elevation: 4415 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−29−00.00N /

119−46−00.00W
2.12.6 Threshold elevation: 4415 ft
2.12.6 Touchdown zone elevation: 4410 ft

AD 2.13 Declared distances
2.13.1 Designation: 07
2.13.2 Takeoff run available: 6102
2.13.3 Takeoff distance available: 6102
2.13.4 Accelerate−stop distance available: 5854
2.13.5 Landing distance available: 5854

2.13.1 Designation: 25
2.13.2 Takeoff run available: 6102
2.13.3 Takeoff distance available: 6102
2.13.4 Accelerate−stop distance available: 6102
2.13.5 Landing distance available: 6102

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI Not To Be Used Beyond 2 Nm Due To Rapidly Rising Mountainous Terrain

2.14.1 Designation: 16L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI Not To Be Used Beyond 6 Nm Due To High Terrain.

2.14.1 Designation: 16R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI Not To Be Used Beyond 6 Nm Due To High Terrain.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 124.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: ANG/OPS
2.18.3 Service designation: 280 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG COMD POST/BASEOPS
2.18.3 Service designation: 8780 MHz
2.18.6 Remarks: Callsign − Caprock.

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 363 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 370.85 MHz

2.18.1 Service designation: ANG COMD POST/BASEOPS
2.18.3 Service designation: 378.4 MHz
2.18.6 Remarks: Callsign − Caprock.

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39−28−48.05N / 119−46−00.00W
2.19.6 Site elevation: 4410 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39−30−28.10N / 119−46−00.00W
2.19.6 Site elevation: 4408 ft

2.19.1 ILS type: Outer Marker for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39−36−27.48N / 119−46−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39−31−10.35N / 119−46−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39−28−49.52N / 119−46−00.00W
2.19.6 Site elevation: 4420 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 16E
2.19.2 ILS identification: AGY
2.19.5 Coordinates: 39−30−59.98N / 119−46−00.00W
2.19.6 Site elevation: 4418 ft

2.19.1 ILS type: DME for runway 34L. Magnetic variation: 16E
2.19.2 ILS identification: AGY
2.19.5 Coordinates: 39−31−00.00N / 119−46−12.58W
2.19.6 Site elevation: 4420 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 16E
2.19.2 ILS identification: AGY
2.19.5 Coordinates: 39−29−19.55N / 119−46−00.00W
2.19.6 Site elevation: 4402 ft

General Remarks:

WATERFOWL ALL QUADRANTS ALL SEASONS. CONCENTRATED NW OF RUNWAY 16R AND E OF RUNWAY 16L.

24 HRS PRIOR PERMISSION REQUIRED FOR TRANSIENT AIRCRAFT PARKING WITH WINGSPANS GREATER THAN 75’.

TAXIWAY C BETWEEN TAXIWAY L & TAXIWAY D RESTRICTED TO AIRCRAFT 60000 LBS OR LESS.

NOISE SENSITIVE AREA ALL QUADS. PILOTS OF TURBOJET AIRCRAFT USE RECOMMENDED NOISE ABATEMENT PROCS; AVAILABLE ON REQUEST.

NOISE NOTE CONT: PILOTS OF NON−TURBOJET AIRCRAFT USE BEST ABATEMENT PROCS AND SETTINGS. AVOID AS MUCH AS FEASIBLE FLYING OVER POPULATED AREAS.

MILITARY AIRCRAFT: TRANSIENT AIRCRAFT EXECUTE STRAIGHT−IN FULL STOP APPROACH. OVERHEAD PATTERN NOT AUTH FOR TRANSIENT AIRCRAFT.

MILITARY AIRCRAFT: NOISE ABATEMENT CRITICAL TERMINATE AFTERBURNER ASAP THEN CLIMB TO 6500 FT MSL ASAP.

GLIDER/SOARING OPER 30−50 MILES SOUTH OF AIRPORT DURING VFR WEATHER & MOUNTAIN WAVE WIND CONDITIONS 1100 TO SS.

PURE JET TOUCH & GO LOW APPROACH & PRACTICE INSTRUMENT APPROACHES ARE PROHIBITED; AIRCRAFT OVER 12500 LBS REQUIRE PRIOR WRITTEN APPROVAL FOR TRAINING FLIGHTS; FOR FURTHER INFORMATION CONTACT AIRPORT OPERATIONS 1−877−736−6359.

TAXIWAY C BETWEEN TAXIWAY L AND TAXIWAY D CLOSED TO AIR CARRIER AIRCRAFT.

TAXIWAY A BETWEEN NORTH TAXIWAY B AND TAXIWAY D CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 149 FT.

ALL COMMERCIAL AIRCRAFT CONTACT GROUND CONTROL FOR ADVISORIES PRIOR TO PUSH BACK ON THE TERMINAL RAMP.

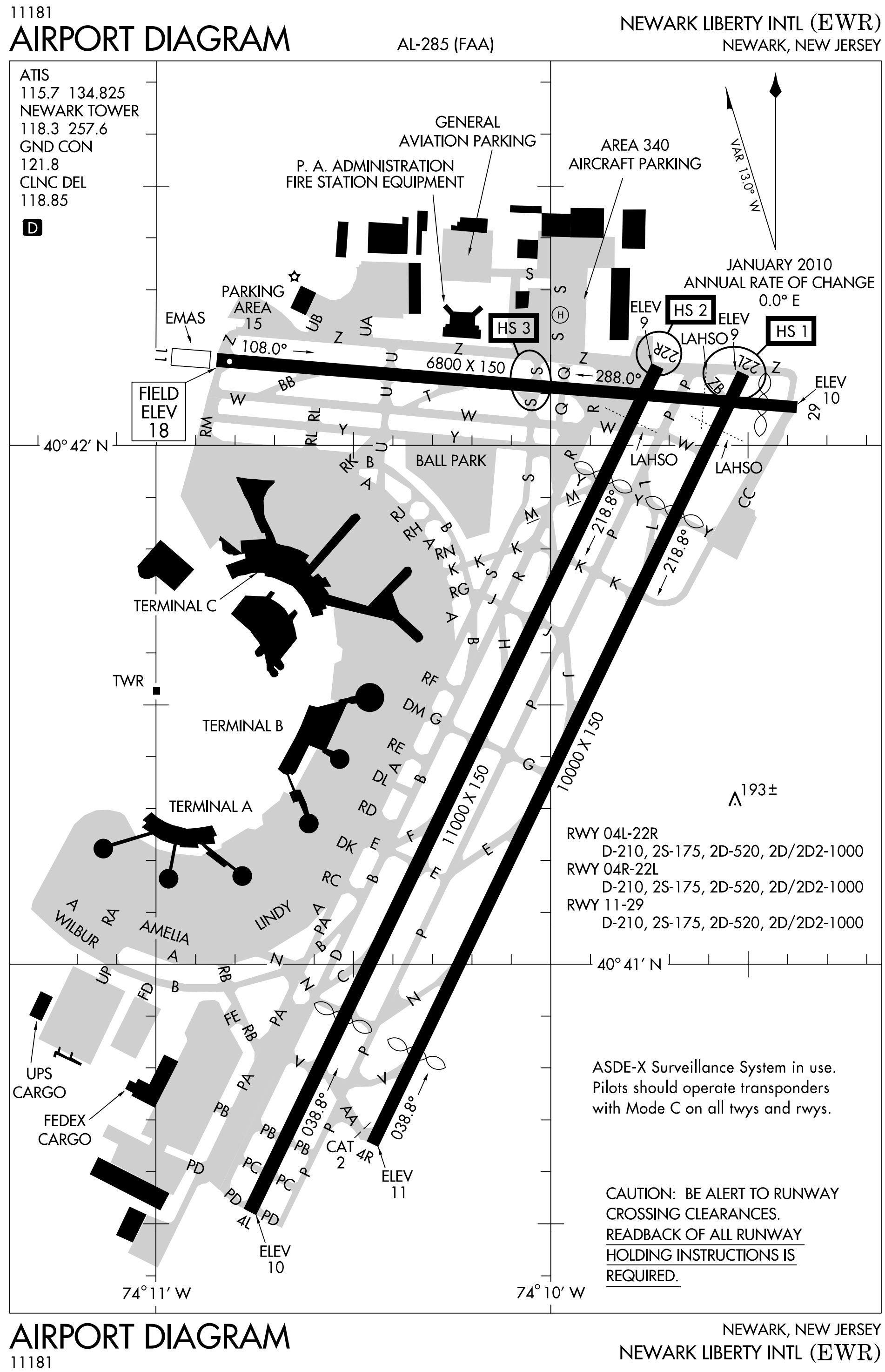
INTENSIVE GLIDER ACTIVITY IN THE VICINITY OF AIRPORT AND SURROUNDING AREAS UP TO 18,000 FT.

MILITARY: ANG OPERATIONS 1330-0200Z++ TUE-FRI EXCEPT HOLIDAY; DSN 830-4709.

TAXIWAY M CLOSED TO AIR CARRIER AIRCRAFT.

TAXIWAY J EAST OF RUNWAY 16L/34R CLOSED TO AIR CARRIER AIRCRAFT.

Newark, New Jersey
Newark Liberty International
ICAO Identifier KEWR



Newark, NJ
Newark Liberty Intl
ICAO Identifier KEWR

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40−41−33.00N / 74−10−00.00W
2.2.2 From City: 3 Miles S Of Newark, NJ
2.2.3 Elevation: 18 ft
2.2.5 Magnetic variation: 13W (1985)
2.2.6 Airport Contact: John S. Jacoby
BUILDING #1− CONRAD ROAD
Newark, NJ 7114 (973−961−6000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 11
2.10.1.b Type of obstacle: Ant (81 ft). Lighted
2.10.1.c Location of obstacle: 550 ft from Centerline

2.10.1.a. Runway designation: 29
2.10.1.b Type of obstacle: Bldg (24 ft). Lighted
2.10.1.c Location of obstacle: 450 ft from Centerline

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Tree (59 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 550 ft from Centerline

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Pole (30 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Pole (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Pole (51 ft). Lighted
2.10.1.c Location of obstacle: 575 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: H1
2.12.3 Dimensions: 40 ft x 40 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 95
2.12.3 Dimensions: 6800 ft x 150 ft
2.12.5 Coordinates: 40−42−10.10N / 74−10−50.55W
2.12.6 Threshold elevation: 18 ft
2.12.6 Touchdown zone elevation: 18 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 275
2.12.3 Dimensions: 6800 ft x 150 ft
2.12.5 Coordinates: 40−42−00.00N / 74−09−22.59W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 04L
2.12.2 True Bearing: 26
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 40−40−31.37N / 74−10−46.02W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 206
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.5 Coordinates: 40−42−00.00N / 74−09−43.83W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 04R

2.12.2 True Bearing: 26
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 40−40−39.30N / 74−10−27.28W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 11 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 206
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 40−42−00.00N / 74−09−30.73W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 10 ft

AD 2.13 Declared distances
2.13.1 Designation: 11
2.13.2 Takeoff run available: 6800
2.13.3 Takeoff distance available: 6800
2.13.4 Accelerate−stop distance available: 6800
2.13.5 Landing distance available: 6800

2.13.1 Designation: 29
2.13.2 Takeoff run available: 6800
2.13.3 Takeoff distance available: 6800
2.13.4 Accelerate−stop distance available: 6800
2.13.5 Landing distance available: 6502

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 11000
2.13.5 Landing distance available: 8460

2.13.1 Designation: 22R
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 11000
2.13.5 Landing distance available: 9560

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 8810

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 8206

AD 2.14 Approach and runway lighting
2.14.1 Designation: 11
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 29
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 04L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Runway 04L P4L Unusable 5 Degs L Of Centerline .

2.14.1 Designation: 22R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 115.7 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC

2.18.3 Service designation: 118.85 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 127.85 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 134.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P CLASS B
2.18.3 Service designation: 257.6 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.825 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/S
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 132.45 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 11. Magnetic variation: 13W
2.19.2 ILS identification: GPR
2.19.5 Coordinates: 40-42-00.00N / 74-10-00.00W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Glide Slope for runway 11. Magnetic variation: 13W
2.19.2 ILS identification: GPR
2.19.5 Coordinates: 40-42-10.83N / 74-10-35.03W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: DME for runway 11. Magnetic variation: 13W
2.19.2 ILS identification: GPR
2.19.5 Coordinates: 40-42-00.00N / 74-10-00.00W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Outer Marker for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40-35-37.20N / 74-13-48.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40-40-21.10N / 74-10-52.50W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40-42-18.19N / 74-09-38.11W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: DME for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40-42-15.69N / 74-09-33.74W
2.19.6 Site elevation: 34 ft

2.19.1 ILS type: Glide Slope for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40-41-00.00N / 74-10-22.76W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 13W
2.19.2 ILS identification: JNN
2.19.5 Coordinates: 40-40-22.39N / 74-10-51.73W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 13W
2.19.2 ILS identification: JNN
2.19.5 Coordinates: 40-41-47.58N / 74-09-53.89W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Outer Marker for runway 22R. Magnetic variation: 13W
2.19.2 ILS identification: JNN
2.19.5 Coordinates: 40-45-55.11N / 74-07-17.20W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: DME for runway 22R. Magnetic variation: 13W
2.19.2 ILS identification: JNN
2.19.5 Coordinates: 40-42-15.25N / 74-09-33.96W
2.19.6 Site elevation: 34 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40-40-28.95N / 74-10-33.87W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40-41-43.55N / 74-09-41.63W
2.19.6 Site elevation: 34 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40-41-43.70N / 74-09-41.73W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40-42-23.50N / 74-09-20.91W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40-45-54.50N / 74-07-16.70W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40-40-57.59N / 74-10-00.00W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40-40-26.62N / 74-10-35.32W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40-40-41.48N / 74-10-23.17W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40-36-26.40N / 74-13-00.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40-42-15.94N / 74-09-25.84W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40-41-43.55N / 74-09-41.63W
2.19.6 Site elevation: 34 ft

General Remarks:

FLOCKS OF BIRDS ON & IN THE VICINITY OF AIRPORT.

FOR NOISE RESTRICTIONS CALL 212−435−3779 DURING NORMAL BUSINESS HOURS.

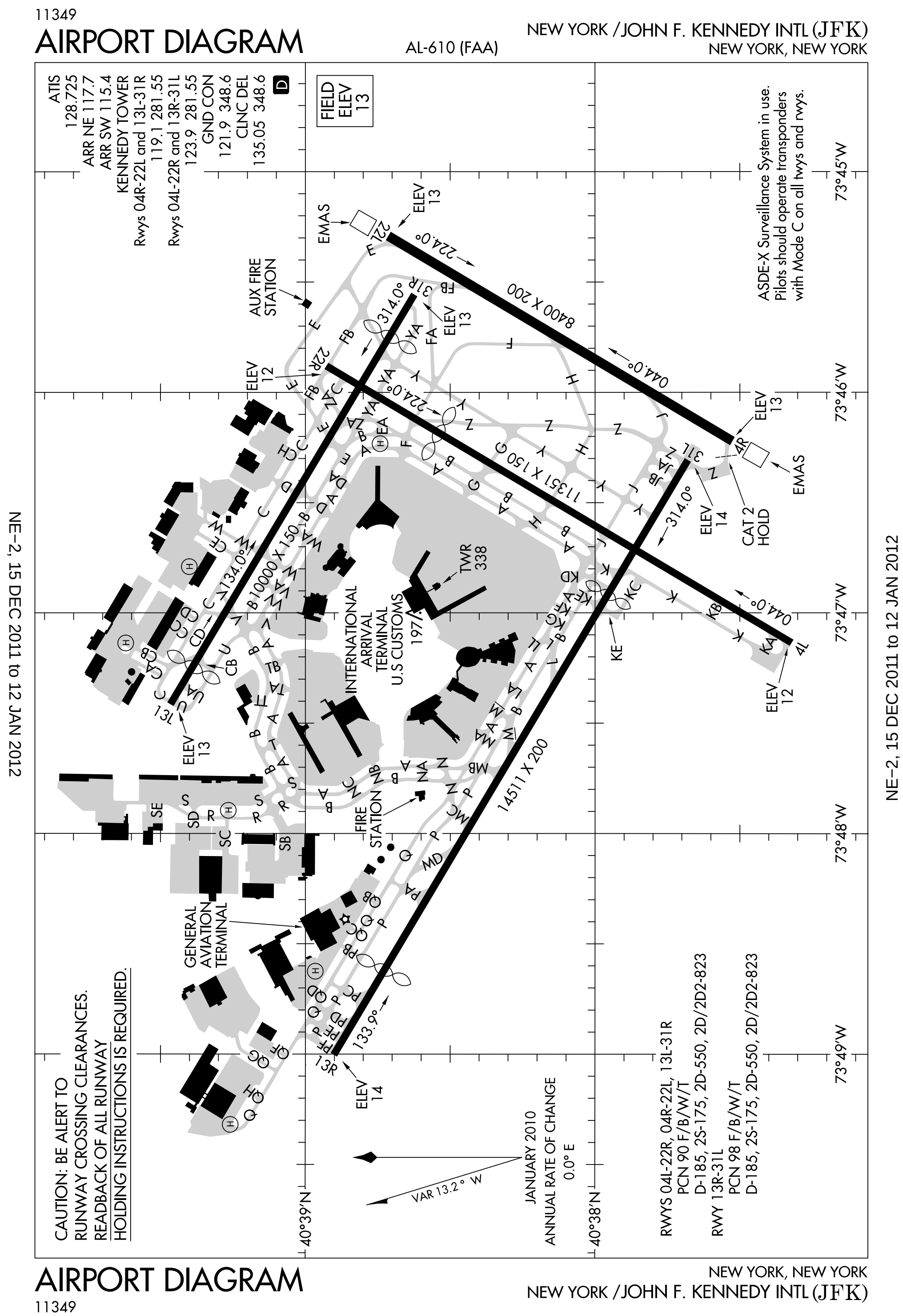
PARA−SAIL & BANNER TOWING OPERATIONS 1000 FT & BELOW IN UPPER & LOWER NEW YORK BAYS INCLUDING ROCKAWAY INLET INDEFINITELY.

TAXIWAY Z BETWEEN TAXIWAY U & UB RESTRICTED TO NARROW BODY AIRCRAFT INDEFINITELY.

ASDE−X SURVEILLANCE SYSTEM IN USE: OPERATE TRANSPONDERS ON ALL TAXIWAYS AND RUNWAYS.

RUNWAYS 04R & 04L DEPARTURES USE UPPER ANTENNA FOR ATC COMMUNICATIONS.

New York, New York
John F. Kennedy International
ICAO Identifier KJFK



New York, NY
John F Kennedy Intl
ICAO Identifier KJFK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40−38−23.10N / 73−46−44.13W
2.2.2 From City: 13 Miles SE Of New York, NY
2.2.3 Elevation: 13 ft
2.2.5 Magnetic variation: 14W (2000)
2.2.6 Airport Contact: Jerry Spampanato
BLDG 14
Jamaica, NY 11430
(718−244−3501)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Fence (10 ft). Lighted
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 13L
2.10.1.b Type of obstacle: Road (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 31
2.12.3 Dimensions: 11351 ft x 150 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40-37-19.26N / 73-47-00.00W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 12 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 211
2.12.3 Dimensions: 11351 ft x 150 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40-38-55.65N / 73-45-52.80W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 31
2.12.3 Dimensions: 8400 ft x 200 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40-37-31.53N / 73-46-13.25W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 211
2.12.3 Dimensions: 8400 ft x 200 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40-38-42.85N / 73-45-17.51W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 60 ft x 60 ft

2.12.1 Designation: 13R
2.12.2 True Bearing: 121
2.12.3 Dimensions: 14511 ft x 200 ft
2.12.4 PCN: 98 F/B/W/T
2.12.5 Coordinates: 40-38-54.10N / 73-49-00.00W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 31L
2.12.2 True Bearing: 301
2.12.3 Dimensions: 14511 ft x 200 ft
2.12.4 PCN: 98 F/B/W/T
2.12.5 Coordinates: 40-37-40.78N / 73-46-18.41W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: H2
2.12.3 Dimensions: 60 ft x 60 ft

2.12.1 Designation: H3
2.12.3 Dimensions: 60 ft x 60 ft

2.12.1 Designation: H4

2.12.3 Dimensions: 60 ft x 60 ft

2.12.1 Designation: 13L
2.12.2 True Bearing: 121
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40-39-27.95N / 73-47-24.86W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 31R
2.12.2 True Bearing: 301
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40-38-37.41N / 73-45-33.40W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 ft

AD 2.13 Declared distances
2.13.1 Designation: 04L
2.13.2 Takeoff run available: 11351
2.13.3 Takeoff distance available: 11351
2.13.4 Accelerate−stop distance available: 11351
2.13.5 Landing distance available: 11351

2.13.1 Designation: 22R
2.13.2 Takeoff run available: 11351
2.13.3 Takeoff distance available: 11351
2.13.4 Accelerate−stop distance available: 11351
2.13.5 Landing distance available: 8655

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 8400
2.13.3 Takeoff distance available: 8400
2.13.4 Accelerate−stop distance available: 8400
2.13.5 Landing distance available: 8400

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 8400
2.13.3 Takeoff distance available: 8400
2.13.4 Accelerate−stop distance available: 8400
2.13.5 Landing distance available: 8400

2.13.1 Designation: 13R
2.13.2 Takeoff run available: 14511
2.13.3 Takeoff distance available: 14511
2.13.4 Accelerate−stop distance available: 14511
2.13.5 Landing distance available: 12468

2.13.1 Designation: 31L
2.13.2 Takeoff run available: 14511
2.13.3 Takeoff distance available: 14511
2.13.4 Accelerate−stop distance available: 14511
2.13.5 Landing distance available: 11248

2.13.1 Designation: 13L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 9095

2.13.1 Designation: 31R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 8970

AD 2.14 Approach and runway lighting
2.14.1 Designation: 04L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 22L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Runway 22L PAPI Horizontal Offset 4 Degrees To Left. Non Standard Light Spacing.

2.14.1 Designation: 13R
2.14.2 Approach lighting system: LDIN: Lead−in light system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Runway 13R First P4L Horizontal Offset 22 Degs Left.
ry 13R Has Second P4L With Transitional Threshold Crossing Height And 3.00 Degrees Vgsi.

2.14.1 Designation: 31L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 13L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 12−box VASI on both sides
2.14.10 Remarks: Runway 13L VASI Unusable Left Of Centerline .

2.14.1 Designation: 31R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 115.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 117.7 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 125.05 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 128.725 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 135.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 281.55 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 281.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 281.55 MHz

2.18.1 Service designation: GND/P CD/P PRE TAXI CLNC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.25 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40−39−00.00N / 73−45−46.62W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: DME for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40−37−43.82N / 73−46−40.57W
2.19.6 Site elevation: 24 ft

2.19.1 ILS type: Outer Marker for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40−35−00.00N / 73−48−56.17W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Glide Slope for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40−37−27.27N / 73−46−58.14W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Middle Marker for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC

2.19.5 Coordinates: 40−39−00.00N / 73−45−46.80W
2.19.6 Site elevation: 99999 ft
2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC
2.19.5 Coordinates: 40−37−44.50N / 73−46−43.09W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC
2.19.5 Coordinates: 40−38−21.28N / 73−46−13.92W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: DME for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC
2.19.5 Coordinates: 40−38−53.29N / 73−45−13.18W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40−38−51.57N / 73−45−10.68W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40−38−53.29N / 73−45−13.18W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40−37−42.10N / 73−46−11.03W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40−37−23.90N / 73−46−19.10W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40−37−00.00N / 73−46−30.60W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40−37−27.51N / 73−46−16.39W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40−43−31.10N / 73−41−35.40W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40−38−32.93N / 73−45−19.98W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40−37−43.82N / 73−46−40.57W
2.19.6 Site elevation: 24 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40−39−12.30N / 73−44−54.50W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40-38-51.13N / 73-45-11.04W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Outer Marker for runway 31L. Magnetic variation: 14W

2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−35−27.30N / 73−41−00.00W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Localizer for runway 31L. Magnetic variation: 14W
2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−38−59.65N / 73−49−12.42W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: Glide Slope for runway 31L. Magnetic variation: 14W
2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−37−59.87N / 73−47−00.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Middle Marker for runway 31L. Magnetic variation: 14W
2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−37−39.50N / 73−46−15.80W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Localizer for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−38−30.69N / 73−45−18.57W
2.19.6 Site elevation: 14 ft

2.19.1 ILS type: Glide Slope for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−39−14.74N / 73−47−00.00W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Outer Marker for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−41−40.70N / 73−52−00.00W
2.19.6 Site elevation: 126 ft

2.19.1 ILS type: Middle Marker for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−39−37.10N / 73−47−44.80W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: DME for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−38−33.54N / 73−45−18.24W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Middle Marker for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−38−25.00N / 73−45−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−38−33.54N / 73−45−18.24W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Outer Marker for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−35−50.70N / 73−39−26.60W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−39−30.78N / 73−47−31.09W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Glide Slope for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−38−50.33N / 73−45−51.02W
2.19.6 Site elevation: 11 ft

General Remarks:

FLOCKS OF BIRDS ON & IN THE VICINITY OF AIRPORT.

LDIN RUNWAY 13L USES 1000’ LIGHT STATION OF THE APPROACH LIGHT SYSTEM ONLY WITH CRI VOR APPROACHES & IS ANGLED TOWARD AQUEDUCT; ALSO 5 SEQUENCE FLASHING LIGHTS FROM 1200−2000’ & A 5 SEQUENCE FLASHING LIGHTS GROUPING APPROXIMATELY 1 MI FROM RUNWAY +1 ADJACENT FORMING APPROACH. APPROACH GATE ANGLED 35 DEGS S OF RUNWAY 13L CENTERLINE DESIGNED TO PROVIDE EARLIER IDENT OF RUNWAY ENVI.

FOR NOISE RESTRICTIONS CALL 212−435−3685 DURING NORMAL BUSINESS HOURS.

AIRCRAFT PROHIBITED IN THE RUNUP BLOCK AREAS AT TAXIWAY Z. TO BE USED FOR TURN AROUND ONLY.

PARA−SAIL & BANNER TOWING OPERATIONS 1000 FT & BELOW IN UPPER & LOWER NEW YORK BAYS INCLUDING ROCKAWAY INLET INDEFINITELY..

SPECIAL AIR TRAFFIC RULES−PART 93 HIGH DENSITY AIRPORT. PRIOR RESERVATION REQUIRED. SEE AERONAUTICAL INFORMATION MANUAL.

GA TRAFFIC CONTACT AIRPORT OPERATIONS ON UNICOM FOR PARKING DIRECTIONS

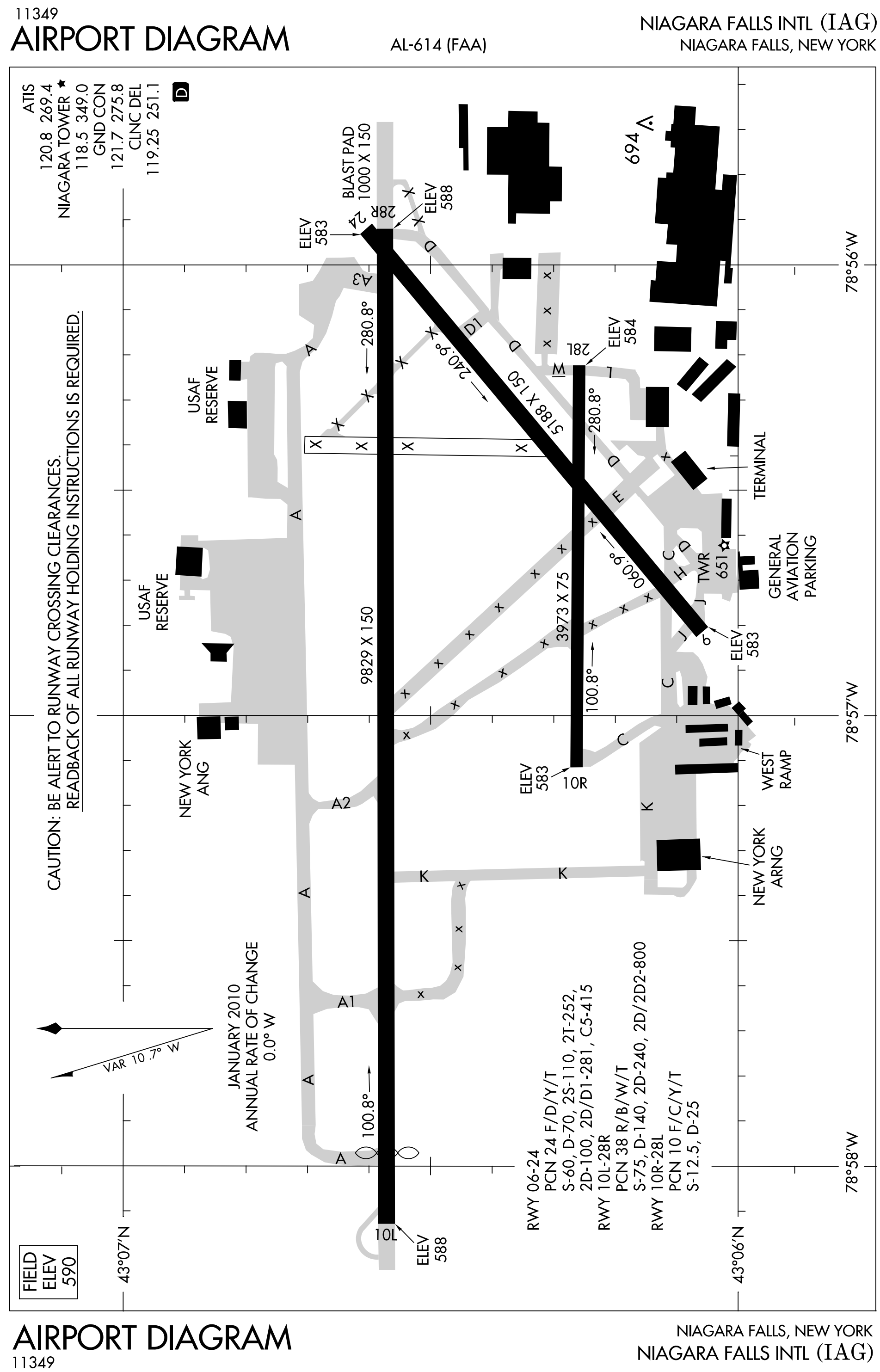
ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

TAXIWAY Q AT HANGAR 19 TOW IN/OUT ONLY.

RUNWAY 13R HAS TWO (2) PAPI − P4L SYSTEMS.

CONVERGING OPERATIONS ON RUNWAYS 13R AND 22L CONDUCTED BY WAY OF ARRIVAL DISTANCE WINDOW.

Niagara Falls, New York
Niagara Falls International
ICAO Identifier KIAG



Niagara Falls, NY
Niagara Falls Intl
ICAO Identifier KIAG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 43−06−26.40N / 78−56−46.30W
2.2.2 From City: 4 Miles E Of Niagara Falls, NY
2.2.3 Elevation: 590 ft
2.2.5 Magnetic variation: 10W (1985)
2.2.6 Airport Contact: Mr. Pascal Cohen
2035 NIAGARA FALLS BLVD
Niagara Falls, NY 14304
(716−855−6450)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 7/1/1974
2.6.4 Remarks: ARFF Index E Equipment Coverage Provided.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 06
2.10.1.b Type of obstacle: Tree (46 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 290 ft from Centerline

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Tree (59 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 320 ft from Centerline

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Tree (52 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 480 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Tree (37 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 28L
2.10.1.b Type of obstacle: Stack (59 ft). Lighted
2.10.1.c Location of obstacle: 120 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Tree (64 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 60 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 50
2.12.3 Dimensions: 5188 ft x 150 ft
2.12.4 PCN: 24 F/D/Y/T
2.12.5 Coordinates: 43−06−00.00N / 78−56−48.95W
2.12.6 Threshold elevation: 583 ft
2.12.6 Touchdown zone elevation: 585 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 230
2.12.3 Dimensions: 5188 ft x 150 ft
2.12.4 PCN: 24 F/D/Y/T
2.12.5 Coordinates: 43−06−36.36N / 78−55−55.27W
2.12.6 Threshold elevation: 583 ft
2.12.6 Touchdown zone elevation: 590 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9829 ft x 150 ft
2.12.4 PCN: 38 R/B/W/T
2.12.5 Coordinates: 43−06−34.35N / 78−58−00.00W
2.12.6 Threshold elevation: 588 ft
2.12.6 Touchdown zone elevation: 589 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9829 ft x 150 ft
2.12.4 PCN: 38 R/B/W/T
2.12.5 Coordinates: 43−06−34.16N /

78−55−55.27W
2.12.6 Threshold elevation: 588 ft
2.12.6 Touchdown zone elevation: 588 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 3973 ft x 75 ft
2.12.4 PCN: 10 F/C/Y/T
2.12.5 Coordinates: 43−06−15.60N / 78−57−00.00W
2.12.6 Threshold elevation: 583 ft
2.12.6 Touchdown zone elevation: 584 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 3973 ft x 75 ft
2.12.4 PCN: 10 F/C/Y/T
2.12.5 Coordinates: 43−06−15.51N / 78−56−13.46W
2.12.6 Threshold elevation: 584 ft
2.12.6 Touchdown zone elevation: 585 ft

AD 2.13 Declared distances
2.13.1 Designation: 06
2.13.2 Takeoff run available: 5189
2.13.3 Takeoff distance available: 5189
2.13.4 Accelerate−stop distance available: 5189
2.13.5 Landing distance available: 5189

2.13.1 Designation: 24
2.13.2 Takeoff run available: 5189
2.13.3 Takeoff distance available: 5189
2.13.4 Accelerate−stop distance available: 5189
2.13.5 Landing distance available: 5189

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 9829
2.13.3 Takeoff distance available: 10829
2.13.4 Accelerate−stop distance available: 9829
2.13.5 Landing distance available: 9129

2.13.1 Designation: 28R
2.13.2 Takeoff run available: 9829
2.13.3 Takeoff distance available: 10529
2.13.4 Accelerate−stop distance available: 9129
2.13.5 Landing distance available: 9129

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 3973
2.13.3 Takeoff distance available: 3973
2.13.4 Accelerate−stop distance available: 3973
2.13.5 Landing distance available: 3973

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 3973
2.13.3 Takeoff distance available: 3973
2.13.4 Accelerate−stop distance available: 3973
2.13.5 Landing distance available: 3973

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10L
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 10R
2.14.4 Visual approach slope indicator system: 2−light PAPI on left

2.14.1 Designation: 28L
2.14.4 Visual approach slope indicator system: 2−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 119.25 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 120.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 251.1 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 269.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 349 MHz

2.18.1 Service designation: NG−OPNS
2.18.3 Service designation: 41 MHz

2.18.1 Service designation: AFR−OPS
2.18.3 Service designation: 340.24 MHz

2.18.1 Service designation: 914 AG COMD POST
2.18.3 Service designation: 340.025 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 28R.
Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−34.36N / 78−58−18.82W
2.19.6 Site elevation: 585 ft

2.19.1 ILS type: Outer Marker for runway 28R.
Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−32.51N / 78−50−18.21W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 28R.
Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−30.09N / 78−56−16.64W
2.19.6 Site elevation: 583 ft

2.19.1 ILS type: Middle Marker for runway 28R.
Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−33.97N / 78−55−00.00W
2.19.6 Site elevation: 587 ft

General Remarks:

EXTENSIVE AIRCRAFT ACTIVITY OPERATING IN THE VICINITY OF US/CANADIAN FALLS ALL ALTITUDES.

HEAVY CONCENTRATIONS OF GULLS−BLACKBIRDS−STARLINGS UP TO 5000 AGL ON & IN THE VICINITY OF AIRPORT.

AIRCRAFT WITH SEATING CAPACITY IN EXCESS OF 30 PASSENGERS AUTH ONLY USE OF RUNWAY 10L/28R.

TAXIWAY E RESTRICTED TO 12500 LBS OR LESS.

TAXIWAY “E” CLOSED PERMANENTLY BETWEEN TAXIWAYS “C” AND “D”.

TAXIWAY “E” CLOSED INDEFINITELY FROM RUNWAY 10L/28R TO RUNWAY 06/24.

ALL MILITARY AIRCRAFT ONLY OPERATIONS RESTRICTED DURING BIRD WATCH CONDITIONS. MODERATE − TAKE-OFF & LANDING PERMISSION ONLY WNEN DEP/ARR ROUTE AVOIDS IDENTIFIED BIRD ACTIVITY; NO LOCAL IFR/VFR TRAFFIC PATTERN ACTIVITY. SEVERE − TAKE-OFF & LANDING PHOHIBITED WO OG/CC APPROVAL; CONTACT COMMAND POST FOR CURRENT BIRD WATCH CONDITIONS.

ALL MILITARY AIRCRAFT ONLY MINIMAL CLASSIFIED MATERIALS AVAILABLE; AIRCREWS SHOULD ARRIVE WITH APPROPRIATE AMOUNT TO COMPLETE THEIR MISSION.

BEARING STRENGTH RUNWAY 06/24: ST110 TT145 SBTT281 TDT415 TRT252.

JASU: 2(A/M32A−86) 1(AM32A−60) 1(MA−1A).

FUEL: J8(MIL) A, A+.

FLUID: SP LOX.

OIL: O−148(MIL).

REMARKS: SEE FLIGHT INFORMATION PUBLICATION AP/1 SUPPLEMENTARY AIRPORT REMARK.

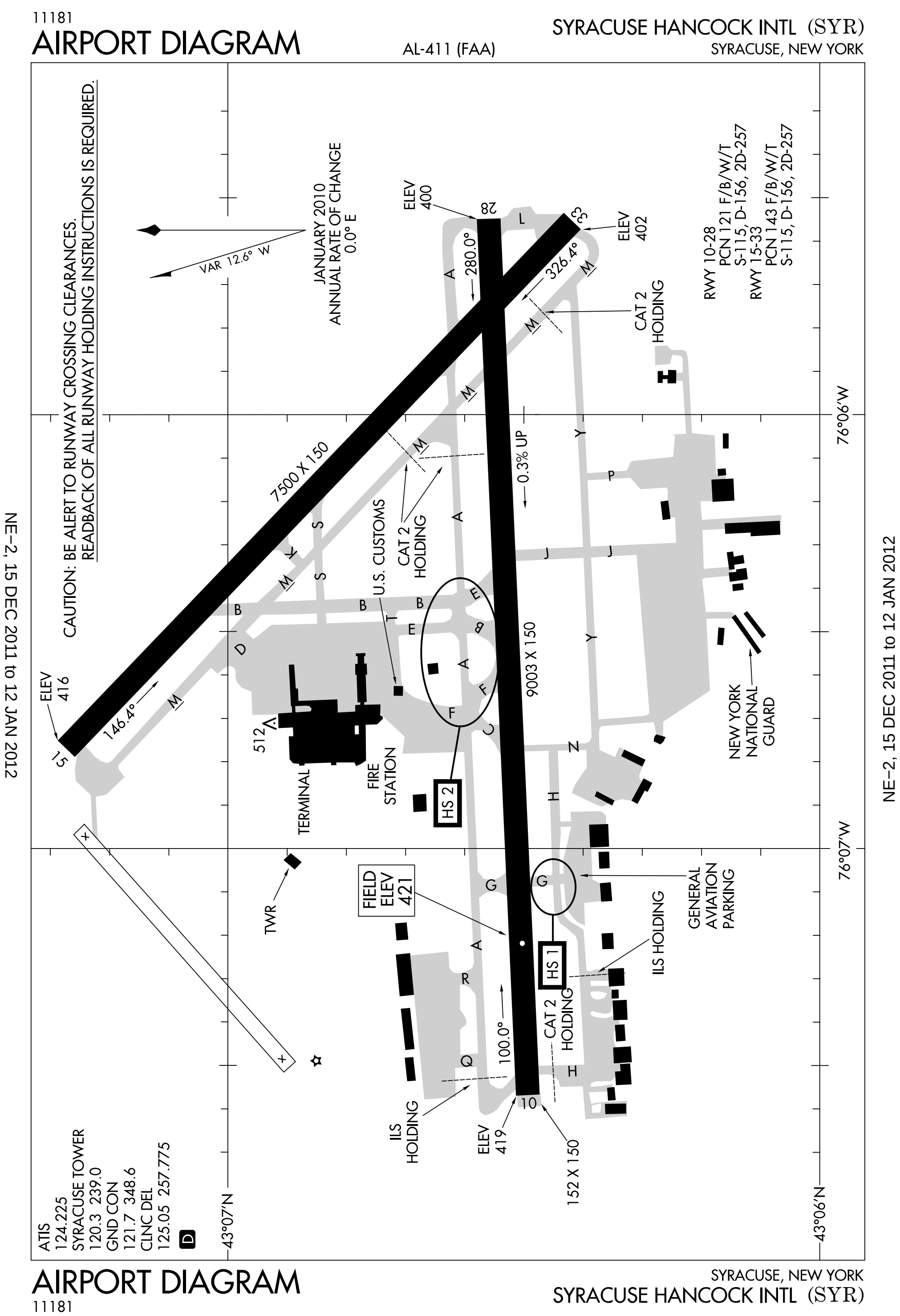
MISC: LOCAL MISSION AIRCRAFT HAVE PRIORITY FOR DEICING; FULL AIRCRAFT DEICING FOR C−17 AND C−5 AIRCRAFT NOT AVAILABLE.

REMARKS−CAUTION: NIGHT VISION DEVICE OPERATIONS PERIODICALLY CONDUCTED IN THE AIRPORT TRAFFIC AREA.

CUSTOMS/AGRICULTURE/IMIGRATION −: AVAILABLE FOR ALL MILITARY WITH 72 HR PRIOR NOTICE. CREW, PASSENGER, CARGO ORGIN, DESTINATION AND PRE−CLEARED INFORMATION REQUIRE 1 HR PRIOR LANDING. CONTACT 914TH OSF, SSI/OSA DSN 238−2176, C717−236−2176,FAX DSN 238−2380, C716−236−2380 FOR RESTRICTED INFORMATION AND REQUIRE PRIOR PERMISSION REQUIRED.

REMARKS − MISC: FOR CURRENT MILITARY RUNWAY CONDITION READING (RCR) CALL OR CONTACT 914 AW COMMAND POST, 914 AW BASE OPERATIONS, OR 107 ANG COMMAND POST.

Syracuse, New York
Syracuse Hancock International
ICAO Identifier KSYR



Syracuse, NY

Syracuse Hancock Intl

ICAO Identifier KSYR

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 43−06−40.27N / 76−06−22.72W
2.2.2 From City: 4 Miles NE Of Syracuse, NY
2.2.3 Elevation: 421 ft
2.2.5 Magnetic variation: 13W (2000)
2.2.6 Airport Contact: Christina Reale
1000 COL EILEEN COLLINS BLVD
Syracuse, NY 13212 (315−454−3263)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities

2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services

2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 15
2.10.1.b Type of obstacle: Trees (51 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 380 ft from Centerline

2.10.1.a. Runway designation: 33
2.10.1.b Type of obstacle: Tree (34 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 520 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Trees (80 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 287 ft from Centerline

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Trees (64 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 686 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 15
2.12.2 True Bearing: 134
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 143 F/B/W/T
2.12.5 Coordinates: 43−07−16.43N / 76−06−46.21W
2.12.6 Threshold elevation: 416 ft
2.12.6 Touchdown zone elevation: 417 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 143 F/B/W/T
2.12.5 Coordinates: 43−06−25.13N / 76−05−33.28W
2.12.6 Threshold elevation: 402 ft
2.12.6 Touchdown zone elevation: 409 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 87
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 121 F/B/W/T
2.12.5 Coordinates: 43−06−29.52N / 76−07−34.15W
2.12.6 Threshold elevation: 419 ft
2.12.6 Touchdown zone elevation: 421 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 267
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 121 F/B/W/T
2.12.5 Coordinates: 43−06−33.51N / 76−05−32.91W
2.12.6 Threshold elevation: 400 ft
2.12.6 Touchdown zone elevation: 413 ft
2.12.7 Slope: 0.3UP

AD 2.13 Declared distances

2.13.1 Designation: 15
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 33

2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 10
2.13.2 Takeoff run available: 9003
2.13.3 Takeoff distance available: 9003
2.13.4 Accelerate−stop distance available: 9003
2.13.5 Landing distance available: 9003

2.13.1 Designation: 28
2.13.2 Takeoff run available: 9003
2.13.3 Takeoff distance available: 9003
2.13.4 Accelerate−stop distance available: 9003
2.13.5 Landing distance available: 9003

AD 2.14 Approach and runway lighting
2.14.1 Designation: 15
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 33
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 28
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 118.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 125.05 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 126.125 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 134.275 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: AR OPS
2.18.3 Service designation: 245.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG OPS
2.18.3 Service designation: 379.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 257.775 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 269.125 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.225 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR

2.19.5 Coordinates: 43−06−28.94N / 76−07−51.66W
2.19.6 Site elevation: 417 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43−06−31.84N / 76−05−20.74W
2.19.6 Site elevation: 406 ft

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43−06−39.47N / 76−05−46.43W
2.19.6 Site elevation: 404 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43−06−43.94N / 76−00−00.00W
2.19.6 Site elevation: 403 ft

2.19.1 ILS type: Inner Marker for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43−06−34.10N / 76−05−18.52W
2.19.6 Site elevation: 395 ft

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43−06−34.93N / 76−04−49.53W
2.19.6 Site elevation: 406 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43−06−33.89N / 76−05−21.13W
2.19.6 Site elevation: 397 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43−06−28.04N / 76−08−11.83W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43−06−31.84N / 76−05−20.74W
2.19.6 Site elevation: 406 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43−06−26.02N / 76−07−20.15W
2.19.6 Site elevation: 423 ft

General Remarks:

NO CHARTER OPER THRU PASSENGER TERMINAL BUILDING WITHOUT PRIOR PERMISSION.

NOISE ABATEMENT PROCEDURES IN EFFECT.

DEER/COYOTE/BIRDS ON IN THE VICINITY OF AIRPORT.

NO JET ENGINE MAINT RUNS ABOVE IDLE BETWEEN 2300−0600.

NO TRANSIENT AIRCRAFT PARKING ON MAIN TERMINAL RAMP.

DIRECT CUSTOM NOTIFICATION IS REQUIRED. HOURS OF NOTIFICATION ARE MON−SAT 0800−1700. ARRIVALS OUTSIDE OF THESE HRS MUST MAKE ARRANGEMENTS DURING REGULAR WORK HRS; CALL 315−455−2271.

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE) BEING TESTED AT SYRACUSE AIRPORT;

ALL AIRCRAFT REQUESTED TO OPR TRANSPONDERS WHILE ON AIRPORT SURFACE.

FIELD CONDITION REPORTS RECORDING AVAILABLE CALL 315−455−3444.

HEAVY AIRCRAFT CONTACT AIRPORT COMMISSIONER FOR PARK AVAILABLE AT C315−455−3263. MILITARY PARK RAMP UNLIGHTED. LIMITED METRO AVAIL AT DSN 243−2185. C315−233−2185 OR CONTACT OWS DSN 576−9755/9702. ALL TRANSIENT AIRCRAFT REQ NOISE ABATEMENT BRIEFING.

RESTRICTED − TAXI U NOT USED. USE TAXI J TO ENTER ANG RAMP.

COMMUNICATIONS − ANG − OPERATIONS − 139.625 379.5 REMARKS: (COBRA OPS) CONTACT ANG OPERATIONS 15 MIN PRIOR TO ARR.

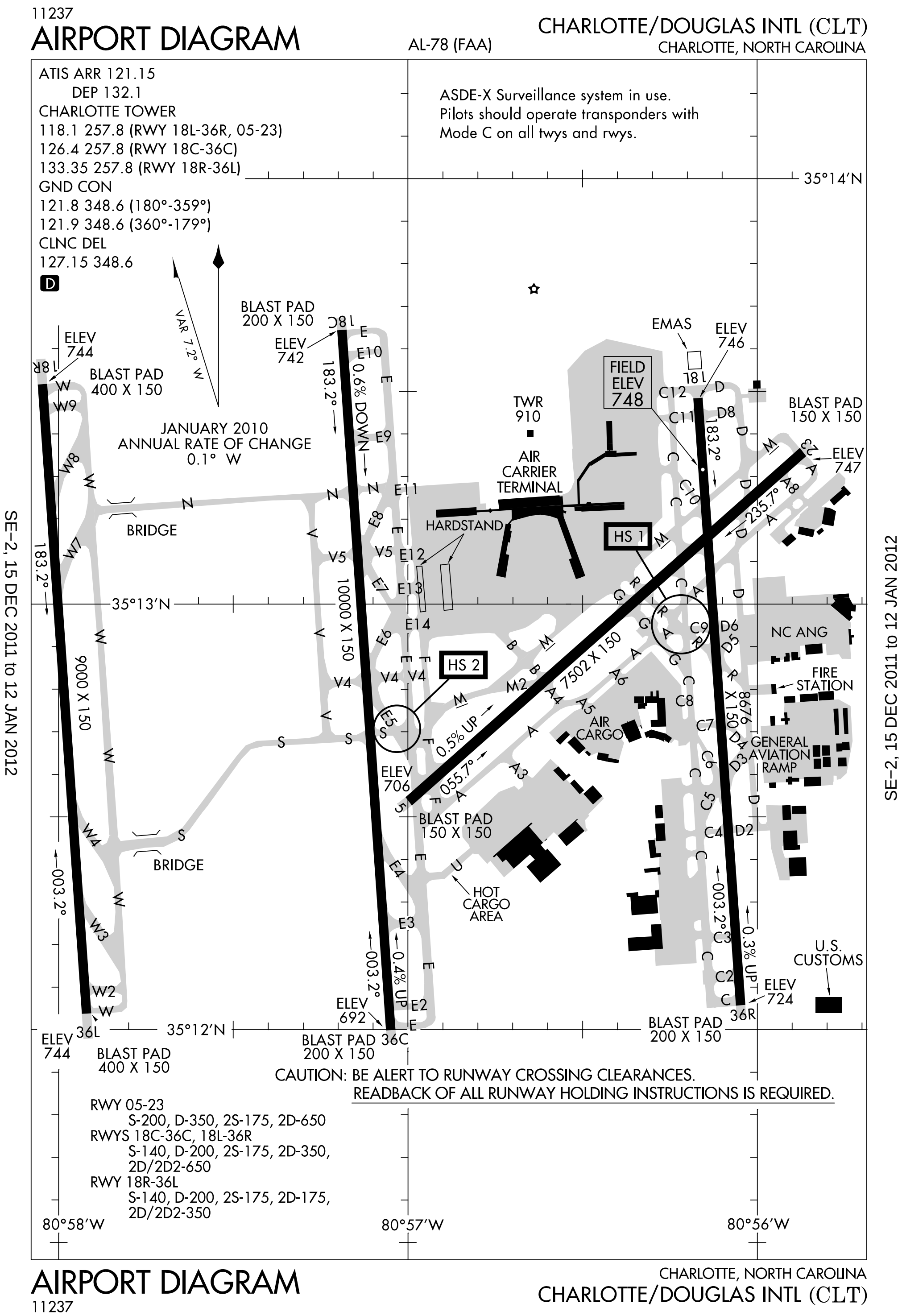
RESTRICTED: TAXIWAY J AND P SOUTH OF TAXIWAY Y CLOSED TO CIVIL OPERATIONS.

CAUTION: TAXIWAY J AND P SOUTH OF TAXIWAY Y AND ANG RAMP HAVE UNCTL VEH AND EQUIPMENT TRAFFIC.

ANG: OPR 1100−2000Z++ WEEKEND EXCEPT HOLIDAY. PRIOR PERMISSION REQUIRED TRANSMIT AIRCRAFT OFFICIAL BUSINESS ONLY. AIRFIELD MANAGER DSN 243−2208, AFTER DUTY HR CONTACT C315−530−2520. PRIOR PERMISSION REQUIRED FOR ALL TRANSIENT AIRCRAFT DUE LIMITED TRANSMIT SERVICE. NOTIFY AIRFIELD MANAGER OF ESTIMATED TIME OF ARRIVAL DELAY OVER 30 MIN OR MSN CANCEL IS REQUIRE.

ANG: HEAVY AIRCRAFT CONTACT AIRPORT COMMISSIONER FOR PARK AVAILABLE AT C315−455−3666. MILITARY PARK RAMP UNLIGHTED. ALL TRANSIENT AIRCRAFT REQUIRE NS ABATEMENT BRIEFING.

Charlotte, North Carolina
Charlotte/Douglas International
ICAO Identifier KCLT



Charlotte, NC
Charlotte/Douglas Intl
ICAO Identifier KCLT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35−12−49.47N / 80−56−56.65W
2.2.2 From City: 4 Miles W Of Charlotte, NC
2.2.3 Elevation: 748 ft
2.2.5 Magnetic variation: 7W (2000)
2.2.6 Airport Contact: Jerry Orr
PO BOX 19066
Charlotte, NC 28219
(704−359−4000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 18L
2.10.1.b Type of obstacle: Rr (19 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 18C
2.10.1.b Type of obstacle: Road (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 425 ft from Centerline

2.10.1.a. Runway designation: 05
2.10.1.b Type of obstacle: Trees (38 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 18L
2.12.2 True Bearing: 176
2.12.3 Dimensions: 8676 ft x 150 ft
2.12.5 Coordinates: 35−13−29.04N / 80−56−10.17W
2.12.6 Threshold elevation: 746 ft
2.12.6 Touchdown zone elevation: 748 ft
2.12.7 Slope: 0.2DOWN

2.12.1 Designation: 36R
2.12.2 True Bearing: 356
2.12.3 Dimensions: 8676 ft x 150 ft
2.12.5 Coordinates: 35−12−00.00N / 80−56−00.00W
2.12.6 Threshold elevation: 724 ft
2.12.6 Touchdown zone elevation: 727 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 18C
2.12.2 True Bearing: 176
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 35−13−38.63N / 80−57−11.41W
2.12.6 Threshold elevation: 742 ft
2.12.6 Touchdown zone elevation: 742 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 36C
2.12.2 True Bearing: 356
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 35−11−59.97N / 80−57−00.00W
2.12.6 Threshold elevation: 692 ft
2.12.6 Touchdown zone elevation: 707 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 05
2.12.2 True Bearing: 48
2.12.3 Dimensions: 7502 ft x 150 ft
2.12.5 Coordinates: 35−12−32.23N / 80−56−59.81W
2.12.6 Threshold elevation: 706 ft
2.12.6 Touchdown zone elevation: 716 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 23
2.12.2 True Bearing: 228
2.12.3 Dimensions: 7502 ft x 150 ft
2.12.5 Coordinates: 35−13−21.42N / 80−55−52.12W

2.12.6 Threshold elevation: 747 ft
2.12.6 Touchdown zone elevation: 747 ft
2.12.7 Slope: 0.5UP

2.12.1 Designation: 18R
2.12.2 True Bearing: 176
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 35−13−31.02N / 80−58−00.00W
2.12.6 Threshold elevation: 744 ft
2.12.6 Touchdown zone elevation: 744 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 356
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 35−12−00.00N / 80−57−55.07W
2.12.6 Threshold elevation: 744 ft
2.12.6 Touchdown zone elevation: 744 ft

AD 2.13 Declared distances
2.13.1 Designation: 18L
2.13.2 Takeoff run available: 8676
2.13.3 Takeoff distance available: 8676
2.13.4 Accelerate−stop distance available: 8676
2.13.5 Landing distance available: 8676

2.13.1 Designation: 36R
2.13.2 Takeoff run available: 8676
2.13.3 Takeoff distance available: 8676
2.13.4 Accelerate−stop distance available: 8676
2.13.5 Landing distance available: 8676

2.13.1 Designation: 18C
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 36C
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 05
2.13.2 Takeoff run available: 7502
2.13.3 Takeoff distance available: 7502
2.13.4 Accelerate−stop distance available: 7092
2.13.5 Landing distance available: 7092

2.13.1 Designation: 23
2.13.2 Takeoff run available: 7502
2.13.3 Takeoff distance available: 7502
2.13.4 Accelerate−stop distance available: 7502
2.13.5 Landing distance available: 7502

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 36L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 18L
2.14.4 Visual approach slope indicator system: 6−box VASI on right
2.14.10 Remarks: VASI Upwind Threshold Crossing Height 90.9’ GA 3.25 Deg; Dwnd Threshold Crossing Height 52.4’ GA 2.75 Deg.

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 18C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 36C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 05
2.14.2 Approach lighting system: MALSR: 1400

feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23
2.14.4 Visual approach slope indicator system: 4−box VASI on right

2.14.1 Designation: 18R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 36L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P (RYS 18L/36R & 05/23)
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 120.05 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 121.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: LCL/P (RY 18C−36C)
2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.15 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 132.1 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 134.75 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 128.32 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 133.35 MHz

2.18.1 Service designation: ALCP
2.18.3 Service designation: 292.25 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35−11−50.60N /

80−56−00.00W
2.19.6 Site elevation: 719 ft

2.19.1 ILS type: Glide Slope for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35−13−19.26N / 80−56−00.00W
2.19.6 Site elevation: 744 ft

2.19.1 ILS type: Outer Marker for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35−20−19.08N / 80−56−41.44W
2.19.6 Site elevation: 717 ft

2.19.1 ILS type: Middle Marker for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35−14−00.00N / 80−56−14.34W
2.19.6 Site elevation: 739 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−13−33.71N / 80−56−10.57W
2.19.6 Site elevation: 741 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−12−14.00N / 80−55−58.90W
2.19.6 Site elevation: 717 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−11−54.22N / 80−56−00.00W
2.19.6 Site elevation: 710 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−11−40.26N / 80−56−00.00W
2.19.6 Site elevation: 700 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−13−33.74N / 80−56−13.65W
2.19.6 Site elevation: 744 ft

2.19.1 ILS type: Outer Marker for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−05−26.62N / 80−55−33.97W
2.19.6 Site elevation: 616 ft

2.19.1 ILS type: Middle Marker for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−14−00.00N / 80−57−13.65W
2.19.6 Site elevation: 703 ft

2.19.1 ILS type: Outer Marker for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−20−12.02N / 80−57−48.14W
2.19.6 Site elevation: 737 ft

2.19.1 ILS type: Localizer for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−11−50.60N / 80−57−00.00W
2.19.6 Site elevation: 687 ft

2.19.1 ILS type: Glide Slope for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−13−26.91N / 80−57−15.23W
2.19.6 Site elevation: 731 ft

2.19.1 ILS type: Outer Marker for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−05−43.52N / 80−56−26.77W
2.19.6 Site elevation: 593 ft

2.19.1 ILS type: Localizer for runway 36C.

Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−13−53.95N / 80−57−12.73W
2.19.6 Site elevation: 750 ft

2.19.1 ILS type: Inner Marker for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−11−48.73N / 80−57−00.00W
2.19.6 Site elevation: 680 ft

2.19.1 ILS type: Glide Slope for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−12−00.00N / 80−57−00.00W
2.19.6 Site elevation: 691 ft

2.19.1 ILS type: Middle Marker for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−11−34.90N / 80−57−00.00W
2.19.6 Site elevation: 679 ft

2.19.1 ILS type: Localizer for runway 05. Magnetic variation: 7W
2.19.2 ILS identification: CLT
2.19.5 Coordinates: 35−13−24.50N / 80−55−47.88W
2.19.6 Site elevation: 738 ft

2.19.1 ILS type: Outer Marker for runway 05. Magnetic variation: 7W
2.19.2 ILS identification: CLT
2.19.5 Coordinates: 35−09−29.30N / 81−01−14.12W
2.19.6 Site elevation: 691 ft

2.19.1 ILS type: Middle Marker for runway 05. Magnetic variation: 7W
2.19.2 ILS identification: CLT
2.19.5 Coordinates: 35−12−10.91N / 80−57−29.16W
2.19.6 Site elevation: 732 ft

2.19.1 ILS type: Glide Slope for runway 05. Magnetic variation: 7W
2.19.2 ILS identification: CLT
2.19.5 Coordinates: 35−12−43.05N / 80−56−52.18W
2.19.6 Site elevation: 695 ft

2.19.1 ILS type: DME for runway 23. Magnetic variation: 7W
2.19.2 ILS identification: APU
2.19.5 Coordinates: 35−12−21.29N / 80−57−10.05W
2.19.6 Site elevation: 706 ft

2.19.1 ILS type: Localizer for runway 23. Magnetic variation: 7W
2.19.2 ILS identification: APU
2.19.5 Coordinates: 35−12−24.08N / 80−57−11.02W
2.19.6 Site elevation: 704 ft

2.19.1 ILS type: Glide Slope for runway 23. Magnetic variation: 7W
2.19.2 ILS identification: APU
2.19.5 Coordinates: 35−13−12.15N / 80−56−00.00W
2.19.6 Site elevation: 738 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 7W
2.19.2 ILS identification: RGS
2.19.5 Coordinates: 35−12−13.28N / 80−58−00.00W
2.19.6 Site elevation: 732 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 7W
2.19.2 ILS identification: RGS
2.19.5 Coordinates: 35−13−20.08N / 80−58−00.00W
2.19.6 Site elevation: 733 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 7W
2.19.2 ILS identification: RGS
2.19.5 Coordinates: 35−11−51.86N / 80−57−54.19W
2.19.6 Site elevation: 738 ft

2.19.1 ILS type: Inner Marker for runway 18R. Magnetic variation: 7W
2.19.2 ILS identification: RGS
2.19.5 Coordinates: 35−13−38.82N / 80−58−00.00W

2.19.6 Site elevation: 739 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 7W
2.19.2 ILS identification: XUU
2.19.5 Coordinates: 35−13−19.81N / 80−58−00.00W
2.19.6 Site elevation: 733 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 7W
2.19.2 ILS identification: XUU
2.19.5 Coordinates: 35−12−12.99N / 80−58−00.00W
2.19.6 Site elevation: 732 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 7W
2.19.2 ILS identification: XUU
2.19.5 Coordinates: 35−13−41.39N / 80−58−00.00W
2.19.6 Site elevation: 738 ft

2.19.1 ILS type: Inner Marker for runway 36L. Magnetic variation: 7W
2.19.2 ILS identification: XUU
2.19.5 Coordinates: 35−11−54.43N / 80−57−54.41W
2.19.6 Site elevation: 739 ft

General Remarks:
RUNWAY SURFACE CONDITION INFORMATION DURING DUTY HRS PHONE ANG OPERATIONS V583−9177/9144 OR AIRBORNE 292.2.

NOISE ABATEMENT PROCEDURE IN EFFECT 2300−0700; LAND ON RUNWAY 05 TAKE-OFF RUNWAY 23.

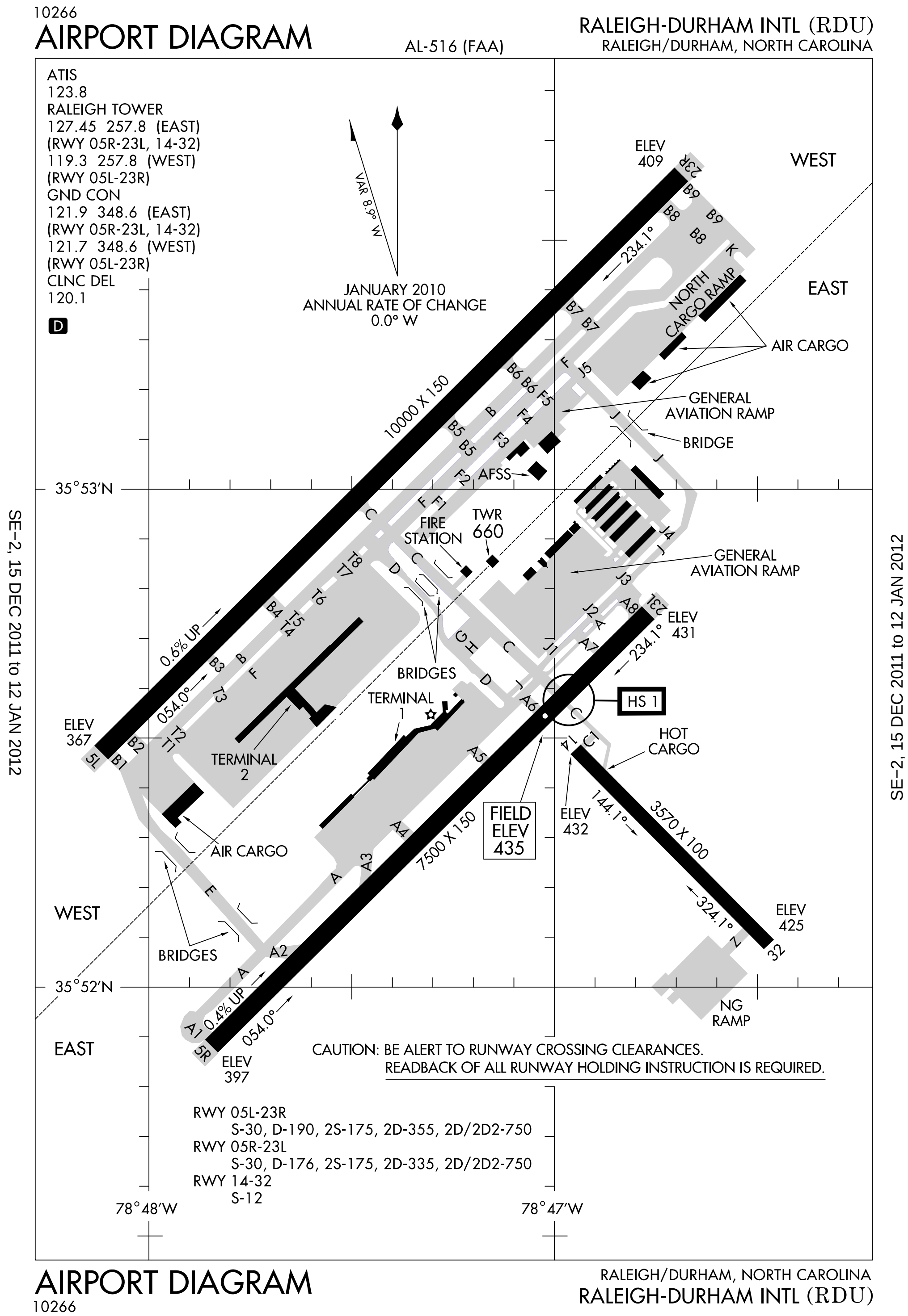
BE ALERT FOR FLOCKS OF MIGRATORY BIRDS ON & IN THE VICINITY OF AIRPORT.

TAXIWAY E13 CLOSED INDEFINITELY.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

ANG: CONTACT NEWSREEL 292.25 30 MIN PRIOR LANDING. AMOPS/COMD POST - 292.25 (CALL NEWSREEL).

Raleigh−Durham, North Carolina
Raleigh−Durham International
ICAO Identifier KRDU



Raleigh/Durham, NC
Raleigh-Durham Intl
ICAO Identifier KRDU

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35−52−39.50N / 78−47−14.90W
2.2.2 From City: 9 Miles NW Of Raleigh/Durham, NC
2.2.3 Elevation: 435 ft
2.2.5 Magnetic variation: 7W (1985)
2.2.6 Airport Contact: John C. Brantley
P.O. BOX 80001
Rdu Airport, NC 27623
(919−840−7702)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Trees (120 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 05L
2.12.2 True Bearing: 45
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 35−52−28.02N / 78−48−00.00W
2.12.6 Threshold elevation: 367 ft
2.12.6 Touchdown zone elevation: 384 ft

2.12.1 Designation: 23R
2.12.2 True Bearing: 225
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 35−53−37.76N / 78−46−40.92W
2.12.6 Threshold elevation: 409 ft
2.12.6 Touchdown zone elevation: 409 ft

2.12.1 Designation: 05R
2.12.2 True Bearing: 45
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.5 Coordinates: 35−51−52.67N / 78−47−50.42W
2.12.6 Threshold elevation: 397 ft
2.12.6 Touchdown zone elevation: 420 ft

2.12.1 Designation: 23L
2.12.2 True Bearing: 225
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.5 Coordinates: 35−52−44.98N / 78−46−45.82W
2.12.6 Threshold elevation: 431 ft
2.12.6 Touchdown zone elevation: 435 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.5 Coordinates: 35−52−30.11N / 78−46−57.64W
2.12.6 Threshold elevation: 432 ft
2.12.6 Touchdown zone elevation: 432 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.5 Coordinates: 35−52−00.00N / 78−46−27.05W
2.12.6 Threshold elevation: 425 ft
2.12.6 Touchdown zone elevation: 429 ft

AD 2.13 Declared distances
2.13.1 Designation: 05L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 23R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 05R

2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 23L
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate−stop distance available: 7500
2.13.5 Landing distance available: 7500

AD 2.14 Approach and runway lighting
2.14.1 Designation: 05L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 05R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 123.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: FINAL CTL
2.18.3 Service designation: 124.8 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 124.95 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.45 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 134.3 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 307.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 392.1 MHz

2.18.1 Service designation: FINAL CTL
2.18.3 Service designation: 395 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 353.675 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 353.675 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35−53−47.52N / 78−46−27.57W
2.19.6 Site elevation: 411 ft

2.19.1 ILS type: Localizer for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35−53−48.07N / 78−46−28.19W
2.19.6 Site elevation: 409 ft

2.19.1 ILS type: Glide Slope for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35−52−37.80N / 78−48−00.00W
2.19.6 Site elevation: 366 ft

2.19.1 ILS type: Middle Marker for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35−52−00.00N / 78−48−41.35W
2.19.6 Site elevation: 334 ft

2.19.1 ILS type: DME for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35−52−19.51N / 78−48−13.82W
2.19.6 Site elevation: 370 ft

2.19.1 ILS type: Middle Marker for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35−53−54.73N / 78−46−19.97W
2.19.6 Site elevation: 410 ft

2.19.1 ILS type: Inner Marker for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35−53−43.88N / 78−46−33.36W
2.19.6 Site elevation: 402 ft

2.19.1 ILS type: Localizer for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35−52−21.03N / 78−48−15.70W
2.19.6 Site elevation: 359 ft

2.19.1 ILS type: Glide Slope for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35−53−32.48N / 78−46−54.35W
2.19.6 Site elevation: 396 ft

2.19.1 ILS type: Localizer for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU
2.19.5 Coordinates: 35−52−52.09N / 78−46−37.05W
2.19.6 Site elevation: 400 ft

2.19.1 ILS type: Glide Slope for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU
2.19.5 Coordinates: 35−51−57.02N / 78−47−38.17W
2.19.6 Site elevation: 400 ft

2.19.1 ILS type: Middle Marker for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU
2.19.5 Coordinates: 35−51−26.40N / 78−48−22.84W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU
2.19.5 Coordinates: 35−47−48.98N / 78−52−58.70W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−51−45.63N / 78−47−59.10W
2.19.6 Site elevation: 358 ft

2.19.1 ILS type: Outer Marker for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−55−38.51N / 78−43−19.67W
2.19.6 Site elevation: 500 ft

2.19.1 ILS type: Middle Marker for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−53−00.00N / 78−46−24.99W
2.19.6 Site elevation: 376 ft

2.19.1 ILS type: Glide Slope for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−52−36.26N / 78−46−52.29W
2.19.6 Site elevation: 430 ft

General Remarks:

NO JET ENGINE MAINTENANCE RUNS BETWEEN 0000−0600.

NATIONAL GUARD PRIOR PERMISSION REQUIRED FOR LANDING CONTACT V582−9181 C(919)664−9181.

NATIONAL GUARD 24 HR PRIOR PERMISSION REQUIRED FOR JET AIRCRAFT & TRANSMIT MILITARY AIRCRAFT − 919−840−2111.

FOUR ENGINE AIRCRAFT WITH WINGSPAN OVER 171 FT & GROUP V MUST USE RUNWAY 05L/23R.

NO APPROVAL REQUIRED FOR PUSHBACK AT TERMINAL GATES UNLESS AIRCRAFT REQUIRES USE OF TAXIWAY. CONTACT ATC PRIOR TO PUSHING ONTO TAXIWAY.

PRIOR PERMISSION REQUIRED FOR ALL MILITARY AIRCRAFT F/W − R/W & UNSCHEDULED CHARTER FLIGHTS WITH 30 OR MORE PASSENGERS. MILITARY PRACTICE APPROACHES REQUIRE APPROVAL. 24 HOURS PRIOR NOTICE REQUIRED. CONTACT AIRPORT OPERATIONS DSN 528−9181, C919−664−6181/ 919−840−2111.

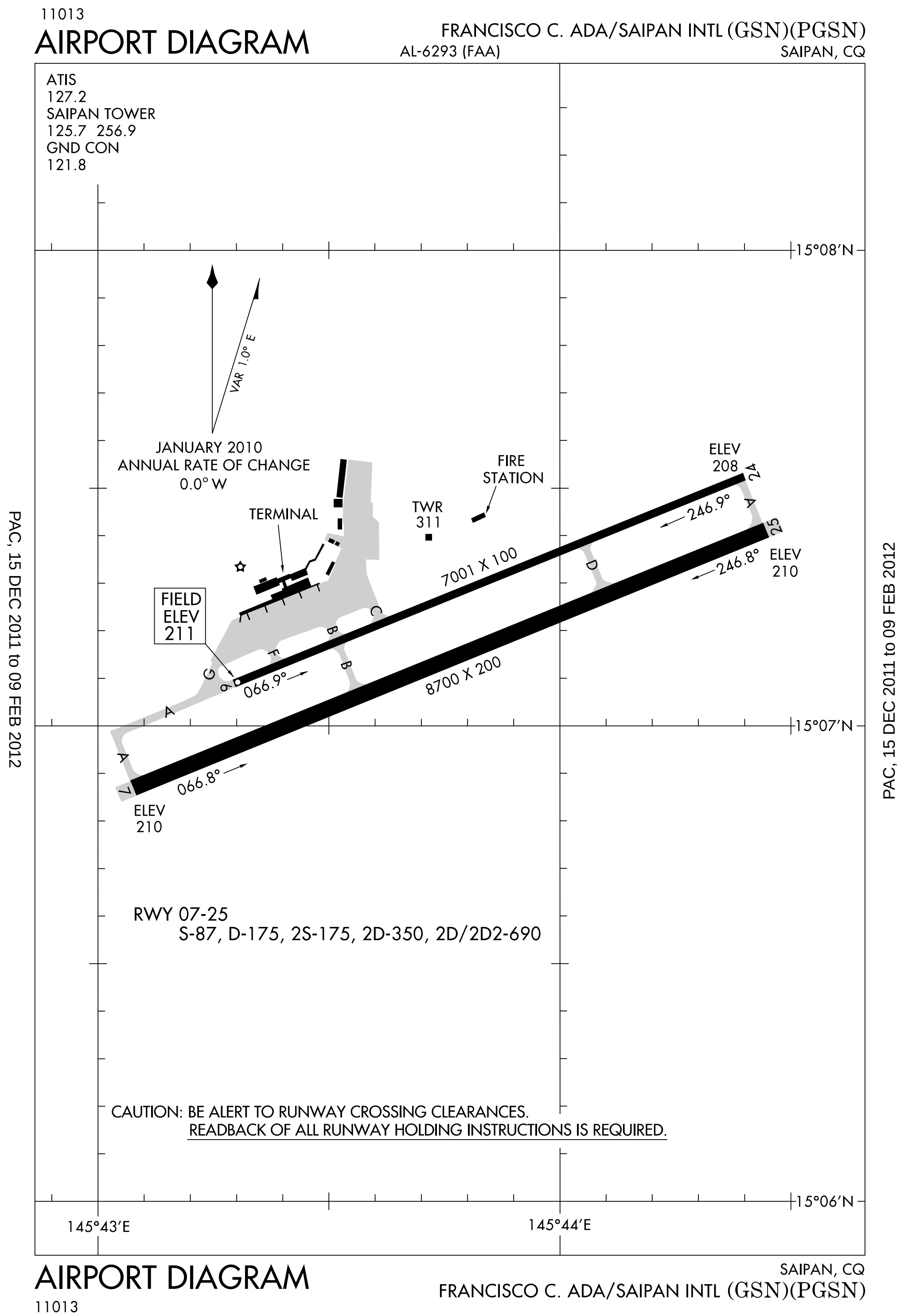
AIRPORT CLOSED TO AIRSHIPS.

TAXIWAY E BEHIND SOUTH CARGO 4 & TAXIWAY J BEHIND CORPORATE HANGARS NOT VISIBLE FROM ATCT.

CRAN 75 FT AGL.76 NAUTICAL MILE FROM APPROACH END RUNWAY 05R.

ARRANGE: LIMITED PARK. ARRANGE OPERATIONS DSN 582−9181 C919−664−6181. RAMP CLOSED TO ALL F/W EXCEPT ARMY & MILITARY TRANSPORT WITH PRIOR PERMISSION REQUIRED, FACILITY HRS 1300−2130Z++ MON=FRI EXCEPT HOLIDAY. MAKE APPT FOR AFTER DUTY HRS. NO FUEL EXCARNG FERRY AIRCRAFT. OSACOM FLIGHT DET DSN 582−9248, C919−664−6248.

North Mariana Islands, Saipan Island
Francisco C. Ada/Saipan International
ICAO Identifier PGSN



Saipan Island, CQ
Francisco C. Ada/Saipan Intl
ICAO Identifier PGSN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 15−07−12.92N / 145−43−47.94E
2.2.2 From City: 4 Miles SW Of Saipan Island, Cq
2.2.3 Elevation: 211 ft
2.2.5 Magnetic variation: 2E (1985)
2.2.6 Airport Contact: Edward M. Deleon Guerrero
PO BOX 501055
Saipan, MP 96950
(670−237−6500/01)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 1/1/1978
2.6.4 Remarks: Closed To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats Except Prior Permission Required Call Or Write Airport Manager 670−237−6500/670−483−1512(Cell); P.O. Box 501055 Saipan Mp 96950.

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07
2.12.2 True Bearing: 68
2.12.3 Dimensions: 8700 ft x 200 ft
2.12.5 Coordinates: 15−06−52.11N / 145−43−00.00E
2.12.6 Threshold elevation: 210 ft
2.12.6 Touchdown zone elevation: 215 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 248
2.12.3 Dimensions: 8700 ft x 200 ft
2.12.5 Coordinates: 15−07−24.70N / 145−44−26.79E
2.12.6 Threshold elevation: 210 ft
2.12.6 Touchdown zone elevation: 210 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 68
2.12.3 Dimensions: 7001 ft x 100 ft
2.12.5 Coordinates: 15−07−00.00N / 145−43−17.64E
2.12.6 Threshold elevation: 211 ft
2.12.6 Touchdown zone elevation: 211 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 248
2.12.3 Dimensions: 7001 ft x 100 ft
2.12.5 Coordinates: 15−07−31.57N / 145−44−23.86E
2.12.6 Threshold elevation: 208 ft
2.12.6 Touchdown zone elevation: 208 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left
2.14.10 Remarks: Restricted To 2.5nm & 5 Degrees Left & Right Of Runway Centerline Due To Intensity.

2.14.1 Designation: 25
2.14.4 Visual approach slope indicator system: 6−box VASI on left
2.14.10 Remarks: Restricted Beyond 2.5 Nm Due To Intensity.
vasi Upwind Threshold Crossing Height 105 Ft Glide Angle 3.25; Downwind Threshold Crossing Height 60 Ft Glide Angle 3.00. Threshold Crossing Height 105 Ft Applies To VASI 6 High Angle.

2.14.1 Designation: 06
2.14.4 Visual approach slope indicator system: PVASI on left

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: PVASI on left

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 07. Magnetic

variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15−07−26.58N / 145−44−31.52E
2.19.6 Site elevation: 211 ft

2.19.1 ILS type: DME for runway 07. Magnetic variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15−07−29.14N / 145−44−30.86E
2.19.6 Site elevation: 223 ft

2.19.1 ILS type: Glide Slope for runway 07. Magnetic variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15−06−58.69N / 145−43−13.05E
2.19.6 Site elevation: 208 ft

2.19.1 ILS type: Middle Marker for runway 07. Magnetic variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15−06−41.60N / 145−42−38.10E
2.19.6 Site elevation: 86 ft

General Remarks:

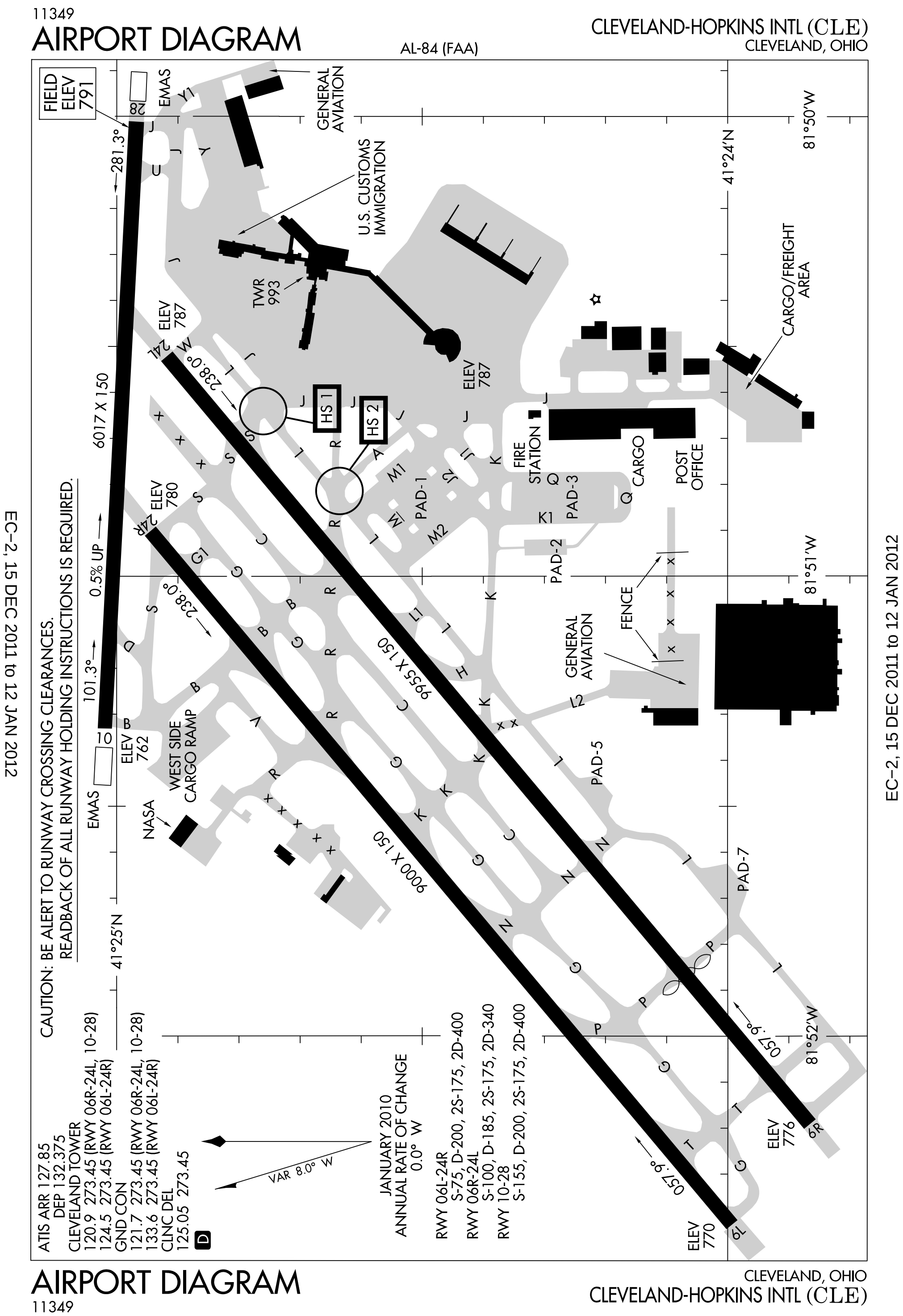
IMMIGRATION & CUSTOMS AVAILABLE DURING SCHEDULED OPERATIONS. OTHER TIMES PRIOR ARRANGEMENTS MUST BE MADE WITH CBP PORT DIRECTOR CALL (670)288−0025/26.

FOR AIRPORT SECURITY CALL (670) 237−6529.

RUNWAY 07/25 CLOSED 1600 − 0000 AND 0500 − 1300.

RUNWAY 06/24 OPEN FOR TAXIING ONLY (NOT AVABL FOR LANDING & TKOFF) 1300 − 1600 AND 0000 − 0500 OTHER TIMES BY NOTAM.

Cleveland, Ohio
Cleveland−Hopkins International
ICAO Identifier KCLE



Cleveland, OH
Cleveland-Hopkins Intl
ICAO Identifier KCLE

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41−24−33.90N / 81−51−17.93W
2.2.2 From City: 9 Miles SW Of Cleveland, OH
2.2.3 Elevation: 791 ft
2.2.5 Magnetic variation: 7W (1990)
2.2.6 Airport Contact: Ricky Smith
5300 RIVERSIDE DR
Cleveland, OH 44135
(216−265−6000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Trees (80 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 370 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Pole (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 630 ft from Centerline

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Road (6 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 06L
2.10.1.b Type of obstacle: Trees (97 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 847 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 06R
2.12.2 True Bearing: 50
2.12.3 Dimensions: 9955 ft x 150 ft
2.12.5 Coordinates: 41−23−51.85N / 81−52−11.38W
2.12.6 Threshold elevation: 776 ft
2.12.6 Touchdown zone elevation: 777 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 230
2.12.3 Dimensions: 9955 ft x 150 ft
2.12.5 Coordinates: 41−24−55.14N / 81−50−31.37W
2.12.6 Threshold elevation: 786 ft
2.12.6 Touchdown zone elevation: 786 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 93
2.12.3 Dimensions: 6017 ft x 150 ft
2.12.5 Coordinates: 41−25−00.00N / 81−51−19.61W
2.12.6 Threshold elevation: 762 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 273
2.12.3 Dimensions: 6017 ft x 150 ft
2.12.5 Coordinates: 41−24−58.01N / 81−50−00.00W
2.12.6 Threshold elevation: 791 ft

2.12.1 Designation: 06L
2.12.2 True Bearing: 50
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 41−23−59.53N / 81−52−24.56W
2.12.6 Threshold elevation: 770 ft
2.12.6 Touchdown zone elevation: 772 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 230
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 41−24−56.75N / 81−50−54.14W
2.12.6 Threshold elevation: 780 ft
2.12.6 Touchdown zone elevation: 780 ft

2.12.1 Designation: 06X
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 24X
2.12.3 Dimensions: 0 ft x 0 ft

AD 2.13 Declared distances
2.13.1 Designation: 06R
2.13.2 Takeoff run available: 9955
2.13.3 Takeoff distance available: 9955
2.13.4 Accelerate-stop distance available: 9955
2.13.5 Landing distance available: 8029

2.13.1 Designation: 24L
2.13.2 Takeoff run available: 9955
2.13.3 Takeoff distance available: 9955
2.13.4 Accelerate-stop distance available: 9955
2.13.5 Landing distance available: 9955

2.13.1 Designation: 10
2.13.2 Takeoff run available: 6017
2.13.3 Takeoff distance available: 6017
2.13.4 Accelerate-stop distance available: 6017
2.13.5 Landing distance available: 6017

2.13.1 Designation: 28
2.13.2 Takeoff run available: 6017
2.13.3 Takeoff distance available: 6017
2.13.4 Accelerate-stop distance available: 6017
2.13.5 Landing distance available: 6017

2.13.1 Designation: 06L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate-stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 24R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate-stop distance available: 9000
2.13.5 Landing distance available: 9000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 10
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 06L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 125.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: RAMP CONTROL
2.18.3 Service designation: 129.17 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 128.25 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.85 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 132.375 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 135.225 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 124.5 MHz

2.18.1 Service designation: GROUND METERING
2.18.3 Service designation: 127.275 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 126.55 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.35 MHz

2.18.1 Service designation: LDA PRM RY 06L/24R
2.18.3 Service designation: 118.975 MHz

2.18.1 Service designation: LDA PRM RY 06R/24L
2.18.3 Service designation: 135.875 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 354.025 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 346.325 MHz

2.18.1 Service designation: LCL/P GND/P CD/P
2.18.3 Service designation: 273.45 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−28−00.00N / 81−43−35.83W
2.19.6 Site elevation: 736 ft

2.19.1 ILS type: Localizer for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−24−00.00N / 81−51−57.82W
2.19.6 Site elevation: 772 ft

2.19.1 ILS type: Glide Slope for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−24−52.35N / 81−50−30.48W
2.19.6 Site elevation: 782 ft

2.19.1 ILS type: Middle Marker for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−25−22.70N / 81−49−43.90W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−23−44.36N / 81−52−17.92W
2.19.6 Site elevation: 779 ft

2.19.1 ILS type: Glide Slope for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41−24−00.00N / 81−51−38.41W
2.19.6 Site elevation: 765 ft

2.19.1 ILS type: Inner Marker for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41−23−57.23N / 81−52−00.00W
2.19.6 Site elevation: 760 ft

2.19.1 ILS type: Middle Marker for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41−23−44.19N / 81−52−23.50W
2.19.6 Site elevation: 768 ft

2.19.1 ILS type: Outer Marker for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41−20−19.06N / 81−57−51.96W
2.19.6 Site elevation: 800 ft

2.19.1 ILS type: DME for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41−25−00.00N / 81−50−11.59W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: Localizer for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41−25−00.00N / 81−50−15.50W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41−25−00.00N / 81−51−21.25W
2.19.6 Site elevation: 756 ft

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41−25−00.00N / 81−50−12.31W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41−24−34.70N / 81−42−32.40W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41−24−55.88N / 81−49−10.69W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41−24−58.45N / 81−51−23.43W
2.19.6 Site elevation: 760 ft

2.19.1 ILS type: DME for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−25−11.94N / 81−50−35.68W
2.19.6 Site elevation: 783 ft
2.19.1 ILS type: Glide Slope for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−24−00.00N / 81−52−17.53W
2.19.6 Site elevation: 764 ft

2.19.1 ILS type: Localizer for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−25−10.19N / 81−50−32.90W
2.19.6 Site elevation: 779 ft

2.19.1 ILS type: Inner Marker for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−23−53.93N / 81−52−33.42W
2.19.6 Site elevation: 781 ft

2.19.1 ILS type: DME for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−25−11.94N / 81−50−35.68W

2.19.6 Site elevation: 783 ft

2.19.1 ILS type: Localizer for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−23−53.08N / 81−52−34.75W
2.19.6 Site elevation: 760 ft

2.19.1 ILS type: Glide Slope for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−24−53.01N / 81−51−00.00W
2.19.6 Site elevation: 768 ft

2.19.1 ILS type: Inner Marker for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−25−00.00N / 81−50−47.32W
2.19.6 Site elevation: 777 ft

2.19.1 ILS type: Glide Slope for runway 06X. Magnetic variation: 7W
2.19.2 ILS identification: EYU
2.19.5 Coordinates: 41−24−00.00N / 81−51−38.26W
2.19.6 Site elevation: 765 ft

2.19.1 ILS type: DME for runway 06X. Magnetic variation: 7W
2.19.2 ILS identification: EYU
2.19.5 Coordinates: 41−25−00.00N / 81−50−00.00W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: Localizer for runway 06X. Magnetic variation: 7W
2.19.2 ILS identification: EYU
2.19.5 Coordinates: 41−25−00.00N / 81−50−00.00W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: DME for runway 24X. Magnetic variation: 7W
2.19.2 ILS identification: FVZ
2.19.5 Coordinates: 41−25−00.00N / 81−50−00.00W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: Localizer for runway 24X. Magnetic variation: 7W
2.19.2 ILS identification: FVZ
2.19.5 Coordinates: 41−23−56.45N / 81−51−51.38W
2.19.6 Site elevation: 764 ft

2.19.1 ILS type: Glide Slope for runway 24X. Magnetic variation: 7W
2.19.2 ILS identification: FVZ
2.19.5 Coordinates: 41−24−52.26N / 81−50−30.45W
2.19.6 Site elevation: 782 ft

General Remarks:

DEER & BIRDS INCLUDING WATERFOWL ON & IN THE VICINITY OF AIRPORT.

ADVISE CUSTOMS AVAILABLE MON−FRI 0700−2100; SAT/SUN 0900−1700; ALL REQUEST FOR SERVICE MUST BE MADE WITH THE U.S. CUSTOMS SERVICE OFFICE LOCATED AT GATE A−14 CALL (216) 267−3600 DURING LISTED HOURS.

NASA GLENN RESEARCH CENTER; NASA RAMP PRIOR PERMISSION REQUIRED CALL 216−433−2020; 0800−1730 MON−FRI. CONTACT NASA OPERATIONS ON FREQ 122.925 WITHIN 50 NAUTICAL MILE.

TAXIWAY ’L2’ CLOSED BETWEEN RUNWAY 06R/24L & TAXIWAY ’L’. AREA MARKED WITH LIGHTED BARRICADES & REFLECTORS.

PAD 2 RESTRICTED TO GROUP II AIRCRAFT, LESS THAN 79 FT WINGSPAN.

ALL APPROACHES ARE OVER NOISE SENSITIVE AREAS. AIRPORT LATE NIGHT NOISE

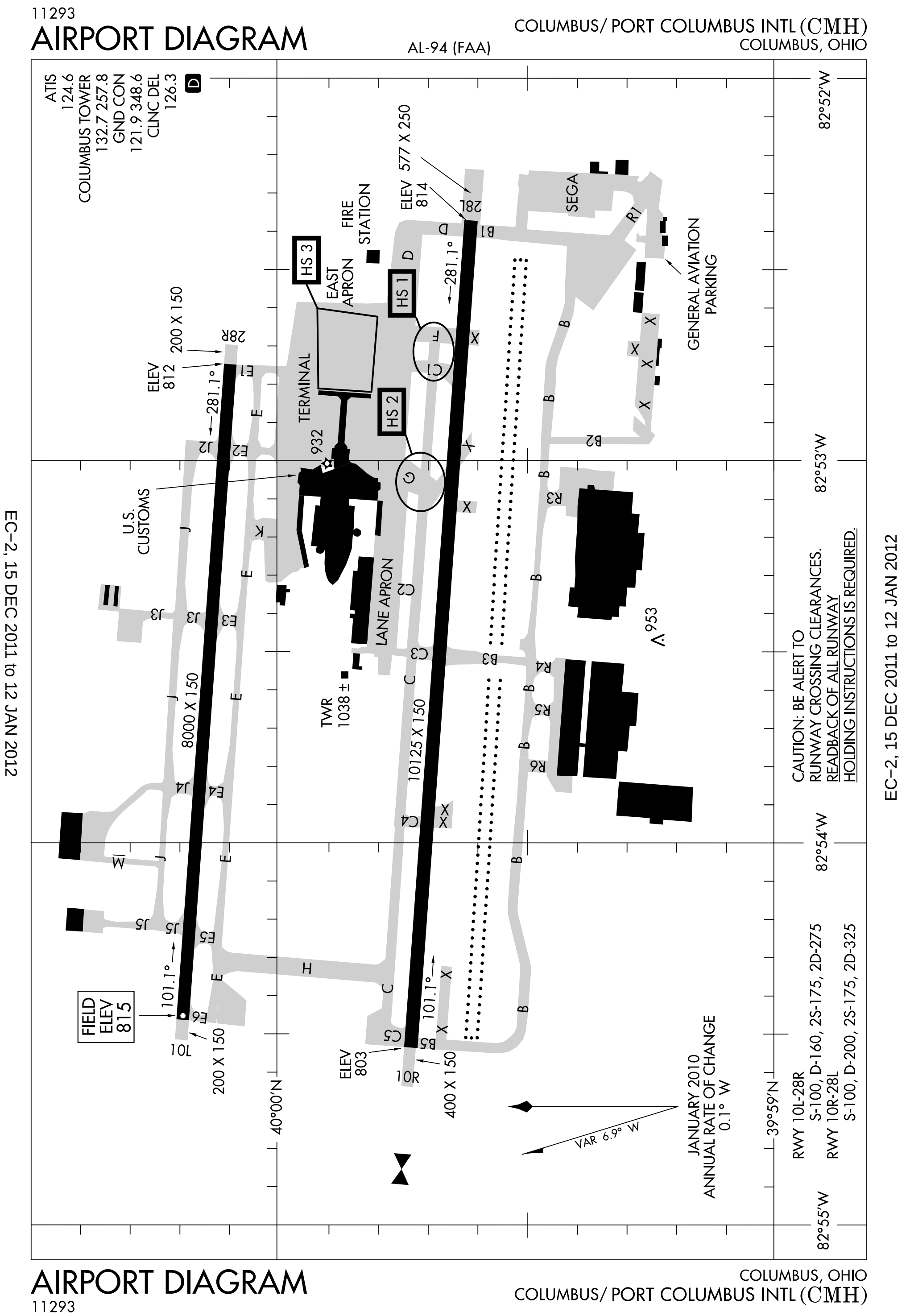
ABATEMENT PROCEDURES ARE IN EFFECT 2300−0600. ADDITIONAL NOISE ABATEMENT PROCEDURES ARE IN EFFECT CALL AIRPORT MANAGER NORMAL BUSINESS HRS AT 216−265−6090.

THE FOLLOWING TAXIWAYS ARE CLOSED ANNUALLY FR 15 OCT THRU 15 APR TO SUPPORT DEICING OPERATIONS AT CLE: TAXIWAY M; TAXIWAY M1 BETWEEN TAXIWAY L & TAXIWAY J1; TAXIWAY M2 BETWEEN TAXIWAY L & TAXIWAY J1; TAXIWAY J2 BETWEEN TAXIWAY A & TAXIWAY K.

RAMP AREA NORTH CONCOURSE D BETWEEN GATES D1, D28 CLOSED EXCEPT AIRCRAFT WINGSPAN LESS THAN 86 FT.

TAXIWAY ’S’ CLOSED BETWEEN TAXIWAY ’B’ & TAXIWAY ’C’; TAXIWAY ’B’ CLOSED BETWEEN TAXIWAY ’V’ ^ RUNWAY 10/28; TAXIWAY ’G’ CLOSED BETWEEN TAXIWAY ’B’ & TAXIWAY ’S’; TAXIWAY ’G1’ CLOSED; TAXIWAY ’D’ CLOSED; TAXIWAY ’U’ CLOSED; TAXIWAY ’J’ CLOSED EAST OF TAXIWAY ’U’; TAXIWAY ’Y’ EAST END CLOSED & TEMPORARILY RELOCATED TO SOUTH WITH GROUP-2 AIRCRAFT RESTRICTION (LESS THAN 79 FT WINGSPAN)

Columbus, Ohio
Port Columbus International
ICAO Identifier KCMH



Columbus, OH
Port Columbus Intl
ICAO Identifier KCMH

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−59−52.70N / 82−53−30.80W
2.2.2 From City: 6 Miles E Of Columbus, OH
2.2.3 Elevation: 815 ft
2.2.5 Magnetic variation: 5W (1990)
2.2.6 Airport Contact: Elaine Roberts, A.A.E.
COLUMBUS RGNL ARPT AUTH
Columbus, OH 43219 (614−239−4000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway physical characteristics
2.12.1 Designation: 10L
2.12.2 True Bearing: 94
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 40−00−11.53N / 82−54−27.49W
2.12.6 Threshold elevation: 815 ft
2.12.6 Touchdown zone elevation: 815 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 274
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 40−00−00.00N / 82−52−44.97W
2.12.6 Threshold elevation: 812 ft
2.12.6 Touchdown zone elevation: 813 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 94
2.12.3 Dimensions: 10125 ft x 150 ft
2.12.5 Coordinates: 39−59−44.05N / 82−54−32.18W
2.12.6 Threshold elevation: 803 ft
2.12.6 Touchdown zone elevation: 810 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 274
2.12.3 Dimensions: 10125 ft x 150 ft
2.12.5 Coordinates: 39−59−36.71N / 82−52−22.43W
2.12.6 Threshold elevation: 814 ft
2.12.6 Touchdown zone elevation: 814 ft

AD 2.13 Declared distances
2.13.1 Designation: 10L
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate−stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 28R
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate−stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 10125
2.13.3 Takeoff distance available: 10125
2.13.4 Accelerate−stop distance available: 10125
2.13.5 Landing distance available: 10125

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 10125
2.13.3 Takeoff distance available: 10125
2.13.4 Accelerate−stop distance available: 10125
2.13.5 Landing distance available: 10125

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system:

4−light PAPI on right

2.14.1 Designation: 10R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 28L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/S
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 119.65 MHz

2.18.1 Service designation: CLASS CAPCH/S DEP/S
2.18.3 Service designation: 120.2 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D-ATIS
2.18.3 Service designation: 124.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 125.95 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 125.95 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 126.3 MHz

2.18.1 Service designation: CLASS CAPCH/S DEP/S
2.18.3 Service designation: 132.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 353.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 317.775 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 317.775 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 338.225 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 371.975 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: RADAR
2.18.3 Service designation: 294.7 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 324.5 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 353.7 Mhz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 10L.

Magnetic variation: 5W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−00.00N /
82−52−32.03W
2.19.6 Site elevation: 799 ft

2.19.1 ILS type: Glide Slope for runway 10L.
Magnetic variation: 5W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−14.28N /
82−54−14.87W
2.19.6 Site elevation: 810 ft

2.19.1 ILS type: Outer Marker for runway 10L.
Magnetic variation: 5W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−36.46N /
83−01−44.26W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 10L.
Magnetic variation: 5W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−12.93N /
82−54−52.25W
2.19.6 Site elevation: 99999 ft
2.19.1 ILS type: DME for runway 10L. Magnetic
variation: 5W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−00.00N /
82−54−41.03W
2.19.6 Site elevation: 822 ft

2.19.1 ILS type: DME for runway 28R. Magnetic
variation: 5W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 40−00−00.00N /
82−54−41.03W
2.19.6 Site elevation: 822 ft

2.19.1 ILS type: Localizer for runway 28R.
Magnetic variation: 5W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 40−00−12.27N /
82−54−40.56W
2.19.6 Site elevation: 812 ft

2.19.1 ILS type: Glide Slope for runway 28R.
Magnetic variation: 5W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 40−00−00.00N /
82−52−56.99W
2.19.6 Site elevation: 808 ft

2.19.1 ILS type: Outer Marker for runway 28R.
Magnetic variation: 5W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 39−59−46.26N /
82−46−18.93W
2.19.6 Site elevation: 1040 ft

2.19.1 ILS type: Outer Marker for runway 10R.
Magnetic variation: 5W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 40−00−00.00N /
83−01−45.46W
2.19.6 Site elevation: 748 ft

2.19.1 ILS type: Middle Marker for runway 10R.
Magnetic variation: 5W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 39−59−46.12N /
82−55−00.00W
2.19.6 Site elevation: 812 ft

2.19.1 ILS type: DME for runway 10R. Magnetic
variation: 5W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 39−59−47.82N /
82−54−46.60W
2.19.6 Site elevation: 820 ft

2.19.1 ILS type: Localizer for runway 10R.
Magnetic variation: 5W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 39−59−35.98N /
82−52−00.00W
2.19.6 Site elevation: 811 ft

2.19.1 ILS type: Glide Slope for runway 10R.
Magnetic variation: 5W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 39−59−39.93N /
82−54−20.65W
2.19.6 Site elevation: 801 ft

2.19.1 ILS type: DME for runway 28L. Magnetic
variation: 5W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−47.82N /
82−54−46.60W
2.19.6 Site elevation: 820 ft

2.19.1 ILS type: Glide Slope for runway 28L.
Magnetic variation: 5W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−41.39N / 82−52−35.19W
2.19.6 Site elevation: 812 ft

2.19.1 ILS type: Outer Marker for runway 28L.
Magnetic variation: 5W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−10.25N / 82−45−15.67W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 28L.
Magnetic variation: 5W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−44.78N / 82−54−45.21W
2.19.6 Site elevation: 804 ft

2.19.1 ILS type: Middle Marker for runway 28L.
Magnetic variation: 5W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−34.84N / 82−51−48.16W
2.19.6 Site elevation: 787 ft

General Remarks:

MODEL AIRCRAFT TRAFFIC WITHIN A 1 NAUTICAL MILE RADIUS OF A POINT 8 NAUTICAL MILE ON A 010 DEGREE BEARING FROM THE AIRPORT; SURFACE − 5000 FT AGL; SR−SS DAILY.

BIRDS IN THE VICINITY OF AIRPORT.

C−3 PAVEMENT (NORTH OF TAXIWAY C) IS 35 FT WIDE; RESTRICTED TO AIRCRAFT 50000 LBS OR LESS WITH WINGSPAN LESS THAN 79 FT.

BE ALERT: RUNWAY 10L/28R RESTRICTIONS ON STAGE I & II TURBOJET AIRCRAFT 2200−0800 & ON STAGE III TURBOJET AIRCRAFT 2200−0700. PRACTICE APPROACHES FOR HIGH NOISE LEVEL TYPE AIRCRAFT INCLUDING NON−STAGE III MILITARY JET AIRCRAFT SHALL NOT BE APPROVED UNLESS RUNWAY 10R/28L IS IN USE & THE APPROACH TERMINATES IN A FULL STOP TAXI−BACK OPN.

ALL SURFACES AROUND TERMINAL; NORTH OF TAXIWAY ’C’ & SOUTH OF TAXIWAY ’E’ ARE NON−MOVEMENT AREAS.

NOISE BARRIER LOCATED AT SE SIDE OF AIRFIELD RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 79 FT.

PERSONNEL AND EQUIPMENT WORKING ADJACENT ALL RUNWAYS AND TAXIWAYS.

TO REQUEST LANDING RIGHTS CONTACT US CUSTOMS BETWEEN 1230−0300Z, MON−FRI AT 614−497−1865.

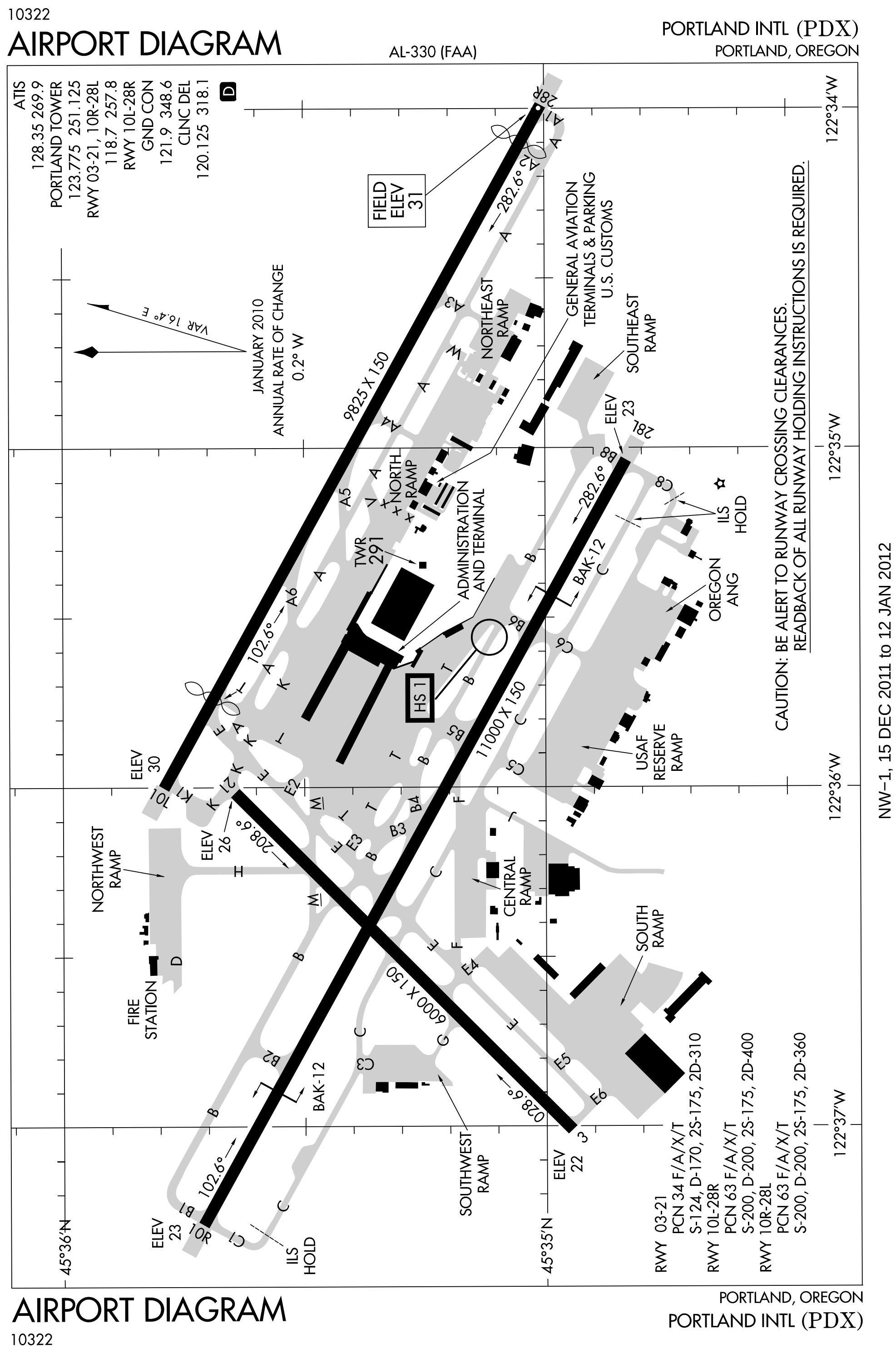
FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

TAXIWAY J2 RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 120 FT.

BE ALERT: LARGE AREAS OF CONSTRUCTION S OF RUNWAY 10R/28L. S AIRFIELD ACCESS ROUTEDS WILL CHANGE FREQUENTLY.

GATE C46, NO POWER OUT OPERATIONS; PUSH BACK REQUIRED.

Portland, Oregon
Portland International
ICAO Identifier KPDX



Portland, OR
Portland Intl
ICAO Identifier KPDX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 45−35−19.35N / 122−35−48.73W
2.2.2 From City: 4 Miles NE Of Portland, OR
2.2.3 Elevation: 31 ft
2.2.5 Magnetic variation: 20E (1980)
2.2.6 Airport Contact: Daren Griffin
7000 NE AIRPORT WAY
Portland, OR 97218
(503−460−4125)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 21
2.10.1.b Type of obstacle: Road (19 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Road (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 408 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 34 F/A/X/T
2.12.5 Coordinates: 45−34−56.73N / 122−37−00.00W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 23 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 34 F/A/X/T
2.12.5 Coordinates: 45−35−38.61N / 122−36−00.00W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 119
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 63 F/A/X/T
2.12.5 Coordinates: 45−35−42.53N / 122−37−17.30W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 24 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 299
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 63 F/A/X/T
2.12.5 Coordinates: 45−34−49.85N / 122−35−00.00W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 23 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 119
2.12.3 Dimensions: 9825 ft x 150 ft
2.12.4 PCN: 63 F/A/X/T
2.12.5 Coordinates: 45−35−47.45N / 122−36−00.00W
2.12.6 Threshold elevation: 30 ft
2.12.6 Touchdown zone elevation: 30 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 299
2.12.3 Dimensions: 9825 ft x 150 ft
2.12.4 PCN: 63 F/A/X/T
2.12.5 Coordinates: 45−35−00.00N / 122−33−59.26W
2.12.6 Threshold elevation: 31 ft
2.12.6 Touchdown zone elevation: 31 ft

AD 2.13 Declared distances
2.13.1 Designation: 03
2.13.2 Takeoff run available: 6000

2.13.3 Takeoff distance available: 6000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 6000

2.13.1 Designation: 21
2.13.2 Takeoff run available: 6000
2.13.3 Takeoff distance available: 6000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 6000

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 11000
2.13.5 Landing distance available: 11000

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 11000
2.13.5 Landing distance available: 11000

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 9825
2.13.3 Takeoff distance available: 9825
2.13.4 Accelerate−stop distance available: 9825
2.13.5 Landing distance available: 8535

2.13.1 Designation: 28R
2.13.2 Takeoff run available: 9825
2.13.3 Takeoff distance available: 9825
2.13.4 Accelerate−stop distance available: 9825
2.13.5 Landing distance available: 9290

AD 2.14 Approach and runway lighting
2.14.1 Designation: 03
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 21
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 10R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 28L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 120.125 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC DEP/S
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: APCH FINAL CTL
2.18.3 Service designation: 126.9 MHz

2.18.1 Service designation: DEP/S RDR
2.18.3 Service designation: 127.85 MHz

2.18.1 Service designation: AFR OPNS
2.18.3 Service designation: 138.45 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: AFR OPNS
2.18.3 Service designation: 252.8 MHz

2.18.1 Service designation: ANG OPNS
2.18.3 Service designation: 280.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: COMD POST
2.18.3 Service designation: 288.9 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 290.3 MHz

2.18.1 Service designation: APCH/S RDR
2.18.3 Service designation: 294.7 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 299.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.775 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 251.125 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 132.275 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 128.35 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 269.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ANG OPS/COMD POST
2.18.3 Service designation: 281.2 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: DME for runway 21. Magnetic variation: 20E
2.19.2 ILS identification: GPO
2.19.5 Coordinates: 45−34−47.97N / 122−37−00.00W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Localizer for runway 21. Magnetic variation: 20E
2.19.2 ILS identification: GPO
2.19.5 Coordinates: 45−34−49.75N / 122−37−10.47W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Localizer for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−34−43.53N / 122−34−45.82W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: DME for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−34−46.74N / 122−34−45.23W
2.19.6 Site elevation: 36 ft

2.19.1 ILS type: Glide Slope for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−35−33.90N / 122−37−00.00W
2.19.6 Site elevation: 16 ft

2.19.1 ILS type: Outer Marker for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−37−24.12N / 122−41−48.15W
2.19.6 Site elevation: 26 ft

2.19.1 ILS type: Middle Marker for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−35−58.13N / 122−37−57.39W
2.19.6 Site elevation: 25 ft

2.19.1 ILS type: Inner Marker for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−35−46.71N / 122−37−28.03W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: Localizer for runway 28L. Magnetic variation: 20E
2.19.2 ILS identification: JMJ
2.19.5 Coordinates: 45−35−50.52N / 122−37−37.81W
2.19.6 Site elevation: 25 ft

2.19.1 ILS type: DME for runway 28L. Magnetic variation: 20E
2.19.2 ILS identification: JMJ
2.19.5 Coordinates: 45−34−46.74N / 122−34−45.23W
2.19.6 Site elevation: 36 ft

2.19.1 ILS type: Glide Slope for runway 28L. Magnetic variation: 20E
2.19.2 ILS identification: JMJ
2.19.5 Coordinates: 45−34−52.63N / 122−35−16.71W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: Localizer for runway 10L. Magnetic variation: 20E
2.19.2 ILS identification: VDG
2.19.5 Coordinates: 45−34−55.53N / 122−33−46.85W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: DME for runway 10L. Magnetic variation: 20E
2.19.2 ILS identification: VDG
2.19.5 Coordinates: 45−35−47.95N / 122−36−13.55W
2.19.6 Site elevation: 26 ft

2.19.1 ILS type: Glide Slope for runway 10L. Magnetic variation: 20E
2.19.2 ILS identification: VDG
2.19.5 Coordinates: 45−35−39.76N / 122−35−30−17W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 20E
2.19.2 ILS identification: IAP
2.19.5 Coordinates: 45−35−00.00N / 122−34−25.01W
2.19.6 Site elevation: 30 ft

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 20E
2.19.2 ILS identification: IAP
2.19.5 Coordinates: 45−32−28.06N / 122−27−44.78W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 20E
2.19.2 ILS identification: IAP
2.19.5 Coordinates: 45−34−44.97N / 122−33−19.90W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 20E
2.19.2 ILS identification: IAP
2.19.5 Coordinates: 45−35−52.30N / 122−36−12.47W
2.19.6 Site elevation: 26 ft

2.19.1 ILS type: DME for runway 28R. Magnetic variation: 20E
2.19.2 ILS identification: IAP
2.19.5 Coordinates: 45−35−47.95N / 122−36−13.55W
2.19.6 Site elevation: 27 ft

General Remarks:

AIRPORT CLOSED TO NON−POWERED AIRCRAFT EXCEPT IN EMERGENCY.

TAXIWAY T BETWEEN EXITS B5 & B6 CLOSED TO AIRCRAFT WITH WINGSPAN OF 118 FT AND

GREATER.

MIGRATORY & WINTERING FLOCKS OF LARGE WATERFOWL ON & IN THE VICINITY OF AIRPORT. HEAVY SEAGULL ACTIVITY SEP THRU APR; EXPECT HIGH NUMBER OF BIRDS YEAR AROUND; CHECK LOCAL ADVISORIES.

NOISE ABATEMENT PROCEDURES IN EFFECT; CALL NOISE OFFICE AT 503−460−4100. RUNWAY 28L ARRIVALS ARE NOISE SENSITIVE, EXPECT APPROACH TO 28R WITH TRANSITION TO 28L.

180 DEGREE TURNS BY AIRCRAFT WEIGHING IN EXCESS OF 12500 LBS PROHIBITED ON ALL RUNWAYS & TAXIWAYS.

UNCONTROLLED TRAFFIC AT PEARSON FIELD VANCOUVER AIRMET 3 NAUTICAL MILE W OF RUNWAY 10L THRESHOLD ON EXTENDED CENTERLINE.

(E143−20) LOCALIZER ONLY.RWY 21.

(E94) WSFO/WSO/FW/RFC.

AREA OF TAXIWAY T BETWEEN M AND E3 NOT VISIBLE FROM TOWER.

TAXIWAY F CLOSED TO NON PART 139 AIRCRAFT WITH WINGSPAN GREATER THAN 194 FT.

TAXIWAY F CLOSED TO PART 139 AIRCRAFT WITH WINGSPAN GREATER THAN 108 FT.

AIRCRAFT AUTHORIZE TO UTILIZE THE NORTHWEST RAMP OR THE NORTH RAMP WILL BE TOWED TO/FROM THESE RAMPS.

AT THE WEST END ARM/DEARM AREA ON TAXIWAY C NO AIRCRAFT OF ANY TYPE MAY TAXI PAST THE ARM/DEARM AREA WHILE IT IS BEING USED.

BEARING STRENGTH: RUNWAY 03−21 ST 175, RUNWAY 10L−28R ST175, RUNWAY 10R−28L ST175.

JASU − (AM32A−60) 4(A/M32A−86) (MC−11) 1(MA−1A).

FUEL − A (AIR BP − FLIGHTCRAFT INC., C503−331−4220) J8(MIL) (NC−100LL, A)

FLUID − LHOXRB.

OIL − O−128−133−148(MIL).

MISC: FLIGHT NOTIFICATION SERVICE, ADVISE CUSTOMS, AVAILABLE.

ANG: PRIOR PERMISSION REQUIRED/OFFICIAL BUSINESS ONLY. BASE OPERATIONS OPR 1500−2300Z++ MON−FRI EXCEPT HOLIDAY.; DSN 638−4390, C503−335−4390. CONTACT BASE OPERATIONS 15 MIN PRIOR TO LANDING AND AFTER DEP ON 281.2. TRANSIENT QUARTERS NOT AVAILABLE.

TAXIWAY V CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT. AIRCRAFT WITH WINGSPAN GREATER THAN 91 FT PROHIBITED FROM TURNING WESTBOUND ONTO

TAXIWAY A FROM TAXIWAY V UNLESS UNDER TOW.

ANG: SEE FLIGHT INFORMATION PUBLICATION AP/1 FOR SUPPLEMENTARY AIRPORT INFORMATION. HAZARDOUS BIRD CONDITION EXIST. PHASE 1 MAY−OCT, PHASE II NOV−APR. CURRENT BIRD WATCH CONDITIONS ARE NOT REPORTED ON AUTOMATIC TERMINAL INFORMATION SERVICE.

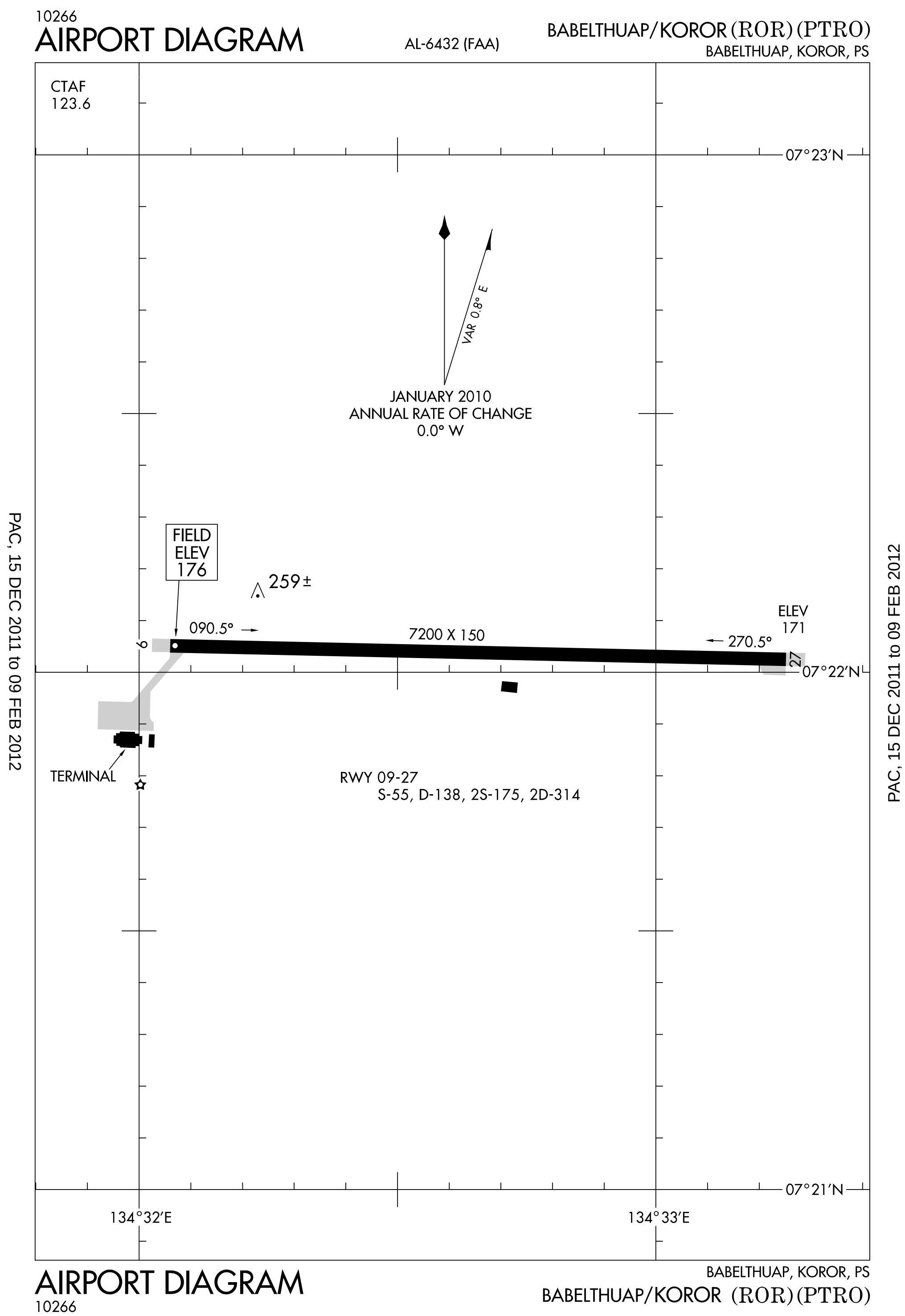
TAXIWAY W BETWEEN TAXIWAY A & THE GENERAL AVIATION RAMP CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 95 FT. AIRCRAFT WITH WINGSPAN BETWEEN 79 FT AND 95 FT MUST BE TOWED. TAXIWAY K BETWEEN THE NORTH RAMP AND THE GENERAL AVIATION RAMP CLOSED TO THROUGH TRAFFIC.

NONSTANDARD YELLOW PARK SPOT DESIGNATORS AND EQUIPMENT TOOL BOX LOCATION PAINTED ON RAMP. LOAD BEARING EDGE ON EAST RAMP NOT MRK. PLEASE CONTACT BASE OPERATIONS OR REQ FOLLOW ME IF NOT FAMILIAR WITH PANGB PARK PROCEDURES.

CONSTRUCTION ON RUNWAY 10R-28L IN PROGRESS. SEE NOTAMS FOR CURRENT INFORMATION.

EXISTING A-G WILL BE REMOVED DURING S RUNWAY REHAB ESTIMATE 01 APR - 30 APR 2011. NEW BARRIER SYS AVAILABLE APPROXIMATELY 30 NOV 2011. REVIEW LOCAL NOTAMS FOR UPDATED STATUS.

Babelthuap Island
Babelthuap/Koror
ICAO Identifier PTRO



Babelthuap Island, PW
Babelthuap/Koror
ICAO Identifier PTRO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 07−22−00.00N / 134−32−39.40E
2.2.2 From City: 4 Miles NE Of Babelthuap Island, Pw
2.2.3 Elevation: 176 ft
2.2.5 Magnetic variation: 1E (1990)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 115,A1
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: None

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Trees (11 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 75 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 91
2.12.3 Dimensions: 7200 ft x 150 ft
2.12.5 Coordinates: 07−22−00.00N / 134−32−00.00E
2.12.6 Threshold elevation: 176 ft
2.12.6 Touchdown zone elevation: 176 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 271
2.12.3 Dimensions: 7200 ft x 150 ft
2.12.5 Coordinates: 07−22−00.00N / 134−33−15.17E
2.12.6 Threshold elevation: 171 ft
2.12.6 Touchdown zone elevation: 176 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

General Remarks:

ALL UNSCHEDULED FLIGHTS MUST FILE A FLIGHT PLAN AT LEAST 7 DAYS PRIOR TO ARRIVAL AND ALL FLIGHTS MUST CONTACT KOROR COMMUNICATIONS ON 123.6 AT LEAST 20 MINUTES PRIOR TO ARRIVAL.

AIRCRAFT RESCUE AND FIRE FIGHTING AVAILABLE 2 HRS PRIOR TO SCHEDULE AIRCRAFT ARR AND UNTIL 1 HR AFTER DEP.

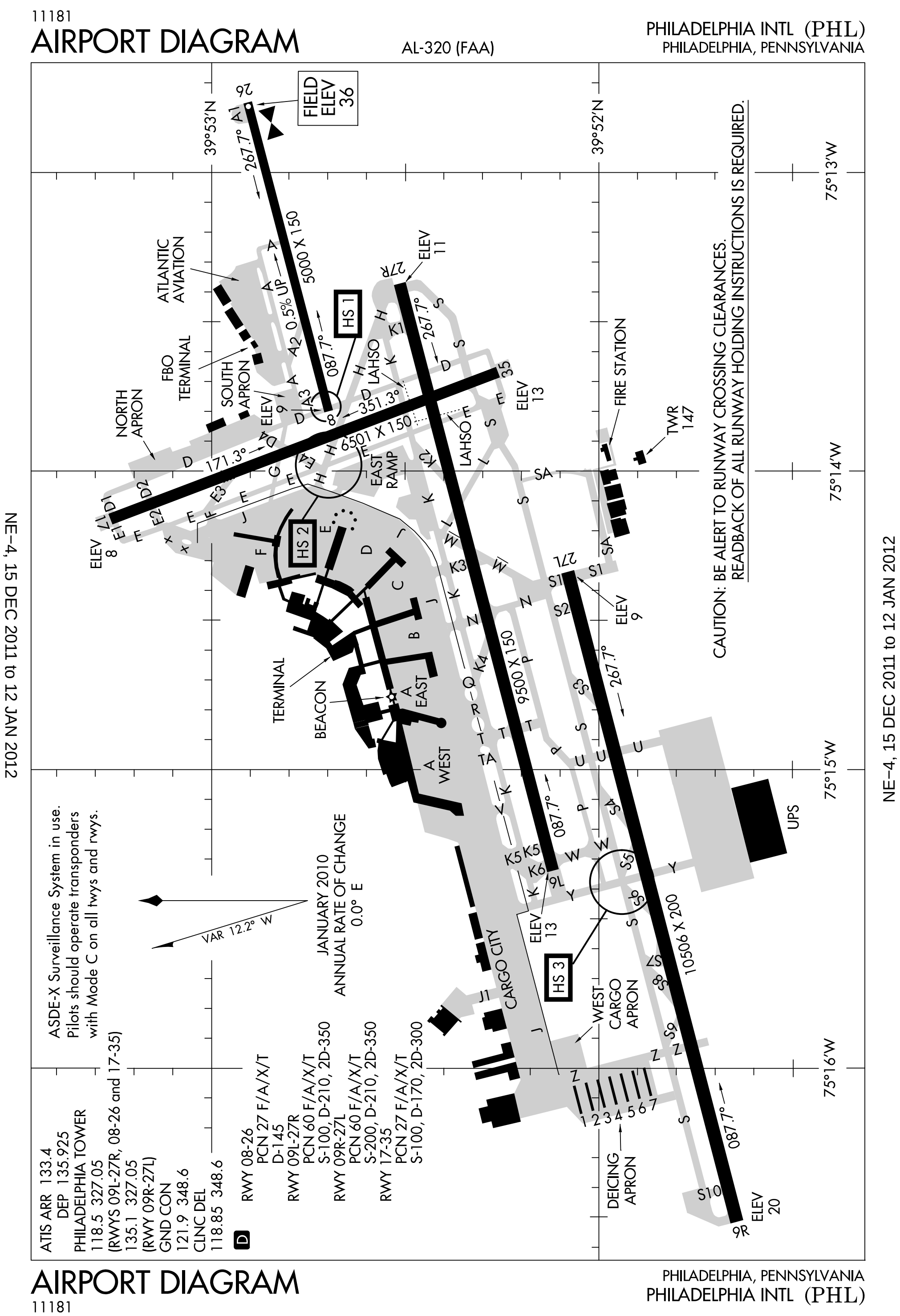
CAUTION: LARGE NUMBER OF BIRDS ON RUNWAY AT NIGHT.

ALL AIRCRAFT EXCEEDING 100000 LBS GROSS WEIGHT TAXI TO THR TURN AROUND BEFORE TAXING TO APRON. AIRCRAFT UNDER 100000 LBS GROSS WEIGHT MAY MAKE A TURN AROUND WHERE FEASIBLE.

ENTRY PERMIT REQUIRED CALL 011−680−488−2498 FAX 011−680−488−4385; LANDING PERMIT REQUIRED MUST GIVE SEVEN DAYS NOTICE CALL 011−680−488−2111 FAX 011−680−488−3207.

(E94) WX STATION 5 MI FROM AIRPORT.

Philadelphia, Pennsylvania
Philadelphia International
ICAO Identifier KPHL



Philadelphia, PA
Philadelphia Intl
ICAO Identifier KPHL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−52−20.10N / 75−14−27.12W
2.2.2 From City: 5 Miles SW Of Philadelphia, PA
2.2.3 Elevation: 36 ft
2.2.5 Magnetic variation: 10W (1980)
2.2.6 Airport Contact: Mark Gale
DIV OF AVIATION TERMINAL E
Philadelphia, PA 19153
(215−937−6914)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Gnd (17 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 460 ft from Centerline

2.10.1.a. Runway designation: 27R
2.10.1.b Type of obstacle: Boat (189 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 09R
2.10.1.b Type of obstacle: Trees (11 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 360 ft from Centerline

2.10.1.a. Runway designation: 27L
2.10.1.b Type of obstacle: Boat (189 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 17
2.10.1.b Type of obstacle: Pole (49 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 560 ft from Centerline

2.10.1.a. Runway designation: 35
2.10.1.b Type of obstacle: Boat (189 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Bldg (190 ft). Lighted
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Fence (5 ft). Lighted
2.10.1.c Location of obstacle: 280 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09L
2.12.2 True Bearing: 75
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−52−00.00N / 75−15−20.39W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 255
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−52−30.79N / 75−13−22.44W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 11 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 75
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−51−38.92N / 75−16−30.70W
2.12.6 Threshold elevation: 20 ft

2.12.6 Touchdown zone elevation: 21 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 255
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−52−00.00N / 75−14−20.27W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 159
2.12.3 Dimensions: 6501 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−53−15.57N / 75−14−00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 339
2.12.3 Dimensions: 6501 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−52−15.57N / 75−13−40.13W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 75
2.12.3 Dimensions: 5000 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−52−42.02N / 75−13−48.04W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 20 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 256
2.12.3 Dimensions: 5000 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−52−54.38N / 75−12−45.94W
2.12.6 Threshold elevation: 36 ft
2.12.6 Touchdown zone elevation: 36 ft

AD 2.13 Declared distances
2.13.1 Designation: 09L
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate-stop distance available: 9500
2.13.5 Landing distance available: 9500

2.13.1 Designation: 27R
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate-stop distance available: 9500
2.13.5 Landing distance available: 9500

2.13.1 Designation: 09R
2.13.2 Takeoff run available: 10506
2.13.3 Takeoff distance available: 10506
2.13.4 Accelerate-stop distance available: 10506
2.13.5 Landing distance available: 10506

2.13.1 Designation: 27L
2.13.2 Takeoff run available: 10506
2.13.3 Takeoff distance available: 10506
2.13.4 Accelerate-stop distance available: 10506
2.13.5 Landing distance available: 10506

2.13.1 Designation: 17
2.13.2 Takeoff run available: 6501
2.13.3 Takeoff distance available: 6501
2.13.4 Accelerate-stop distance available: 6501
2.13.5 Landing distance available: 6501

2.13.1 Designation: 35
2.13.2 Takeoff run available: 6501
2.13.3 Takeoff distance available: 6501
2.13.4 Accelerate-stop distance available: 6501
2.13.5 Landing distance available: 6501

2.13.1 Designation: 08
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate-stop distance available: 5000
2.13.5 Landing distance available: 5000

2.13.1 Designation: 26
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate-stop distance available: 5000
2.13.5 Landing distance available: 5000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system:

4−light PAPI on left

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 09R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 27L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 17
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: Runway 26 PAPI Unusable Beyond 8 Degs Right Of Centerline .

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.35 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.85 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: APCH/P AT OR BELOW 5000 FT.
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: FINAL APCH
2.18.3 Service designation: 125.4 MHz

2.18.1 Service designation: APCH/P ABOVE 5000 FT
2.18.3 Service designation: 126.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.85 MHz

2.18.1 Service designation: APCH/P AT OR BELOW 5000 FT.
2.18.3 Service designation: 126.85 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 127.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 127.35 MHz

2.18.1 Service designation: APCH/P AT OR BELOW 5000 FT.
2.18.3 Service designation: 127.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: APCH/P ABOVE 5000 FT.
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: APCH/P AT OR BLO 5000 FT.
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: APCH/P AT OR BLO 5000 FT.
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 269.25 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 269.25 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 269.25 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: APCH/P ABOVE 5000 FT
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 291.7 MHz

2.18.1 Service designation: APCH/P AT OR BLO 5000 FT.
2.18.3 Service designation: 291.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: APCH/P ABOVE 5000 FT IC
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 323.1 MHz

2.18.1 Service designation: CD/P GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.925 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 135.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135.1 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 327.05 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 327.05 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 123.6 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 120.425 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 133.875 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 133.875 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−52−35.47N / 75−13−11.51W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: Outer Marker for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−50−29.30N / 75−22−57.40W
2.19.6 Site elevation: 47 ft

2.19.1 ILS type: Middle Marker for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−52−00.00N / 75−15−55.00W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Localizer for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−52−33.39N / 75−13−00.00W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Glide Slope for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−52−00.00N / 75−15−00.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: DME for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39−52−35.47N / 75−13−11.51W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39−52−24.05N / 75−13−35.81W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39−52−00.00N / 75−15−32.93W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39−54−00.00N / 75−05−41.51W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39−52−38.00N / 75−12−46.40W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39−50−29.30N / 75−22−57.40W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39−51−36.74N / 75−16−41.58W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39−51−31.82N / 75−17−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39−52−00.00N / 75−14−00.00W
2.19.6 Site elevation: 8 ft

2.19.1 ILS type: DME for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39−52−00.00N / 75−14−00.00W
2.19.6 Site elevation: 18 ft

2.19.1 ILS type: Glide Slope for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39−51−37.82N / 75−16−15.73W
2.19.6 Site elevation: 15 ft

2.19.1 ILS type: Localizer for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39−51−36.27N / 75−16−43.95W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Glide Slope for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39−51−58.71N / 75−14−31.14W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Middle Marker for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39−52−12.91N / 75−13−40.55W
2.19.6 Site elevation: 21 ft

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39−52−00.00N / 75−14−00.00W
2.19.6 Site elevation: 18 ft

2.19.1 ILS type: Outer Marker for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−58−30.97N / 75−16−44.21W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−52−00.00N / 75−13−35.55W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Glide Slope for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−53−00.00N / 75−14−00.00W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Middle Marker for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−53−43.20N /

75−14−27.10W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−52−00.00N / 75−13−39.56W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: DME for runway 26. Magnetic variation: 10W
2.19.2 ILS identification: LLH
2.19.5 Coordinates: 39−52−42.22N / 75−13−32.38W
2.19.6 Site elevation: 19 ft

2.19.1 ILS type: Glide Slope for runway 26. Magnetic variation: 10W
2.19.2 ILS identification: LLH
2.19.5 Coordinates: 39−52−49.37N / 75−12−58.35W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Localizer for runway 26. Magnetic variation: 10W
2.19.2 ILS identification: LLH
2.19.5 Coordinates: 39−52−42.38N / 75−13−31.83W
2.19.6 Site elevation: 6 ft

General Remarks:

BIRDS ON & IN THE VICINITY OF AIRPORT.

RUNWAYS 27L, 27R & 35 SHIP CHANNEL (DELAWARE RIVER) MAX HEIGHT OF SHIPS 189 FT. RUNWAY 26 SHIP CHANNEL (SCHUYLKILL) MAX HEIGHT OF SHIPS 149 FT.

AIRPORT IS LOCATED IN A NOISE SENSITIVE AREA. AIRPORT NOISE ABATEMENT TAKEOFF PROCEDURES ARE TO BE USED.

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM EQUIPPED ACFT−TCAS ALERT MAY BE CAUSED BY TRANSPONDER EQUIPPED SHIPS LOCATED PHL NAVAL BASE 3 NAUTICAL MILE E.

UNLIGHTED STACK 288 FT MSL (271 FT AGL) 2.3 NAUTICAL MILE SW OF AIRPORT.

RUNWAY 09R ROLLOUT RUNWAY VISUAL RANGE USED FOR RUNWAY 09L MIDPOINT RUNWAY VISUAL RANGE.

ALL ENGINE RUNUPS REQUIRE PRIOR PERMISSION REQUIRED FROM DUTY OPERATIONS OFFICER AT 937−6914/6800; RUNUPS 20 MIN MAXIMUM.

ALL AIRCRAFT TRAVELING ON TAXIWAY J MUST USE MINIMUM POWER WHEN TURNING SOUTH DUE TO JETBLAST CONCERNS.

TAXIWAY J BETWEEN TAXIWAYS K3 AND Q RESTRICTED TO AIRCRAFT WITH WINGSPANS 171 FT AND LESS.

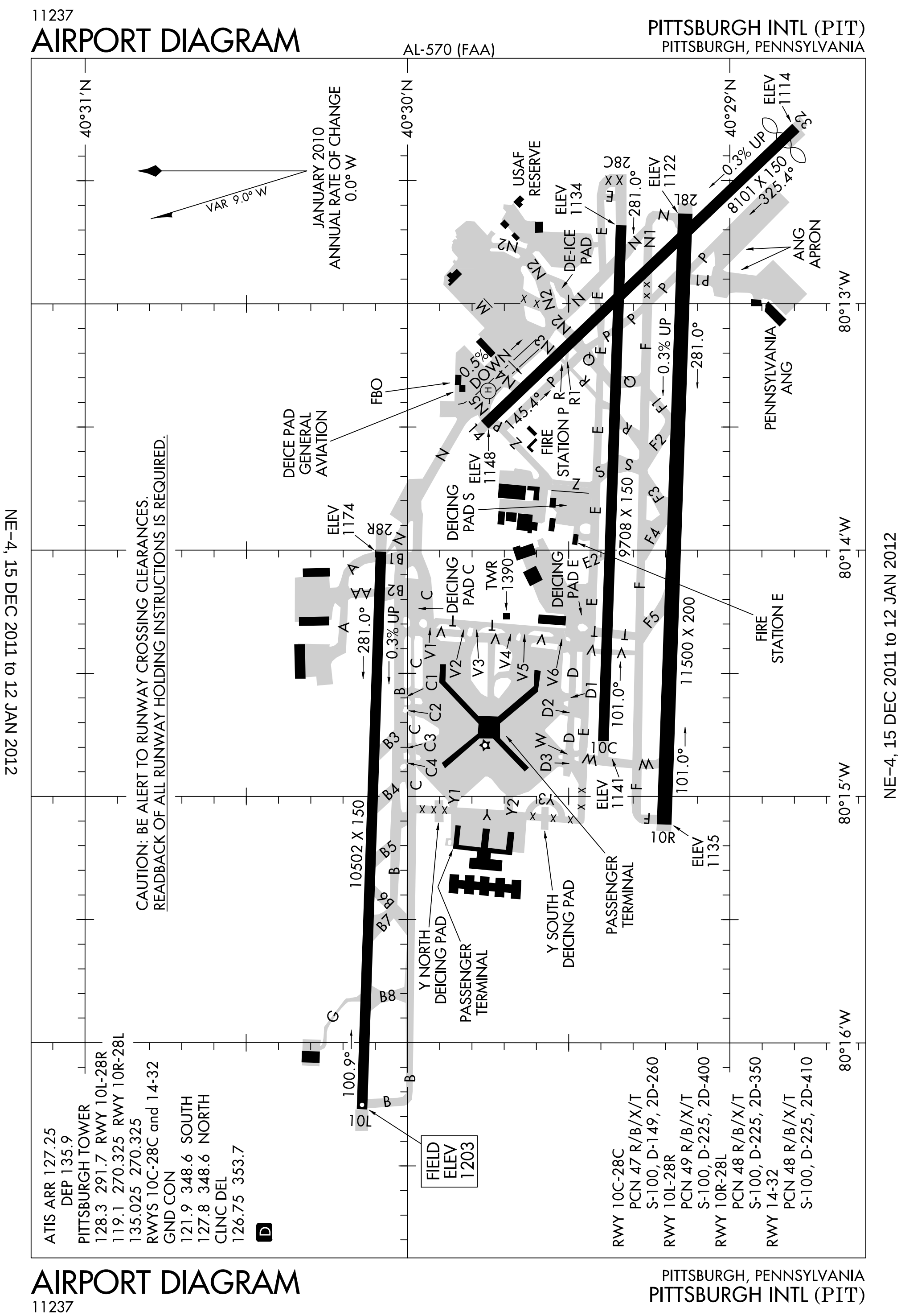
ONLY NOSE−IN PARKING PERMITTED ON NORTH & EAST REMOTE APRONS. PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS FOR ALL AIRCRAFT PARKING ON NORTH & EAST REMOTE APRONS; CONTACT 215−937−6914/6800.

POSSIBLE UNMARKED SHIP OBSTRUCTION TRANSITING EAST OR WESTBOUND ALONG THE DELAWARE RIVER REACHING HEIGHTS OF 189’ − BE ALERT WHEN APPROACHING PHL RUNWAY 35 AND WHENEVER CIRCLING OR VISUALLY APPROACHING ALL OTHER

RUNWAYS.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

Pittsburgh, Pennsylvania
Pittsburgh International
ICAO Identifier KPIT



Pittsburgh, PA
Pittsburgh Intl
ICAO Identifier KPIT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40−29−29.30N / 80−13−58.30W
2.2.2 From City: 12 Miles NW Of Pittsburgh, PA
2.2.3 Elevation: 1203 ft
2.2.5 Magnetic variation: 8W (1995)
2.2.6 Airport Contact: Bradley D. Penrod
PO BOX 12370, SUITE. 4000
Pittsburgh, PA 15231
(412−472−3510)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 28C
2.10.1.b Type of obstacle: Trees (130 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 980 ft from Centerline

2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Pole (26 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Trees (166 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 700 ft from Centerline

2.10.1.a. Runway designation: 28L
2.10.1.b Type of obstacle: Trees (78 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 680 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Trees (38 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 680 ft from Centerline

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Trees (55 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 10C
2.12.2 True Bearing: 92
2.12.3 Dimensions: 9708 ft x 150 ft
2.12.4 PCN: 47 R/B/X/T
2.12.5 Coordinates: 40−29−23.54N / 80−14−46.54W
2.12.6 Threshold elevation: 1141 ft
2.12.6 Touchdown zone elevation: 1141 ft

2.12.1 Designation: 28C
2.12.2 True Bearing: 272
2.12.3 Dimensions: 9708 ft x 150 ft
2.12.4 PCN: 47 R/B/X/T
2.12.5 Coordinates: 40−29−20.25N / 80−12−40.96W
2.12.6 Threshold elevation: 1134 ft
2.12.6 Touchdown zone elevation: 1134 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 136
2.12.3 Dimensions: 8101 ft x 150 ft
2.12.4 PCN: 48 R/B/X/T
2.12.5 Coordinates: 40−29−45.65N / 80−13−29.52W
2.12.6 Threshold elevation: 1148 ft
2.12.6 Touchdown zone elevation: 1148 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 32
2.12.2 True Bearing: 316
2.12.3 Dimensions: 8101 ft x 150 ft
2.12.4 PCN: 48 R/B/X/T

2.12.5 Coordinates: 40−28−47.69N / 80−12−17.22W
2.12.6 Threshold elevation: 1114 ft
2.12.6 Touchdown zone elevation: 1123 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 10R
2.12.2 True Bearing: 92
2.12.3 Dimensions: 11500 ft x 200 ft
2.12.4 PCN: 48 R/B/X/T
2.12.5 Coordinates: 40-29-12.22N / 80-15-00.00W
2.12.6 Threshold elevation: 1135 ft
2.12.6 Touchdown zone elevation: 1135 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 272
2.12.3 Dimensions: 11500 ft x 200 ft
2.12.4 PCN: 48 R/B/X/T
2.12.5 Coordinates: 40-29-00.00N / 80-12-38.13W
2.12.6 Threshold elevation: 1122 ft
2.12.6 Touchdown zone elevation: 1125 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 10L
2.12.2 True Bearing: 92
2.12.3 Dimensions: 10502 ft x 150 ft
2.12.4 PCN: 49 R/B/X/T
2.12.5 Coordinates: 40−30−00.00N / 80−16−16.26W
2.12.6 Threshold elevation: 1203 ft
2.12.6 Touchdown zone elevation: 1203 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 272
2.12.3 Dimensions: 10502 ft x 150 ft
2.12.4 PCN: 49 R/B/X/T
2.12.5 Coordinates: 40−30−00.00N / 80−14−00.00W
2.12.6 Threshold elevation: 1174 ft
2.12.6 Touchdown zone elevation: 1174 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: H1
2.12.3 Dimensions: 60 ft x 60 ft

AD 2.13 Declared distances

2.13.1 Designation: 10C
2.13.2 Takeoff run available: 9708
2.13.3 Takeoff distance available: 9708
2.13.4 Accelerate−stop distance available: 9708
2.13.5 Landing distance available: 9708

2.13.1 Designation: 28C
2.13.2 Takeoff run available: 9708
2.13.3 Takeoff distance available: 9708
2.13.4 Accelerate−stop distance available: 9708
2.13.5 Landing distance available: 9708

2.13.1 Designation: 14
2.13.2 Takeoff run available: 8101
2.13.3 Takeoff distance available: 8101
2.13.4 Accelerate−stop distance available: 7366
2.13.5 Landing distance available: 7366

2.13.1 Designation: 32
2.13.2 Takeoff run available: 8101
2.13.3 Takeoff distance available: 8101
2.13.4 Accelerate−stop distance available: 7801
2.13.5 Landing distance available: 7466

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate-stop distance available: 11500
2.13.5 Landing distance available: 11500

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate-stop distance available: 11500
2.13.5 Landing distance available: 11500

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 10502
2.13.3 Takeoff distance available: 10502
2.13.4 Accelerate−stop distance available: 10502
2.13.5 Landing distance available: 10502

2.13.1 Designation: 28R
2.13.2 Takeoff run available: 10502
2.13.3 Takeoff distance available: 10502
2.13.4 Accelerate−stop distance available: 10102
2.13.5 Landing distance available: 10102

AD 2.14 Approach and runway lighting

2.14.1 Designation: 10C
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28C
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 28L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 10L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: ALSF2/SSALR Is A Dual Mode System & Controlled By ATCt & Remote Monitored.

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.35 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 121.25 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 123.95 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 124.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.75 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 126.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 127.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135.025 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 270.325 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CP
2.18.3 Service designation: 252.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 291.7 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 338.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz
2.18.1 Service designation: CD/P
2.18.3 Service designation: 353.7 MHz

2.18.1 Service designation: OPS
2.18.3 Service designation: 36.35 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 360.8 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 279.625 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 285.575 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 336.2 MHz

2.18.1 Service designation: ANG−OPS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 125.275 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 133.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 10C. Magnetic variation: 8W
2.19.2 ILS identification: BGY
2.19.5 Coordinates: 40−29−19.91N / 80−12−28.02W
2.19.6 Site elevation: 1136 ft

2.19.1 ILS type: Glide Slope for runway 10C. Magnetic variation: 8W
2.19.2 ILS identification: BGY
2.19.5 Coordinates: 40−29−19.33N / 80−14−32.79W
2.19.6 Site elevation: 1134 ft

2.19.1 ILS type: Localizer for runway 28C. Magnetic variation: 8W
2.19.2 ILS identification: XXX
2.19.5 Coordinates: 40−29−23.76N / 80−14−54.62W
2.19.6 Site elevation: 1136 ft

2.19.1 ILS type: Glide Slope for runway 28C. Magnetic variation: 8W
2.19.2 ILS identification: XXX
2.19.5 Coordinates: 40−29−25.79N / 80−12−54.47W
2.19.6 Site elevation: 1131 ft

2.19.1 ILS type: Localizer for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40−29−50.41N / 80−13−35.46W
2.19.6 Site elevation: 1139 ft

2.19.1 ILS type: Glide Slope for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40−28−52.66N / 80−12−29.14W
2.19.6 Site elevation: 1112 ft

2.19.1 ILS type: Middle Marker for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40−28−25.30N / 80−11−49.10W
2.19.6 Site elevation: 1100 ft

2.19.1 ILS type: Outer Marker for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40−25−53.20N / 80−08−44.60W
2.19.6 Site elevation: 1180 ft

2.19.1 ILS type: Glide Slope for runway 10R. Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−15.34N / 80−14−53.77W
2.19.6 Site elevation: 1130 ft

2.19.1 ILS type: Outer Marker for runway 10R. Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−14.90N / 80−22−13.90W

2.19.6 Site elevation: 1081 ft

2.19.1 ILS type: Middle Marker for runway 10R.
Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−13.15N / 80−15−42.43W
2.19.6 Site elevation: 1155 ft

2.19.1 ILS type: Localizer for runway 10R.
Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−00.00N / 80−12−34.12W
2.19.6 Site elevation: 1117 ft

2.19.1 ILS type: Inner Marker for runway 10R.
Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−12.54N / 80−15−18.88W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 28L.
Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−12.64N / 80−15−23.03W
2.19.6 Site elevation: 1141 ft

2.19.1 ILS type: Middle Marker for runway 28L.
Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−00.00N / 80−12−00.00W
2.19.6 Site elevation: 1069 ft

2.19.1 ILS type: Glide Slope for runway 28L.
Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−00.00N / 80−12−51.24W
2.19.6 Site elevation: 1118 ft

2.19.1 ILS type: Outer Marker for runway 28L.
Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−00.00N / 80−06−00.00W
2.19.6 Site elevation: 1043 ft

2.19.1 ILS type: Glide Slope for runway 28R.
Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40-30-00.00N / 80-14-14.60W
2.19.6 Site elevation: 1166 ft
2.19.1 ILS type: Outer Marker for runway 28R.
Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40-29-58.85N / 80-07-00.00W
2.19.6 Site elevation: 938 ft

2.19.1 ILS type: Localizer for runway 28R.
Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40-30-00.00N / 80-16-31.33W
2.19.6 Site elevation: 1214 ft

2.19.1 ILS type: Middle Marker for runway 28R.
Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40-30-00.00N / 80-13-26.81W
2.19.6 Site elevation: 1164 ft

2.19.1 ILS type: Glide Slope for runway 10L.
Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40-30-11.93N / 80-15-59.90W
2.19.6 Site elevation: 1195 ft

2.19.1 ILS type: Inner Marker for runway 10L.
Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40-30-00.00N / 80-16-27.00W
2.19.6 Site elevation: 1172 ft

2.19.1 ILS type: Outer Marker for runway 10L.
Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40-30-17.54N / 80-21-59.03W
2.19.6 Site elevation: 99999 ft
2.19.1 ILS type: Middle Marker for runway 10L.
Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40-30-00.00N / 80-16-48.80W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 10L.
Magnetic variation: 8W
2.19.2 ILS identification: LXB

2.19.5 Coordinates: 40-30-00.00N / 80-13-47.19W
2.19.6 Site elevation: 1162 ft

General Remarks:

DEER & BIRDS ON & IN THE VICINITY OF AIRPORT.

ALL JETS DEPARTING RUNWAY 28R MUST BE ALIGNED WITHIN RUNWAY PRIOR TO APPLYING TAKE-OFF POWER.

AIRCRAFT USING TAXIWAY ’N’ PROHIBITED TO STOP ON OVERPASS AREA DUE TO POSSIBLE EMERGENCY EVACUATION HAZARD.

ANG AIRCRAFT MUST CONTACT TANKER 303.0/FTR OPERATIONS 293.7 BEFORE CROSSING RUNWAY 28L TO OBTAIN CLEARANCE TO ENTER.

TERMINAL TAXILANES E OF CONCOURSES A & B RESTRD TO GROUP 3 AIRCRAFT & SMALLER.

RUNWAY 10C & 28C DEPARTURES: DO NOT APPLY TAKEOFF THRUST PRIOR TO RUNWAY THRESHOLD.

TERMINAL APRON CONTROL FREQS ARE 130.77 FOR NORTH APRON; 131.37 FOR SOUTH APRON.

ATCT IS AUTHORIZED TO HAVE AIRCRAFT LINE−UP & WAIT ON RUNWAYS 28L AT TAXIWAY ’P’ DURING HRS OF DARKNESS. THE SPECIFIC RUNWAY SHALL BE USED ONLY FOR DEPARTURES & THE INTERSECTION MUST BE VISIBLE FROM ATCT.

SERVICE−JASU: (ANG) (A/M32A−86) (AM 32−95; (AFRC − 2(A/M32−86 (AM32−95).

SERVICE−FLUID: LPOX L/H NIT.

SERVICE−OIL: O−156.

SERVICE−TRAN ALERT: NO PRIORITY BASIS.

AFRC: CALL PITT COMMAND POST PRIOR TO ENTRY TO S RAMP, MAIN RAMP.

ANG: OPR 1130−2030Z++ MON−FRI EXCEPT HOLIDAY (CLOSED EVERY OTH MON).

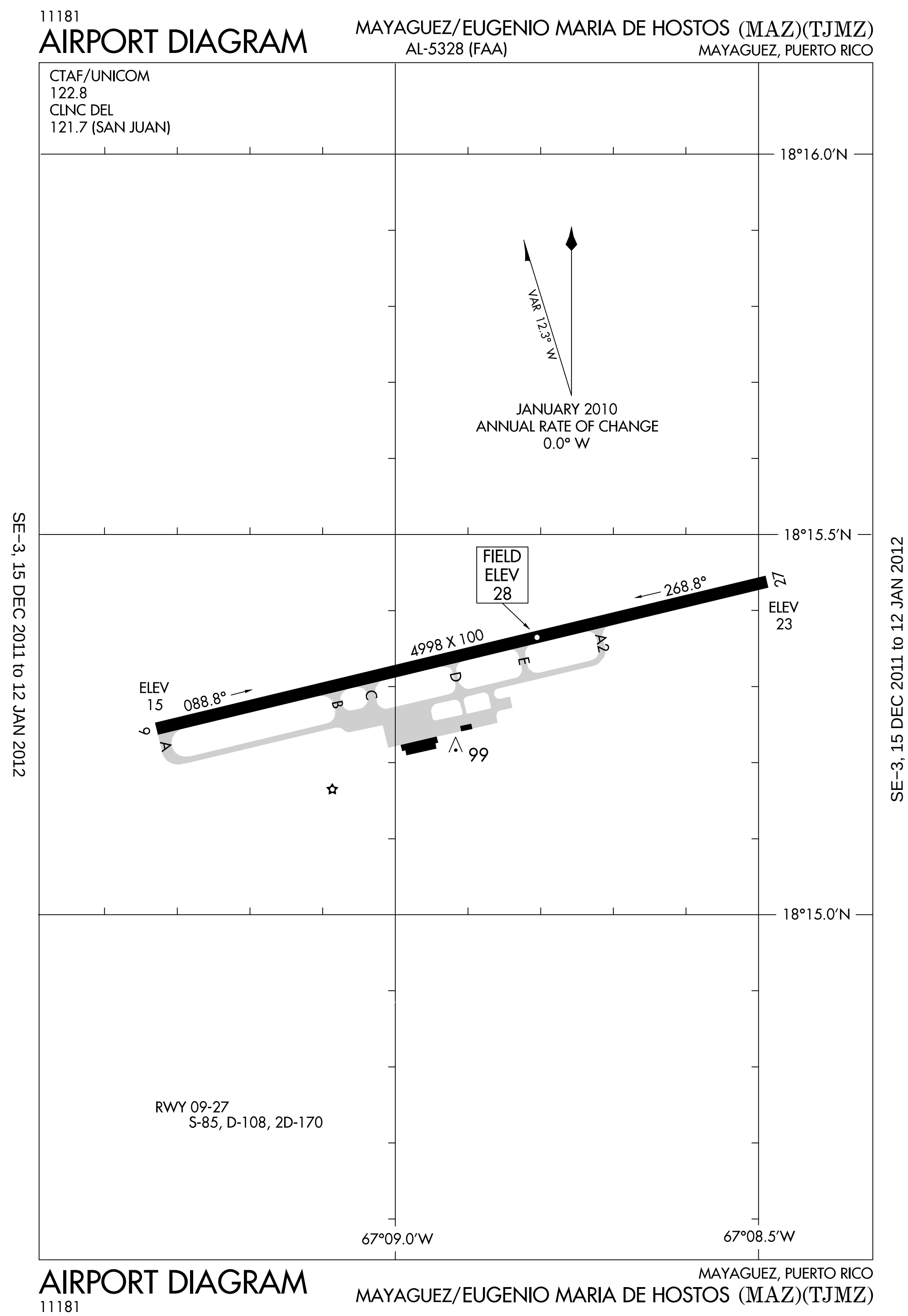
ANG: OPR 1130−2030Z++MON−FRI EXCEPT HOLIDAY. CLOSED EVERY OTHER MON. OFFICIAL BUSINESS ONLY. PRIOR PERMISSION REQUIRED 48 HR PRIOR NOTICE REQUIRE. CALL DSN 294−7374/7260, C412−776−7374/7260.

AFRC: MIN 48HR PRIOR NOTICE REQUIRE FOR C5, C141 DUE TO LIMITED PARKING, LIGHT, AND SERVICE. NO TRANSIENT SERVICE. TRANSIENT AIRCRAFT CALL FBO AVIATION CENTER C412−472−6700. NORMAL DUTY HR 1330−0400Z++ EXCEPT HOLIDAY. UNIT TRAINING ASSEMBLY 1300−2100Z++ SAT. AND SUN.

PERSONNEL AND EQUIPMENT WORKING ADJACENT ALL RUNWAYS.

TAXIWAY G INTERSECTION AT RUNWAY 10L/28R RIGHT TURN NOT AUTHORIZED.

Mayaguez, Puerto Rico
Eugenio Maria De Hostos
ICAO Identifier TJMZ



Mayaguez, PR
Eugenio Maria De Hostos
ICAO Identifier TJMZ

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 18−15−20.50N / 67−08−54.50W
2.2.2 From City: 3 Miles N Of Mayaguez, PR
2.2.3 Elevation: 28 ft
2.2.5 Magnetic variation: 10W (1985)
2.2.6 Airport Contact: Jorge Santiago
BOX 710
Mayaguez, PR 709
(787−832−3390)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 0730−0400 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: None
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: None
2.6.4 Remarks: No ARFF Services Provided To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats 2300−0600 Except 24 Hr Prior Permission Required; Call Airport Manager 787−832−3390 Or 787−833−0148.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Poles (44 ft). Lighted
2.10.1.c Location of obstacle: 75 ft from Centerline

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Trees (65 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 450 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 76
2.12.3 Dimensions: 4998 ft x 100 ft
2.12.5 Coordinates: 18−15−14.68N / 67−09−19.73W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 28 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 256
2.12.3 Dimensions: 4998 ft x 100 ft
2.12.5 Coordinates: 18−15−26.25N / 67−08−29.30W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 28 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

General Remarks:

1200’ TOWER /1207’ MSL/ 9 NAUTICAL MILE NNW.

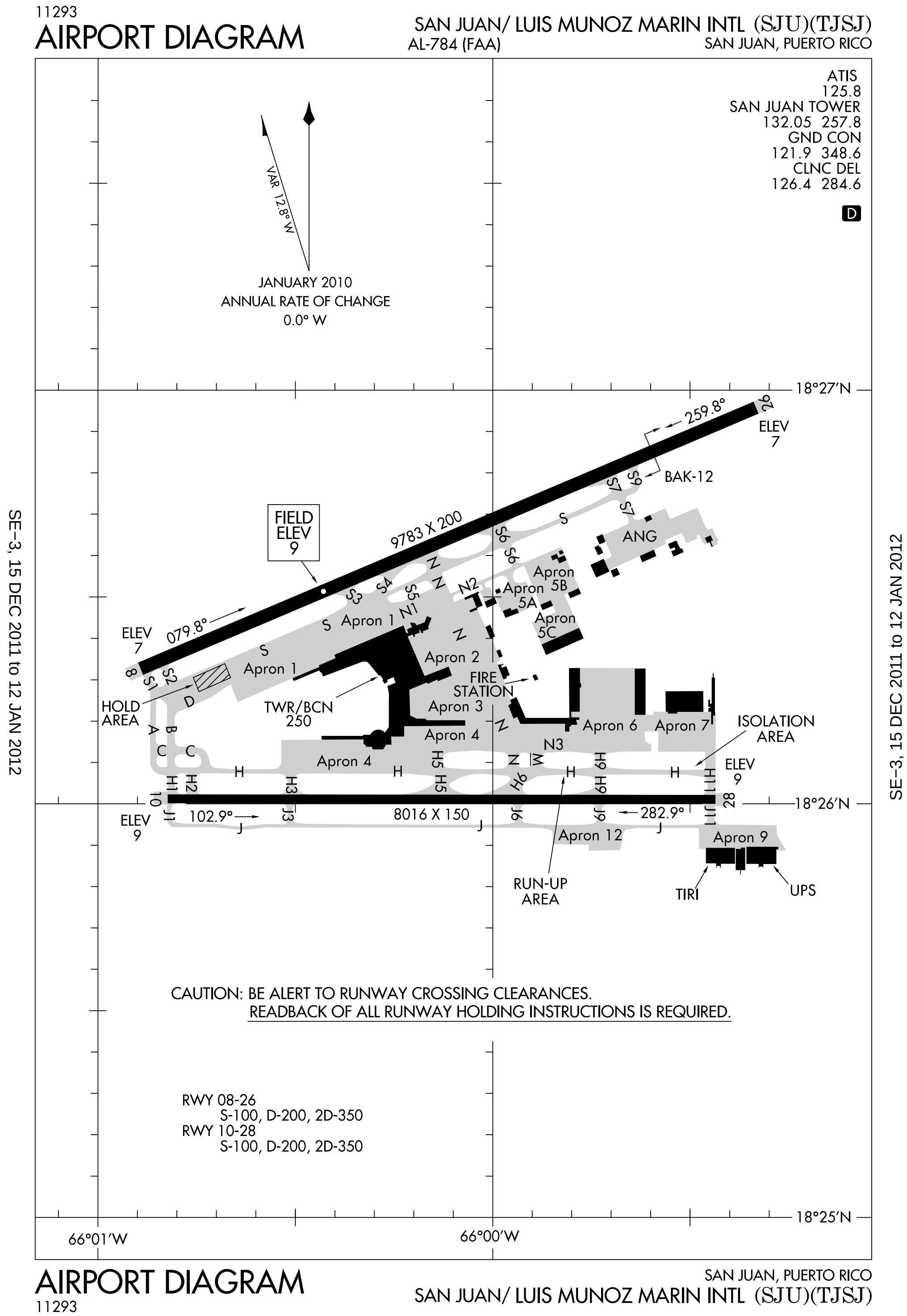
BIRDS ON AND IN THE VICINITY OF RUNWAY CAUTION ADVISED UNTIL FURTHER NOTICE.

CRANE 70 FT AGL SOUTH APPROACH END RUNWAY 9.

AVIATION GASOLINE UNAVAILABLE.

PERSONNEL AND EQUIPMENT WORKING RUNWAY 09/27 1100−2100Z DAILY.

San Juan, Puerto Rico
Luis Munoz Marin International
ICAO Identifier TJSJ



San Juan, PR
Luis Munoz Marin Intl
ICAO Identifier TJSJ

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 18−26−21.46N / 66−00−00.00W
2.2.2 From City: 3 Miles SE Of San Juan, PR
2.2.3 Elevation: 9 ft
2.2.5 Magnetic variation: 11W (1985)
2.2.6 Airport Contact: Arnaldo Deleo
GPO BOX 362829
San Juan, PR 936
(787−791−3840)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,115,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I D certified on 5/1/2005

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Tree (50 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Trees (24 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Tree (59 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Tree (72 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 800 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 90
2.12.3 Dimensions: 8016 ft x 150 ft
2.12.5 Coordinates: 18−26−00.00N / 66−00−49.42W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8016 ft x 150 ft
2.12.5 Coordinates: 18−26−00.00N / 65−59−26.16W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 67
2.12.3 Dimensions: 9783 ft x 200 ft
2.12.5 Coordinates: 18−26−19.50N / 66−00−53.50W
2.12.6 Threshold elevation: 7 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 247
2.12.3 Dimensions: 9783 ft x 200 ft
2.12.5 Coordinates: 18−26−57.42N / 65−59−19.98W
2.12.6 Threshold elevation: 7 ft
2.12.6 Touchdown zone elevation: 7 ft

AD 2.13 Declared distances
2.13.1 Designation: 10
2.13.2 Takeoff run available: 8016
2.13.3 Takeoff distance available: 8016
2.13.4 Accelerate−stop distance available: 8016
2.13.5 Landing distance available: 8016

2.13.1 Designation: 28
2.13.2 Takeoff run available: 8016
2.13.3 Takeoff distance available: 8016
2.13.4 Accelerate−stop distance available: 8016
2.13.5 Landing distance available: 8016

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.4 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD PRE TAXI CLNC
2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 269.2 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 290.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.05 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA
2.19.5 Coordinates: 18−26−00.00N / 65−59−15.53W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA
2.19.5 Coordinates: 18−25−57.56N / 66−00−39.05W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA
2.19.5 Coordinates: 18−26−00.00N / 66−01−15.39W
2.19.6 Site elevation: 1 ft

2.19.1 ILS type: Outer Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA
2.19.5 Coordinates: 18−26−00.00N / 66−05−00.00W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Localizer for runway 08. Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18−27−00.00N / 65−59−11.41W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Glide Slope for runway 08. Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18−26−27.04N / 66−00−45.58W
2.19.6 Site elevation: 4 ft

2.19.1 ILS type: Middle Marker for runway 08.
Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18−26−00.00N / 66−01−24.60W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 08.
Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18−24−31.82N / 66−05−21.83W
2.19.6 Site elevation: 10 ft

General Remarks:

NOT LATER THAN 48 HR PRIOR PERMISSION REQUIRED FOR PARKING OF MILITARY, GENERAL AVIATION & DC3 AIRCRAFT OR LARGER. SEND PRIOR PERMISSION REQUIRED TO PUERTO RICO PORT AUTH AT 787−253−0979, 787−791−2908, 939−630−8862. AIRCRAFT WITHOUT CREDIT W PRPA MUST PAY ALL CHARGES BEFORE DEPARTURE.

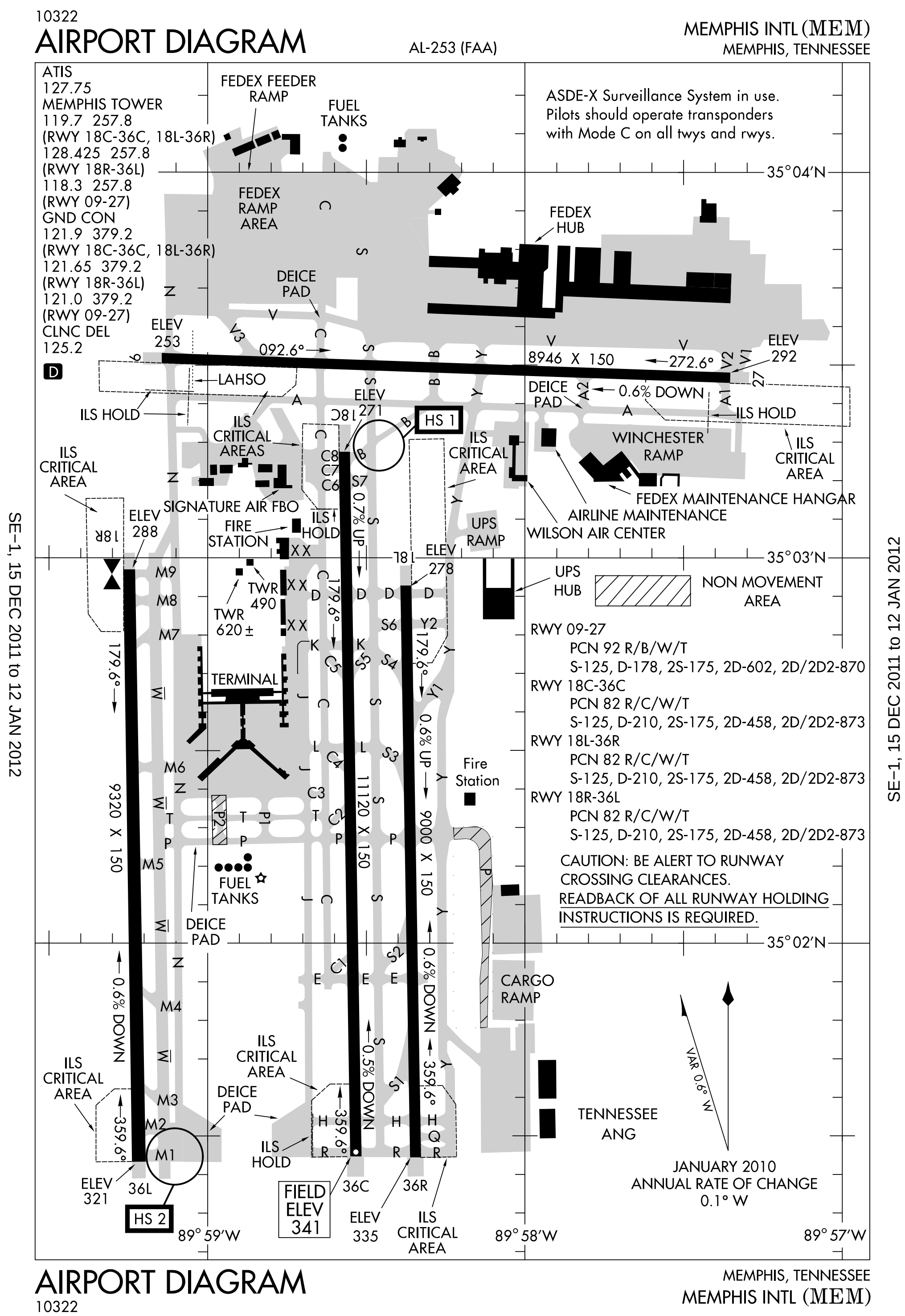
24 HR PRIOR PERMISSION REQUIRED FOR ALL MILITARY TRANSPORT AIRCRAFT. C5'S NOT AUTHORIZED DUE TO CONSTRUCTION.

TAXIWAY JULIET CLOSED TO AIRCRAFT WITH GREATER THAN 118 FT WINGSPAN.

PERSONNEL AND EQUIPMENT WORKING N RUNWAY 8/26 ALONG TREE AREA. OBST CRANE 50 FT AGL 300 FT N RUNWAY 8/26 CL 1100−1800 MON−FRI.

APRON 12 AVAILABLE FOR GA AIRCRAFT ONLY.

Memphis, Tennessee
Memphis International
ICAO Identifier KMEM



Memphis, TN
Memphis Intl
ICAO Identifier KMEM

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35−02−32.70N / 89−58−36.00W
2.2.2 From City: 3 Miles S Of Memphis, TN
2.2.3 Elevation: 341 ft
2.2.5 Magnetic variation: 1E (2000)
2.2.6 Airport Contact: Larry D Cox
2491 WINCHESTER RD.
Memphis, TN 38116
(901−922−8000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/21/1973
2.6.4 Remarks: Index D ARFF Equipment Available 24 Hours Per Day, 7 Days Per Week.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Pole (28 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Pole (34 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 36R
2.10.1.b Type of obstacle: Ant (18 ft). Lighted
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 36L
2.10.1.b Type of obstacle: Road (21 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 18C
2.10.1.b Type of obstacle: Pole (65 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 803 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 92
2.12.3 Dimensions: 8946 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 35−03−31.04N / 89−59−00.00W
2.12.6 Threshold elevation: 253 ft
2.12.6 Touchdown zone elevation: 259 ft
2.12.7 Slope: 0.1UP

2.12.1 Designation: 27
2.12.2 True Bearing: 272
2.12.3 Dimensions: 8946 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 35−03−28.01N / 89−57−21.08W
2.12.6 Threshold elevation: 292 ft
2.12.6 Touchdown zone elevation: 292 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 18L
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−02−55.74N / 89−58−22.63W
2.12.6 Threshold elevation: 278 ft
2.12.6 Touchdown zone elevation: 301 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−01−26.74N / 89−58−20.75W
2.12.6 Threshold elevation: 335 ft
2.12.6 Touchdown zone elevation: 335 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9320 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−02−58.16N / 89−59−14.79W
2.12.6 Threshold elevation: 288 ft
2.12.6 Touchdown zone elevation: 295 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9320 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−01−25.98N / 89−59−12.81W
2.12.6 Threshold elevation: 321 ft
2.12.6 Touchdown zone elevation: 321 ft

2.12.1 Designation: 18C
2.12.2 True Bearing: 179
2.12.3 Dimensions: 11120 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−03−16.54N / 89−58−34.21W
2.12.6 Threshold elevation: 271 ft
2.12.6 Touchdown zone elevation: 290 ft

2.12.1 Designation: 36C
2.12.2 True Bearing: 359
2.12.3 Dimensions: 11120 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−01−26.58N / 89−58−31.90W
2.12.6 Threshold elevation: 341 ft
2.12.6 Touchdown zone elevation: 341 ft

AD 2.13 Declared distances
2.13.1 Designation: 09
2.13.2 Takeoff run available: 8946
2.13.3 Takeoff distance available: 8946
2.13.4 Accelerate−stop distance available: 8946
2.13.5 Landing distance available: 8946

2.13.1 Designation: 27
2.13.2 Takeoff run available: 8946
2.13.3 Takeoff distance available: 8946
2.13.4 Accelerate−stop distance available: 8946
2.13.5 Landing distance available: 8946

2.13.1 Designation: 18L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 36R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 9320
2.13.3 Takeoff distance available: 9320
2.13.4 Accelerate−stop distance available: 9320
2.13.5 Landing distance available: 9127

2.13.1 Designation: 36L
2.13.2 Takeoff run available: 9320
2.13.3 Takeoff distance available: 9320
2.13.4 Accelerate−stop distance available: 9320
2.13.5 Landing distance available: 9320

2.13.1 Designation: 18C
2.13.2 Takeoff run available: 11120
2.13.3 Takeoff distance available: 11120
2.13.4 Accelerate−stop distance available: 11120
2.13.5 Landing distance available: 11120

2.13.1 Designation: 36C
2.13.2 Takeoff run available: 11120
2.13.3 Takeoff distance available: 11120
2.13.4 Accelerate−stop distance available: 11120
2.13.5 Landing distance available: 11120

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 18L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: ALSF2 Unmonitored.

2.14.1 Designation: 18R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 36L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 18C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 36C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.65 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 125.8 MHz

2.18.1 Service designation: FINAL
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ANG CP
2.18.3 Service designation: 138.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: FINAL
2.18.3 Service designation: 263.6 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 291.6 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 291.6 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 338.3 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 385.45 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 379.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.425 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121 MHz

2.18.1 Service designation: FINAL
2.18.3 Service designation: 120.925 MHz

2.18.1 Service designation: FINAL RADAR 9/27
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: SATELLITE
2.18.3 Service designation: 134.2 MHz

2.18.1 Service designation: ANG CP
2.18.3 Service designation: 353.45 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35−03−27.64N / 89−57−00.00W
2.19.6 Site elevation: 297 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35−03−27.21N / 89−58−56.22W
2.19.6 Site elevation: 253 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35−03−42.16N / 90−04−17.75W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35−03−32.06N / 89−59−45.42W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35−03−24.48N / 89−57−36.25W
2.19.6 Site elevation: 277 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35−03−21.52N / 89−51−53.89W
2.19.6 Site elevation: 326 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35−03−31.39N / 89−59−20.99W
2.19.6 Site elevation: 251 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35−03−27.13N / 89−56−49.73W
2.19.6 Site elevation: 304 ft

2.19.1 ILS type: Localizer for runway 18L. Magnetic variation: 1E
2.19.2 ILS identification: EXS
2.19.5 Coordinates: 35−01−16.82N / 89−58−20.55W
2.19.6 Site elevation: 315 ft

2.19.1 ILS type: DME for runway 18L. Magnetic variation: 1E
2.19.2 ILS identification: EXS
2.19.5 Coordinates: 35−01−16.86N / 89−58−19.30W
2.19.6 Site elevation: 382 ft

2.19.1 ILS type: Glide Slope for runway 18L. Magnetic variation: 1E
2.19.2 ILS identification: EXS
2.19.5 Coordinates: 35−02−46.77N / 89−58−17.63W
2.19.6 Site elevation: 279 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 1E
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35−03−00.00N / 89−58−22.84W
2.19.6 Site elevation: 279 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 1E
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35−03−00.00N / 89−58−19.67W
2.19.6 Site elevation: 281 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 1E
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35−01−37.99N / 89−58−16.18W
2.19.6 Site elevation: 324 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 1E
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35−01−18.39N / 89−58−20.58W
2.19.6 Site elevation: 324 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 1E
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35−01−00.00N / 89−58−20.21W
2.19.6 Site elevation: 305 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 1E
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35−03−00.00N / 89−59−17.33W
2.19.6 Site elevation: 276 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 1E
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35−01−38.77N / 89−59−17.90W
2.19.6 Site elevation: 307 ft

2.19.1 ILS type: Middle Marker for runway 36L. Magnetic variation: 1E
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35−00−55.71N / 89−59−12.14W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 36L. Magnetic variation: 1E
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 34−57−13.77N / 89−59−00.00W
2.19.6 Site elevation: 320 ft

2.19.1 ILS type: Inner Marker for runway 36L. Magnetic variation: 1E
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35−01−17.41N / 89−59−12.63W
2.19.6 Site elevation: 325 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 1E
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35−03−00.00N / 89−59−14.98W
2.19.6 Site elevation: 276 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35−02−48.70N / 89−59−18.49W
2.19.6 Site elevation: 285 ft

2.19.1 ILS type: Middle Marker for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35−03−24.11N / 89−59−15.34W
2.19.6 Site elevation: 251 ft

2.19.1 ILS type: Outer Marker for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35−07−44.20N / 89−59−23.09W
2.19.6 Site elevation: 306 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35−01−19.31N /

89−59−12.67W
2.19.6 Site elevation: 325 ft

2.19.1 ILS type: Glide Slope for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35−03−00.00N / 89−58−37.51W
2.19.6 Site elevation: 273 ft

2.19.1 ILS type: Outer Marker for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35−07−45.23N / 89−58−37.90W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35−01−10.23N / 89−58−31.56W
2.19.6 Site elevation: 346 ft

2.19.1 ILS type: Middle Marker for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35−03−51.13N / 89−58−34.92W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 36C. Magnetic variation: 1E
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35−01−17.65N / 89−58−31.71W
2.19.6 Site elevation: 318 ft

2.19.1 ILS type: Middle Marker for runway 36C. Magnetic variation: 1E
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35−01−00.00N / 89−58−31.42W
2.19.6 Site elevation: 326 ft

2.19.1 ILS type: DME for runway 36C. Magnetic variation: 1E
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35−03−22.23N / 89−58−37.26W
2.19.6 Site elevation: 253 ft

2.19.1 ILS type: Localizer for runway 36C. Magnetic variation: 1E
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35−03−22.50N / 89−58−34.34W
2.19.6 Site elevation: 261 ft

2.19.1 ILS type: Glide Slope for runway 36C. Magnetic variation: 1E
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35−01−38.08N / 89−58−36.94W
2.19.6 Site elevation: 330 ft

General Remarks:

ALL TRANSIENT AIRCRAFT REQUIRE −FOLLOW ME− ASSIST ENTERING ANG RAMP. USE OF ANG RAMP REQUIRES PRIOR PERMISSION REQUIRED V966−8131 −FOR OFFICIAL BUSINESS ONLY−.

HELICOPTER OPERATIONS PROHIBITED TO/FROM TERMINAL BUILDING.

LARGE FLOCKS OF BIRDS IN THE VICINITY OF AIRPORT.

TAXIWAY N NORTH OF TAXIWAY V, TAXIWAY C NORTH OF TAXIWAY V AND TAXIWAY S NORTH OF TAXIWAY V DESIGNATED AS NON−MOVEMENT AREAS.

LARGE & HEAVY EASTBOUND AIRCRAFT ON TAXIWAY V FOR RUNWAY 27 HOLD SHORT AT MINIMUM THRUST AREA SIGN.

PRIOR PERMISSION REQUIRED FOR TAXI CLEARANCE ON TAXIWAY ’N’ NORTH OF TAXIWAY ’V’, TAXIWAY ’S’ NORTH TAXIWAY ’V’, AND TAXIWAY ’C’ NORTH OF TAXIWAY ’V’ CONTACT

FEDEX RAMP ATCT ON FREQ 131.5.

IF POSSIBLE ALL AIRCRAFT CONDUCT GROUND OPERATIONS WITH TRANSPONDERS ON.

TAXIWAY V BETWEEN TAXIWAY B AND APPROACH END RUNWAY 27 RESTRICTED TO AIRCRAFT WITH WINGSPANS OF 171 FT 6 INCHES OR LESS.

TAXIWAY V BETWEEN TAXIWAY S TAXIWAY Y RESTRICTED TO AIRCRAFT WITH TAIL HEIGHTS LESS THAN 65 FT 10 INCHES.

ANG−PRIOR PERMISSION REQUIRED DSN 726−7131, C901−291−7131. OPER 1245−2215Z MON − FRI AND CLOSED ALTITUDE MON & HOLIDAY DUE TO ALTERNATE WORK SCHEDULE. TRANSIENT AIRCRAFT MAINT NOT AVAILABLE. REFUEL SERVICE FOR OTHER THAN C5 AIRCRAFT REQUIRE QUALIFIED CREW CHIEF OR CREWMEMBERS. NON−C5 AIRCRAFT SUPPORT PROVIDED BY CONTRACT FBO ON FIELD.

CONTACT RAMP CONTROL ON 121.8 FOR ENTRY ON TO ANG RAMP. ANG FREQS 138.95 341.75. AFTER HRS CONTACT COMMAND POST AT DSN 726−7148 OR SECURITY FORCES AT DSN 726−7101.

READ BACK ALL HOLD SHORT INSTRUCTIONS REQURED.

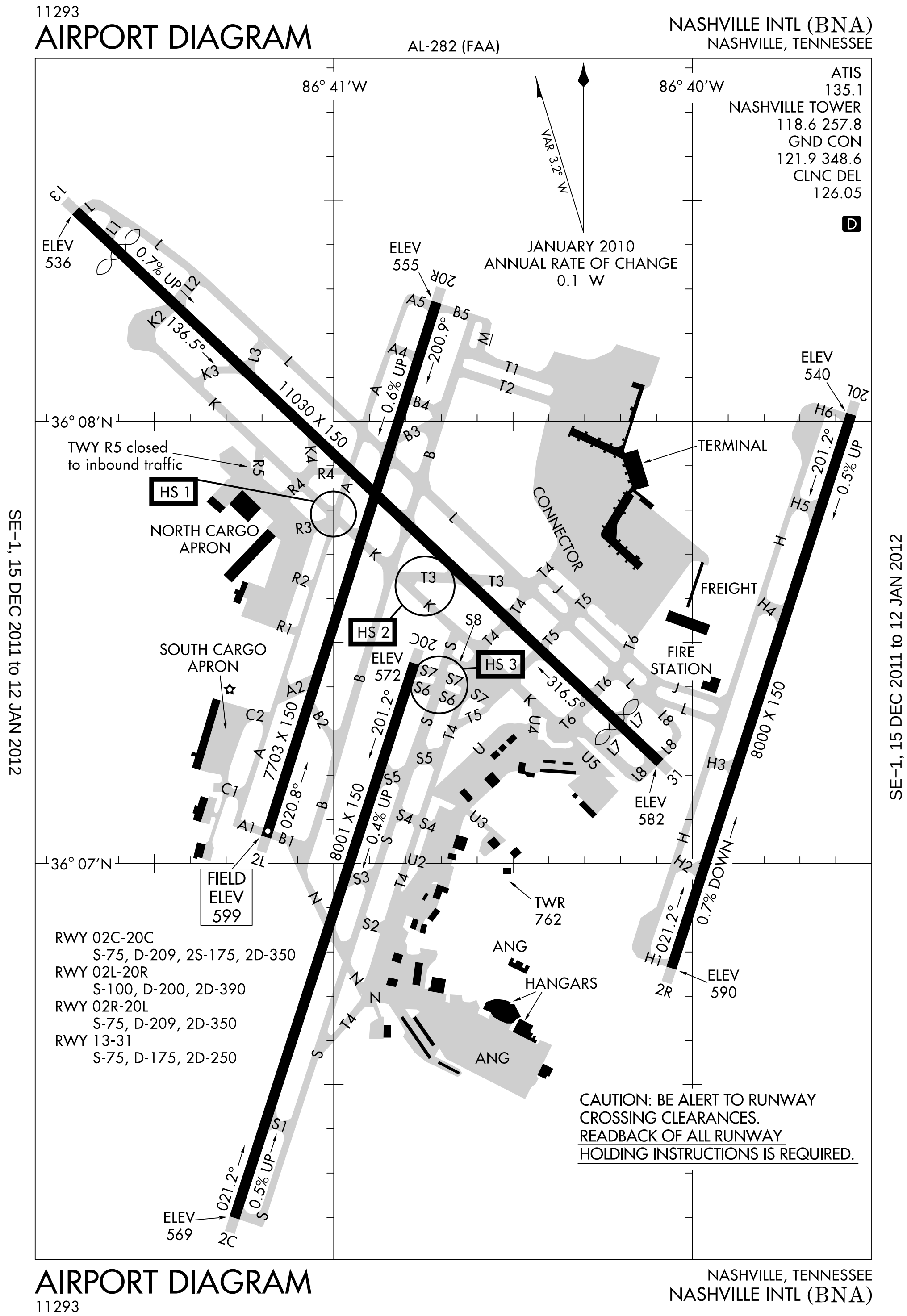
MILITARY AIRCRAFT WITH WINGSPANS GREATER THAN 171 FT SHOULD NOT TAXI ON TAXIWAY N BETWEEN TAXIWAY M7 AND TAXIWAY T NOR ON TAXIWAY J NORTH OF TAXIWAY C3.

AIRPORT CLOSED TO C5 AND LARGER EXCEPT PRIOR PERMISSION REQUIRED AIRPORT MANAGER 901−922−8117.

ANG: BASH PHASE TWO PERIOD ACTIVE FROM SEPTEMBER THROUGH MARCH.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

Nashville, Tennessee
Nashville International
ICAO Identifier KBNA



Nashville, TN
Nashville Intl
ICAO Identifier KBNA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36−07−28.10N / 86−40−41.50W
2.2.2 From City: 5 Miles SE Of NAShville, TN
2.2.3 Elevation: 599 ft
2.2.5 Magnetic variation: 3W (2010)
2.2.6 Airport Contact: Raul Regalado
ONE TERMINAL DR. SUITE 501
Nashville, TN 37214
(615−275−1600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 13
2.10.1.b Type of obstacle: Trees. Not Lighted or Marked

2.10.1.a. Runway designation: 31
2.10.1.b Type of obstacle: Tree. Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 13
2.12.2 True Bearing: 133
2.12.3 Dimensions: 11030 ft x 150 ft
2.12.5 Coordinates: 36−08−28.60N / 86−41−43.28W
2.12.6 Threshold elevation: 536 ft
2.12.6 Touchdown zone elevation: 567 ft

2.12.1 Designation: 31
2.12.2 True Bearing: 313
2.12.3 Dimensions: 11030 ft x 150 ft
2.12.5 Coordinates: 36−07−13.79N / 86−40−00.00W
2.12.6 Threshold elevation: 582 ft
2.12.6 Touchdown zone elevation: 577 ft

2.12.1 Designation: 02C
2.12.2 True Bearing: 18
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.5 Coordinates: 36−06−11.99N / 86−41−16.66W
2.12.6 Threshold elevation: 569 ft
2.12.6 Touchdown zone elevation: 587 ft

2.12.1 Designation: 20C
2.12.2 True Bearing: 198
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.5 Coordinates: 36−07−27.24N / 86−40−46.55W
2.12.6 Threshold elevation: 572 ft
2.12.6 Touchdown zone elevation: 588 ft

2.12.1 Designation: 02L
2.12.2 True Bearing: 18
2.12.3 Dimensions: 7703 ft x 150 ft
2.12.5 Coordinates: 36−07−00.00N / 86−41−11.31W
2.12.6 Threshold elevation: 598 ft
2.12.6 Touchdown zone elevation: 599 ft

2.12.1 Designation: 20R
2.12.2 True Bearing: 198
2.12.3 Dimensions: 7703 ft x 150 ft
2.12.5 Coordinates: 36−08−16.23N / 86−40−42.84W
2.12.6 Threshold elevation: 555 ft
2.12.6 Touchdown zone elevation: 578 ft

2.12.1 Designation: 02R
2.12.2 True Bearing: 18
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 36−06−45.77N / 86−40−00.00W
2.12.6 Threshold elevation: 590 ft
2.12.6 Touchdown zone elevation: 590 ft

2.12.1 Designation: 20L
2.12.2 True Bearing: 198
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.5 Coordinates: 36−08−00.00N /

86−39−33.40W
2.12.6 Threshold elevation: 540 ft
2.12.6 Touchdown zone elevation: 550 ft

AD 2.13 Declared distances
2.13.1 Designation: 13
2.13.2 Takeoff run available: 10288
2.13.3 Takeoff distance available: 11029
2.13.4 Accelerate−stop distance available: 10288
2.13.5 Landing distance available: 9487

2.13.1 Designation: 31
2.13.2 Takeoff run available: 10228
2.13.3 Takeoff distance available: 11029
2.13.4 Accelerate−stop distance available: 10228
2.13.5 Landing distance available: 9487

2.13.1 Designation: 02C
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate−stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 20C
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate−stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 02L
2.13.2 Takeoff run available: 7702
2.13.3 Takeoff distance available: 7702
2.13.4 Accelerate−stop distance available: 7702
2.13.5 Landing distance available: 7702

2.13.1 Designation: 20R
2.13.2 Takeoff run available: 7702
2.13.3 Takeoff distance available: 7702
2.13.4 Accelerate−stop distance available: 7702
2.13.5 Landing distance available: 7702

2.13.1 Designation: 02R
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate−stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 20L
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate−stop distance available: 8000
2.13.5 Landing distance available: 8000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 13
2.14.4 Visual approach slope indicator system: 6−box VASI on left

2.14.1 Designation: 02C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 20C
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 02L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 20R
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 02R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 20L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CLASS C IC
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 119.35 MHz

2.18.1 Service designation: APCH/P

2.18.3 Service designation: 120.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 127.175 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: ALCP
2.18.3 Service designation: 314.4 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 317.45 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 360.7 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 385.55 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 387 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.1 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−08−30.65N / 86−41−45.97W
2.19.6 Site elevation: 540 ft

2.19.1 ILS type: Middle Marker for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−06−57.26N / 86−39−44.59W
2.19.6 Site elevation: 547 ft

2.19.1 ILS type: Outer Marker for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−03−16.09N / 86−34−51.59W
2.19.6 Site elevation: 520 ft

2.19.1 ILS type: Glide Slope for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−07−28.27N / 86−40−18.60W
2.19.6 Site elevation: 566 ft

2.19.1 ILS type: Localizer for runway 02C. Magnetic variation: 3W
2.19.2 ILS identification: EZN
2.19.5 Coordinates: 36−07−31.97N / 86−40−44.66W
2.19.6 Site elevation: 574 ft

2.19.1 ILS type: Glide Slope for runway 02C. Magnetic variation: 3W
2.19.2 ILS identification: EZN
2.19.5 Coordinates: 36−06−22.64N / 86−41−16.89W
2.19.6 Site elevation: 571 ft

2.19.1 ILS type: Localizer for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36−08−25.75N / 86−40−39.10W
2.19.6 Site elevation: 552 ft

2.19.1 ILS type: DME for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36−08−26.46N / 86−40−42.35W
2.19.6 Site elevation: 535 ft

2.19.1 ILS type: Glide Slope for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36−07−12.95N / 86−41−00.00W
2.19.6 Site elevation: 591 ft

2.19.1 ILS type: Outer Marker for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36−01−51.60N / 86−43−18.44W
2.19.6 Site elevation: 985 ft

2.19.1 ILS type: Middle Marker for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36−06−35.04N / 86−41−22.51W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36−06−54.83N / 86−41−14.80W
2.19.6 Site elevation: 595 ft

2.19.1 ILS type: Outer Marker for runway 20R. Magnetic variation: 3W
2.19.2 ILS identification: VIY
2.19.5 Coordinates: 36−12−13.70N / 86−39−00.00W
2.19.6 Site elevation: 433 ft

2.19.1 ILS type: Glide Slope for runway 20R. Magnetic variation: 3W
2.19.2 ILS identification: VIY
2.19.5 Coordinates: 36−08−00.00N / 86−40−42.76W
2.19.6 Site elevation: 555 ft

2.19.1 ILS type: Localizer for runway 20R. Magnetic variation: 3W
2.19.2 ILS identification: VIY
2.19.5 Coordinates: 36−06−49.68N / 86−41−16.79W
2.19.6 Site elevation: 587 ft

2.19.1 ILS type: Glide Slope for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−06−56.01N / 86−39−54.74W
2.19.6 Site elevation: 577 ft

2.19.1 ILS type: Inner Marker for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−06−37.69N / 86−40−00.00W
2.19.6 Site elevation: 569 ft

2.19.1 ILS type: Middle Marker for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−06−19.86N / 86−40−13.85W
2.19.6 Site elevation: 607 ft

2.19.1 ILS type: DME for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−08−00.00N / 86−39−35.72W
2.19.6 Site elevation: 520 ft

2.19.1 ILS type: Localizer for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−08−10.51N / 86−39−29.60W
2.19.6 Site elevation: 531 ft

2.19.1 ILS type: Localizer for runway 20L. Magnetic variation: 3W
2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36−06−30.02N / 86−40−00.00W
2.19.6 Site elevation: 613 ft

2.19.1 ILS type: Middle Marker for runway 20L. Magnetic variation: 3W
2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36−08−25.51N / 86−39−23.69W
2.19.6 Site elevation: 610 ft

2.19.1 ILS type: DME for runway 20L. Magnetic variation: 3W
2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36−06−30.96N /

86−40−12.89W
2.19.6 Site elevation: 621 ft

2.19.1 ILS type: Glide Slope for runway 20L.
Magnetic variation: 3W

2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36−07−50.03N / 86−39−33.12W
2.19.6 Site elevation: 534 ft

General Remarks:

READ BACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

PILOTS COMPLY WITH ALL HOLD SHORT INSTRUCTIONS PARTICULARLY AT TAXIWAY K & RUNWAY 20C APPROACH; TAXIWAY L8 & RUNWAY 31 APPROACH; TAXIWAY L AT RUNWAY 13 APPROACH; AND TAXIWAY H AT RUNWAY 31 APPROACH.

ALL TURBOJET RUNWAYS HAVE NOISE ABATEMENT PROCEDURES. MILITARY FIGHTER/ATTACK/TRAINER TURBOJETS USE RUNWAY 13/31 FOR ARRIVAL & DEPARTURE.

LIGHTED JET BLAST FENCE 598 MSL 1100 FT SE OF RUNWAY 31 THRESHOLD.

LIGHTED JET BLAST FENCE 568 FT MSL 1167 FT NW RUNWAY 13 THRESHOLD.

NO UNAUTHORIZED 180 DEGREE TURNS FOR AIRCRAFT OVER 12500 LBS ON ASPHALT SURFACES.

NO FLIGHT OVER MAIN TERMINAL BUILDING IS PERMITTED.

BIRD ACTIVITY ON & IN THE VICINITY OF AIRPORT.

DO NOT CONFUSE 150 FT WIDE TAXIWAY S FOR RUNWAY 20C.

’C’ CONCOURSE TAXILANES ARE; INNER TAXILANE FOR OUTBOUND TRAFFIC & OUTER TAXILANE FOR INBOUND TRAFFIC.

FENCE CONSTRUCTION NE RAMP APRON ’D’ CONCOURSE LIGHTED.

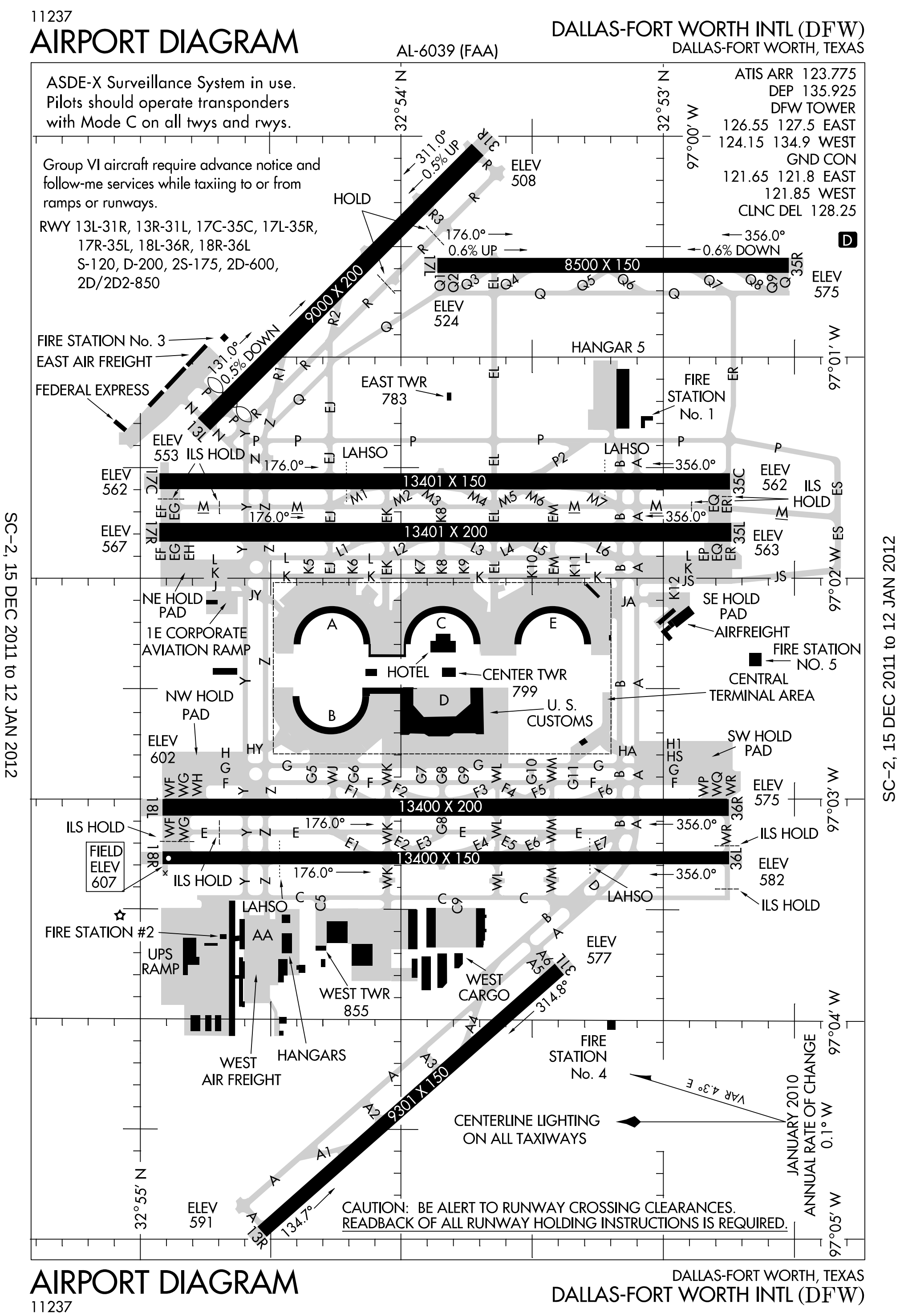
NO FLIGHTS OVER AIR NATIONAL GUARD RAMP.

CAUTION: BASH PHASE I: RUNS FROM 1 APRIL THROUGH 30 SEPTEMBER EACH YEAR. PHASE II RUNS FROM 1 OCTOBER THROUGH 31 MARCH EACH YEAR DUE TO ITS PROXIMITY TO THE FOUR MAJOR MIGRATORY FLYWAYS. SEE AP/1 FOR MORE INFORMATION.

ANG: OFFICIAL BUSINESS ONLY, PRIOR PERMISSION REQUIRED DSN 844−8119.

ANG: CALL SIGN MUSIC CITY OPERATIONS.

Dallas, Texas
Dallas−Fort Worth International
ICAO Identifier KDFW



Dallas-Fort Worth, TX
Dallas/Fort Worth Intl
ICAO Identifier KDFW

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32−53−48.58N / 97−02−16.79W
2.2.2 From City: 12 Miles NW Of Dallas−Fort Worth, TX
2.2.3 Elevation: 607 ft
2.2.5 Magnetic variation: 6E (2000)
2.2.6 Airport Contact: Jeffrey Fegan − Ceo
PO BOX 619428
Dallas−Ft Worth, TX 75261
(972−973−3112)
2.2.7 Traffic: IFR/VFR
2.2.8 Remarks: And Dallas Co.

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 7/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 17L
2.10.1.b Type of obstacle: Ant (150 ft). Lighted
2.10.1.c Location of obstacle: 798 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 18L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 200 ft
2.12.5 Coordinates: 32−54−56.88N / 97−03−00.00W
2.12.6 Threshold elevation: 602 ft
2.12.6 Touchdown zone elevation: 602 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 200 ft
2.12.5 Coordinates: 32−52−44.30N / 97−03−00.00W
2.12.6 Threshold elevation: 575 ft
2.12.6 Touchdown zone elevation: 580 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.5 Coordinates: 32−54−56.93N / 97−03−16.71W
2.12.6 Threshold elevation: 607 ft
2.12.6 Touchdown zone elevation: 607 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.5 Coordinates: 32−52−44.35N / 97−03−17.40W
2.12.6 Threshold elevation: 582 ft
2.12.6 Touchdown zone elevation: 588 ft

2.12.1 Designation: 17C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13401 ft x 150 ft
2.12.5 Coordinates: 32−54−56.55N / 97−01−33.49W
2.12.6 Threshold elevation: 562 ft
2.12.6 Touchdown zone elevation: 562 ft

2.12.1 Designation: 35C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13401 ft x 150 ft
2.12.5 Coordinates: 32−52−43.96N / 97−01−34.22W
2.12.6 Threshold elevation: 562 ft
2.12.6 Touchdown zone elevation: 562 ft

2.12.1 Designation: 13L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 9000 ft x 200 ft
2.12.5 Coordinates: 32−54−45.20N / 97−01−17.32W
2.12.6 Threshold elevation: 553 ft
2.12.6 Touchdown zone elevation: 553 ft

2.12.1 Designation: 31R
2.12.2 True Bearing: 315
2.12.3 Dimensions: 9000 ft x 200 ft
2.12.5 Coordinates: 32−53−41.93N / 97−00−00.00W

2.12.6 Threshold elevation: 508 ft
2.12.6 Touchdown zone elevation: 523 ft

2.12.1 Designation: 13R
2.12.2 True Bearing: 139
2.12.3 Dimensions: 9301 ft x 150 ft
2.12.5 Coordinates: 32−54−34.47N / 97−04−59.28W
2.12.6 Threshold elevation: 591 ft
2.12.6 Touchdown zone elevation: 591 ft

2.12.1 Designation: 31L
2.12.2 True Bearing: 319
2.12.3 Dimensions: 9301 ft x 150 ft
2.12.5 Coordinates: 32−53−24.97N / 97−03−47.79W
2.12.6 Threshold elevation: 577 ft
2.12.6 Touchdown zone elevation: 581 ft

2.12.1 Designation: 17L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.5 Coordinates: 32−53−53.95N / 97−00−35.20W
2.12.6 Threshold elevation: 524 ft
2.12.6 Touchdown zone elevation: 545 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.5 Coordinates: 32−52−29.85N / 97−00−35.67W
2.12.6 Threshold elevation: 575 ft
2.12.6 Touchdown zone elevation: 575 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.5 Coordinates: 32−54−56.60N / 97−01−47.58W
2.12.6 Threshold elevation: 566 ft
2.12.6 Touchdown zone elevation: 566 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.5 Coordinates: 32−52−44.02N / 97−01−48.29W
2.12.6 Threshold elevation: 563 ft
2.12.6 Touchdown zone elevation: 564 ft

AD 2.13 Declared distances
2.13.1 Designation: 18L
2.13.2 Takeoff run available: 13400
2.13.3 Takeoff distance available: 13400
2.13.4 Accelerate−stop distance available: 13400
2.13.5 Landing distance available: 13400

2.13.1 Designation: 36R
2.13.2 Takeoff run available: 13400
2.13.3 Takeoff distance available: 13400
2.13.4 Accelerate−stop distance available: 13400
2.13.5 Landing distance available: 13400

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 13400
2.13.3 Takeoff distance available: 13400
2.13.4 Accelerate−stop distance available: 13400
2.13.5 Landing distance available: 13400

2.13.1 Designation: 36L
2.13.2 Takeoff run available: 13400
2.13.3 Takeoff distance available: 13400
2.13.4 Accelerate−stop distance available: 13400
2.13.5 Landing distance available: 13400

2.13.1 Designation: 17C
2.13.2 Takeoff run available: 13401
2.13.3 Takeoff distance available: 13401
2.13.4 Accelerate−stop distance available: 13401
2.13.5 Landing distance available: 13401

2.13.1 Designation: 35C
2.13.2 Takeoff run available: 13401
2.13.3 Takeoff distance available: 13401
2.13.4 Accelerate−stop distance available: 13401
2.13.5 Landing distance available: 13401

2.13.1 Designation: 13L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 8375

2.13.1 Designation: 31R
2.13.2 Takeoff run available: 8375
2.13.3 Takeoff distance available: 8375
2.13.4 Accelerate−stop distance available: 8375
2.13.5 Landing distance available: 8375
2.13.1 Designation: 13R
2.13.2 Takeoff run available: 9301
2.13.3 Takeoff distance available: 9301

2.13.4 Accelerate−stop distance available: 9301
2.13.5 Landing distance available: 9301

2.13.1 Designation: 31L
2.13.2 Takeoff run available: 9301
2.13.3 Takeoff distance available: 9301
2.13.4 Accelerate−stop distance available: 9301
2.13.5 Landing distance available: 9301

2.13.1 Designation: 17L
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 35R
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 17R
2.13.2 Takeoff run available: 13401
2.13.3 Takeoff distance available: 13401
2.13.4 Accelerate−stop distance available: 13401
2.13.5 Landing distance available: 13401

2.13.1 Designation: 35L
2.13.2 Takeoff run available: 13401
2.13.3 Takeoff distance available: 13401
2.13.4 Accelerate−stop distance available: 13401
2.13.5 Landing distance available: 13401

AD 2.14 Approach and runway lighting
2.14.1 Designation: 18L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.1 Designation: 18R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 13L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 31R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 13R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 31L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.1 Designation: 17L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system

with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 17R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CLASS B NW
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.55 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 119.875 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.85 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 124.15 MHz

2.18.1 Service designation: CLASS B NE
2.18.3 Service designation: 124.3 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.825 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 125.025 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.125 MHz

2.18.1 Service designation: CLASS B SE
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 126.475 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 126.55 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128.25 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 133.525 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 133.625 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 134.9 MHz

2.18.1 Service designation: CLASS B SW
2.18.3 Service designation: 135.975 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 284.65 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 290.35 MHz

2.18.1 Service designation: CLASS B NW
2.18.3 Service designation: 306.95 MHz

2.18.1 Service designation: DEP/P

2.18.3 Service designation: 319.85 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 323.05 MHz

2.18.1 Service designation: CLASS B SE
2.18.3 Service designation: 343.65 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 363.15 MHz

2.18.1 Service designation: CLASS B SW
2.18.3 Service designation: 379.9 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 263.025 MHz

2.18.1 Service designation: CLASS B NE
2.18.3 Service designation: 282.275 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 123.775 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.925 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32−52−33.61N / 97−03−00.00W
2.19.6 Site elevation: 570 ft

2.19.1 ILS type: Middle Marker for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32−55−00.00N / 97−03−00.00W
2.19.6 Site elevation: 600 ft

2.19.1 ILS type: DME for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32−55−00.00N / 97−03−00.00W
2.19.6 Site elevation: 594 ft

2.19.1 ILS type: Outer Marker for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32−59−42.30N / 97−02−58.02W
2.19.6 Site elevation: 571 ft

2.19.1 ILS type: Glide Slope for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32−54−45.22N / 97−03−00.00W
2.19.6 Site elevation: 594 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−55−00.00N / 97−03−00.00W
2.19.6 Site elevation: 595 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−52−54.85N / 97−03−00.00W
2.19.6 Site elevation: 577 ft

2.19.1 ILS type: Outer Marker for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−47−34.94N / 97−03−00.00W
2.19.6 Site elevation: 523 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−55−00.00N / 97−03−00.00W
2.19.6 Site elevation: 594 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−52−17.10N / 97−03−00.00W
2.19.6 Site elevation: 560 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN

2.19.5 Coordinates: 32−52−33.93N / 97−03−17.46W
2.19.6 Site elevation: 580 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−54−25.17N / 97−03−21.58W
2.19.6 Site elevation: 598 ft

2.19.1 ILS type: Inner Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−54−44.35N / 97−03−16.79W
2.19.6 Site elevation: 604 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−52−34.09N / 97−03−12.60W
2.19.6 Site elevation: 584 ft

2.19.1 ILS type: Outer Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−59−42.30N / 97−02−58.02W
2.19.6 Site elevation: 571 ft

2.19.1 ILS type: Middle Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−55−00.00N / 97−03−16.70W
2.19.6 Site elevation: 600 ft

2.19.1 ILS type: Outer Marker for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−47−34.94N / 97−03−00.00W
2.19.6 Site elevation: 523 ft

2.19.1 ILS type: Middle Marker for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−52−15.86N / 97−03−17.54W
2.19.6 Site elevation: 542 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−52−34.09N / 97−03−12.60W
2.19.6 Site elevation: 584 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−55−00.00N / 97−03−21.01W
2.19.6 Site elevation: 580 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−54−23.19N / 97−03−21.01W
2.19.6 Site elevation: 601 ft

2.19.1 ILS type: Localizer for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−52−33.15N / 97−01−34.28W
2.19.6 Site elevation: 563 ft

2.19.1 ILS type: DME for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−52−34.13N / 97−01−39.65W
2.19.6 Site elevation: 560 ft

2.19.1 ILS type: Inner Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−55−00.00N / 97−01−33.46W
2.19.6 Site elevation: 562 ft

2.19.1 ILS type: Middle Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−55−00.00N / 97−01−33.35W
2.19.6 Site elevation: 561 ft

2.19.1 ILS type: Outer Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−59−44.75N / 97−01−46.52W
2.19.6 Site elevation: 525 ft

2.19.1 ILS type: Glide Slope for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−54−45.64N / 97−01−28.77W
2.19.6 Site elevation: 556 ft

2.19.1 ILS type: DME for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−34.13N / 97−01−39.65W
2.19.6 Site elevation: 575 ft

2.19.1 ILS type: Outer Marker for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−48−00.00N / 97−01−38.86W
2.19.6 Site elevation: 480 ft

2.19.1 ILS type: Inner Marker for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−35.30N / 97−01−34.26W
2.19.6 Site elevation: 563 ft

2.19.1 ILS type: Glide Slope for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−54.33N / 97−01−29.47W
2.19.6 Site elevation: 557 ft

2.19.1 ILS type: Localizer for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−55−00.00N / 97−01−33.45W
2.19.6 Site elevation: 558 ft
2.19.1 ILS type: Middle Marker for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−16.34N / 97−01−34.37W
2.19.6 Site elevation: 559 ft

2.19.1 ILS type: Localizer for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32−54−47.86N / 97−01−20.46W
2.19.6 Site elevation: 552 ft

2.19.1 ILS type: Glide Slope for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32−53−51.74N / 97−00−00.00W
2.19.6 Site elevation: 509 ft

2.19.1 ILS type: DME for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32−54−46.09N / 97−01−22.58W
2.19.6 Site elevation: 548 ft

2.19.1 ILS type: Outer Marker for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32−49−51.37N / 96−55−27.13W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32−53−20.76N / 96−59−38.13W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32−54−24.13N / 97−04−54.08W
2.19.6 Site elevation: 588 ft

2.19.1 ILS type: Outer Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32−58−20.35N / 97−08−45.76W

2.19.6 Site elevation: 605 ft

2.19.1 ILS type: DME for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32−53−16.07N / 97−03−42.77W
2.19.6 Site elevation: 590 ft

2.19.1 ILS type: Middle Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32−54−55.16N / 97−05−20.58W
2.19.6 Site elevation: 610 ft

2.19.1 ILS type: Localizer for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32−53−17.46N / 97−03−40.07W
2.19.6 Site elevation: 577 ft

2.19.1 ILS type: Localizer for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32−52−19.44N / 97−00−35.73W
2.19.6 Site elevation: 584 ft

2.19.1 ILS type: DME for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32−52−18.74N / 97−00−40.18W
2.19.6 Site elevation: 577 ft

2.19.1 ILS type: Glide Slope for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32−53−45.23N / 97−00−31.14W
2.19.6 Site elevation: 526 ft

2.19.1 ILS type: Outer Marker for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32−58−00.00N / 97−00−26.70W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32−54−00.00N / 97−00−35.26W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32−54−24.15N / 97−00−35.04W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32−54−00.00N / 97−00−35.15W
2.19.6 Site elevation: 519 ft

2.19.1 ILS type: DME for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32−52−18.74N / 97−00−40.18W
2.19.6 Site elevation: 577 ft

2.19.1 ILS type: Middle Marker for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32−52−00.00N / 97−00−35.82W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32−52−22.61N / 97−00−35.71W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32−48−20.28N / 97−00−26.58W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 35R. Magnetic variation: 4E

2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32−52−43.44N / 97−00−30.90W
2.19.6 Site elevation: 559 ft

2.19.1 ILS type: Glide Slope for runway 17R. Magnetic variation: 4E
2.19.2 ILS identification: JHZ
2.19.5 Coordinates: 32−54−45.82N / 97−01−43.06W
2.19.6 Site elevation: 561 ft

2.19.1 ILS type: Outer Marker for runway 17R. Magnetic variation: 4E
2.19.2 ILS identification: JHZ
2.19.5 Coordinates: 32−59−44.75N / 97−01−46.52W
2.19.6 Site elevation: 525 ft

2.19.1 ILS type: Localizer for runway 17R. Magnetic variation: 4E
2.19.2 ILS identification: JHZ
2.19.5 Coordinates: 32−52−34.13N / 97−01−48.35W
2.19.6 Site elevation: 558 ft

2.19.1 ILS type: Middle Marker for runway 17R. Magnetic variation: 4E
2.19.2 ILS identification: JHZ
2.19.5 Coordinates: 32−55−26.68N / 97−01−47.42W
2.19.6 Site elevation: 561 ft

2.19.1 ILS type: DME for runway 17R. Magnetic variation: 4E
2.19.2 ILS identification: JHZ
2.19.5 Coordinates: 32−52−33.67N / 97−01−53.66W
2.19.6 Site elevation: 0 ft

2.19.1 ILS type: Glide Slope for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−52−54.98N / 97−01−43.53W
2.19.6 Site elevation: 559 ft

2.19.1 ILS type: Middle Marker for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−52−17.25N / 97−01−48.43W
2.19.6 Site elevation: 554 ft

2.19.1 ILS type: Localizer for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−55−00.00N / 97−01−47.52W
2.19.6 Site elevation: 567 ft

2.19.1 ILS type: DME for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−52−33.67N / 97−01−53.66W
2.19.6 Site elevation: 0 ft

2.19.1 ILS type: Outer Marker for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−48−00.00N / 97−01−38.86W
2.19.6 Site elevation: 499 ft

General Remarks:

BIRDS ON & IN THE VICINITY OF AIRPORT.

PRIOR PERMISSION REQUIRED FROM THE PRIMARY TENANT AIRLINES TO OPERATE WITHIN THE CENTRAL TERMINAL AREA. PROPER MINIMUM OBJECT FREE AREA DISTANCES MAY NOT BE MAINTAINED FOR RAMP/APRON TAXILANES.

PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS FOR GENERAL AVIATION AIRCRAFT TO PROCEED TO AIRLINE TERMINAL GATE EXCEPT GENERAL AVIATION FACILITY.

STANDARD SAWED GROOVING 160 FT WIDE FULL LENGTH RUNWAYS 13L/31R; 18L/36R & 17R/35L. STANDARD GROOVING 130 FT WIDE FULL LENGTH RUNWAYS 17L/35R; 18R/36L;

13R/31L & 17C/35C.

AIRPORT UNDER CONSTRUCTION; PERSONNEL AND EQUIPMENT WORKING IN MOVEMENT AREAS.

TAKE-OFF DISTANCE FOR RUNWAY 17R FROM TAXIWAY EMERGENCY GEAR IS 13082 FT & FROM TAXIWAY EH IS 12816 FT.

LAND & HOLD SHORT SIGNS ON RUNWAY 17C AT TAXIWAY ’B’ 10,460 FT S OF RUNWAY 17C THRESHOLD; RUNWAY 18R AT TAXIWAY ’B’ 10,100 FT S OF RUNWAY 18R THRESHOLD; RUNWAY 35C AT TAXIWAY ’EJ’ 9050 FT N OF RUNWAY 35C THRESHOLD; RUNWAY 36L AT TAXIWAY ’Z’ 10,650 FT N OF RUNWAY 36L THRESHOLD; LIGHTED & MARKED WITH IN−PAVEMENT PULSATING WHITE LIGHTS.

TAKE-OFF DISTANCE FOR RUNWAY 36R FROM TAXIWAY WAYPOINT IS 12,815 FT; FROM TAXIWAY WQ IS 13,082 FT.

TAKE-OFF DISTANCE FOR RUNWAY 17L FROM TAXIWAY Q2 IS 8196 FT.

TAXIWAYS MAY REQUIRE JUDGMENTAL OVERSTEERING FOR LARGE AIRCRAFT.

TAKE-OFF DISTANCE FOR RUNWAY 35R FROM TAXIWAY Q9 IS 8196 FT.

TAKE-OFF DISTANCE FOR RUNWAY 35L FROM TAXIWAY EQ IS 13084 FT & FROM TAXIWAY EN ROUTE PENETRATION IS 12811 FT.

AIRCRAFT EXITING BY WAY OF APRON ENTRANCE/EXIT POINTS 42; 43 & 44 CONTACT GROUND CONTROL PRIOR TO TAXIING.

APRON ENTRANCE/EXIT POINTS 22, 24, 105, 107, & 122 CLOSED TO AIRCRAFT WITH WINGSPAN 125 FT & GREATER.

APRON ENTRANCE/EXIT POINTS 5, 7, 42 & 44 CLOSED TO AIRCRAFT WITH WINGSPAN 118 FT & GREATER.

FREQUENT GROUND SUPPORT EQUIPMENT UNDER ESCORT CROSSING TAXIWAYS A & B AT TAXIWAY HA.

AIRCRAFT PUSHING BACK OR POWERING BACK ON TERMINAL B APRON HAVE RIGHT OF WAY.

TAXIWAY EDGE REFLECTORS ALONG ALL TAXIWAYS.

TERMINAL B APRON TAXILANE BETWEEN APRON ENTRANCE/EXIT POINT TAXILANES 110 & 115 CLOSED TO AIRCRAFT WITH WINGSPAN 118 FT AND GREATER.

TAKE-OFF DISTANCE FOR RUNWAY 18L FROM TAXIWAY WG IS 13,082; FROM TAXIWAY WH IS 12,815.

PRIOR PERMISSION REQUIRED GA OPERATIONS 2200−0600; CALL AIRPORT OPERATIONS 972−973−3112.

TAXIWAY G11 EAST OF TAXIWAY G CLOSED TO AIRCRAFT WITH WINGSPAN 125 FT & GREATER.

APRON ENTRANCE/EXIT POINT 124 CLOSED TO AIRCRAFT WITH WINGSPAN 200 FT AND GREATER.

TAXIWAY A5 CLOSED TO AIRCRAFT WITH WINGSPAN 171 FT AND GREATER.

TAKE-OFF DISTANCE FOR RUNWAY 17C FROM TAXIWAY EMERGENCY GEAR IS 13,082 FT.

TAKE-OFF DISTANCE FOR RUNWAY 18R FROM TAXIWAY WG IS 13,082 FT.

APRON ENTRANCE/EXIT POINTS 52 & 53 CLOSED TO AIRCRAFT WITH WINGSPAN 171 FT & GREATER.

AIRCRAFT USING GATES D6−D17 MUST OBTAIN APPROVAL FROM DFW RAMP TOWER 129.95 PRIOR TO ENTERING RAMP & PRIOR TO PUSHBACK 0530−2230. USE EXTREME CARE AT OTHER TIMES.

APRON ENTRANCE/EXIT POINT 45 CLOSED 2200−0800.

APRON ENTRANCE/EXIT POINTS 32, 33, 34, 35, 36, 37, 38 & 39 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

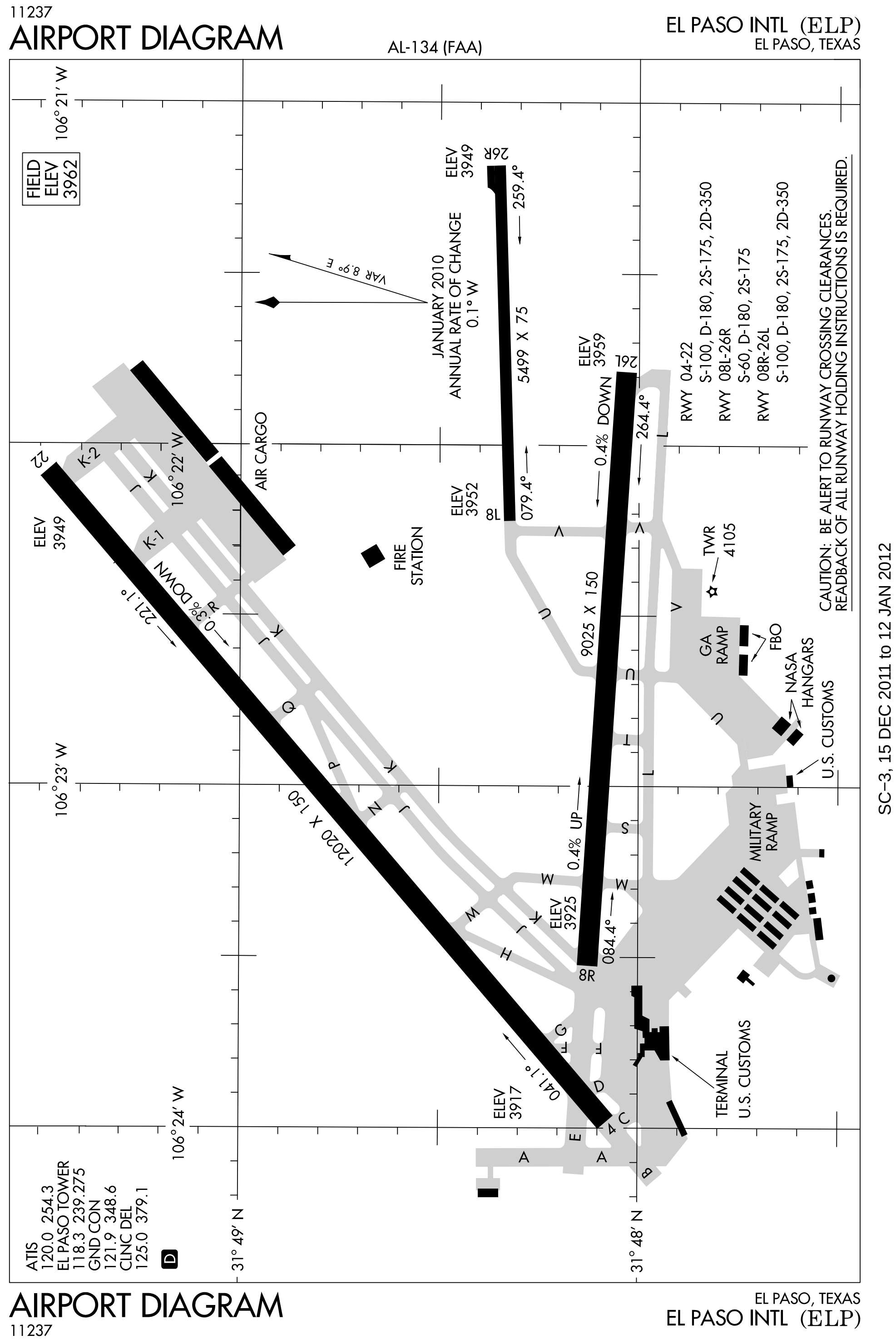
PRIOR PERMISSION REQUIRED AIRCRAFT WITH WINGSPAN 215 FT OR GREATER (GROUP VI) CALL AIRPORT OPERATIONS 972−973−3112 FOR FOLLOW−ME SERVICES WHILE TAXIING TO & FROM RAMP & RUNWAYS.

RUNWAY VISUAL SCREEN 20 FT AGL 1180 FT S APPROACH END RUNWAY 35C.

RUNWAY VISUAL SCREEN 22 FT AGL 1179 FT S APPROACH END RUNWAY 35L.

APRON ENTRANCE/EXIT POINT 4 CLOSED TO AIRCRAFT WITH WINGSPAN 100 FT & GREATER.

El Paso, Texas
El Paso International
ICAO Identifier KELP



El Paso, TX
El Paso Intl
ICAO Identifier KELP

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 31−48−26.10N / 106−22−39.20W
2.2.2 From City: 4 Miles NE Of El Paso, TX
2.2.3 Elevation: 3962 ft
2.2.5 Magnetic variation: 11E (1985)
2.2.6 Airport Contact: Monica Lombrana
6701 CONVAIR RD
El Paso, TX 79925
(915−780−4749)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1+,B+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway physical characteristics
2.12.1 Designation: 04
2.12.2 True Bearing: 50
2.12.3 Dimensions: 12020 ft x 150 ft
2.12.5 Coordinates: 31−48−00.00N / 106−23−59.46W
2.12.6 Threshold elevation: 3917 ft
2.12.6 Touchdown zone elevation: 3923 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 230
2.12.3 Dimensions: 12020 ft x 150 ft
2.12.5 Coordinates: 31−49−22.01N / 106−22−12.78W
2.12.6 Threshold elevation: 3949 ft
2.12.6 Touchdown zone elevation: 3949 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 88
2.12.3 Dimensions: 5499 ft x 75 ft
2.12.5 Coordinates: 31−48−20.58N / 106−22−11.46W
2.12.6 Threshold elevation: 3952 ft
2.12.6 Touchdown zone elevation: 3957 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 268
2.12.3 Dimensions: 5499 ft x 75 ft
2.12.5 Coordinates: 31−48−22.17N / 106−21−00.00W
2.12.6 Threshold elevation: 3949 ft
2.12.6 Touchdown zone elevation: 3951 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 93
2.12.3 Dimensions: 9025 ft x 150 ft
2.12.5 Coordinates: 31-48-00.00N / 106-23-31.85W
2.12.6 Threshold elevation: 3925 ft
2.12.6 Touchdown zone elevation: 3937 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 273
2.12.3 Dimensions: 9025 ft x 150 ft
2.12.5 Coordinates: 31-48-00.00N / 106-21-47.47W
2.12.6 Threshold elevation: 3958 ft
2.12.6 Touchdown zone elevation: 3958 ft

AD 2.13 Declared distances
2.13.1 Designation: 04
2.13.2 Takeoff run available: 12020
2.13.3 Takeoff distance available: 12020
2.13.4 Accelerate−stop distance available: 12020
2.13.5 Landing distance available: 12020

2.13.1 Designation: 22
2.13.2 Takeoff run available: 12020
2.13.3 Takeoff distance available: 12020
2.13.4 Accelerate−stop distance available: 12449
2.13.5 Landing distance available: 12020

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 5493
2.13.3 Takeoff distance available: 5493
2.13.4 Accelerate-stop distance available: 5493
2.13.5 Landing distance available: 5493

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 5493

2.13.3 Takeoff distance available: 5493
2.13.4 Accelerate-stop distance available: 5493
2.13.5 Landing distance available: 5493

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 9025
2.13.3 Takeoff distance available: 9025
2.13.4 Accelerate−stop distance available: 9025
2.13.5 Landing distance available: 9025

2.13.1 Designation: 26L
2.13.2 Takeoff run available: 9025
2.13.3 Takeoff distance available: 9025
2.13.4 Accelerate−stop distance available: 9025
2.13.5 Landing distance available: 9025

AD 2.14 Approach and runway lighting
2.14.1 Designation: 04
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4-light PAPI on right

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: Omnidirectional approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 120 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: UTILITY
2.18.3 Service designation: 121.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 125 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 254.3 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 263 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 353.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 379.1 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 124.25 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 298.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.275 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 04. Magnetic variation: 11E
2.19.2 ILS identification: ETF
2.19.5 Coordinates: 31−47−58.72N / 106−24−13.53W
2.19.6 Site elevation: 3926 ft

2.19.1 ILS type: Localizer for runway 04. Magnetic

variation: 11E
2.19.2 ILS identification: ETF
2.19.5 Coordinates: 31−49−28.45N / 106−22−00.00W
2.19.6 Site elevation: 3950 ft

Magnetic variation: 11E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−49−17.29N / 106−22−26.60W
2.19.6 Site elevation: 3940 ft

2.19.1 ILS type: Localizer for runway 22. Magnetic variation: 11E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−47−55.92N / 106−24−12.90W
2.19.6 Site elevation: 3911 ft

2.19.1 ILS type: DME for runway 22. Magnetic variation: 11E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−47−58.72N / 106−24−13.53W
2.19.6 Site elevation: 3926 ft

2.19.1 ILS type: Middle Marker for runway 22. Magnetic variation: 11E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−49−33.88N / 106−21−56.93W
2.19.6 Site elevation: 3947 ft

2.19.1 ILS type: Outer Marker for runway 22. Magnetic variation: 11E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−51−37.02N / 106−19−00.00W
2.19.6 Site elevation: 3940 ft

2.19.1 ILS type: Glide Slope for runway 22.

General Remarks:

24 HR PRIOR PERMISSION REQUIRED CLASS A EXPLOSIVES CONTACT 915−780−4749.

CAUTION: BIGGS AAF 2NM NW RUNWAY 21 CAN BE MISTAKEN FOR ELP RUNWAY 22.

SAILPLANE & ULTRALIGHT OPERATIONS IN THE VICINITY OF HORIZON AIRPORT 8 NAUTICAL MILE ESE.

NORTH BOUND TRAFFIC PROHIBITED ON TAXIWAY F SOUTH OF TAXIWAY E.

TAXIWAY A SOUTH OF TAXIWAY E; TAXIWAYS B & C; TAXIWAY J NE OF TAXIWAY K1; TAXIWAY K NE OF TAXIWAY K1 BETWEEN TAXIWAY J & NORTH CARGO RAMP; TAXIWAYS U & V SOUTH OF TAXIWAY L; & TAXIWAY K2 NOT VISIBLE FROM ATCT.

HOLDING POSITION MARKINGS FOR RUNWAY 8R APPROACH AND RUNWAY 4/22 ARE IN CLOSE PROXIMITY TO THE TERMINAL APRON; REVIEW AIRPORT DIAGRAM PRIOR TO PUSHBACK FROM THE GATE.

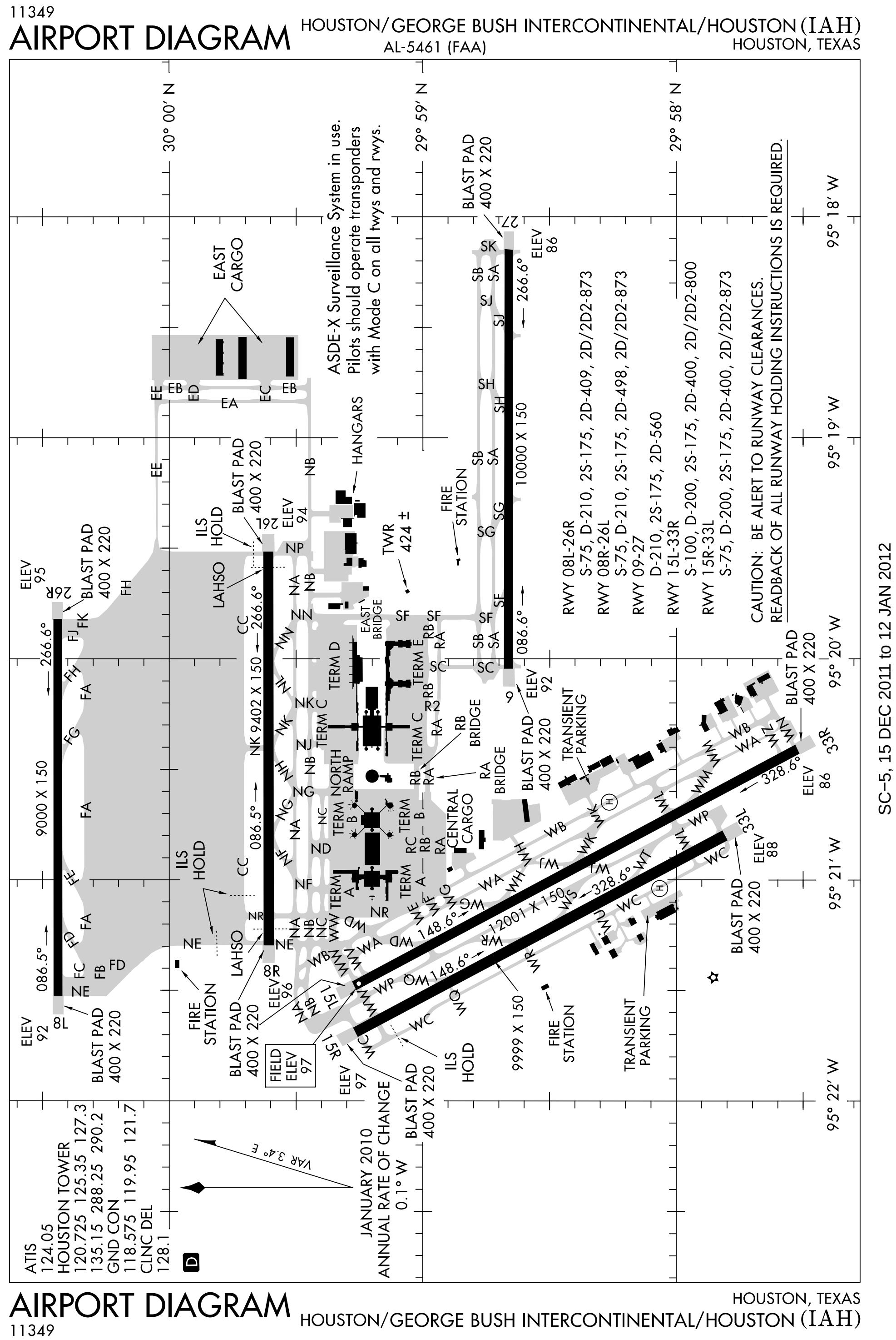
MILITARY USERS SHOULD REVIEW NOISE ABATEMENT PROCEDURES LISTED FOR BIGGS AAF.

NOISE ABATEMENT PROCEDURES IN EFFECT, CONTACT ATCT FOR DETAILS.

ENGINE POWER IS RESTRICTED TO IDLE POWER ON ONE ENGINE AT A TIME FOR MAX 5 MIN ON ANY TERMINAL OR PARKING APRONS, CROSS−BLEED STARTS OR OTHER PRE DEP ACTIVITY ON MOVEMENT AREAS ONLY, MAINT OR OTHER REQUIREMENT NEEDING LONGER OR HIGHER POWER CONTACT TOWER FOR DIRECTIONS TO DESIGNATED RUNUP AREAS.

611 FT AGL UNLIGHTED SMOKESTACK 8 MILES WSW OF AIRPORT.

Houston, Texas
George Bush Intercontinental/Houston
ICAO Identifier KIAH



Houston, TX
George Bush Intercontinental/Houston
ICAO Identifier KIAH

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 29−59−00.00N / 95−20−29.19W
2.2.2 From City: 15 Miles N Of Houston, TX
2.2.3 Elevation: 97 ft
2.2.5 Magnetic variation: 5E (2000)
2.2.6 Airport Contact: Mary Case
PO BOX 60106
Houston, TX 77205
(281−230−3100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway physical characteristics
2.12.1 Designation: 15L
2.12.2 True Bearing: 152
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.5 Coordinates: 29−59−16.40N / 95−21−28.33W
2.12.6 Threshold elevation: 96 ft
2.12.6 Touchdown zone elevation: 96 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 332
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.5 Coordinates: 29−57−31.55N / 95−20−24.19W
2.12.6 Threshold elevation: 86 ft
2.12.6 Touchdown zone elevation: 89 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 152
2.12.3 Dimensions: 9999 ft x 150 ft
2.12.5 Coordinates: 29−59−16.10N / 95−21−41.03W
2.12.6 Threshold elevation: 97 ft
2.12.6 Touchdown zone elevation: 97 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 332
2.12.3 Dimensions: 9999 ft x 150 ft
2.12.5 Coordinates: 29−57−48.75N / 95−20−47.58W
2.12.6 Threshold elevation: 88 ft
2.12.6 Touchdown zone elevation: 91 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9402 ft x 150 ft
2.12.5 Coordinates: 29−59−36.30N / 95−21−17.87W
2.12.6 Threshold elevation: 96 ft
2.12.6 Touchdown zone elevation: 97 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9402 ft x 150 ft
2.12.5 Coordinates: 29−59−36.38N / 95−19−30.95W
2.12.6 Threshold elevation: 94 ft
2.12.6 Touchdown zone elevation: 97 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 29−58−39.33N / 95−20−00.00W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 92 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.5 Coordinates: 29−58−39.41N / 95−18−00.00W
2.12.6 Threshold elevation: 86 ft
2.12.6 Touchdown zone elevation: 88 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 30−00−25.78N / 95−21−31.65W

2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 96 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.5 Coordinates: 30−00−25.86N / 95−19−49.29W
2.12.6 Threshold elevation: 95 ft
2.12.6 Touchdown zone elevation: 97 ft

AD 2.13 Declared distances
2.13.1 Designation: 15L
2.13.2 Takeoff run available: 12001
2.13.3 Takeoff distance available: 12001
2.13.4 Accelerate−stop distance available: 12001
2.13.5 Landing distance available: 12001

2.13.1 Designation: 33R
2.13.2 Takeoff run available: 12001
2.13.3 Takeoff distance available: 12001
2.13.4 Accelerate−stop distance available: 12001
2.13.5 Landing distance available: 12001

2.13.1 Designation: 15R
2.13.2 Takeoff run available: 9999
2.13.3 Takeoff distance available: 9999
2.13.4 Accelerate−stop distance available: 9999
2.13.5 Landing distance available: 9999

2.13.1 Designation: 33L
2.13.2 Takeoff run available: 9999
2.13.3 Takeoff distance available: 9999
2.13.4 Accelerate−stop distance available: 9999
2.13.5 Landing distance available: 9999

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 9402
2.13.3 Takeoff distance available: 9402
2.13.4 Accelerate−stop distance available: 9402
2.13.5 Landing distance available: 9402

2.13.1 Designation: 26L
2.13.2 Takeoff run available: 9402
2.13.3 Takeoff distance available: 9402
2.13.4 Accelerate−stop distance available: 9402
2.13.5 Landing distance available: 9402

2.13.1 Designation: 09
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 27
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 15L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 33R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 15R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 08R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: ALSF2: Standard

2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 27
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 08L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 26R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 118.575 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 120.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 124.05 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 127.3 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 134.45 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 135.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 257.7 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 257.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 281.4 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 281.4 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 284 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 316.15 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 379.1 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 119.95 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 288.25 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 290.2 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 120.725 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Middle Marker for runway 15L. Magnetic variation: 5E
2.19.2 ILS identification: HSQ
2.19.5 Coordinates: 29−59−44.91N / 95−21−45.76W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 15L. Magnetic variation: 5E
2.19.2 ILS identification: HSQ
2.19.5 Coordinates: 29−57−22.82N / 95−20−18.86W
2.19.6 Site elevation: 83 ft

2.19.1 ILS type: Outer Marker for runway 15L. Magnetic variation: 5E
2.19.2 ILS identification: HSQ
2.19.5 Coordinates: 30−04−29.27N / 95−24−46.16W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 33R. Magnetic variation: 5E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29−57−00.00N / 95−20−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 33R. Magnetic variation: 5E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29−53−33.65N / 95−17−56.01W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 33R. Magnetic variation: 5E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29−59−31.42N / 95−21−37.54W
2.19.6 Site elevation: 94 ft

2.19.1 ILS type: Glide Slope for runway 33R. Magnetic variation: 5E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29−57−38.81N / 95−20−33.46W
2.19.6 Site elevation: 81 ft

2.19.1 ILS type: Glide Slope for runway 15R. Magnetic variation: 5E
2.19.2 ILS identification: LKM
2.19.5 Coordinates: 29−59−00.00N / 95−21−39.03W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Localizer for runway 15R. Magnetic variation: 5E
2.19.2 ILS identification: LKM
2.19.5 Coordinates: 29−57−39.40N / 95−20−41.87W
2.19.6 Site elevation: 84 ft

2.19.1 ILS type: DME for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−38.92N / 95−21−31.30W
2.19.6 Site elevation: 109 ft

2.19.1 ILS type: Glide Slope for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−40.32N / 95−21−00.00W
2.19.6 Site elevation: 90 ft

2.19.1 ILS type: Outer Marker for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.55N / 95−28−20.43W
2.19.6 Site elevation: 117 ft

2.19.1 ILS type: Inner Marker for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.29N / 95−21−29.37W
2.19.6 Site elevation: 94 ft

2.19.1 ILS type: Middle Marker for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.24N / 95−21−51.93W
2.19.6 Site elevation: 94 ft

2.19.1 ILS type: Localizer for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.39N / 95−19−19.59W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.04N / 95−12−54.15W
2.19.6 Site elevation: 75 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−38.92N / 95−21−31.30W
2.19.6 Site elevation: 109 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−39.54N / 95−19−42.80W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.29N / 95−21−31.28W
2.19.6 Site elevation: 93 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.42N / 95−18−57.72W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Inner Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.39N / 95−19−20.60W
2.19.6 Site elevation: 93 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−35.39N / 95−19−50.68W
2.19.6 Site elevation: 86 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−39.36N / 95−20−32.49W
2.19.6 Site elevation: 92 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−44.10N / 95−26−00.00W
2.19.6 Site elevation: 105 ft

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−39.41N / 95−17−57.58W
2.19.6 Site elevation: 81 ft

2.19.1 ILS type: DME for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−35.38N /

95−20−13.58W
2.19.6 Site elevation: 100 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29−58−39.33N / 95−20−15.29W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: DME for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29−58−35.38N / 95−20−13.58W
2.19.6 Site elevation: 100 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29−58−41.04N / 95−13−20.44W
2.19.6 Site elevation: 80 ft

2.19.1 ILS type: Inner Marker for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29−58−39.41N / 95−17−59.16W
2.19.6 Site elevation: 85 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29−58−35.44N / 95−18−20.86W
2.19.6 Site elevation: 81 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29−58−39.42N / 95−17−37.46W
2.19.6 Site elevation: 83 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30−00−29.75N / 95−21−18.69W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30−00−25.87N / 95−19−37.01W
2.19.6 Site elevation: 94 ft

2.19.1 ILS type: DME for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30−00−30.07N / 95−19−37.07W
2.19.6 Site elevation: 90 ft

2.19.1 ILS type: Inner Marker for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30−00−25.77N / 95−21−40.86W
2.19.6 Site elevation: 92 ft

2.19.1 ILS type: Glide Slope for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30−00−29.81N / 95−20−00.00W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30−00−25.78N / 95−21−43.93W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: DME for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30−00−21.58N / 95−21−44.35W
2.19.6 Site elevation: 84 ft

2.19.1 ILS type: Inner Marker for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30−00−25.87N / 95−19−40.42W
2.19.6 Site elevation: 96 ft

General Remarks:

BIRDS ON & IN VICINITY OF AIRPORT.

TAXIWAYS ’RA’, ’RB’ & ’SC’ NORTH OF TAXIWAY ’SB’ ARE DESIGNATED NON−MOVEMENT AREAS OPERATED BY COA RAMP CONTROL.

CAUTION: APPROACH END RUNWAY 26L BRIGHT LIGHTS APPROXIMATELY ONE MILE FROM THRESHOLD & 900 FT S OF CENTERLINE.

9 FT AGL UNMARKED SECURITY FENCE ADJACENT TO FBO & CORPORATE BASE OPERATOR RAMPS AND NONMOVEMENT AREA TAXILANES. HELICOPTER HOVER/TAXI RESTRICTED TO HARD SURFACE MOVEMENT AREAS ONLY.

TAXIWAY ’NR’ CLOSED TO AIRCRAFT WITH WINGSPANS GREATER THAN 125 FT BETWEEN TAXIWAY ’WD’ & TAXIWAY ’WB’.

TAXIWAY ’SF’ BETWEEN THE SOUTH RAMP & TAXIWAY ’NB’ IS DESIGNATED NON−MOVEMENT AREAS.

FOR FLIGHT PLAN FILING CALL 1−800−WX−BRIEF.

DUAL TAXIWAY OPERATIONS TAXIWAY NK BETWEEN TAXIWAY NB & NORTH RAMP; WEST CENTERLINE RESTRICTED TO AIRCRAFT MAX WINGSPANS 125 FT & EAST CENTERLINE MAX WINGSPANS 214 FT.

THE FOLLOWING MOVEMENT AREAS ARE NOT VISIBLE FROM THE ATCT: PORTIONS OF TAXIWAYS ’WA’ & ’WB’ FROM TAXIWAY ’WH’ TO THE APPROACH END RUNWAY 33R; TAXIWAYS ’WA’ & ’WB’ FROM TAXIWAY ’WD’ NORTH FOR 400 FT; TAXIWAY ’WD’ FROM TAXIWAY ’WA’ TO TAXIWAY ’NR’; TAXIWAY ’NR’; TAXIWAY ’WL’ FROM RUNWAY 15L TO TAXIWAY ’WB’ & TAXIWAY ’WM’.

NORTH RAMP NORTH & SOUTH TAXI LANES CLOSED TO AIRCRAFT WITH WINGSPANS GREATER THAN 125 FT.

NORTH RAMP CONNECTOR RESTRICTED TO AIRCRAFT WITH WINGSPAN 125 FT AND BELOW.

RUNWAY 15L/33R MAGNETIC ANOMALIES MAY AFFECT COMPASS HEADING FOR TAKE-OFF.

TAXIWAYS AIRMET & WESTBOUND MAGNETIC ANOMALIES MAY AFFECT COMPASS HEADING.

NORTH RAMP TAXILANE BETWEEN TAXIWAYS NF & NR RESTRICTED TO AIRCRAFT WITH WINGSPAN 125 FT & BELOW.

TAXIWAY WC WEST OF RUNWAY 15R/33L RESTRICTED TO AIRCRAFT WITH 118 FT WINGSPAN AND BELOW.

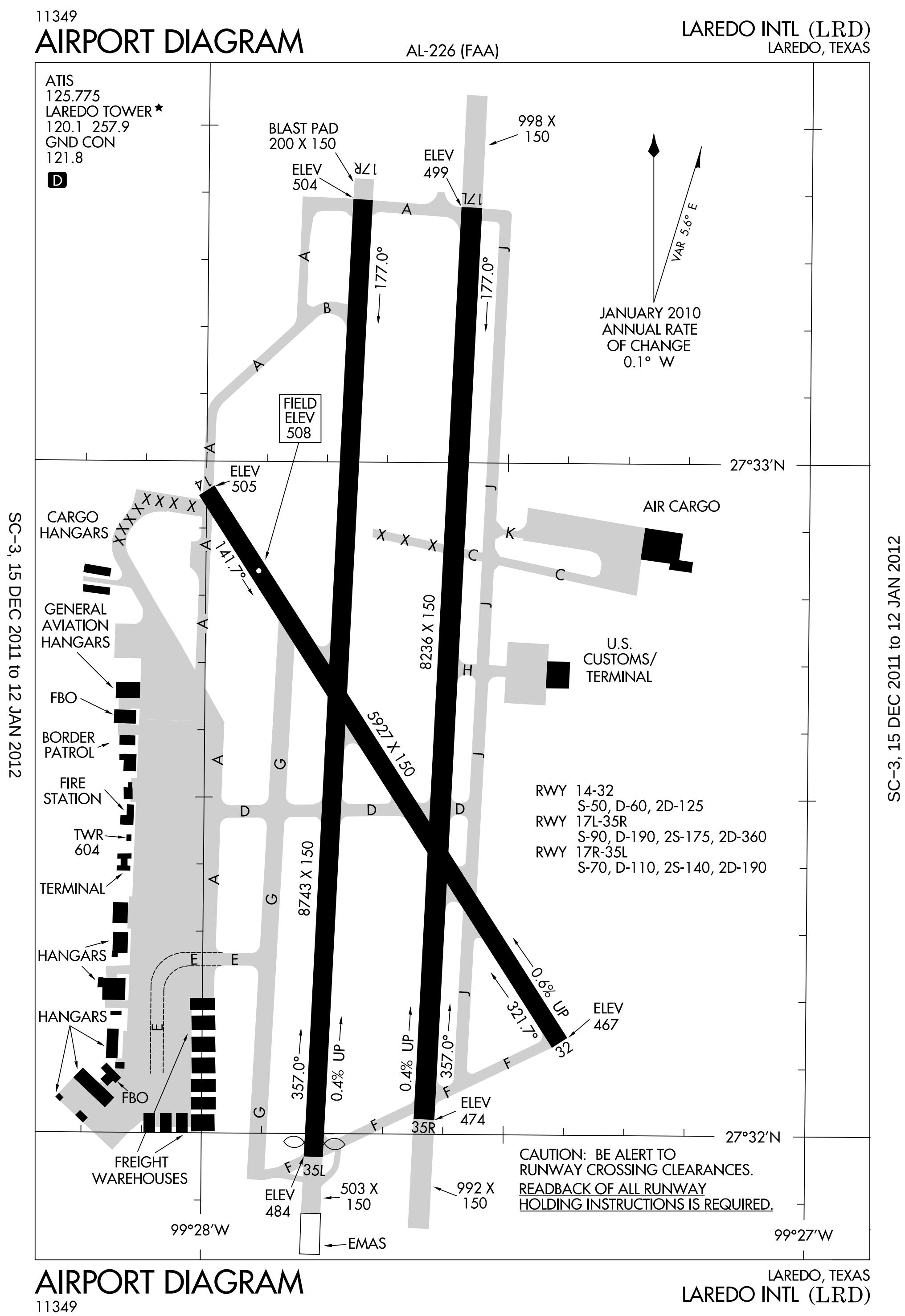
ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

NOISE SENSITIVE AREA NORTH, EAST AND WEST OF AIRPORT.

TAXIWAY LANE RC CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT.

NJ TAXILANE BETWEEN SPOT 10 AND THE NORTH RAMP CONNECTOR CLOSED TO WINGSPANS OVER 135 FT.

Laredo, Texas
Laredo International
ICAO Identifier KLRD



Laredo, TX
Laredo Intl
ICAO Identifier KLRD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 27−32−39.10N / 99−27−41.70W
2.2.2 From City: 3 Miles NE Of Laredo, TX
2.2.3 Elevation: 508 ft
2.2.5 Magnetic variation: 8E (1985)
2.2.6 Airport Contact: Jose Flores
5210 BOB BULLOCK LOOP
Laredo, TX 78041
(956−795−2000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 7/1/1975

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Road (12 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 14
2.12.2 True Bearing: 147
2.12.3 Dimensions: 5927 ft x 150 ft
2.12.5 Coordinates: 27−32−58.02N / 99−28−00.00W
2.12.6 Threshold elevation: 505 ft
2.12.6 Touchdown zone elevation: 508 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 327
2.12.3 Dimensions: 5927 ft x 150 ft
2.12.5 Coordinates: 27−32−00.00N / 99−27−24.66W
2.12.6 Threshold elevation: 467 ft
2.12.6 Touchdown zone elevation: 494 ft
2.12.7 Slope: 0.6UP

2.12.1 Designation: 17R
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.5 Coordinates: 27−33−23.37N / 99−27−44.71W
2.12.6 Threshold elevation: 504 ft
2.12.6 Touchdown zone elevation: 504 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.5 Coordinates: 27−31−56.88N / 99−27−49.04W
2.12.6 Threshold elevation: 484 ft
2.12.6 Touchdown zone elevation: 497 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 17L
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.5 Coordinates: 27−33−22.93N / 99−27−33.60W
2.12.6 Threshold elevation: 499 ft
2.12.6 Touchdown zone elevation: 499 ft
2.12.7 Slope: 0.2DOWN

2.12.1 Designation: 35R
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.5 Coordinates: 27−32−00.00N / 99−27−37.69W
2.12.6 Threshold elevation: 474 ft
2.12.6 Touchdown zone elevation: 487 ft
2.12.7 Slope: 0.4UP

AD 2.13 Declared distances
2.13.1 Designation: 14
2.13.2 Takeoff run available: 5928
2.13.3 Takeoff distance available: 5928
2.13.4 Accelerate−stop distance available: 5928
2.13.5 Landing distance available: 5928

2.13.1 Designation: 32
2.13.2 Takeoff run available: 5928
2.13.3 Takeoff distance available: 5928

2.13.4 Accelerate−stop distance available: 5928
2.13.5 Landing distance available: 5928

2.13.1 Designation: 17R
2.13.2 Takeoff run available: 7711
2.13.3 Takeoff distance available: 7711
2.13.4 Accelerate−stop distance available: 7711
2.13.5 Landing distance available: 7711

2.13.1 Designation: 35L
2.13.2 Takeoff run available: 7711
2.13.3 Takeoff distance available: 7711
2.13.4 Accelerate−stop distance available: 7711
2.13.5 Landing distance available: 7711

2.13.1 Designation: 17L
2.13.2 Takeoff run available: 8236
2.13.3 Takeoff distance available: 8236
2.13.4 Accelerate−stop distance available: 8236
2.13.5 Landing distance available: 8236

2.13.1 Designation: 35R
2.13.2 Takeoff run available: 8236
2.13.3 Takeoff distance available: 8236
2.13.4 Accelerate−stop distance available: 8236
2.13.5 Landing distance available: 8236

AD 2.14 Approach and runway lighting
2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 17R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 35L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 17L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 125.775 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−33−12.49N / 99−27−40.70W
2.19.6 Site elevation: 497 ft

2.19.1 ILS type: Middle Marker for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−33−41.55N / 99−27−43.80W
2.19.6 Site elevation: 484 ft

2.19.1 ILS type: Localizer for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−31−51.73N / 99−27−49.30W
2.19.6 Site elevation: 476 ft

2.19.1 ILS type: Outer Marker for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−38−32.52N / 99−27−29.32W
2.19.6 Site elevation: 675 ft

2.19.1 ILS type: DME for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−31−50.88N /

99−27−46.67W
2.19.6 Site elevation: 475 ft

General Remarks:

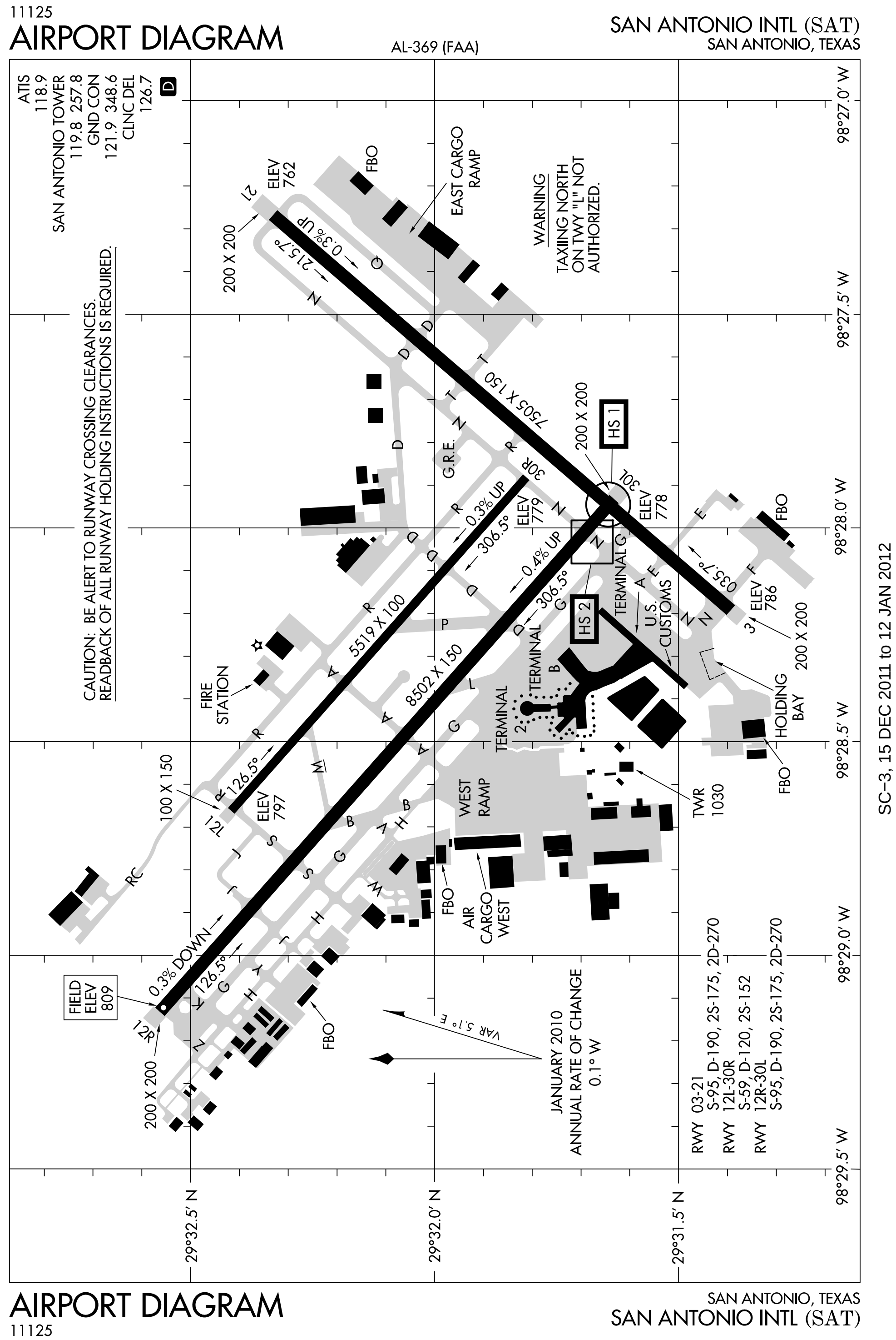
5’ LINE OF SIGHT NOT AVAILABLE BETWEEN ENDS OF RUNWAY 14/32.

RUNWAY 14/32 RESTRICTED TO AIRCRAFT LESS THAN 60,000 LBS DTW.

TAXIWAY C CLOSED BETWEEN RUNWAY 17L/35R & RUNWAY 17R INDEFINITELY.

EMAS ARRESTOR BED PARTIALLY DAMAGED, POTENTIAL DEGRADED PERFORMANCE FOR OFF RUNWAY CENTERLINE ENGAGEMENT.

San Antonio, Texas
San Antonio International
ICAO Identifier KSAT



San Antonio, TX
San Antonio Intl
ICAO Identifier KSAT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 29−32−00.00N / 98−28−11.20W
2.2.2 From City: 7 Miles N Of San Antonio, TX
2.2.3 Elevation: 809 ft
2.2.5 Magnetic variation: 8E (1980)
2.2.6 Airport Contact: Frank R. Miller
9800 AIRPORT BLVD
San Antonio, TX 78216
(210−207−3450)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 30L
2.10.1.b Type of obstacle: Bldg (79 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 03
2.10.1.b Type of obstacle: Pole (46 ft). Lighted
2.10.1.c Location of obstacle: 225 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 12L
2.12.2 True Bearing: 132
2.12.3 Dimensions: 5519 ft x 100 ft
2.12.5 Coordinates: 29−32−25.07N / 98−28−39.71W
2.12.6 Threshold elevation: 797 ft
2.12.6 Touchdown zone elevation: 797 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 312
2.12.3 Dimensions: 5519 ft x 100 ft
2.12.5 Coordinates: 29−31−48.78N / 98−27−53.02W
2.12.6 Threshold elevation: 779 ft
2.12.6 Touchdown zone elevation: 788 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 132
2.12.3 Dimensions: 8502 ft x 150 ft
2.12.5 Coordinates: 29−32−33.89N / 98−29−00.00W
2.12.6 Threshold elevation: 809 ft
2.12.6 Touchdown zone elevation: 809 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 312
2.12.3 Dimensions: 8502 ft x 150 ft
2.12.5 Coordinates: 29−31−38.00N / 98−27−55.99W
2.12.6 Threshold elevation: 778 ft
2.12.6 Touchdown zone elevation: 790 ft

2.12.1 Designation: 03
2.12.2 True Bearing: 41
2.12.3 Dimensions: 7505 ft x 150 ft
2.12.5 Coordinates: 29−31−23.64N / 98−28−11.66W
2.12.6 Threshold elevation: 786 ft
2.12.6 Touchdown zone elevation: 786 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 221
2.12.3 Dimensions: 7505 ft x 150 ft
2.12.5 Coordinates: 29−32−19.90N / 98−27−16.17W
2.12.6 Threshold elevation: 762 ft
2.12.6 Touchdown zone elevation: 773 ft

AD 2.13 Declared distances
2.13.1 Designation: 12L
2.13.2 Takeoff run available: 5519
2.13.3 Takeoff distance available: 5519
2.13.4 Accelerate−stop distance available: 5519
2.13.5 Landing distance available: 5519

2.13.1 Designation: 30R
2.13.2 Takeoff run available: 5519

2.13.3 Takeoff distance available: 5519
2.13.4 Accelerate−stop distance available: 5519
2.13.5 Landing distance available: 5519

2.13.1 Designation: 12R
2.13.2 Takeoff run available: 8502
2.13.3 Takeoff distance available: 8502
2.13.4 Accelerate−stop distance available: 8502
2.13.5 Landing distance available: 8502

2.13.1 Designation: 30L
2.13.2 Takeoff run available: 8502
2.13.3 Takeoff distance available: 8502
2.13.4 Accelerate−stop distance available: 8502
2.13.5 Landing distance available: 8502

2.13.1 Designation: 03
2.13.2 Takeoff run available: 7505
2.13.3 Takeoff distance available: 7505
2.13.4 Accelerate−stop distance available: 7505
2.13.5 Landing distance available: 7505

2.13.1 Designation: 21
2.13.2 Takeoff run available: 7505
2.13.3 Takeoff distance available: 7505
2.13.4 Accelerate−stop distance available: 7505
2.13.5 Landing distance available: 7505

AD 2.14 Approach and runway lighting
2.14.1 Designation: 12L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 12R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 03
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 21
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 118.05 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 118.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.8 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 121.2 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 124.45 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 128.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 251.125 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 317.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 353.5 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 285.45 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 239.025 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 335.625 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 290.225 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 12R. Magnetic variation: 5E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−31−29.11N / 98−27−49.94W
2.19.6 Site elevation: 791 ft

2.19.1 ILS type: Glide Slope for runway 12R. Magnetic variation: 5E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−32−28.99N / 98−28−54.82W
2.19.6 Site elevation: 801 ft

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 5E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−32−55.58N / 98−29−35.87W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 12R. Magnetic variation: 5E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−36−27.45N / 98−34−10.92W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 5E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−31−31.31N / 98−27−47.38W
2.19.6 Site elevation: 771 ft

2.19.1 ILS type: Inner Marker for runway 12R. Magnetic variation: 5E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−32−38.99N / 98−29−14.51W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 30L. Magnetic variation: 8E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29−32−42.30N / 98−29−18.78W
2.19.6 Site elevation: 809 ft

2.19.1 ILS type: DME for runway 30L. Magnetic variation: 8E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29−31−29.11N / 98−27−49.94W

2.19.6 Site elevation: 791 ft

2.19.1 ILS type: Outer Marker for runway 30L. Magnetic variation: 8E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29−28−00.00N / 98−23−19.32W
2.19.6 Site elevation: 692 ft

2.19.1 ILS type: Glide Slope for runway 30L. Magnetic variation: 8E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29−31−47.90N / 98−28−00.00W
2.19.6 Site elevation: 778 ft

2.19.1 ILS type: Middle Marker for runway 30L. Magnetic variation: 8E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29−31−20.34N / 98−27−33.19W
2.19.6 Site elevation: 761 ft

2.19.1 ILS type: Outer Marker for runway 03. Magnetic variation: 8E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29−28−28.61N / 98−31−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 03. Magnetic variation: 8E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29−32−33.45N / 98−27−00.00W
2.19.6 Site elevation: 749 ft

2.19.1 ILS type: Glide Slope for runway 03. Magnetic variation: 8E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29−31−27.70N / 98−28−00.00W
2.19.6 Site elevation: 777 ft

2.19.1 ILS type: Middle Marker for runway 03. Magnetic variation: 8E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29−31−00.00N / 98−28−35.26W
2.19.6 Site elevation: 99999 ft

General Remarks:

TAXIWAY L CLOSED NORTHBOUND.

NUMEROUS FLOCKS OF BIRDS IN THE VICINITY OF AIRPORT.

GLIDER/SOARING OPERATIONS APPROXIMATELY 17 MILES NW OF AIRPORT DURING VFR.

TAXIWAY D NON−MOVEMENT AREA FROM TAXIWAY N TO 500 FT W OF TAXIWAY N.

NOISE SENSITIVE AREAS EXIST ON ALL SIDES OF THE AIRPORT: AT THE PILOT'S DISCRETION CLIMB AS QUICKLY & QUIETLY AS SAFELY POSSIBLE ON DEP & USE CONSIDERATION WHEN FLYING OVER POPULATED AREAS BY MINIMIZING FLIGHT & HIGH POWER SETTINGS. ENGINE−UPS ARE PERMITTED BETWEEN 0600−2300.

AIRCRAFT TAXIING ON RUNWAY 03 NE BOUND LOOK FOR HOLD SHORT TO RUNWAY 30L.

AIRCRAFT TAXIING ON TAXIWAY N SW BOUND LOOK FOR HOLD SHORT TO RUNWAY 30R.

PERSONNEL AND EQUIPMENT WORKING ON & ALONG TAXIWAYS AND RAMPS AREAS AT VARIOUS TIMES.

GROUND RUN−UP ENCLOSURE AVAILABLE 24 HRS.

TERMINAL GATE A1 USE ONLY WITH PRIOR PERMISSION REQUIRED CALL OPERATIONS 210−413−4928.

RUNWAY 12L/30R NOT AVAILABLE FOR PART 121 AIR CARRIER OPERATIONS.

THE FOLLOWING TAXIWAYS ARE NOT AVAILABLE FOR AIRCRAFT 59,000 LBS OR OVER: TAXIWAYS A & J NORTH OF RUNWAY 12R/30L; TAXIWAYS W, M, P, TAXIWAY H NW OF TAXIWAY Z AND TAXIWAY E EAST OF RUNWAY 03/21.

TAXIWAY Z CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

C130 AND C141 TYPE AIRCRAFT SHALL PARK ON WEST RAMP TO CLEAR CUSTOMS.

GA AIRCRAFT CLEARING U.S. CUSTOMS AT TERMINAL A BE ALERT FOR PERSONNEL & EQUIPMENT WHILE TAXIING TO AND FROM THE ASSIGNED CUSTOMS CLEARANCE LOCATIONS.

TAXIWAY Q ENTRANCE/EXIT AT AIR CARGO EAST CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

INNER RAMP TAXILANE NORTH & EAST OF TERMINAL A IS CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT EXCEPT FOR AIRCRAFT CROSSING THE INNER RAMP TO GATES A12 TO A16.

PRIOR PERMISSION REQUIRED WITH AIRPORT OPERATIONS FOR AIRCRAFT POWERING BACK FROM TERMINAL GATES.

TAXIWAYS L & B CLOSED TO AIRCRAFT WITH WINGSPANS GREATER THAN 118 FT EXITING RUNWAY 30L.

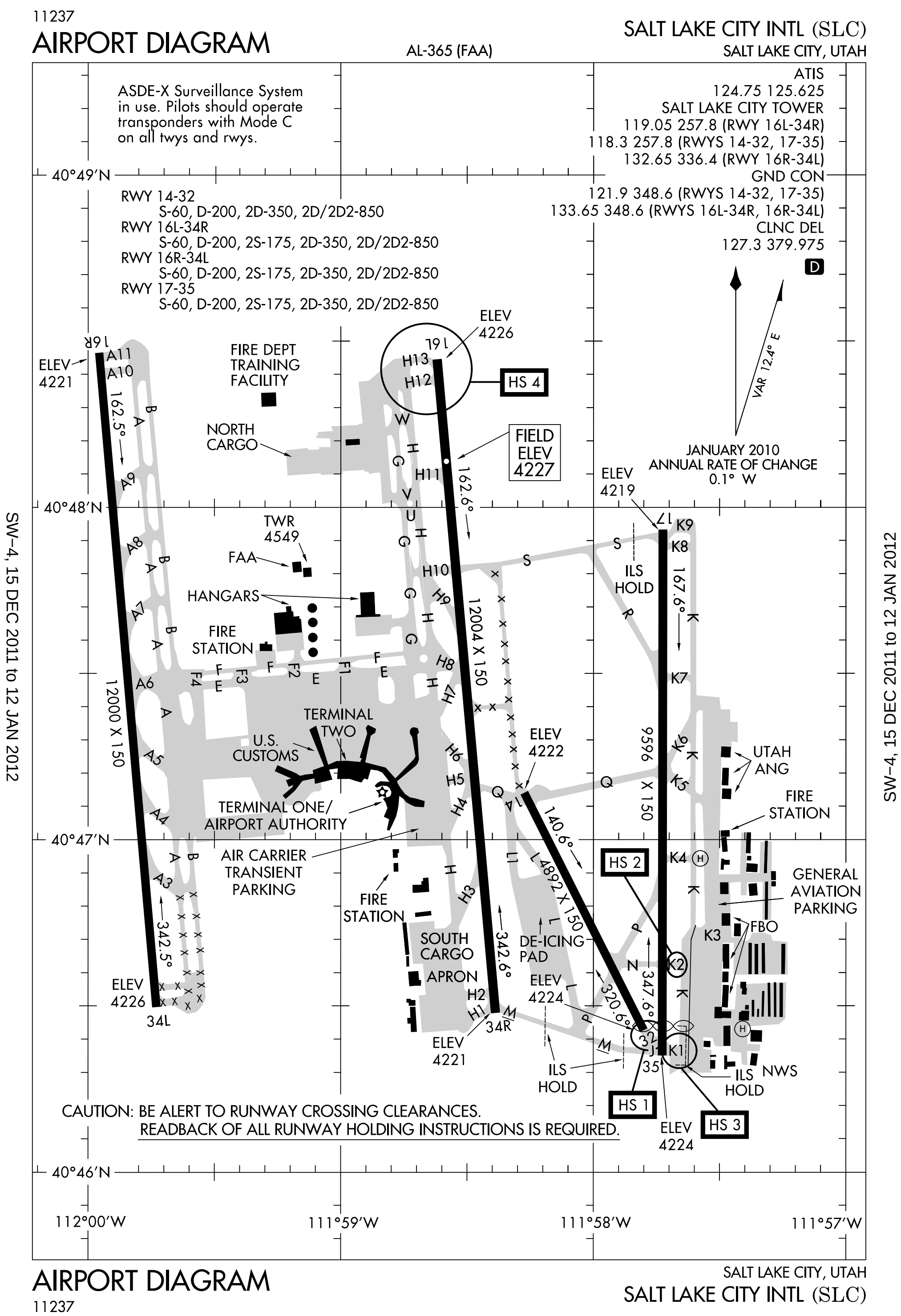
A BARRICADED PAVEMENT ELEVATION CHANGE EXISTS ALONG THE EASTERN SIDE OF THE WEST RAMP.

FREQUENT RUBBER ACCUMULATION NW 2500 RUNWAY 12R/30L

AIRCRAFT TRANSITIONING TO OR FROM THE INNER RAMP NORTH OF TERMINAL B BE ALERT FOR VEHICLE LANE.

AIRCRAFT AT TERMINAL A & B CONTACT GROUND CONTROL PRIOR TO PUSH FOR ADVISORIES.

Salt Lake City, Utah
Salt Lake City International
ICAO Identifier KSLC



Salt Lake City, UT
Salt Lake City Intl
ICAO Identifier KSLC

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40−47−18.20N / 111−58−39.98W
2.2.2 From City: 3 Miles W Of Salt Lake City, UT
2.2.3 Elevation: 4227 ft
2.2.5 Magnetic variation: 14E (1995)
2.2.6 Airport Contact: Maureen Riley
P.O. BOX 145550
Salt Lake City, UT 84114
(801−575−2401)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 35
2.10.1.b Type of obstacle: Ant (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 16L
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12004 ft x 150 ft
2.12.5 Coordinates: 40−48−26.80N / 111−58−36.97W
2.12.6 Threshold elevation: 4226 ft
2.12.6 Touchdown zone elevation: 4227 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12004 ft x 150 ft
2.12.5 Coordinates: 40−46−28.68N / 111−58−23.25W
2.12.6 Threshold elevation: 4221 ft
2.12.6 Touchdown zone elevation: 4222 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 40−48−27.99N / 111−59−57.42W
2.12.6 Threshold elevation: 4221 ft
2.12.6 Touchdown zone elevation: 4223 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 40−46−29.90N / 111−59−43.69W
2.12.6 Threshold elevation: 4226 ft
2.12.6 Touchdown zone elevation: 4226 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.5 Coordinates: 40−47−56.10N / 111−57−43.46W
2.12.6 Threshold elevation: 4218 ft
2.12.6 Touchdown zone elevation: 4219 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 360
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.5 Coordinates: 40−46−21.29N / 111−57−43.44W
2.12.6 Threshold elevation: 4224 ft
2.12.6 Touchdown zone elevation: 4224 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 153
2.12.3 Dimensions: 4892 ft x 150 ft
2.12.5 Coordinates: 40−47−00.00N / 111−58−16.45W
2.12.6 Threshold elevation: 4222 ft
2.12.6 Touchdown zone elevation: 4222 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 333
2.12.3 Dimensions: 4892 ft x 150 ft
2.12.5 Coordinates: 40−46−25.51N / 111−57−47.58W
2.12.6 Threshold elevation: 4224 ft

2.12.6 Touchdown zone elevation: 4224 ft

2.12.1 Designation: HF
2.12.3 Dimensions: 60 ft x 60 ft

2.12.1 Designation: HB
2.12.3 Dimensions: 60 ft x 60 ft
2.12.5 Coordinates: 40−46−27.08N / 111−57−24.06W
2.12.6 Threshold elevation: 4220 ft

AD 2.13 Declared distances
2.13.1 Designation: 16L
2.13.2 Takeoff run available: 12004
2.13.3 Takeoff distance available: 12004
2.13.4 Accelerate−stop distance available: 12004
2.13.5 Landing distance available: 12004

2.13.1 Designation: 34R
2.13.2 Takeoff run available: 12004
2.13.3 Takeoff distance available: 12004
2.13.4 Accelerate−stop distance available: 12004
2.13.5 Landing distance available: 12004

2.13.1 Designation: 16R
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 34L
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 17
2.13.2 Takeoff run available: 9597
2.13.3 Takeoff distance available: 9597
2.13.4 Accelerate−stop distance available: 9597
2.13.5 Landing distance available: 9597

2.13.1 Designation: 35
2.13.2 Takeoff run available: 9597
2.13.3 Takeoff distance available: 9597
2.13.4 Accelerate−stop distance available: 9597
2.13.5 Landing distance available: 9273

2.13.1 Designation: 14
2.13.2 Takeoff run available: 4892
2.13.3 Takeoff distance available: 4892
2.13.4 Accelerate−stop distance available: 4892
2.13.5 Landing distance available: 4892

2.13.1 Designation: 32
2.13.2 Takeoff run available: 4892
2.13.3 Takeoff distance available: 4892
2.13.4 Accelerate−stop distance available: 4892
2.13.5 Landing distance available: 4892

AD 2.14 Approach and runway lighting
2.14.1 Designation: 16L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 35
2.14.2 Approach lighting system: MALSR: 1400

feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.05 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: APCH/P DEP P IC
2.18.3 Service designation: 124.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 124.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 124.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 126.25 MHz

2.18.1 Service designation: CD/P PRE−TAXI CLNC PRE−DEP CLNC
2.18.3 Service designation: 127.3 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 128.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.65 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 135.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 319.25 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 307.05 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 322.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 353.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 336.4 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 377.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 133.65 MHz

2.18.1 Service designation: CD/P

2.18.3 Service designation: 379.975 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.625 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 353.825 MHz

2.18.1 Service designation: ANG COMD POST
2.18.3 Service designation: 303 MHz

2.18.1 Service designation: ANG COMD POST
2.18.3 Service designation: 311 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40−46−18.49N / 111−58−22.06W
2.19.6 Site elevation: 4224 ft

2.19.1 ILS type: DME for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40−46−18.71N / 111−58−18.11W
2.19.6 Site elevation: 4236 ft

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40−48−17.07N / 111−58−30.61W
2.19.6 Site elevation: 4222 ft

2.19.1 ILS type: Middle Marker for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40−48−55.10N / 111−58−40.28W
2.19.6 Site elevation: 4217 ft

2.19.1 ILS type: Inner Marker for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40−48−35.68N / 111−58−38.00W
2.19.6 Site elevation: 4223 ft

2.19.1 ILS type: Localizer for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−48−37.67N / 111−58−38.21W
2.19.6 Site elevation: 4222 ft

2.19.1 ILS type: Glide Slope for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−46−39.32N / 111−58−19.28W
2.19.6 Site elevation: 4217 ft

2.19.1 ILS type: Inner Marker for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−46−20.33N / 111−58−22.29W
2.19.6 Site elevation: 4222 ft

2.19.1 ILS type: Outer Marker for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−40−52.21N / 111−57−46.57W
2.19.6 Site elevation: 4310 ft

2.19.1 ILS type: DME for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−46−18.71N / 111−58−18.11W
2.19.6 Site elevation: 4236 ft

2.19.1 ILS type: Middle Marker for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−46−00.00N / 111−58−18.28W
2.19.6 Site elevation: 4221 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−46−19.62N / 111−59−46.36W
2.19.6 Site elevation: 4232 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 12E

2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−48−17.29N / 112−00−00.00W
2.19.6 Site elevation: 4216 ft

2.19.1 ILS type: Inner Marker for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−48−37.20N / 111−59−58.20W
2.19.6 Site elevation: 4218 ft

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−48−56.30N / 112−00−00.00W
2.19.6 Site elevation: 4215 ft

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−46−19.93N / 111−59−42.52W
2.19.6 Site elevation: 4225 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 12E
2.19.2 ILS identification: UUH
2.19.5 Coordinates: 40−48−37.96N / 111−59−58.58W
2.19.6 Site elevation: 4217 ft

2.19.1 ILS type: DME for runway 34L. Magnetic variation: 12E
2.19.2 ILS identification: UUH
2.19.5 Coordinates: 40−46−19.61N / 111−59−46.36W
2.19.6 Site elevation: 4232 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 12E
2.19.2 ILS identification: UUH
2.19.5 Coordinates: 40−46−39.89N / 111−59−50.26W
2.19.6 Site elevation: 4220 ft

2.19.1 ILS type: Localizer for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−46−10.06N / 111−57−43.44W
2.19.6 Site elevation: 4225 ft
2.19.1 ILS type: DME for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−46−10.06N / 111−57−46.86W
2.19.6 Site elevation: 4238 ft

2.19.1 ILS type: Glide Slope for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−47−45.73N / 111−57−49.95W
2.19.6 Site elevation: 4214 ft

2.19.1 ILS type: Middle Marker for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−48−23.40N / 111−57−43.40W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Glide Slope for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40−46−35.13N / 111−57−48.64W
2.19.6 Site elevation: 4220 ft

2.19.1 ILS type: Localizer for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40−48−00.00N / 111−57−43.46W
2.19.6 Site elevation: 4219 ft

2.19.1 ILS type: DME for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40−46−10.06N / 111−57−46.86W
2.19.6 Site elevation: 4238 ft

2.19.1 ILS type: Outer Marker for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40−40−52.21N / 111−57−46.57W

2.19.6 Site elevation: 4310 ft

General Remarks:

CAUTION: FLOCK OF BIRDS ON AND IN VICINITY OF AIRPORT.

HELIPADS B AND F LOCATED ON GENERAL AVIATION APRONS.

SURFACE MOVEMENT GUIDANCE CONTROL SYSTEM & LOW VISIBILITY TAXI PROCEDURES.

DUE TO TRAFFIC VOLUME, LOCAL DEPARTURE AND ARR OPERATIONS ARE DISCOURAGED AND DELAYS CAN BE EXPECTED BETWEEN 1000−1200 AND 2000−2300.

SPECIAL VFR IS NOT RECOMMEND AT THE AIRPORT, IF REQUIRED, EXPECT DELAYS.

ANG RAMP - OPR 1430-2230Z++ MON-THU. CLOSED FRI-SUN AND HOLIDAY. OFFICIAL BUSINESS ONLY. PRIOR PERMISSION REQUIRED 48 HR ALL AIRCRAFTVALID 1 HR +/- ESTIMATED TIME OF ARRIVAL. TRANSIENT PRK/SVC EXTREMELY LIMITED. BASE OPERATIONS DSN 245-2274, C801-245-2274. MILITARY ALTITUDE HILL AFB (KHIF) 25 NAUTICAL MILE N. ALL AIRCRAFT CONTACT UTAH CONTROL (COMD POST) 20 MIN OUT WITH ESTIMATED TIME OF ARRIVAL AND REQ.

ANG RAMP - ALL AIRCRAFT CONTACT UTAH CONTROL WITH LANDING & DEP TIMES. COMMAND POST DSN: 245-2416/2417; C801-245-2416/2417. PHASE II WILDLIFE ACT DURING MIGRATION/MORNING/EVENING HRS FR OCT-APR. CONTACT UTAH CONTROL FOR CURRENT BIRD-WATCH CONDITION.ASDE-X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

SEE FLIGHT INFORMATION PUBLICATION AP/1 SUPPLEMENTARY AIRPORT INFORMATION.

COMMUNICATIONS-ANG COMMAND POST: CALL UTAH CONTROL

USE CAUTION FOR EXTENSIVE PARAGLIDING OPERATIONS IN THE VICINITY OF POINT OF THE MOUNTAIN.

TAXIWAY A CLOSED S OF TAXIWAY A3 UNTIL 31 OCT 2012.

TAXIWAY B CLOSED S OF TAXIWAY A3 UNTIL 31 OCT 2012.

TAXIWAY A1 CLOSED UNTIL 31 OCT 2012. TAXIWAY A2 CLOSED UNTIL 31 OCT 2012.

RUNWAY 16R/34L PERSONNEL AND EQUIPMENT WORKING S 4000 FT.

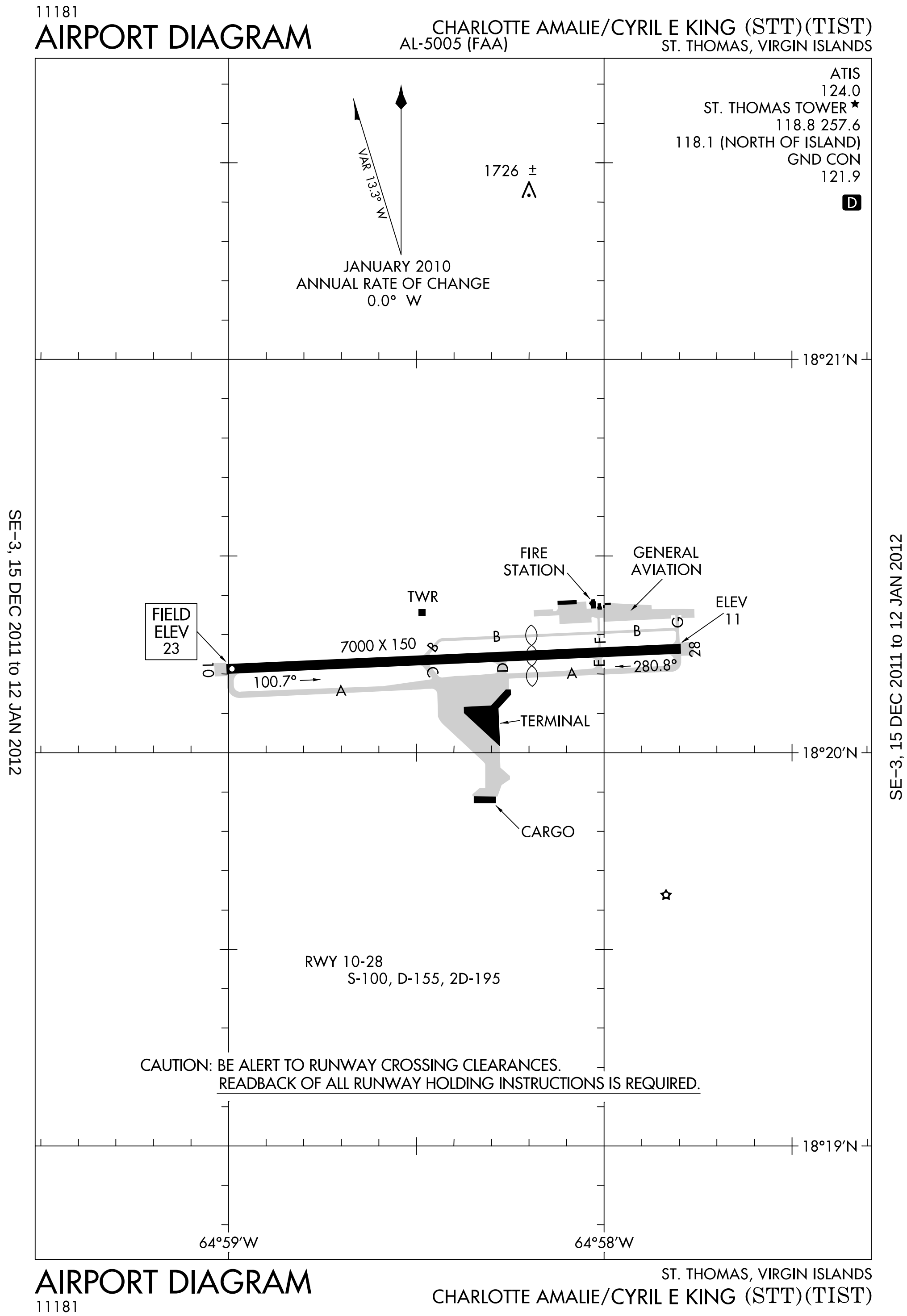
RUNWAY 34L SMGCS DEP UNAVAILABLE.

TAXIWAY A3 LENGTH AVAILABLE 8700 FT.

TAXIWAY A3 JET BLAST HAZARD USE MINIMUM POWER UNTIL ALIGNED WITH RUNWAY.

RUNWAY 34L FULL LENGTH AVAILABLE UPON REQUEST - MAKE REQUEST PRIOR TO TAXI - BACK TAXI REQUIRED.

Charlotte Amalie St. Thomas, Virgin Islands
Cyril E King
ICAO Identifier TIST



Charlotte Amalie, VI
Cyril E King
ICAO Identifier TIST

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 18−20−14.30N / 64−58−24.10W
2.2.2 From City: 2 Miles W Of Charlotte Amalie, VI
2.2.3 Elevation: 23 ft
2.2.5 Magnetic variation: 13W (2000)
2.2.6 Airport Contact: Mr. Jose Nazario
CYRIL E. KING AIRPORT
St Thomas, VI 802
(340−774−5100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 0700−2300 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Minor

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973
2.6.4 Remarks: Closed To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats Except 24 Hrs Prior Permission Required Call Airport Manager 340−774−5100.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Pole (28 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 87
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 18−20−12.72N / 64−59−00.00W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 23 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 267
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 18−20−15.81N / 64−57−47.75W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 15 ft

AD 2.13 Declared distances
2.13.1 Designation: 10
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 7000
2.13.5 Landing distance available: 7000

2.13.1 Designation: 28
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 3700

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.6 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: TMN
2.19.5 Coordinates: 18−20−18.76N / 64−57−39.49W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: TMN
2.19.5 Coordinates: 18−20−16.17N / 64−57−39.21W
2.19.6 Site elevation: 15 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: TMN
2.19.5 Coordinates: 18−20−10.74N / 64−58−48.30W
2.19.6 Site elevation: 14 ft

General Remarks:

AIRCRAFT THAT BACK TAXI FOR DEP ON RUNWAY 28 SHALL MAKE THEIR 180 DEGREE TURN COUNTERCLOCKWISE.

NOISE SENSITIVE AREA: AVOID OVERFLIGHTS OF WATER ISLAND LOCATED 2 MI SE OF AIRPORT.

PILOTS MAY ENCOUNTER FALSE ILLUSORY INDICATIONS DURING NIGHT VISUAL APPROACHES TO RUNWAY 10 WHEN USING VISUAL CUES FOR VERTICAL GUIDANCE; RECOMMEND USE OF THE ILS GS & FREQUENT CROSS REFERENCE WITH THE AIRCRAFT ALTIMETER TO MAINT THE PROPER APPROACH PROFILE.

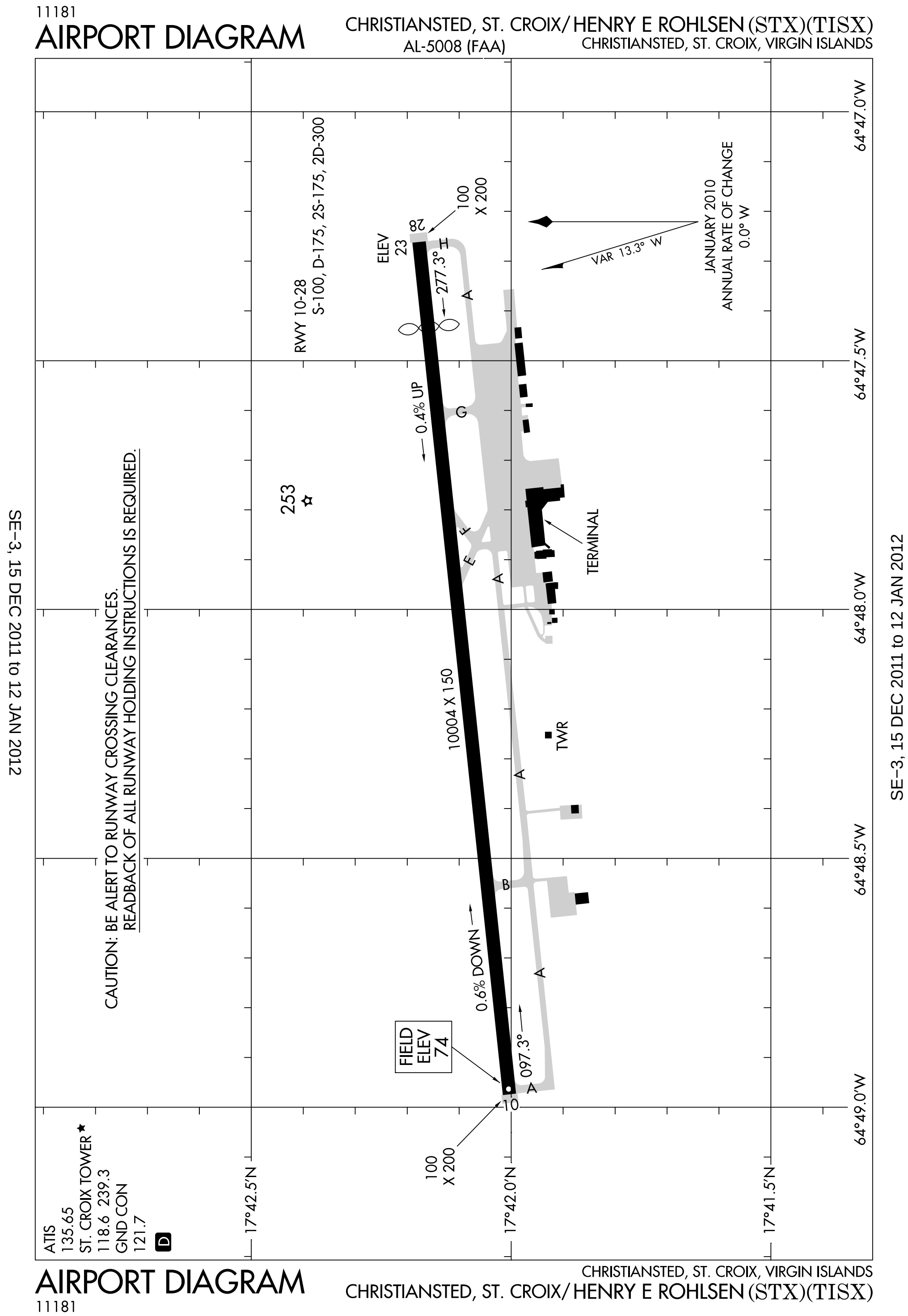
LIGHTS ON HILL 4 NAUTICAL MILE SE OF AIRPORT MAY BE MISTAKEN FOR RUNWAY 10/28 WHEN MAKING A VISUAL APPROACH FROM THE SOUTH.

RUNWAY 10 DEPS MAINTAIN RUNWAY HEADING UNTIL REACHING DEP END OF RUNWAY BEFORE TURNING ON COURSE OR ASSIGNED HEADING UNLESS OTHERWISE AUTHORIZED BY ATCT.

AIRCRAFT RESCUE AND FIRE FIGHTING UNAVAILABLE 2300−0630.

PILOTS CONTACT GROUND CONTROL PRIOR TO PUSHBACK.

Christiansted St. Croix
Henry E Rohlsen
ICAO Identifier TISX



Christiansted, VI
Henry E Rohlsen
ICAO Identifier TISX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 17−42−00.00N / 64−48−00.00W
2.2.2 From City: 6 Miles SW Of Christiansted, VI
2.2.3 Elevation: 74 ft
2.2.5 Magnetic variation: 13W (2000)
2.2.6 Airport Contact: Mr. David Mapp
P.O. BOX 1134
St Croix, VI 821
(340−778−1012)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 0500−2300 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A1+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973
2.6.4 Remarks: Closed To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats Except 24 Hrs Prior Permission Required Contact Airport Manager 340−778−1012 Or 340−778−1033(Fax). ARFF Service Unavailable 2300−0500.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Bldg (217 ft). Marked
2.10.1.c Location of obstacle: 800 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 84
2.12.3 Dimensions: 10004 ft x 150 ft
2.12.5 Coordinates: 17−42−00.00N / 64−48−58.45W
2.12.6 Threshold elevation: 74 ft
2.12.6 Touchdown zone elevation: 74 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 264
2.12.3 Dimensions: 10004 ft x 150 ft
2.12.5 Coordinates: 17−42−10.62N / 64−47−15.54W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 40 ft

AD 2.13 Declared distances
2.13.1 Designation: 10
2.13.2 Takeoff run available: 10004
2.13.3 Takeoff distance available: 10004
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 28
2.13.2 Takeoff run available: 10004
2.13.3 Takeoff distance available: 10004
2.13.4 Accelerate−stop distance available: 10004
2.13.5 Landing distance available: 9000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 135.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P

2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 10W
2.19.2 ILS identification: STX
2.19.5 Coordinates: 17−42−11.44N / 64−47−00.00W
2.19.6 Site elevation: 23 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 10W
2.19.2 ILS identification: STX
2.19.5 Coordinates: 17−42−00.00N / 64−48−21.03W
2.19.6 Site elevation: 48 ft

2.19.1 ILS type: Outer Marker for runway 10. Magnetic variation: 10W
2.19.2 ILS identification: STX
2.19.5 Coordinates: 17−41−30.90N / 64−53−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 10W
2.19.2 ILS identification: STX
2.19.5 Coordinates: 17−41−59.40N / 64−49−00.00W
2.19.6 Site elevation: 99999 ft

General Remarks:

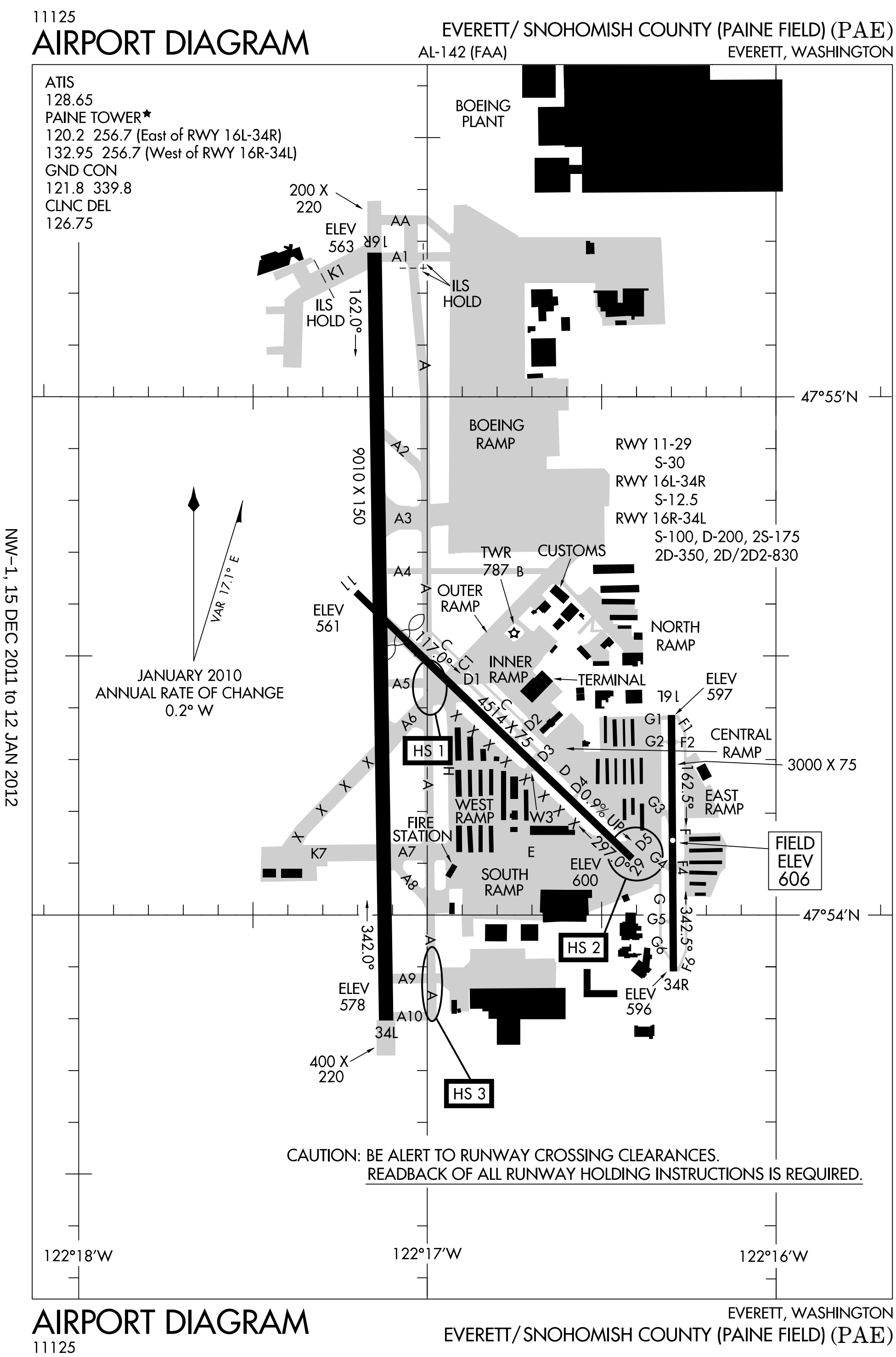
APPROACH TO RUNWAY 28 SOMETIMES OBSCURED BY SMOKE FROM LANDFILL LOCATED E OF AIRPORT.

RUNWAY 10 AND 28 100’ X 200’ BLAST PAD.

BIRDS & WILDLIFE ON & IN THE VICINITY OF AIRPORT.

TAXI INTO POSITION AND HOLD PROCEDURES NO LONGER IN EFFECT.

Everett, Washington
Snohomish County (Paine Field)
ICAO Identifier KPAE



Everett, WA
Snohomish County (Paine Fld)
ICAO Identifier KPAE

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47−54−25.15N / 122−16−53.66W
2.2.2 From City: 6 Miles SW Of Everett, WA
2.2.3 Elevation: 606 ft
2.2.5 Magnetic variation: 20E (1990)
2.2.6 Airport Contact: David T Waggoner
3220 100TH ST SW
Everett, WA 98204
(425−388−5125)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: MAY−OCT Months, ALL Days, 0700−2100 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 11/1/1974
2.6.4 Remarks: Airport Closed To Aircraft 0 Operations With More Than 30 Passenger Seats 2100−0700 Except Prior Permission Required Contact Airport Operations 425−388−5110/5480. For Addl ARFF Capability Contact Airport Operations 425−388−5110.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 11
2.10.1.b Type of obstacle: Trees (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 100 ft from Centerline

2.10.1.a. Runway designation: 29
2.10.1.b Type of obstacle: Trees (46 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 16L
2.10.1.b Type of obstacle: Pole (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 100 ft from Centerline

2.10.1.a. Runway designation: 34R
2.10.1.b Type of obstacle: Pole (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 125 ft from Centerline

2.10.1.a. Runway designation: 34L
2.10.1.b Type of obstacle: Trees (125 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 930 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 11
2.12.2 True Bearing: 134
2.12.3 Dimensions: 4514 ft x 75 ft
2.12.5 Coordinates: 47−54−37.49N / 122−17−12.38W
2.12.6 Threshold elevation: 561 ft
2.12.6 Touchdown zone elevation: 603 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 314
2.12.3 Dimensions: 4514 ft x 75 ft
2.12.5 Coordinates: 47−54−00.00N / 122−16−24.84W
2.12.6 Threshold elevation: 600 ft
2.12.6 Touchdown zone elevation: 603 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 3000 ft x 75 ft
2.12.5 Coordinates: 47−54−23.12N / 122−16−18.12W
2.12.6 Threshold elevation: 597 ft
2.12.6 Touchdown zone elevation: 606 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 360
2.12.3 Dimensions: 3000 ft x 75 ft
2.12.5 Coordinates: 47−53−53.52N / 122−16−17.78W
2.12.6 Threshold elevation: 596 ft
2.12.6 Touchdown zone elevation: 606 ft

2.12.1 Designation: 16R

2.12.2 True Bearing: 179
2.12.3 Dimensions: 9010 ft x 150 ft
2.12.5 Coordinates: 47−55−16.80N / 122−17−00.00W
2.12.6 Threshold elevation: 563 ft
2.12.6 Touchdown zone elevation: 570 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9010 ft x 150 ft
2.12.5 Coordinates: 47−53−47.90N / 122−17−00.00W
2.12.6 Threshold elevation: 578 ft
2.12.6 Touchdown zone elevation: 584 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 11
2.14.4 Visual approach slope indicator system: 2−box VASI on left

2.14.1 Designation: 29
2.14.4 Visual approach slope indicator system: 2−box VASI on right

2.14.1 Designation: 16L
2.14.4 Visual approach slope indicator system: 2−light PAPI on left

2.14.1 Designation: 34R
2.14.4 Visual approach slope indicator system: 2−light PAPI on right

2.14.1 Designation: 16R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 34L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P(ACFT ARR E OF CNTRLN OR DEP RY 16L/34R)
2.18.3 Service designation: 120.2 MHz

2.18.1 Service designation: LCL/P(ACFT ARR W OF CNTRLN OR DEP RY 16R/34L)
2.18.3 Service designation: 132.95 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 126.75 MHz

2.18.1 Service designation: ATIS (425−355−9797)
2.18.3 Service designation: 128.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 256.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 339.8 MHz

2.18.1 Service designation: AR−OPNS
2.18.3 Service designation: 34.1 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 20E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 47−53−33.98N / 122−17−00.00W
2.19.6 Site elevation: 565 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 20E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 47−55−00.00N / 122−17−13.66W
2.19.6 Site elevation: 562 ft

2.19.1 ILS type: Outer Marker for runway 16R. Magnetic variation: 20E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 48−03−10.00N / 122−17−19.50W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 20E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 47−55−53.80N / 122−17−00.00W
2.19.6 Site elevation: 99999 ft

General Remarks:

RUNWAYS 11/29 & 16L/34R CLOSED BETWEEN 2100−0700; LARGE AIRCRAFT FLY W PATTERN OVER WATER; SMALL AIRCRAFT FLY E PATTERN OVER AIRPORT.

NOISE SENSITIVE AIRPORT; FOR NOISE ABATEMENT PROCEDURES & TRAFFIC PROCEDURES CALL AIRPORT OPERATIONS 425−388−5125.

IF ACCESS TO BOEING RAMP REQUIRE CONTACT BOEING FLIGHT DISPATCH (206) 655−3421 FOR APPROVAL DURING NORMAL DUTY HRS.

IT IS REQUESTED THAT PILOTS ADHERE TO THE FOLLOWING NOISE ABATEMENT PROCEDURES UNLESS OTHERWISE INSTRUCTED BY ATCT, ITINERANT ARRIVAL AND LOW APPROACH OF SMALL AIRCRAFT OVER 250 HORSEPOWER AUTHORIZED ON RUNWAYS 29, 16L AND 34R.

BE ALERT TO CONVERGE TRAFFIC ON BASE TO FINAL LEGS RUNWAYS 16R/34L 2100−0700.

AVOID OVERFLIGHT OF BOEING RAMP − NE CORNER OF AIRPORT DUE TO JET BLAST.

TRAINING FLIGHTS DISCOURAGED AFTER 2200. RUNWAY 16R−34L TOUCH AND GO LANDING PROHIBITED MON−FRI FORM 0700−0900.

TAXIWAY E LIGHTS OUT OF SERVICE INDEFINITELY.

AVOID INTERSECTION DEPS FROM RUNWAYS 16L/34R & 29. AVOID INTERSECTION DEPS FROM RUNWAY 11 EXCEPT FROM TAXIWAY DELTA 1 INTERSECTION.

FLOCKS OF LARGE & SMALL BIRDS IN THE VICINITY OF AIRPORT.

RUNWAY 34L DEPS DISCOURAGED IN CALM WIND CONDITIONS.

ITINERANT DEP OF SMALL AIRCRAFT OVER 250 HORSEPOWER ON RUNWAYS 11 AND 34R.

TAXIWAY A−2 RESTRICTED TO 30,000 LBS.

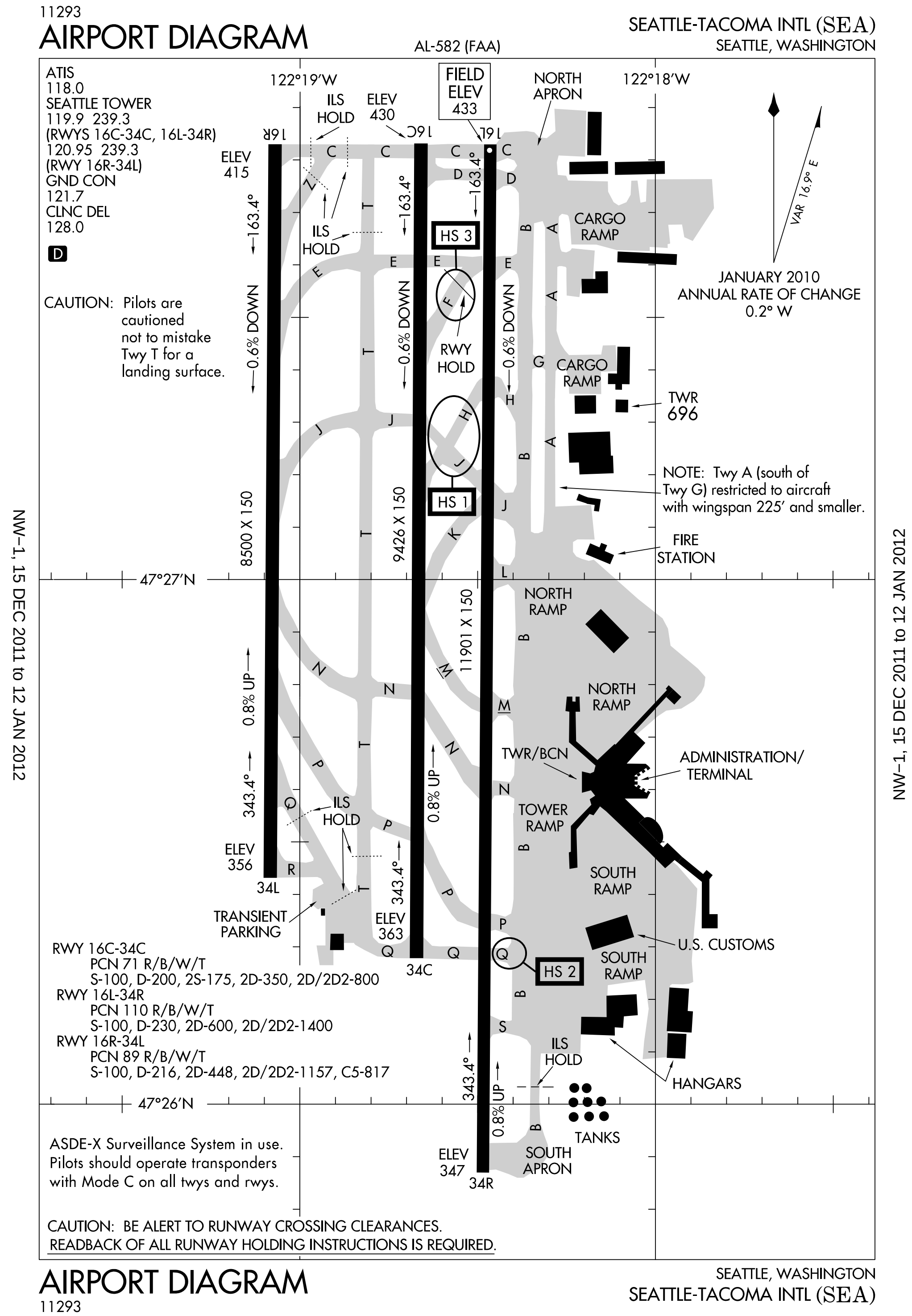
AREAS NOT VISIBLE FROM ATCT INCLUDE E EDGE OF S 1200 FT OF TAXIWAY A, TAXIWAY E FROM SE CORNER OF WEST HANGARS TO TAXIWAY A, MID SECTION OF OUTER TERMINAL RAMP, TAXIWAY H FROM NW EDGE OF WEST HANGARS TO TAXIWAY E, NE EDGE OF INNER TERMINAL RAMP.

RUNWAYS 16L/34R AND 11/29 LIMITED TO HELIPORT 8,000 LBS OR LESS.

TAXIWAY C CLOSED BETWEEN TAXIWAY D1 AND TAXIWAY A.

TAXIWAY W CLOSED INDEFINITE.

Seattle, Washington
Seattle−Tacoma International
ICAO Identifier KSEA



Seattle, WA
Seattle-Tacoma Intl
ICAO Identifier KSEA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47−26−59.60N / 122−18−42.40W
2.2.2 From City: 10 Miles S Of Seattle, WA
2.2.3 Elevation: 433 ft
2.2.5 Magnetic variation: 17E (2010)
2.2.6 Airport Contact: Mark Reis
BOX 68727
Seattle, WA 98168
(206−787−4682)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A,A1
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: None

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 34C
2.10.1.b Type of obstacle: Tree (131 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 700 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 16R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 89 R/B/W/T
2.12.5 Coordinates: 47−27−49.81N / 122−19−00.00W
2.12.6 Threshold elevation: 415 ft
2.12.6 Touchdown zone elevation: 415 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 34L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 89 R/B/W/T
2.12.5 Coordinates: 47−26−25.92N / 122−19−00.00W
2.12.6 Threshold elevation: 356 ft
2.12.6 Touchdown zone elevation: 379 ft
2.12.7 Slope: 0.8UP

2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 11901 ft x 150 ft
2.12.4 PCN: 110 R/B/W/T
2.12.5 Coordinates: 47−27−49.66N / 122−18−27.90W
2.12.6 Threshold elevation: 432 ft
2.12.6 Touchdown zone elevation: 432 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 34R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11901 ft x 150 ft
2.12.4 PCN: 110 R/B/W/T
2.12.5 Coordinates: 47−25−52.22N / 122−18−28.94W
2.12.6 Threshold elevation: 347 ft
2.12.6 Touchdown zone elevation: 372 ft
2.12.7 Slope: 0.8UP

2.12.1 Designation: 16C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9426 ft x 150 ft
2.12.4 PCN: 71 R/B/W/T
2.12.5 Coordinates: 47−27−49.71N / 122−18−39.55W
2.12.6 Threshold elevation: 430 ft
2.12.6 Touchdown zone elevation: 430 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 34C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 9426 ft x 150 ft
2.12.4 PCN: 71 R/B/W/T
2.12.5 Coordinates: 47−26−16.69N / 122−18−40.36W
2.12.6 Threshold elevation: 363 ft
2.12.6 Touchdown zone elevation: 387 ft
2.12.7 Slope: 0.8UP

AD 2.13 Declared distances
2.13.1 Designation: 16R

2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 34L
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 16L
2.13.2 Takeoff run available: 11901
2.13.3 Takeoff distance available: 11901
2.13.4 Accelerate−stop distance available: 11901
2.13.5 Landing distance available: 11901

2.13.1 Designation: 34R
2.13.2 Takeoff run available: 11901
2.13.3 Takeoff distance available: 11901
2.13.4 Accelerate−stop distance available: 11901
2.13.5 Landing distance available: 11901

2.13.1 Designation: 16C
2.13.2 Takeoff run available: 9426
2.13.3 Takeoff distance available: 9426
2.13.4 Accelerate−stop distance available: 9426
2.13.5 Landing distance available: 9426

2.13.1 Designation: 34C
2.13.2 Takeoff run available: 9426
2.13.3 Takeoff distance available: 9426
2.13.4 Accelerate−stop distance available: 9426
2.13.5 Landing distance available: 9426

AD 2.14 Approach and runway lighting
2.14.1 Designation: 16R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 34L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 118 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.2 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.2 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.2 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 120.4 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 120.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: GATE CTL
2.18.3 Service designation: 126.25 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 290.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 290.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 290.9 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 290.9 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 290.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 290.9 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 338.2 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 269.125 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 269.125 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 269.125 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 125.6 MHz

2.18.1 Service designation: GND CON
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: NORTH RAMP/CARGO
2.18.3 Service designation: 126.87 MHz

2.18.1 Service designation: SOUTH RAMP
2.18.3 Service designation: 122.27 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 133.65 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 273.45 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.95 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 377.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 377.15 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Inner Marker for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47−27−58.22N / 122−19−00.00W
2.19.6 Site elevation: 379 ft

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47−26−15.92N / 122−19−00.00W
2.19.6 Site elevation: 344 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47−27−38.46N / 122−19−00.00W
2.19.6 Site elevation: 406 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47−26−15.62N / 122−18−59.94W
2.19.6 Site elevation: 364 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: BEJ
2.19.5 Coordinates: 47−27−59.78N / 122−19−00.00W
2.19.6 Site elevation: 371 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: BEJ
2.19.5 Coordinates: 47−26−34.93N / 122−18−59.99W
2.19.6 Site elevation: 359 ft
2.19.1 ILS type: DME for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: BEJ
2.19.5 Coordinates: 47−26−15.62N / 122−18−59.94W
2.19.6 Site elevation: 364 ft

2.19.1 ILS type: Localizer for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47−25−45.81N / 122−18−29.00W
2.19.6 Site elevation: 338 ft

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47−27−38.94N / 122−18−33.82W
2.19.6 Site elevation: 425 ft

2.19.1 ILS type: Middle Marker for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47−28−20.04N / 122−18−39.69W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47−31−56.60N / 122−18−25.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47−26−00.00N / 122−18−22.68W
2.19.6 Site elevation: 369 ft

2.19.1 ILS type: DME for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47−26−00.00N / 122−18−22.68W
2.19.6 Site elevation: 369 ft

2.19.1 ILS type: Glide Slope for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47−26−00.00N / 122−18−23.03W
2.19.6 Site elevation: 355 ft

2.19.1 ILS type: Middle Marker for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47−25−18.10N / 122−18−29.30W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47−27−54.27N / 122−18−27.86W
2.19.6 Site elevation: 428 ft

2.19.1 ILS type: Localizer for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−26−00.00N / 122−18−40.43W
2.19.6 Site elevation: 355 ft

2.19.1 ILS type: DME for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−26−00.00N / 122−18−44.23W
2.19.6 Site elevation: 370 ft

2.19.1 ILS type: Glide Slope for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−27−38.69N / 122−18−45.46W
2.19.6 Site elevation: 418 ft

2.19.1 ILS type: Outer Marker for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−31−56.59N / 122−18−25.04W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Inner Marker for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−27−58.58N / 122−18−39.29W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−28−20.04N / 122−18−39.69W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Localizer for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−27−54.35N / 122−18−39.51W
2.19.6 Site elevation: 422 ft

2.19.1 ILS type: DME for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−26−00.00N / 122−18−44.23W
2.19.6 Site elevation: 370 ft

2.19.1 ILS type: Glide Slope for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−26−25.60N / 122−18−46.17W
2.19.6 Site elevation: 367 ft

2.19.1 ILS type: Middle Marker for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−25−49.76N / 122−18−42.14W
2.19.6 Site elevation: 289 ft

General Remarks:

BIRD FLOCKS WITHIN AIRPORT VICINITY − CHECK LOCAL ADVISORYS.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.
BETWEEN THE HRS OF 2200−0700 THE USE OF EXTENDED REVERSE THRUST IS DISCOURAGED BEYOND WHAT IS NECCESSARY FOR OPERATIONAL OR SAFETY REASONS. NOISE ABATEMENT PROCEDURES IN EFFECT BETWEEN 2200−0600. FOR FURTHER INFORMATION CONTACT SEA NOISE ABATEMENT OFFICE AT 206−787−7496.

HELICOPTERS LANDING & DEPARTING AVOID OVERFLYING FUEL FARM LOCATED AT THE SE CORNER OF THE AIRPORT.

(E110) CONTINUOUS POWER AIRPORT.

(E94) WSO/WSFO.

TAXIWAY A SOUTH OF TAXIWAY G RESTRICTED TO AIRCRAFT WITH WINGSPAN 225 FT AND SMALLER.

DO NOT MISTAKE TAXIWAY T FOR LANDING SURFACE.

ACCESS TO AIR CARGO 4 PARKING AND CARGO AREAS RESTRICTED TO AIRCRAFT WITH WINGSPANS OF 118 FT OR LESS.

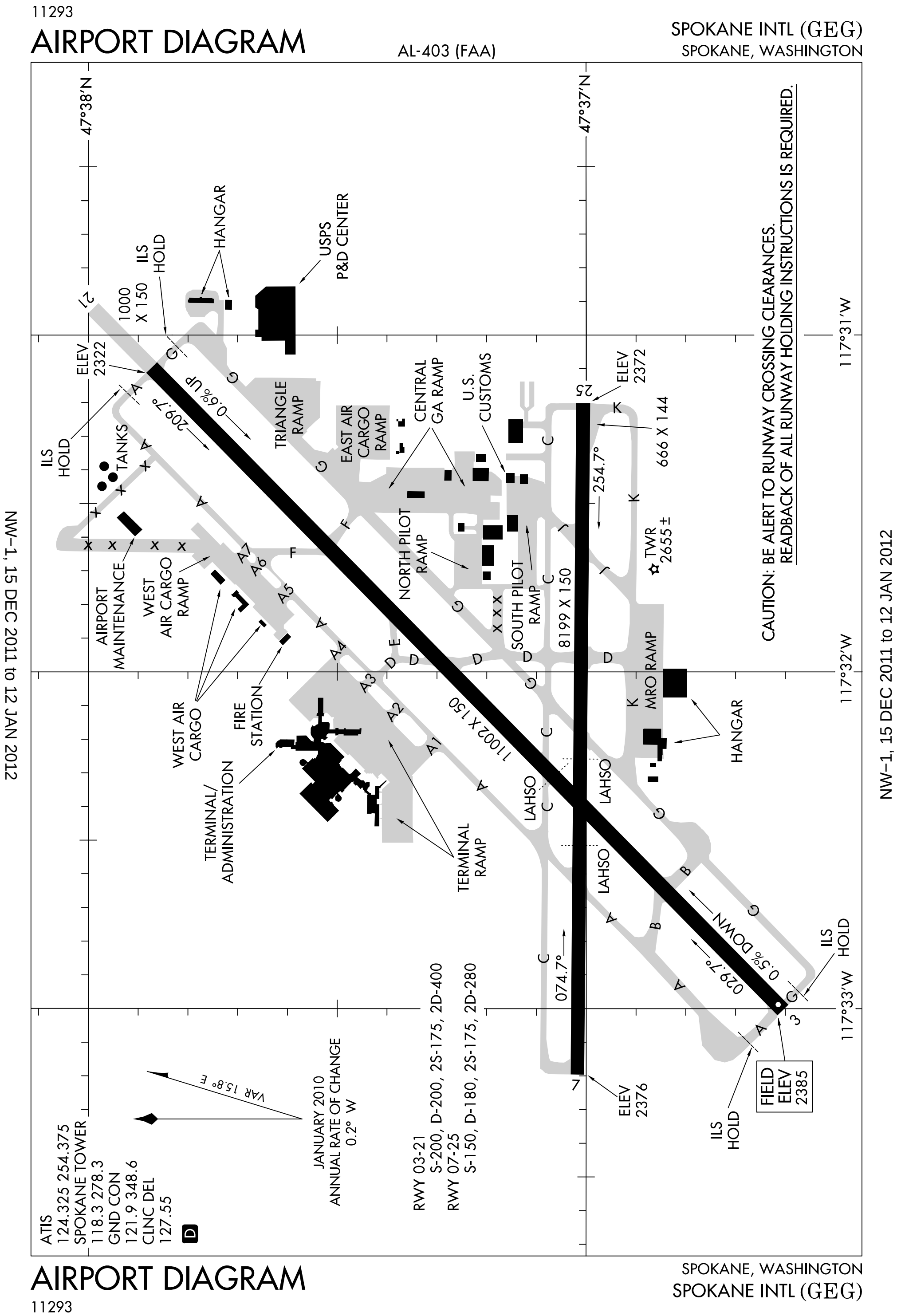
TAXIWAY FOR CORPORATE HANGAR RAMP LIMITED TO AIRCRAFT WITH 104 FT OR LESS WINGSPAN FOR TAXI OPERATIONS. GA CUSTOMS PARKING IS VERY LIMITED.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE C ON ALL TAXIWAYS AND RUNWAYS.

PRIOR PERMISSION REQUIRED FOR ALL GENERAL AVIATION PARKING AND SERVICES, CONTACT 206−433−5481.

TAXILANE W RESTRICTED TO WINGSPAN OF 135 FT OR LESS. SEATTLE RAMP TOWER PROVIDES ADVISORY CONTROL ONLY.

Spokane, Washington
Spokane International
ICAO Identifier KGEG



Spokane, WA
Spokane Intl
ICAO Identifier KGEG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47−37−00.00N / 117−32−00.00W
2.2.2 From City: 5 Miles SW Of Spokane, WA
2.2.3 Elevation: 2385 ft
2.2.5 Magnetic variation: 18E (2000)
2.2.6 Airport Contact: Ryland Davis
9000 W AIRPORT DR.
Spokane, WA 99224
(509−455−6455)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, 0600−2200 Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100,100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I B certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 25
2.10.1.b Type of obstacle: Tree (69 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 365 ft from Centerline

2.10.1.a. Runway designation: 21
2.10.1.b Type of obstacle: Gnd (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07
2.12.2 True Bearing: 90
2.12.3 Dimensions: 8199 ft x 150 ft
2.12.5 Coordinates: 47−37−00.00N / 117−33−11.76W
2.12.6 Threshold elevation: 2376 ft
2.12.6 Touchdown zone elevation: 2376 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8199 ft x 150 ft
2.12.5 Coordinates: 47−37−00.00N / 117−31−12.10W
2.12.6 Threshold elevation: 2372 ft
2.12.6 Touchdown zone elevation: 2373 ft

2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.5 Coordinates: 47-36-36.29N / 117-33-00.00W
2.12.6 Threshold elevation: 2385 ft
2.12.6 Touchdown zone elevation: 2385 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.5 Coordinates: 47-37-52.38N / 117-31-00.00W
2.12.6 Threshold elevation: 2322 ft
2.12.6 Touchdown zone elevation: 2346 ft
2.12.7 Slope: 0.6UP

AD 2.13 Declared distances
2.13.1 Designation: 07
2.13.2 Takeoff run available: 8199
2.13.3 Takeoff distance available: 8199
2.13.4 Accelerate-stop distance available: 8199
2.13.5 Landing distance available: 8199

2.13.1 Designation: 25
2.13.2 Takeoff run available: 8199
2.13.3 Takeoff distance available: 8199
2.13.4 Accelerate-stop distance available: 8199
2.13.5 Landing distance available: 8199

2.13.1 Designation: 03
2.13.2 Takeoff run available: 11002
2.13.3 Takeoff distance available: 11002
2.13.4 Accelerate-stop distance available: 11002
2.13.5 Landing distance available: 11002

2.13.1 Designation: 21
2.13.2 Takeoff run available: 11002
2.13.3 Takeoff distance available: 11002

2.13.4 Accelerate−stop distance available: 11002
2.13.5 Landing distance available: 11002

2.13.1 Designation: 07
2.13.2 Takeoff run available: 8199
2.13.3 Takeoff distance available: 8199
2.13.4 Accelerate−stop distance available: 8199
2.13.5 Landing distance available: 8199

2.13.1 Designation: 25
2.13.2 Takeoff run available: 8199
2.13.3 Takeoff distance available: 8199
2.13.4 Accelerate−stop distance available: 8199
2.13.5 Landing distance available: 8199

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07
2.14.4 Visual approach slope indicator system: 4-box VASI on left

2.14.1 Designation: 25
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 03
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on left

2.14.1 Designation: 21
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4-light PAPI on left
2.14.10 Remarks: ALSF 2 May Be Operated As SSALR During Favorable Wx Conditions.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 123.75 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.325 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.55 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 133.35 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 254.375 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 263 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 282.25 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 372.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 278.3 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−32.05N / 117−33−15.10W
2.19.6 Site elevation: 2380 ft

2.19.1 ILS type: Inner Marker for runway 03. Magnetic variation: 16E

2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−30.06N / 117−33−00.00W
2.19.6 Site elevation: 2381 ft

2.19.1 ILS type: Localizer for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−37−59.69N / 117−30−54.76W
2.19.6 Site elevation: 2316 ft

2.19.1 ILS type: Middle Marker for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−29.40N / 117−33−10.64W
2.19.6 Site elevation: 2378 ft
2.19.1 ILS type: Glide Slope for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−47.56N / 117−32−51.88W
2.19.6 Site elevation: 2372 ft

2.19.1 ILS type: Localizer for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47−36−29.20N / 117−33−10.95W
2.19.6 Site elevation: 2380 ft

2.19.1 ILS type: Glide Slope for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47−37−48.97N / 117−31−19.44W
2.19.6 Site elevation: 2324 ft

2.19.1 ILS type: Inner Marker for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47−38−00.00N / 117−30−49.60W
2.19.6 Site elevation: 96 ft

2.19.1 ILS type: Outer Marker for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47−40−37.34N / 117−27−00.00W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: DME for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47−36−32.05N / 117−33−15.10W
2.19.6 Site elevation: 2380 ft

2.19.1 ILS type: Middle Marker for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47−38−16.92N / 117−30−28.82W
2.19.6 Site elevation: 2233 ft

General Remarks:

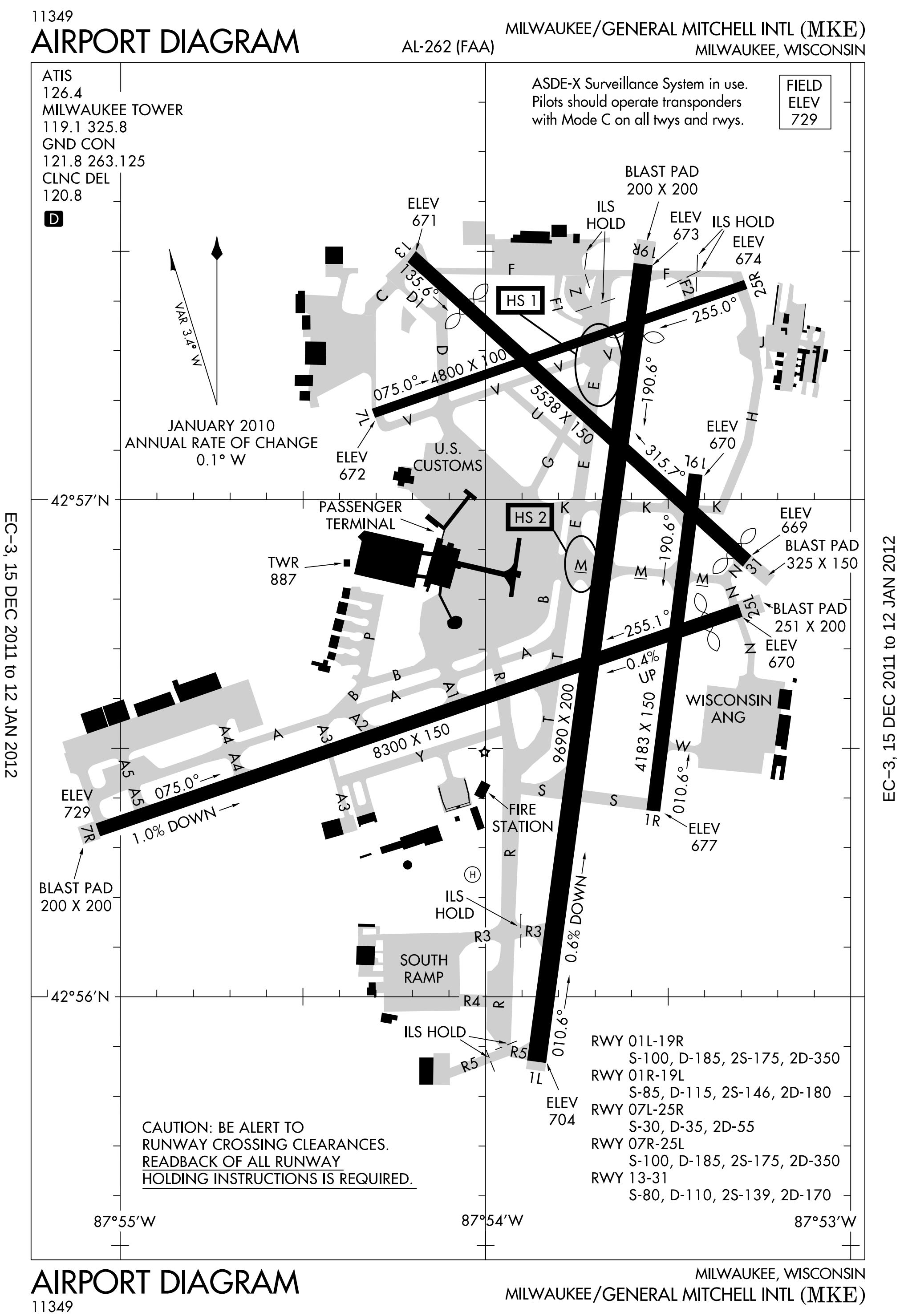
BE ALERT TO TURBULENCE OVER SMOKE STACKS 1 MILE EAST OF AIRPORT.

WATERFOWL & BIRDS ON & IN THE VICINITY OF AIRPORT.

TAXIWAY K UNLIGHTED ON RAMP SIDE ALONG MAINTENANCE RAMP AND IS UNAVAILABLE BELOW 1200 RUNWAY VISUAL RANGE UNLESS UNDER ESCORT BY “FOLLOW ME”.

MILITARY TRANSIENT AIRCRAFT REQUIRING SUPPORT AT KGEG MUST CONTACT FBO FOR SERVICE. FAIRCHILD AFB DETACHMENT HAS NO TRANSIENT ALERT, FLEET SERVICE, CREW TRANSPORTATION, AIRCRAFT PARKING, OR COMMAND AND CONTROL SERVICES FOR TRANSIENT AIRCRAFT.

Milwaukee, Wisconsin
General Mitchell International
ICAO Identifier KMKE



Milwaukee, WI
General Mitchell Intl
ICAO Identifier KMKE

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 42−56−49.49N / 87−53−49.43W
2.2.2 From City: 5 Miles S Of Milwaukee, WI
2.2.3 Elevation: 729 ft
2.2.5 Magnetic variation: 2W (1995)
2.2.6 Airport Contact: C.B. Bateman
5300 S HOWELL AVE
Milwaukee, WI 53207
(414−747−5300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: ALL Months, ALL Days, ALL Hours

AD 2.4 Handling services and facilities
2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrone category for firefighting: ARFF Index I C certified on 5/1/1973
2.6.4 Remarks: ARFF Index D Equip Available Upon Request.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 13
2.10.1.b Type of obstacle: Pole (33 ft). Lighted
2.10.1.c Location of obstacle: 69 ft from Centerline

2.10.1.a. Runway designation: 31
2.10.1.b Type of obstacle: Rr (42 ft). Lighted
2.10.1.c Location of obstacle: 295 ft from Centerline

2.10.1.a. Runway designation: 07L
2.10.1.b Type of obstacle: Tree (44 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 187 ft from Centerline

2.10.1.a. Runway designation: 25R
2.10.1.b Type of obstacle: Pole (77 ft). Lighted
2.10.1.c Location of obstacle: 195 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Tree (80 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 305 ft from Centerline

2.10.1.a. Runway designation: 25L
2.10.1.b Type of obstacle: Pole (41 ft). Lighted
2.10.1.c Location of obstacle: 464 ft from Centerline

2.10.1.a. Runway designation: 19L
2.10.1.b Type of obstacle: Tree (125 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 463 ft from Centerline

2.10.1.a. Runway designation: 01L
2.10.1.b Type of obstacle: Tree (82 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 985 ft from Centerline

2.10.1.a. Runway designation: 19R
2.10.1.b Type of obstacle: Fence (6 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 404 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 13
2.12.2 True Bearing: 132
2.12.3 Dimensions: 5538 ft x 150 ft
2.12.5 Coordinates: 42−57−29.28N / 87−54−12.33W
2.12.6 Threshold elevation: 671 ft
2.12.6 Touchdown zone elevation: 670 ft

2.12.1 Designation: 31
2.12.2 True Bearing: 312
2.12.3 Dimensions: 5538 ft x 150 ft
2.12.5 Coordinates: 42−56−52.50N / 87−53−17.21W
2.12.6 Threshold elevation: 669 ft
2.12.6 Touchdown zone elevation: 670 ft

2.12.1 Designation: 07L

2.12.2 True Bearing: 72
2.12.3 Dimensions: 4800 ft x 100 ft
2.12.5 Coordinates: 42−57−00.00N / 87−54−19.15W
2.12.6 Threshold elevation: 672 ft
2.12.6 Touchdown zone elevation: 672 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 252
2.12.3 Dimensions: 4800 ft x 100 ft
2.12.5 Coordinates: 42−57−24.81N / 87−53−17.88W
2.12.6 Threshold elevation: 674 ft
2.12.6 Touchdown zone elevation: 674 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 72
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.5 Coordinates: 42−56−20.66N / 87−55−00.00W
2.12.6 Threshold elevation: 729 ft
2.12.6 Touchdown zone elevation: 723 ft
2.12.7 Slope: 1DOWN

2.12.1 Designation: 25L
2.12.2 True Bearing: 252
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.5 Coordinates: 42−56−46.46N / 87−53−18.02W
2.12.6 Threshold elevation: 670 ft
2.12.6 Touchdown zone elevation: 683 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 01R
2.12.2 True Bearing: 7
2.12.3 Dimensions: 4183 ft x 150 ft
2.12.5 Coordinates: 42−56−21.76N / 87−53−32.51W
2.12.6 Threshold elevation: 677 ft
2.12.6 Touchdown zone elevation: 677 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 187
2.12.3 Dimensions: 4183 ft x 150 ft
2.12.5 Coordinates: 42−57−00.00N / 87−53−25.49W
2.12.6 Threshold elevation: 670 ft
2.12.6 Touchdown zone elevation: 674 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 7
2.12.3 Dimensions: 9690 ft x 200 ft
2.12.5 Coordinates: 42−55−52.73N / 87−53−51.02W
2.12.6 Threshold elevation: 704 ft
2.12.6 Touchdown zone elevation: 704 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 187
2.12.3 Dimensions: 9690 ft x 200 ft
2.12.5 Coordinates: 42−57−27.70N / 87−53−34.78W
2.12.6 Threshold elevation: 673 ft
2.12.6 Touchdown zone elevation: 672 ft

AD 2.13 Declared distances
2.13.1 Designation: 13
2.13.2 Takeoff run available: 5538
2.13.3 Takeoff distance available: 5538
2.13.4 Accelerate−stop distance available: 5538
2.13.5 Landing distance available: 4797

2.13.1 Designation: 31
2.13.2 Takeoff run available: 5538
2.13.3 Takeoff distance available: 5538
2.13.4 Accelerate−stop distance available: 5538
2.13.5 Landing distance available: 5334

2.13.1 Designation: 07R
2.13.2 Takeoff run available: 7761
2.13.3 Takeoff distance available: 7761
2.13.4 Accelerate−stop distance available: 7761
2.13.5 Landing distance available: 7761

2.13.1 Designation: 25L
2.13.2 Takeoff run available: 7761
2.13.3 Takeoff distance available: 7761
2.13.4 Accelerate−stop distance available: 7761
2.13.5 Landing distance available: 7328

2.13.1 Designation: 19R
2.13.2 Takeoff run available: 690
2.13.3 Takeoff distance available: 9690
2.13.4 Accelerate−stop distance available: 9690
2.13.5 Landing distance available: 8905

AD 2.14 Approach and runway lighting
2.14.1 Designation: 13
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 31

2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.1 Designation: 07L
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 25R
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 07R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 19R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.65 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 120.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 126.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: AS ASSIGNED
2.18.3 Service designation: 127.85 MHz

2.18.1 Service designation: OPNS
2.18.3 Service designation: 139.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 325.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 317.725 MHz

2.18.1 Service designation: OPNS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: 128ARW (ANG) CMD POST
2.18.3 Service designation: 321 MHz

2.18.1 Service designation: UPSET CTL
2.18.3 Service designation: 6761 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 127 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 263.075 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−22.80N / 87−55−00.00W
2.19.6 Site elevation: 730 ft

2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−22.25N / 87−54−40.36W
2.19.6 Site elevation: 706 ft

2.19.1 ILS type: Outer Marker for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−54−32.56N / 88−02−27.51W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−12.13N / 87−55−35.49W
2.19.6 Site elevation: 744 ft

2.19.1 ILS type: Localizer for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−48.89N / 87−53−00.00W
2.19.6 Site elevation: 668 ft

2.19.1 ILS type: DME for runway 25L. Magnetic variation: 2W
2.19.2 ILS identification: PXY
2.19.5 Coordinates: 42−56−22.86N / 87−55−00.00W
2.19.6 Site elevation: 720 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 2W
2.19.2 ILS identification: PXY
2.19.5 Coordinates: 42−56−19.99N / 87−55−00.00W
2.19.6 Site elevation: 720 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 2W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−57−49.95N / 87−53−30.97W
2.19.6 Site elevation: 713 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 2W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−56−00.00N / 87−53−43.04W
2.19.6 Site elevation: 691 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 2W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−50−22.60N / 87−54−46.83W
2.19.6 Site elevation: 678 ft

2.19.1 ILS type: Inner Marker for runway 01L. Magnetic variation: 2W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−55−44.65N / 87−53−52.40W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 2W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−55−26.50N / 87−53−55.50W
2.19.6 Site elevation: 701 ft

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 2W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−57−50.93N / 87−53−27.40W
2.19.6 Site elevation: 714 ft

2.19.1 ILS type: Localizer for runway 19R. Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 42−55−38.30N / 87−53−53.48W
2.19.6 Site elevation: 710 ft

2.19.1 ILS type: Glide Slope for runway 19R.

Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 42−57−00.00N / 87−53−32.52W
2.19.6 Site elevation: 666 ft

2.19.1 ILS type: Middle Marker for runway 19R.
Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 42−57−46.59N / 87−53−31.53W
2.19.6 Site elevation: 99999 ft

2.19.1 ILS type: Outer Marker for runway 19R.
Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 43−03−36.06N / 87−52−36.26W
2.19.6 Site elevation: 99999 ft

General Remarks:

RUNWAY 07L/25R CLOSED TO ALL JET AIRCRAFT.

TAXIWAY ’A’ CLOSED FROM TAXIWAY ’R’ TO ’E’ & TAXIWAY ’E’ CLOSED FROM TAXIWAY ’T’ TO ’M’ AND TAXIWAY ’T’ CLOSED NORTH RUNWAY 07R/25L AIRCRAFT WITH TAIL HEIGHT GREATER THAN 54.5 FT DURING CAT II & III OPERATIONS.

RUNWAY 13/31 CLOSED JET AIRCRAFT WITHOUT PRIOR PERMISSION REQUIRED AIRPORT MANAGER − CALL 414−747−5325.

TRAINING FLIGHTS INVOLVING SUCCESSIVE USE OF ANY RUNWAY PROHIBITED 2200−0600.

RUNWAYS 13/31 & 01R/19L & 07L/25R CLOSED EXCEPT LIGHT WEIGHT SINGLE ENGINE AIRCRAFT 2200−0600 DAILY.

BIRDS ON & IN THE VICINITY OF AIRPORT.

PREFERRED USAGE BY AIRCRAFT BETWEEN 2200−0600 IS TAKE-OFF RUNWAY 19R & LANDING RUNWAY 01L.

ALL APPROACHES ARE OVER NOISE SENSITIVE AREAS; ALL TURBOJET AIRCRAFT SHOULD REFRAIN FROM CONDUCTING MULTI VFR TRAFFIC PATTERN APPROACHES & DEPS WITHOUT PRIOR APPROVAL FROM AIRPORT MANAGER CALL C414−747−5325.

ANG: PRIOR PERMISSION REQUIRED ALL AIRCRAFT, 48HR PRIOR NOTICE, CONTACT AIRFIELD OPERATIONS DSN 580-8241, C414-944-8241. 128 ARW IS A FULLY OPERATIONAL KC-135R BASE WITH HRS OF OPERATION MON-FRI 1200Z-1930Z++ TUE-FRI, CLOSED HOLIDAY, SAT-SUN EXCEPT UNIT TMG, CALL FOR AVAILABLE.

ANG: ANY MDS’S (OTHER THAN KC−135) IS LIMITED TO STANDARD TRANSIENT MARSHALLING AND PARKING. NO TECHNICAL DATA AVAILABLE FOR TRANSIENT MAINTENANCE. FUEL AND AGE EQUIPMENT SUPPORT AVAILABLE FOR SELF−SERVICE. THERE ARE NO ADDITIONAL CONFIGURATION ITEMS SUPPORTED SUCH AS LANTIRN PODS, EDM PODS, ETC.

ANG: END OF RUNWAY FACILITIES, AIRCRAFT SHELTERS/REVETMENTS, AND ALERT FACILITIES ARE NOT AVAILABLE. AIRFIELD/AIRCRAFT PARKING CONCERNS INCLUDE: LIMITED STATIC GROUNDING POINTS AND NO AIRCRAFT TIE DOWN POINTS.

ANG: NO FLEET SERVICE/HOT CARGO PARKING AVAILABLE. CONTACT UPSET CTRL 20 MIN

PRIOR TO ARR TO RECEIVE CURRENT BIRD WATCH CONDITION AND PARKING INFORMATION.

ASDE−X SURVEILLANCE SYSTEM IN USE: PILOTS SHOULD OPERATE TRANSPONDERS WITH MODE ’C’ ON ALL TAXIWAYS & RUNWAYS.

AIRCRAFT WITH WINGSPAN GREATER THAN 158 FT CANNOT PASS SIMULTANEOUSLY ON TAXIWAY ’A’ & TAXIWAY ’B’ BETWEEN TAXIWAY ’A1’ & TAXIWAY ’A2’.

TAXIWAY ’S’ & ’T’ CLOSED BETWEEN RUNWAY 7R/25L & TAXIWAY ’R’ DURING CAT II & CAT III OPERATIONS.

AIRCRAFT WITH WINGSPAN GREATER THAN 175 FT CANNOT PASS SIMULTANEOUSLY ON TAXIWAY ’E’ & TAXIWAY ’Z’.

TAXIWAY B CLOSED BETWEEN TAXIWAY R AND TAXIWAY A1 TO AIRCRAFT WITH WINGSPAN GREATER THAN 117 FT WITHOUT PERMISSION FROM AIRPORT DIRECTOR AT 414−747−5325.

TAXIWAYS D1, F2, H, J, F1, P AND F (EAST OF RUNWAY 19R) CLOSED TO AIRCRAFT WTIH WINGSPAN GREATER THAN 78 FT.

TAXIWAY F (WEST OF TAXIWAY Z) CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 117 FT UNLESS PERMISSION FROM AIRPORT DIRECTOR AT 414−747−5325.

RUNWAY 19R TAKE-OFF DISTANCE AVAILABLE 8,450 FT FROM INTERSECTION TAXIWAY V.

TAXIWAY V BETWEEN TAXIWAY D AND RUNWAY 7L/25R CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 170 FT WHEN RUNWAY 7L/25R IN USE.

TAXIWAY B BETWEEN TAXIWAY V AND TAXIWAY R CLOSED TO AFFECT WITH WINGSPAN GREATER THAN 170 FT.

HOLDING BAYS AT RUNWAYS 1L & 7R ARE IN USE, ASSOCIATED TAXIWAY ADJACENT TO BAY IS LIMITED TO AIRCRAFT WINGSPAN UP TO FT.137 FT

HOLDING BAY AT RUNWAY 19R WHEN IN USE, TAXIWAY Z ADJACENT TO BAY IS LIMITED TO AIRCRAFT WITH WINGSPAN UP TO 170 FT.

RUNWAY 07L/25R NO AIRCRAFT 65,000 LBS OR GREATER ALLOWED TAXI BETWEEN TAXIWAY ’C’ & TAXIWAY ’E’.

RUNWAY 01R−19L AVAILABLE TO AIR CARRIERS FOR TAXI ONLY.

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Appendix 1. ATS Routes

MINIMUM ENROUTE IFR ALTITUDES OVER PARTICULAR ROUTES AND INTERSECTIONS

1. This is a consolidation of all data in Subparts C and D of Federal Aviation Regulation (FAR) Part 95 − Subchapter F, which were in effect February 9, 2012, Amendment 498 included.

2. It is not an amendment to Part 95; therefore, it will not appear in the Federal Register.

For updates to these routes and access to additional data products, please visit http://nfdc.faa.gov/fadds/index.jsp.

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95.1001 COLORED FEDERAL AIRWAYS

95.41 GREEN FEDERAL AIRWAY G1

FROM	TO	MEA
MOUNT MOFFETT, AK NDB/DME	HORTH, AK FIX	8000
HORTH, AK FIX	MORDI, AK FIX	*8000
*2500 - MOCA		
*5000 - GNSS MEA		
MORDI, AK FIX	ELFEE, AK NDB	*8000
*5300 - MOCA		
*7000 - GNSS MEA		

95.42 GREEN FEDERAL AIRWAY G2

FROM	TO	MEA
BORLAND, AK NDB/DME	WOODY ISLAND, AK NDB	*10000
*6600 - MOCA		

95.44 GREEN FEDERAL AIRWAY G4

FROM	TO	MEA
WOOD RIVER, AK NDB	ILIAMNA, AK NDB/DME	*4500
*3000 - MOCA		

95.46 GREEN FEDERAL AIRWAY G6

FROM	TO	MEA
ST MARYS, AK NDB	ANIAK, AK NDB	4000

95.47 GREEN FEDERAL AIRWAY G7

FROM	TO	MEA
GAMBELL, AK NDB/DME	FORT DAVIS, AK NDB	3000
FORT DAVIS, AK NDB	NORTON BAY, AK NDB	*5000
*4200 - MOCA		

95.48 GREEN FEDERAL AIRWAY G8

FROM	TO	MEA
SHEMYA, AK NDB	MOUNT MOFFETT, AK NDB/DME	#*8000
*6300 - MOCA		
#HF COMMS REQUIRED.		
MOUNT MOFFETT, AK NDB/DME	DUTCH HARBOR, AK NDB/DME	#*9000
*8000 - MOCA		
#HF COMMUNICATIONS REQUIRED		
DUTCH HARBOR, AK NDB/DME	MORDI, AK FIX	*9000
*5700 - MOCA		
*6000 - GNSS MEA		
MORDI, AK FIX	ELFEE, AK NDB	*8000
*5300 - MOCA		
*7000 - GNSS MEA		
ELFEE, AK NDB	CRACK, AK FIX	#*5000
*4100 - MOCA		
#HF COMMS ONLY BELOW 5000 MSL		
#VHF COMMS AVBL 5000 MSL AND ABOVE.		

FROM	TO	MEA

95.48 GREEN FEDERAL AIRWAY G8 – CONTINUED

CRACK, AK FIX	CHINOOK, AK NDB	#*3000
*2300 - MOCA		
#VHF/UHF COMMS AVBL 9000 MSL AND BELOW		
#HF COMMS ONLY BELOW 9000 MSL		
CHINOOK, AK NDB	NOSKY, AK FIX	*6000
*4900 - MOCA		
NOSKY, AK FIX	KACHEMAK, AK NDB	6100

95.49 GREEN FEDERAL AIRWAY G9

OSCARVILLE, AK NDB	CAIRN MOUNTAIN, AK NDB	6000

95.50GREEN FEDERAL AIRWAY G10

CAPE NEWENHAM, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	#4600
#HF COMMS REQURED BELOW 8000		
ST PAUL ISLAND, AK NDB/DME	BILBE, AK FIX	3000
BILBE, AK FIX	ELFEE, AK NDB	*6000
*3800 - MOCA		
ELFEE, AK NDB	PORT HEIDEN, AK NDB/DME	*5000
*4100 - MOCA		
PORT HEIDEN, AK NDB/DME	WIDTH, AK FIX COP 090 PDN	9000
WIDTH, AK FIX	WOODY ISLAND, AK NDB	*9000
*6300 - MOCA		
WOODY ISLAND, AK NDB	KACHEMAK, AK NDB	6000

95.51GREEN FEDERAL AIRWAY G11

CAMPBELL LAKE, AK NDB	GLENNALLEN, AK NDB	10000
GLENNALLEN, AK NDB	NABESNA, AK NDB	10000

95.52GREEN FEDERAL AIRWAY G12

CHINOOK, AK NDB	PORT HEIDEN, AK NDB/DME	2500
PORT HEIDEN, AK NDB/DME	BORLAND, AK NDB/DME	10000
BORLAND, AK NDB/DME	ELFEE, AK NDB	10000

95.53GREEN FEDERAL AIRWAY G13

ZOLMN, NC FIX	MANTEO, NC NDB	2000

95.55GREEN FEDERAL AIRWAY G15

ST MARYS, AK NDB	ANVIK, AK NDB/DME	4000
ANVIK, AK NDB/DME	TAKOTNA RIVER, AK NDB	*9000
*6000 - MOCA		
*7000 - GNSS MEA		

95.56GREEN FEDERAL AIRWAY G16

FROM	TO	MEA
POINT LAY, AK NDB	WAINWRIGHT VILLAGE, AK NDB	*1700
*1200 - MOCA		
WAINWRIGHT VILLAGE, AK NDB	BROWERVILLE, AK NDB	*1600
*1100 - MOCA		
BROWERVILLE, AK NDB	NUIQSUT VILLAGE, AK NDB COP 050 VIR	1600
NUIQSUT VILLAGE, AK NDB	PUT RIVER, AK NDB	*1700
*1200 - MOCA		

95.57GREEN FEDERAL AIRWAY G17

FROM	TO	MEA
WAINWRIGHT VILLAGE, AK NDB	ATQASUK, AK NDB	*1600
*1100 - MOCA		

95.58GREEN FEDERAL AIRWAY G18

FROM	TO	MEA
HOTHAM, AK NDB	POINT LAY, AK NDB	*10000
*6000 - MOCA		
	COP 096 HHM	
POINT LAY, AK NDB	ATQASUK, AK NDB COP 050 PIZ	2300

95.101 AMBER FEDERAL AIRWAY A1

FROM	TO	MEA
ABBOTSFORD, CANADA NDB	VICTORIA, CANADA NDB	#2800
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
U.S. CANADIAN BORDER	SITKA, AK NDB	*5000
*2300 - MOCA		
SITKA, AK NDB	SPARL, AK FIX	5200
SPARL, AK FIX	OCEAN CAPE, AK NDB	*6000
*2200 - MOCA		
OCEAN CAPE, AK NDB	CAPEM, AK FIX	*6000
*2000 - MOCA		
CAPEM, AK FIX	CORVA, AK FIX	*6000
*4400 - MOCA		
CORVA, AK FIX	EGGER, AK FIX	2000
EGGER, AK FIX	ORCA BAY, AK NDB	5000
ORCA BAY, AK NDB	CAMPBELL LAKE, AK NDB	*9000
*8300 - MOCA		
CAMPBELL LAKE, AK NDB	TAKOTNA RIVER, AK NDB	*10000
*9500 - MOCA		
TAKOTNA RIVER, AK NDB	NORTH RIVER, AK NDB	6000
NORTH RIVER, AK NDB	FORT DAVIS, AK NDB	3000

95.102 AMBER FEDERAL AIRWAY A2

FROM	TO	MEA
U.S. CANADIAN BORDER	NABESNA, AK NDB	*9600
*9000 - MOCA		
NABESNA, AK NDB	DELTA JUNCTION, AK NDB	8000

95.103 AMBER FEDERAL AIRWAY A3

EVANSVILLE, AK NDB	PUT RIVER, AK NDB	10000

95.104 AMBER FEDERAL AIRWAY A4

EVANSVILLE, AK NDB	ANAKTUVUK PASS, AK NDB	*10000
*8300 - MOCA		

95.105 AMBER FEDERAL AIRWAY A5

AMBLER, AK NDB/DME	EVANSVILLE, AK NDB	*7500
*6600 - MOCA		

95.106 AMBER FEDERAL AIRWAY A6

ST MARYS, AK NDB	NORTH RIVER, AK NDB	5000

95.107 AMBER FEDERAL AIRWAY A7

CAMPBELL LAKE, AK NDB	MINERAL CREEK, AK NDB COP 069 CMQ	12000

95.109 AMBER FEDERAL AIRWAY A9

CHENA, AK NDB	EVANSVILLE, AK NDB	5500
EVANSVILLE, AK NDB	BROWERVILLE, AK NDB	*10000
*9100 - MOCA		

95.115AMBER FEDERAL AIRWAY A15

US CANADIAN BORDER	NICHOLS, AK NDB	5000
NICHOLS, AK NDB	SUMNER STRAIT, AK NDB	*7000
*5100 - MOCA		
*6000 - GNSS MEA		
SUMNER STRAIT, AK NDB	COGHLAN ISLAND, AK NDB	7000
COGHLAN ISLAND, AK NDB	HAINES, AK NDB	*9000
*8300 - MOCA		
HAINES, AK NDB	BURWASH, CANADA NDB	#11000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
BURWASH, CANADA NDB	BEAVER CREEK, CANADA NDB	#9600
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
BEAVER CREEK, CANADA NDB	NABESNA, AK NDB	*9600
*9000 - MOCA		
NABESNA, AK NDB	DELTA JUNCTION, AK NDB	8000

95.116AMBER FEDERAL AIRWAY A16

ACTIVE PASS, CANADA NDB	WHITE ROCK, CANADA NDB	#*3000
*2100 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

FROM	TO	MEA

95.117AMBER FEDERAL AIRWAY A17

CHENA, AK NDB	*CHANDALAR LAKE, AK NDB	7000
*10000 - MCA CHANDALAR LAKE, AK NDB , NW BND		
CHANDALAR LAKE, AK NDB	PUT RIVER, AK NDB	10000

95.201 RED FEDERAL AIRWAY R1

ST PAUL ISLAND, AK NDB/DME	GARRS, AK FIX	*4600
*2700 - MOCA		
GARRS, AK FIX	CHINOOK, AK NDB	4600

95.202 RED FEDERAL AIRWAY R2

ELFEE, AK NDB	PORT HEIDEN, AK NDB/DME	6000

95.204 RED FEDERAL AIRWAY R4

CHENA, AK NDB	BEAR CREEK, AK NDB	5000

95.239 RED FEDERAL AIRWAY R39

OSCARVILLE, AK NDB	*ANIAK, AK NDB	**2000
*3500 - MCA ANIAK, AK NDB , NE BND		
**1400 - MOCA		
ANIAK, AK NDB	TAKOTNA RIVER, AK NDB	*6000
*5400 - MOCA		
TAKOTNA RIVER, AK NDB	MINCHUMINA, AK NDB	5000
MINCHUMINA, AK NDB	ICE POOL, AK NDB	4000

95.250 RED FEDERAL AIRWAY R50

NANWAK, AK NDB/DME	OSCARVILLE, AK NDB	3000
OSCARVILLE, AK NDB	ANVIK, AK NDB/DME	4100

95.251 RED FEDERAL AIRWAY R51

SUMNER STRAIT, AK NDB	SITKA, AK NDB	7000

95.299 RED FEDERAL AIRWAY R99

ST PAUL ISLAND, AK NDB/DME	DUTCH HARBOR, AK NDB/DME	#4800
#HF COMMS REQUIRED BELOW 8000 MSL.		
DUTCH HARBOR, AK NDB/DME	CHINOOK, AK NDB	*9000
*6300 - MOCA		
CHINOOK, AK NDB	ILIAMNA, AK NDB/DME	*5000
*4400 - MOCA		
ILIAMNA, AK NDB/DME	KACHEMAK, AK NDB	6100

FROM	TO	MEA

95.601 BLUE FEDERAL AIRWAY B1

WOODY ISLAND, AK NDB	ILIAMNA, AK NDB/DME	*10000
*9100 - MOCA		

95.602 BLUE FEDERAL AIRWAY B2

POINT LAY, AK NDB	CAPE LISBURNE, AK NDB/DME	4000
CAPE LISBURNE, AK NDB/DME	HOTHAM, AK NDB	*8000
*4100 - MOCA		
	COP 057 LUR	
HOTHAM, AK NDB	TIN CITY, AK NDB/DME	*5000
*4300 - MOCA		
TIN CITY, AK NDB/DME	FORT DAVIS, AK NDB	*7000
*5900 - MOCA		
*6000 - GNSS MEA		

95.603 BLUE FEDERAL AIRWAY B3

ANIAK, AK NDB	ANVIK, AK NDB/DME	3700
ANVIK, AK NDB/DME	NORTH RIVER, AK NDB	4600
NORTH RIVER, AK NDB	NORTON BAY, AK NDB	3000
NORTON BAY, AK NDB	HOTHAM, AK NDB	4500
HOTHAM, AK NDB	NOATAK, AK NDB/DME	3300

95.604 BLUE FEDERAL AIRWAY B4

UTOPIA CREEK, AK NDB/DME	EVANSVILLE, AK NDB	*8000
*6200 - MOCA		
EVANSVILLE, AK NDB	YUKON RIVER, AK NDB	*8000
*6600 - MOCA		

95.605 BLUE FEDERAL AIRWAY B5

CAPE LISBURNE, AK NDB/DME	POINT HOPE, AK NDB	4000

95.607 BLUE FEDERAL AIRWAY B7

CAPE NEWENHAM, AK NDB/DME	OSCARVILLE, AK NDB	4600

95.608 BLUE FEDERAL AIRWAY B8

TIN CITY, AK NDB/DME	SHISHMAREF, AK NDB	4000

95.609 BLUE FEDERAL AIRWAY B9

*DEEDS, FL FIX	MARATHON, FL NDB	**2000
*4000 - MRA		
**1500 - MOCA		

FROM	TO	MEA

95.6125 BLUE FEDERAL AIRWAY B25

ORCA BAY, AK NDB	*SHOPE, AK FIX	4900
*6600 - MCA SHOPE, AK FIX , N BND		
SHOPE, AK FIX	GLENNALLEN, AK NDB	10000
GLENNALLEN, AK NDB	*DELTA JUNCTION, AK NDB	**12000
*8000 - MCA DELTA JUNCTION, AK NDB , SE BND		
**11500 - MOCA		

95.6126 BLUE FEDERAL AIRWAY B26

CHENA, AK NDB	YUKON RIVER, AK NDB	7000

95.6127 BLUE FEDERAL AIRWAY B27

WOODY ISLAND, AK NDB	CHINOOK, AK NDB	10000
CHINOOK, AK NDB	OSCARVILLE, AK NDB	7500
OSCARVILLE, AK NDB	ST MARYS, AK NDB	3000
ST MARYS, AK NDB	FORT DAVIS, AK NDB	3000
FORT DAVIS, AK NDB	HOTHAM, AK NDB	6000

95.6128 BLUE FEDERAL AIRWAY B28

US CANADIAN BORDER	NICHOLS, AK NDB	5000
NICHOLS, AK NDB	SITKA, AK NDB	*6900
*6000 - MOCA		
*6000 - GNSS MEA		

95.6137 BLUE FEDERAL AIRWAY B37

SUMNER STRAIT, AK NDB	ELEPHANT, AK NDB	*7000
*6400 - MOCA		
ELEPHANT, AK NDB	SPARL, AK FIX	*6000
*5000 - MOCA		
*5000 - GNSS MEA		

95.6138 BLUE FEDERAL AIRWAY B38

ELEPHANT, AK NDB	CHILL, AK FIX	7300
CHILL, AK FIX	HAINES, AK NDB	9000

95.6140 BLUE FEDERAL AIRWAY B40

HAINES, AK NDB	ROBINSON, CANADA NDB	#*10000
*9800 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6179 BLUE FEDERAL AIRWAY B79

SANDSPIT, CANADA NDB	NICHOLS, AK NDB	#5000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.1001 DIRECT ROUTES-U.S.

FROM	TO	MEA
ABERDEEN, SD VOR/DME	MASON CITY, IA VORTAC	18000 MAA - 45000
ABERDEEN, SD VOR/DME	FARGO, ND VORTAC	18000 MAA - 45000
ABILENE, TX VORTAC	LLANO, TX VORTAC COP 75 ABI	7000
ABILENE, TX VORTAC *3300 - MOCA	WACO, TX VORTAC	*6500
ALBEK, NJ FIX	INT OOD VORTAC 075 & CYN VORTAC 042	2000 MAA - 8000
ALBEK, NJ FIX	WOODSTOWN, NJ VORTAC	2000 MAA - 7000
ALEXANDRIA, MN VOR/DME	JAMESTOWN, ND VOR/DME	18000 MAA - 22000
ALLENDALE, SC VOR	SINCA, GA FIX	11000 MAA - 23000
ALLENTOWN, PA VORTAC *3000 - MOCA	STILLWATER, NJ VOR/DME	*3300
ALLENTOWN, PA VORTAC *2500 - MOCA	POTTSTOWN, PA VORTAC	*2700
APPIN, TX FIX *1500 - MOCA	LAKE CHARLES, LA VORTAC	*8000
APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	18000 MAA - 45000
ATLANTIC CITY, NJ VORTAC	ATLANTIC CITY, NJ VORTAC 165/20	2000 MAA - 4000
AUGUSTA, ME VOR/DME	SCUPP, OA FIX	13000 MAA - 39000
BAGBY, CA FIX *5800 - MOCA	CLOVIS, CA VORTAC	*7000
BANGOR, ME VORTAC *8000 - MRA **5000 - MOCA	*PATTA, ME FIX	**8000
BARNES, MA VORTAC	KIBBE, MA FIX	2200 MAA - 17500
BARRETTS MOUNTAIN, NC VOR/DME *3000 - MOCA	GREENSBORO, NC VORTAC	*3500
BATTLE MOUNTAIN, NV VORTAC	CLOVIS, CA VORTAC	24000 MAA - 45000
BATTLE MOUNTAIN, NV VORTAC	TWIN FALLS, ID VORTAC	#18000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
BAXLY, GA FIX *1700 - MOCA	BRUNSWICK, GA VORTAC	*3000
BERLIN, NH VOR/DME	SUGRR, ME FIX	6000 MAA - 17000
BERLIN, NH VOR/DME *4300 - MOCA	NERNY, ME FIX	*6000 MAA - 17000
BESGE, NC FIX	CAPEX, NC FIX	6000 MAA – 10000

FROM	TO	MEA
BIG SUR, CA VORTAC VIA BSR VORTAC 85 & AVE VORTAC 304	AVENAL, CA VORTAC	*11000
*7900 - MOCA		MAA - 35000
BISMARCK, ND VOR/DME	HUMBOLDT, MN VORTAC	18000
BISMARCK, ND VOR/DME	DICKINSON, ND VORTAC	18000
		MAA - 24000
BLALY, GA FIX	FLINN, GA FIX	2000
BOOIE, TN NDB	YUMMY, VA FIX	4500
BOZEMAN, MT VOR/DME	DUBOIS, ID VORTAC	18000
		MAA - 25000
BOZEMAN, MT VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	19000
		MAA - 35000
BRADFORD, IL VORTAC	DES MOINES, IA VORTAC	18000
		MAA - 41000
BRILO, CA FIX	YAGER, CA FIX	7000
BROOKLEY, AL VORTAC	SEMMES, AL VORTAC	2000
		MAA - 17500
BRUSE, FL FIX	DEFUN, FL FIX	*2000
*1700 – MOCA		
BULLION, NV VOR/DME	BOISE, ID VORTAC	18000
BUTLER, MO VORTAC VIA BUM VORTAC 84 & VIH VOR/DME 268	VICHY, MO VOR/DME	18000
		MAA - 41000
BUTLER, MO VORTAC	KANSAS CITY, MO VORTAC	3100
		MAA - 35000
CAJON, CA FIX	HITOP, CA FIX	8000
CALBE, CA FIX VIA PDZ VORTAC 306 & PMD VORTAC 142	PALMDALE, CA VORTAC	10000
		MAA - 17500
*CAMARILLO, CA VOR/DME	SANTA MONICA, CA VOR/DME	5000
*3600 - MCA CAMARILLO, CA VOR/DME , E BND		
CARRA, FL FIX	ORMOND BEACH, FL VORTAC	2000
		MAA - 17500
*CHARM, CO FIX	**PUEBLO, CO VORTAC	8000
*10000 - MCA CHARM, CO FIX , S BND		
**7200 - MCA PUEBLO, CO VORTAC , S BND		
		MAA - 45000
CHICO, CA VOR/DME	RED BLUFF, CA VORTAC	3000
		MAA - 12000
CHISUM, NM VORTAC	*TRACC, NM FIX	10000
*11000 - MCA TRACC, NM FIX , N BND		
COALDALE, NV VORTAC	SQUAW VALLEY, CA VOR/DME	15000
		MAA - 39000
COALDALE, NV VORTAC	WOODSIDE, CA VORTAC COP 68 OAL	*18000
*15100 - MOCA		MAA - 45000
COCHISE, AZ VORTAC	DOUGLAS, AZ VORTAC	8200
COLLI, CA FIX	SCAGGS ISLAND, CA VORTAC	3500
COLOM, CA FIX	FRIANT, CA VORTAC	18000
		MAA - 45000
COLOM, CA FIX	MINA, NV VORTAC	28000
COLUMBIA, MO VOR/DME	SEDALIA, MO NDB	4000
COLUMBIA, SC VORTAC	CHARLESTON, WV VORTAC	18000
		MAA - 45000
CONCORD, NH VORTAC	KHRIS, NH FIX	3000
		MAA – 8000

FROM	TO	MEA
CORONA, NM VORTAC	TRACC, NM FIX	12000
CORTEZ, CO VOR/DME	PUEBLO, CO VORTAC COP 80 CEZ	#22000
		MAA - 45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
COVEX, LA FIX	APPIN, TX FIX	*8000
*1800 - MOCA		
COVEX, LA FIX	BELCHER, LA VORTAC	*3500
*1900 - MOCA		
CRAIG, FL VORTAC	GATORS, FL VORTAC	24000
		MAA - 45000
CRAIG, FL VORTAC	LEE COUNTY, FL VORTAC	24000
		MAA - 45000
CRAIG, FL VORTAC	VALDOSTA, GA VOR/DME	*4000
*1500 - MOCA		
CRESTVIEW, FL VORTAC	IDGES, FL FIX	2000
VIA 1500 FLOOR CEW VORTAC R-131.		
		MAA - 17500
CUNEY, TX FIX	NACOGDOCHES, TX NDB	*4000
*3000 - MOCA		
DAGGETT, CA VORTAC	PALMDALE, CA VORTAC	7000
DAYTON, OH VOR/DME	APPLETON, OH VORTAC	18000
		MAA - 45000
DAYTON, OH VOR/DME	GUNNE, OH FIX	18000
		MAA - 39000
DAYTON, OH VOR/DME	FORT WAYNE, IN VORTAC	18000
		MAA - 43000
DELLS, WI VORTAC	EAU CLAIRE, WI VORTAC	18000
		MAA - 29000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	2700
		MAA - 35000
DESTN, FL FIX	VARRE, FL FIX	*2000
VIA 1500 FLOOR. NUN VOR R-095.		
*1500 - MOCA		MAA - 17500
DETROIT LAKES, MN VOR/DME	THIEF RIVER FALLS, MN VOR/DME	*3300
*2700 - MOCA		
DICKINSON, ND VORTAC	U.S. CANADIAN BORDER	18000
VIA DIK VORTAC 31		
DICKINSON, ND VORTAC	MINOT, ND VORTAC	18000
		MAA - 35000
DILLON, MT VOR/DME	SHERIDAN, WY VOR/DME	#33000
		MAA - 45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
DUBOIS, ID VORTAC	BOZEMAN, MT VOR/DME	18000
		MAA - 35000
DULUTH, MN VORTAC	U.S. CANADIAN BORDER	#*18000
*3100 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
DULUTH, MN VORTAC	TRAVERSE CITY, MI VORTAC	24000
*DUNOIR, WY VOR/DME	WORLAND, WY VOR/DME COP 40 DNW	**16000
*12200 - MCA DUNOIR, WY VOR/DME , E BND		
**15200 - MOCA		
DUNOIR, WY VOR/DME	BILLINGS, MT VORTAC	18000
		MAA - 45000
DUPREE, SD VORTAC	BISMARCK, ND VOR/DME	18000
		MAA - 35000
EAU CLAIRE, WI VORTAC	DULUTH, MN VORTAC	18000
		MAA – 29000

FROM	TO	MEA
EEDEN, AK FIX	FRIED, AK FIX	10000 MAA - 45000
ELLWOOD CITY, PA VORTAC	INT EWC VORTAC 050 & BFD VORTAC 246	4000
EPHRATA, WA VORTAC *6700 - MOCA	OMAK, WA NDB	*8000
EVELETH, MN VOR/DME	ELY, MN VOR/DME	3400
FARGO, ND VORTAC	WILLISTON, ND VORTAC	23000
FAYETTEVILLE, NC VOR/DME *1600 - MOCA	TAR RIVER, NC VORTAC	*3000
FAYETTEVILLE, NC VOR/DME	KINSTON, NC VORTAC	2000
FELLOWS, CA VORTAC	SAN MARCUS, CA VORTAC	9000
FELLOWS, CA VORTAC	GORMAN, CA VORTAC	11000
FELLOWS, CA VORTAC	FILLMORE, CA VORTAC COP 42 FLW	9500
FELLOWS, CA VORTAC	GUADALUPE, CA VOR	7000
FELLOWS, CA VORTAC	GAVIOTA, CA VORTAC	8000
FELLOWS, CA VORTAC	SHAFTER, CA VORTAC	6400
FILLMORE, CA VORTAC	FELLOWS, CA VORTAC	9500
FILLMORE, CA VORTAC	CLOVIS, CA VORTAC COP 60 FIM	18000
FLINT, MI VORTAC	OLTOE, IA FIX	2600
FLYING CLOUD, MN VOR/DME	SIOUX FALLS, SD VORTAC	17000 MAA - 25000
FORNEY, MO VOR	COLUMBIA, MO VOR/DME	2900 MAA - 17500
FORT DODGE, IA VORTAC	BRADFORD, IL VORTAC	18000 MAA - 45000
FORT STOCKTON, TX VORTAC *6000 - MOCA	ROCKSPRINGS, TX VORTAC	*8000
FORT STOCKTON, TX VORTAC	SAN ANGELO, TX VORTAC	7000
FORT WAYNE, IN VORTAC	KALAMAZOO, MI VOR/DME	18000 MAA - 43000
GATORS, FL VORTAC	BASSS, FL FIX	3000 MAA - 17500
GATORS, FL VORTAC *1700 - MOCA	ROYES, FL FIX	*3000
GATORS, FL VORTAC	CARRA, FL FIX	3000 MAA - 17500
GEORGETOWN, NY VORTAC	VASTS, NY FIX	3900
GINNA, CA FIX	CAMARILLO, CA VOR/DME	4000
GIPPER, MI VORTAC	LITCHFIELD, MI VOR/DME COP 49 GIJ	#18000 MAA - 41000
#MAXIMUM CROSSING ALT SBN 075/49 33000.		
GLINA, NM FIX VIA BWS VOR/DME 351 *9900 - MOCA	BOLES, NM VOR/DME	#*13000 MAA - 24000
#RADAR REQUIRED WHEN IN HOLLOMAN APCH CTL ARSPC.		
GOOCH SPRINGS, TX VORTAC *3000 - MOCA	COLLEGE STATION, TX VORTAC	*4000
GOPHER, MN VORTAC	CEDAR RAPIDS, IA VOR/DME	14500 MAA - 35000
GOPHER, MN VORTAC	MOLINE, IL VORTAC	13000 MAA - 35000
GOREY, CO FIX	RLG*C*128/10	16000 MAA - 14700
GRAND ISLAND, NE VORTAC *2900 - MOCA	LINCOLN, NE VORTAC	*4000 MAA - 35000
GRAND ISLAND, NE VORTAC *3800 - MOCA	SALINA, KS VORTAC	*7000 MAA - 17500
GRAND STRAND, SC VORTAC	KINSTON, NC VORTAC	18000 MAA – 45000

FROM	TO	MEA
GROTON, CT VOR/DME	FLIBB, CT FIX	*2000
*1500 - MOCA		MAA - 17500
GUADALUPE, CA VOR	HABUT, CA FIX	5000
GUANTANAMO BAY, CU UHF/NDB	INT NBW NDB 078 & GT NDB 243	2400
GULFPORT, MS VORTAC	*PLUGG, MS FIX	**2000
*5000 - MRA		
**1700 - MOCA		
GUNNE, OH FIX	TIVERTON, OH VOR/DME	18000
		MAA - 39000
HOLSTON MOUNTAIN, TN VORTAC	LONDON, KY VORTAC	18000
		MAA - 45000
HOMEE, PA FIX	REVLOC, PA VOR/DME	4000
HOMEE, PA FIX	JOHNSTOWN, PA VORTAC	4200
HONEZ, CA FIX	MODESTO, CA VOR/DME	2200
HORIG, TN FIX	KIMGE, TN FIX	5500
		MAA - 10000
HOVEL, ID FIX	ONTARIO, OR NDB	
	SE BND	7000
	NW BND	9000
HUDSPETH, TX VORTAC	MARFA, TX VOR/DME	9400
HUMBLE, TX VORTAC	QUITMAN, TX VOR/DME	*9000
*2200 - MOCA		MAA - 41000
HURON, SD VORTAC	REDWOOD FALLS, MN VOR/DME COP 40 HON	31000
		MAA - 37000
INT ADW VORTAC 067 & OTT VORTAC 037	BOAST, MD FIX	2200
INT CNX VORTAC 315 & OTO VOR 168	GLINA, NM FIX	*12000
VIA OTO VOR 168		
*9000 - MOCA		
INT EWC VORTAC 050 & BFD VOR/DME 246	BRADFORD, PA VOR/DME	4000
INT MGY VOR 234 & MXE VORTAC 113	MODENA, PA VORTAC	2000
INT NBW NDB 078 & GT NDB 243	GRAND TURK, TC NDB	*2000
*1300 - MOCA		
JAMESTOWN, ND VOR/DME	GRAND FORKS, ND VOR/DME	18000
		MAA - 35000
JAMESTOWN, ND VOR/DME	BISMARCK, ND VOR/DME	18000
		MAA - 24000
JIMMY, VA FIX	INT HPW VORTAC 105 & HCM VORTAC 134	2000
JULIAN, CA VORTAC	PARADISE, CA VORTAC	8000
		MAA - 41000
KAISER, MO NDB	FORNEY, MO VOR	*3000
*2400 - MOCA		
KALAMAZOO, MI VOR/DME	GRAND RAPIDS, MI VOR/DME	18000
		MAA - 43000
KALISPELL, MT VOR/DME	U.S. CANADIAN BORDER COP 82 FCA	18000
		MAA - 45000
KALISPELL, MT VOR/DME	HELENA, MT VORTAC COP 50 FCA	*15500
*11400 - MOCA		
KANSAS CITY, MO VORTAC	LINCOLN, NE VORTAC	*3500
*2900 - MOCA		MAA - 35000
KANSAS CITY, MO VORTAC	ST JOSEPH, MO VORTAC	2900
		MAA - 35000
KEARNEY, NE VOR	MANKATO, KS VORTAC	4200
KENNEDY, NY VOR/DME	COLTS NECK, NJ VOR/DME	2000
		MAA - 5000

FROM	TO	MEA
KHRIS, NH FIX	LAWRENCE, MA VOR/DME	3000 MAA - 8000
KILMA, NJ FIX	COLTS NECK, NJ VOR/DME	2000 MAA - 6000
KIRKSVILLE, MO VORTAC	SPINNER, IL VORTAC	18000 MAA - 41000
LAFAYETTE, LA VORTAC	ORICH, LA FIX	1600
LAKE CHARLES, LA VORTAC *1600 - MOCA	APPIN, TX FIX	*8000
LAKE CHARLES, LA VORTAC *1600 - MOCA	LUFKIN, TX VORTAC	*3000 MAA - 1700
LAKE HUGHES, CA VORTAC	FILLMORE, CA VORTAC	8000
LAMONI, IA VORTAC	IOWA CITY, IA VORTAC	18000 MAA - 42000
LAUGHLIN, TX VORTAC *3000 - MOCA	SAN ANTONIO, TX VORTAC	*5000
LAWTON, OK VOR/DME VIA LAW VOR/DME 71 & MLC VORTAC 254 *2700 - MOCA	MC ALESTER, OK VORTAC	*6000 MAA - 24000
LEONA, TX VORTAC *1900 - MOCA	GREGG COUNTY, TX VORTAC	*2500
LINCOLN, NE VORTAC	OMAHA, IA VORTAC	3700 MAA - 35000
LINCOLN, NE VORTAC *2700 - MOCA	DES MOINES, IA VORTAC	*5000 MAA - 45000
LONDON, KY VORTAC	HOLSTON MOUNTAIN, TN VORTAC	18000 MAA - 43000
LUFKIN, TX VORTAC *2000 - MOCA	MONROE, LA VORTAC COP 82 LFK	*8000
LUFKIN, TX VORTAC *2100 - MOCA	PALESTINE, TX NDB COP 53 LFK	*3200
MADISON, WI VORTAC	DELLS, WI VORTAC	18000 MAA - 29000
MANHATTAN, KS VOR/DME	FORBES FIELD, KS- RIPLY LOM COP 35 MHK	3500
MANKATO, KS VORTAC *3100 - MOCA	SALINA, KS VORTAC	*3400
MANTECA, CA VOR/DME	SAN JOSE, CA VOR/DME COP 30 ECA	6000 MAA - 30000
MANTECA, CA VOR/DME	BUSHY, CA FIX	6000
MARATHON, FL NDB VIA CONTROL 1233	TADPO, FL FIX	2500
*MARIC, CA FIX VIA AVE VORTAC 109 & LHS VORTAC 305 *3400 - MCA MARIC, CA FIX , E BND	LAKE HUGHES, CA VORTAC	7800
MARSH HARBOUR, BS NDB *1300 - MOCA	ANGLL, BS FIX	*2000
MARYSVILLE, CA VOR/DME	CHICO, CA VOR/DME	3000 MAA - 12000
MC ALESTER, OK VORTAC *2700 - MOCA	TULSA, OK VORTAC	*3000
MC GUIRE, NJ VORTAC	INT GXU VORTAC 234 & MXE VORTAC 113	2000 MAA - 8000
MC GUIRE, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	2000 MAA - 7000
MEEKER, CO VOR/DME *16500 - MRA **15500 - MOCA	*FUNDS, CO FIX	**24000 MAA – 37000

FROM	TO	MEA
MENDOCINO, CA VORTAC	POINT REYES, CA VORTAC	5000 MAA - 39000
MENDOCINO, CA VORTAC *7500 - MOCA	BRILO, CA FIX	*11000 MAA - 24000
MINA, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	18000
MINOT, ND VORTAC	U.S. CANADIAN BORDER	18000 MAA - 45000
MISSOULA, MT VOR/DME	DILLON, MT VOR/DME	16500 MAA - 35000
MISSOULA, MT VOR/DME	KALISPELL, MT VOR/DME	18000 MAA - 45000
MISSOULA, MT VOR/DME	GREAT FALLS, MT VORTAC	18000 MAA - 24000
MISSOULA, MT VOR/DME	BOZEMAN, MT VOR/DME	20000 MAA - 35000
MONTEBELLO, VA VOR/DME	ELKINS, WV VORTAC	6600
MONTOUR, PA VORTAC	DU BOIS, PA LOM COP 65 MMJ	5000
MORGANTOWN, WV VORTAC	INT AGC VORTAC 237 & EWC VORTAC 190	3800
MORMON MESA, NV VORTAC	WILSON CREEK, NV VORTAC	18000
MORRO BAY, CA VORTAC	FILLMORE, CA VORTAC	9500
MORRO BAY, CA VORTAC	FELLOWS, CA VORTAC	6400
MORRO BAY, CA VORTAC	SHAFTER, CA VORTAC	6000
MOULTRIE, GA VOR/DME	VALDOSTA, GA VOR/DME	2000 MAA - 7000
MUDDY MOUNTAIN, WY VOR/DME	DICKINSON, ND VORTAC	18000 MAA - 35000
MUSTANG, NV VORTAC	TROSE, CA FIX	22000
NAPOLEON, MO VORTAC *2400 - MOCA	KAISER, MO NDB COP 70 ANX	*5000
NERNY, ME FIX	AUGUSTA, ME VOR/DME	6000 MAA - 17000
NEWMAN, TX VORTAC *6700 - MOCA	TURQE, NM FIX	*8000 MAA - 17500
NORTH BEND, OR VORTAC	NEWPORT, OR VORTAC	18000 MAA - 45000
NORTH BEND, OR VORTAC	EUGENE, OR VORTAC	18000 MAA - 41000
NORTH PHILADELPHIA, PA VOR	ROBBINSVILLE, NJ VORTAC	2000 MAA - 7000
NORTH PHILADELPHIA, PA VOR *1700 - MOCA	NORTH PHILADELPHIA, PA VOR 100/40	*4000 MAA - 5000
NORTH PLATTE, NE VORTAC *4200 - MOCA	KEARNEY, NE VOR	*5000
NORTHBROOK, IL VOR/DME	DES MOINES, IA VORTAC	18000 MAA - 41000
NORWICH, CT VOR/DME	LAFAY, RI FIX	2000 MAA - 17500
O'NEILL, NE VORTAC VIA ONL VORTAC 68 & MCW VORTAC 257	MASON CITY, IA VORTAC	24000 MAA - 41000
OAKLAND, CA VORTAC	SCAGGS ISLAND, CA VORTAC	4000
OMAHA, IA VORTAC	HILL CITY, KS VORTAC	18000 MAA - 45000
ONTARIO, OR NDB	PARMO, ID FIX	5000
PACIF, CA FIX	SEAL BEACH, CA VORTAC	3000

FROM	TO	MEA
PANOCHE, CA VORTAC	*HENCE, CA FIX	**9000
*9000 - MCA HENCE, CA FIX , E BND		
**5800 - MOCA		
PANOCHE, CA VORTAC	SUNOL, CA FIX	18000
		MAA - 31000
PANOCHE, CA VORTAC	GORMAN, CA VORTAC	24000
PARADISE, CA VORTAC	*CALBE, CA FIX	6000
*8500 - MCA CALBE, CA FIX , NW BND		
		MAA - 17500
PARER, FL FIX	CRESS, FL FIX	*2000
*1400 - MOCA		
PAWNEE CITY, NE VORTAC	KIRKSVILLE, MO VORTAC	18000
VIA PWE VORTAC 81		
& IRK VORTAC 266		
		MAA - 41000
PAWNEE CITY, NE VORTAC	KANSAS CITY, MO VORTAC	18000
		MAA - 45000
PEACH SPRINGS, AZ VORTAC	DOVE CREEK, CO VORTAC	18000
	COP 100 PGS	
VIA PGS VORTAC 43		
& DVC VORTAC 226		
		MAA - 41000
PECAN, GA VORTAC	OMAHO, AL FIX	*2500
*1900 - MOCA		
PECAN, GA VORTAC	MOULTRIE, GA VOR/DME	2500
		MAA - 7000
PENDLETON, OR VORTAC	DILLON, MT VOR/DME	#24000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
PHIPS, FL FIX	DESTN, FL FIX	*3000
VIA 1500 FLOOR. PFN VORTAC R-284.		
*1500 - MOCA		MAA - 17500
PINON, NM VOR/DME	*TRACC, NM FIX	10000
*11000 - MCA TRACC, NM FIX , N BND		
POINT REYES, CA VORTAC	WOODSIDE, CA VORTAC	*5000
*4400 - MOCA		MAA - 17000
POTTSTOWN, PA VORTAC	BOYER, PA FIX	5000
		MAA - 7000
*PRYOR, OK FIX	DRAKE, AR VOR/DME	**4000
*2900 - MRA		
**3000 - MOCA		MAA - 23000
PUEBLO CO LOM	PYNON, CO FIX	7600
PUEBLO, CO VORTAC	HILL CITY, KS VORTAC	18000
		MAA - 45000
PUEBLO, CO VORTAC	HAYES CENTER, NE VORTAC	18000
VIA PUB VORTAC 37		
& HCT VORTAC 221		
		MAA - 41000
PYNON, CO FIX	BLACK FOREST, CO VOR/DME	9400
QUITMAN, TX VOR/DME	TULSA, OK VORTAC	*9000
*3000 - MOCA		
RAPID CITY, SD VORTAC	MINOT, ND VORTAC	#18000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
RAPID CITY, SD VORTAC	FARGO, ND VORTAC	24000
RAPID CITY, SD VORTAC	DUPREE, SD VORTAC	18000
		MAA - 35000
RAPID CITY, SD VORTAC	HURON, SD VORTAC	31000
	COP 165 RAP	
		MAA - 37000
RAVINE, PA VORTAC	WILKES-BARRE, PA VORTAC	*4000
*3900 - MOCA		
RAVINE, PA VORTAC	HAILS, PA FIX	3400
RED BLUFF, CA VORTAC	SCAGGS ISLAND, CA VORTAC	*6000
	COP 60 RBL	
*9000 - MOCA		

FROM	TO	MEA
RED BLUFF, CA VORTAC	REDDING, CA VOR/DME	3000
*REDDING, CA VOR/DME	**TOMAD, CA FIX	
	NE BND	6000
	SW BND	9000
**7000 - MRA		
*5000 - MCA REDDING, CA VOR/DME , SW BND		
REDDING, CA VOR/DME	CHICO, CA VOR/DME	5000
		MAA - 12000
REVLOC, PA VOR/DME	GRACE, PA FIX	4000
		MAA - 17000
RICHY, CA FIX	MARRI, CA FIX	13000
RIVERTON, WY VOR/DME	GREAT FALLS, MT VORTAC	#*35000
*14800 - MOCA		
#35000 MRA AT COP.		
RIVERTON, WY VOR/DME	LARAMIE, WY VOR/DME	18000
		MAA - 35000
ROCK SPRINGS, WY VOR/DME	JACKSON, WY VOR/DME	*18000
	COP 118 OCS	
*13200 - MOCA		MAA - 45000
ROCK SPRINGS, WY VOR/DME	LARAMIE, WY VOR/DME	*18000
*14000 - MOCA		MAA - 45000
ROGUE VALLEY, OR VORTAC	*ROOTY, OR FIX	11000
*11000 - MRA		
ROLLS, OK FIX	INT GAG VORTAC 143 & SYO VORTAC 079	*6000
*3300 - MOCA		MAA - 17500
ROME, OR VOR/DME	DUBOIS, ID VORTAC	31000
	COP 144 REO	
		MAA - 45000
ROME, OR VOR/DME	DONNELLY, ID VOR/DME	24000
		MAA - 45000
SACRAMENTO, CA VORTAC	KLAMATH FALLS, OR VORTAC	18000
	COP 130 SAC	
SALEM, OR LOM	BATTLE GROUND, WA VORTAC	3000
SALINA, KS VORTAC	FORBES KS LOM	*4500
*2800 - MOCA		
SALINAS, CA VORTAC	LICKE, CA FIX	6000
		MAA - 17500
SALINAS, CA VORTAC	GILRO, CA FIX	5000
SALMON, ID VOR/DME	MISSOULA, MT VOR/DME	18000
		MAA - 45000
SALT FLAT, TX VORTAC	MARFA, TX VOR/DME	10400
SAN ANGELO, TX VORTAC	ROCKSPRINGS, TX VORTAC	4200
SAN ANGELO, TX VORTAC	GOOCH SPRINGS, TX VORTAC	5000
SAN ANGELO, TX VORTAC	BROWNWOOD, TX VOR/DME	3500
SAN ANGELO, TX VORTAC	BROWNWOOD, TX VOR/DME	4500
VIA SJT VORTAC 73		
& BWD VOR/DME 224		
SAN JOSE, CA VOR/DME	COLLI, CA FIX	4000
SAN MARCUS, CA VORTAC	GUADALUPE, CA VOR	6700
SAN MARCUS, CA VORTAC	MORRO BAY, CA VORTAC	6800
SANTA CATALINA, CA VORTAC	GAVIOTA, CA VORTAC	6400
*SANTY, CA FIX	**TAILS, CA FIX	5000
*7000 - MRA		
**7000 - MRA		
SAUFLEY, FL VOR	VARRE, FL FIX	2000
VIA NUN VOR 104		
		MAA - 17500
SCAPA, PR FIX	CRSTL, PR FIX	6000
SCOTTSBLUFF, NE VORTAC	WOLBACH, NE VORTAC	18000
VIA BFF VORTAC 83		
& OBH VORTAC 269		
		MAA - 45000
SCOTTSBLUFF, NE VORTAC	ABERDEEN, SD VOR/DME	26000
		MAA - 45000

FROM	TO	MEA
SEAL BEACH, CA VORTAC	ELMOO, CA FIX	*5000
*2400 - MOCA		
SEMMES, AL VORTAC	GREENE COUNTY, MS VORTAC	2000 MAA - 17500
*SHAFTER, CA VORTAC	**WRING, CA FIX	5000
*3300 - MCA SHAFTER, CA VORTAC , NE BND		
**5400 - MCA WRING, CA FIX , SE BND		
SHELBYVILLE, TN VOR/DME	INT BNA VORTAC 130 & SYI VOR/DME 040	*3000
*2400 - MOCA		
SHERIDAN, WY VOR/DME	RAPID CITY, SD VORTAC	18000 MAA - 45000
SIDNEY, NE VORTAC	ABERDEEN, SD VOR/DME	29000 MAA - 45000
SILVER CITY, NM VORTAC	ALBUQUERQUE, NM VORTAC COP 50 SVC	14500
SIOUX FALLS, SD VORTAC	FARGO, ND VORTAC	15000
SNOUT, AK FIX	EEDEN, AK FIX	10000 MAA - 45000
SNOWBIRD, TN VORTAC	LONDON, KY VORTAC	18000 MAA - 45000
SPOKANE, WA VORTAC	U.S. CANADIAN BORDER	#18000 MAA - 45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
SPOKANE, WA VORTAC	MISSOULA, MT VOR/DME	18000 MAA - 35000
SPOKANE, WA VORTAC VIA GEG VORTAC 139 & DNJ VOR/DME 322	DONNELLY, ID VOR/DME	18000 MAA - 41000
SQUAW VALLEY, CA VOR/DME	*RICHY, CA FIX	11000
*12000 - MCA RICHY, CA FIX , SE BND		
SQUAW VALLEY, CA VOR/DME	KLAMATH FALLS, OR VORTAC	28000 MAA - 45000
ST JEAN, CANADA VORTAC VIA YJN VORTAC 160 & LEB VOR/DME 360	LEBANON, NH VOR/DME	#18000 MAA - 26000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
ST LOUIS, MO VORTAC	MOLINE, IL VORTAC	*8000
*3200 - MOCA		MAA - 30000
ST LOUIS, MO VORTAC	PEORIA, IL VORTAC	*7000
*2100 - MOCA		
ST PETERSBURG, FL VORTAC	ATLANTA, GA VORTAC	30000 MAA - 41000
SUGRR, ME FIX	AUGUSTA, ME VOR/DME	6000 MAA - 17000
TAOS, NM VORTAC	*CHARM, CO FIX	15000
*10000 - MCA CHARM, CO FIX , S BND		MAA - 45000
TIVERTON, OH VOR/DME	WILMO, OH FIX	18000 MAA - 41000
TIVERTON, OH VOR/DME	AKRON, OH VOR/DME	18000 MAA - 39000
TONOPAH, NV VORTAC VIA TPH VORTAC 77 & BCE VORTAC 262	BRYCE CANYON, UT VORTAC	23000 MAA - 45000
TOPEKA, KS VORTAC	NEOSHO, MO VOR/DME	*5000
*3000 - MOCA		MAA – 35000

FROM	TO	MEA
TROSE, CA FIX	MODESTO, CA VOR/DME	
	SW BND	5000
	NE BND	22000
		MAA - 39000
TRUER, PA FIX	ELMIRA, NY VOR/DME	4000
TULSA, OK VORTAC	INT TUL VORTAC 189 & OKM VOR 208	*2500
*2200 - MOCA		
TULSA, OK VORTAC	BARTLESVILLE, OK VOR/DME	2500
TURQE, NM FIX	BOLES, NM VOR/DME	#*8000
*6600 - MOCA		MAA - 17500
#MAA 11000 MSL WHEN R-5103C IN USE		
#ROUTE NOT USABLE WHEN R-5103A OR R-5103B IN USE.		
RADAR RQRD WHEN IN HOLLOMAN APCH CTL AIRSPACE.		
TUSCOLA, TX VOR/DME	LLANO, TX VORTAC	*4500
*3900 - MOCA		
TUTTS, VA FIX	AZALEA PARK, VA NDB	4000
TWENTYNINE PALMS, CA VORTAC	GOFFS, CA VORTAC	18000
	COP 17 TNP	
VIA TNP VORTAC 28 & GFS VORTAC 185		
		MAA - 45000
UNBAR, MI FIX	SALEM, MI VORTAC	18000
		MAA - 45000
VALDOSTA, GA VOR/DME	WAYCROSS, GA VORTAC	2300
		MAA - 7000
*VAN NUYS, CA VOR/DME	**PALMDALE, CA VORTAC	7800
*6000 - MCA VAN NUYS, CA VOR/DME , NE BND		
**5800 - MCA PALMDALE, CA VORTAC , SW BND		
		MAA - 17500
VAN NUYS, CA VOR/DME	STABO, CA FIX	4000
	COP 18 VNY	
VARRE, FL FIX	SAUFLEY, FL VOR	2000
VIA 1500 FLOOR. NUN VOR R-095.		
		MAA - 17500
VEERS, CT FIX	BARNES, MA VORTAC	3300
		MAA - 17500
VERO BEACH, FL VORTAC	LUCYS, FL FIX	1500
		MAA - 17500
VICHY, MO VOR/DME	POCKET CITY, IN VORTAC	18000
VIA VIH VOR/DME 87 & PXV VORTAC 272		
		MAA - 41000
WAKER, CA FIX	FILLMORE, CA VORTAC	4800
*WESLA, CA FIX	FILLMORE, CA VORTAC	4800
*4100 - MCA WESLA, CA FIX , N BND		
WICHITA FALLS, TX VORTAC	ARDMORE, OK VORTAC	*4000
*2500 - MOCA		
WICHITA, KS VORTAC	WILL ROGERS, OK VORTAC	*6000
*3600 - MOCA		MAA - 17500
WILKES-BARRE, PA VORTAC	LATTY, NY FIX	4000
		MAA - 10000
WILL ROGERS, OK VORTAC	WICHITA, KS VORTAC	*6000
*3600 - MOCA		MAA - 17500
WILLISTON, ND VORTAC	U.S. CANADIAN BORDER	*8000
VIA ISN VORTAC 340		
*3400 - MOCA		MAA - 17500
WILME, FL FIX	*TERES, FL FIX	**7000
*7000 - MRA		
*7000 - MCA TERES, FL FIX , E BND		
**1400 - MOCA		

FROM	TO	MEA
WILMO, OH FIX	AKRON, OH VOR/DME	18000 MAA - 41000
WILSON CREEK, NV VORTAC	BULLION, NV VOR/DME	20000
WINDOM, MN NDB *2900 - MOCA	WORTHINGTON, MN VOR/DME	*3400
WINDOM, MN NDB	REDWOOD FALLS, MN VOR/DME	3300
WIREGRASS, AL VORTAC	BLALY, GA FIX	2500
WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	10000 MAA - 17500
WOLBACH, NE VORTAC	OMAHA, IA VORTAC	3800 MAA - 35000
WOLBACH, NE VORTAC	PAWNEE CITY, NE VORTAC	18000 MAA - 45000
WOODRING, OK VOR/DME *2700 - MOCA	STILLWATER, OK VOR/DME	*2900
WOODSIDE, CA VORTAC *7000 - MRA **4400 - MOCA	*EUGEN, CA FIX	**6000
WRAPS, CA FIX *2600 - MOCA	SACRAMENTO, CA VORTAC	*3000

PUERTO RICO ROUTES

ROUTE 1

FROM	TO	MEA
UTAHS, PR FIX	BORINQUEN, PR VORTAC	*4000
*1300 - MOCA		
BORINQUEN, PR VORTAC	MAYAGUEZ, PR VOR/DME	2500

ROUTE 2

FROM	TO	MEA
FAJAR, PR FIX	TOURO, PR FIX	2000
TOURO, PR FIX	MALIE, VI FIX	2000

ROUTE 3

FROM	TO	MEA
UTAHS, PR FIX	*JAAWS, PR FIX	12000
*7000 - MRA		
JAAWS, PR FIX	SAN JUAN, PR VORTAC	3000

ROUTE 4

FROM	TO	MEA
*IDAHO, PR FIX	BORINQUEN, PR VORTAC	**2500
*15000 - MRA		
**1800 - MOCA		
BORINQUEN, PR VORTAC	JOSHE, PR FIX	6000
JOSHE, PR FIX	MIGHT, PR FIX	6000
MIGHT, PR FIX	TUUNA, PR FIX	6000
TUUNA, PR FIX	VEDAS, PR FIX	5000
VEDAS, PR FIX	SNOOZ, VI FIX	4000
SNOOZ, VI FIX	ST CROIX, VI VOR/DME	2400

ROUTE 5

FROM	TO	MEA
BORINQUEN, PR VORTAC	*ROBLL, PR FIX	**3000
*6000 - MRA		
**1800 - MOCA		
ROBLL, PR FIX	PLING, PR FIX	*6000
*1300 - MOCA		

ROUTE 6

FROM	TO	MEA
*IDAHO, PR FIX	**ROBLL, PR FIX	15000
*15000 - MRA		
**6000 - MRA		
ROBLL, PR FIX	BEANO, PR FIX	6000
BEANO, PR FIX	CORAF, PR FIX	*3000
*1300 - MOCA		
CORAF, PR FIX	SAN JUAN, PR VORTAC	1500
SAN JUAN, PR VORTAC	CHAKA, PR FIX	2500
CHAKA, PR FIX	PALCO, PR FIX	3000
PALCO, PR FIX	ST THOMAS, VI VOR/DME	2700

FROM	TO	MEA
		MAA - 45000

ROUTE 7

FROM	TO	MEA
PLING, PR FIX	SAALR, PR FIX	12000
SAALR, PR FIX	DONKE, PR FIX	3000
DONKE, PR FIX	SAN JUAN, PR VORTAC	3000
SAN JUAN, PR VORTAC	SANLO, PR FIX	4000
SANLO, PR FIX	TUUNA, PR FIX	4000
TUUNA, PR FIX	GESSO, PR FIX	9000

ROUTE 8

FROM	TO	MEA
*PONCE, PR VOR/DME	TUUNA, PR FIX	**6000
*13000 - MCA PONCE, PR VOR/DME , W BND		
**4500 - MOCA		

ROUTE 9

FROM	TO	MEA
VERMO, PR FIX	*DEEDY, PR FIX	12000
*2500 - MRA		
DEEDY, PR FIX	WALNA, PR FIX	12000
PONCE, PR VOR/DME	*DAKES, PR FIX	6000
*9000 - MRA		

ROUTE 10

FROM	TO	MEA
SAN JUAN, PR VORTAC	VARNA, PR FIX	3700
VARNA, PR FIX	JOSHE, PR FIX	6000
JOSHE, PR FIX	PONCE, PR VOR/DME	6000
PONCE, PR VOR/DME	KYAAK, PR FIX	6000
KYAAK, PR FIX	ALASK, PR FIX	6000

ROUTE 12

FROM	TO	MEA
MAYAGUEZ, PR VOR/DME	JOSHE, PR FIX	6000
JOSHE, PR FIX	*VARNA, PR FIX	6000
*5000 - MCA VARNA, PR FIX , SW BND		
VARNA, PR FIX	SAN JUAN, PR VORTAC	3700
SAN JUAN, PR VORTAC	JETSS, PR FIX	2000
JETSS, PR FIX	ST THOMAS, VI VOR/DME	2800

FROM TO MEA

BAHAMA ROUTES

1L

SATELLITE, FL NDB	JOLTS, BS FIX	*2000
*1500 - MOCA		
JOLTS, BS FIX	FREEPORT, BS VOR/DME	*2000
*1500 - MOCA		
FREEPORT, BS VOR/DME	BARTS, BS FIX	*2000
*1300 - MOCA		
BARTS, BS FIX	MAMML, BS FIX	*2000
*1200 - MOCA		
MAMML, BS FIX	DIAZZ, OA FIX	*2000
*1200 - MOCA		
DIAZZ, OA FIX	COBBL, BS FIX	
COBBL, BS FIX	LOGVN, OA FIX	*2000
*1200 - MOCA		
LOGVN, OA FIX	BRRGO, BS FIX	2000
BRRGO, BS FIX	AVNEY, OA FIX	*2000
*1200 - MOCA		
AVNEY, OA FIX	BENIE, IB FIX	*2000
*1200 - MOCA		
BENIE, IB FIX	OREDE, BS FIX	*2000
*1200 - MOCA		
OREDE, BS FIX	RAHAM, IB FIX	*2000
*1200 - MOCA		
RAHAM, IB FIX	STRUD, OA FIX	*2000
*1300 - MOCA		
STRUD, OA FIX	BIKIN, IB FIX	
BIKIN, IB FIX	GRAND TURK, TC VORTAC	*2000
*1300 - MOCA		

9L

GRAND TURK, TC VORTAC	TOMAZ, IB FIX	2000
TOMAZ, IB FIX	CARAH, OA FIX	*2000
*1300 - MOCA		
CARAH, OA FIX	SKHOT, OA FIX	*2000
*1300 - MOCA		

10L

FREEPORT, BS VOR/DME	HAANA, BS FIX	
HAANA, BS FIX	MRRSH, BS FIX	3000

21V

FREEPORT, BS VOR/DME	ULAMA, BS FIX	2000
ULAMA, BS FIX	WALIK, FL FIX	
WALIK, FL FIX	PALM BEACH, FL VORTAC	2000

22V

FORT LAUDERDALE, FL VOR/DME	DEKAL, OA FIX	6000
DEKAL, OA FIX	WIERS, BS FIX	6000
WIERS, BS FIX	OYSTA, BS FIX	10000
OYSTA, BS FIX	CAREY, BS FIX	6000
CAREY, BS FIX	MAJUR, OA FIX	2000
MAJUR, OA FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		

FROM	TO	MEA

49V

FROM	TO	MEA
DOLPHIN, FL VORTAC	LUVLY, FL FIX	2000
LUVLY, FL FIX	JUNUR, FL FIX	2000
JUNUR, FL FIX	FOWEE, OA FIX	6000
FOWEE, OA FIX	LUCSS, BS FIX	*7000
*1400 - MOCA		MAA - 45000
LUCSS, BS FIX	JERRE, OA FIX	*4000
*1400 - MOCA		MAA - 45000
JERRE, OA FIX	*TINKY, OA FIX	**4000
*8000 - MRA		
**1400 - MOCA		MAA - 45000
TINKY, OA FIX	NICKO, BS FIX	*4000
*1500 - MOCA		MAA - 45000
NICKO, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		MAA - 45000

53V

FROM	TO	MEA
VIRGINIA KEY, FL VOR/DME	SKIPS, BS FIX	4000
SKIPS, BS FIX	LEEVI, BS FIX	5000
LEEVI, BS FIX	SWIMM, BS FIX	5000
SWIMM, BS FIX	WOOZE, BS FIX	9000
WOOZE, BS FIX	*RAJAY, BS FIX	11000
*11000 - MRA		
RAJAY, BS FIX	PRUNE, BS FIX	4000
PRUNE, BS FIX	HINZY, BS FIX	2000
HINZY, BS FIX	NASSAU, BS VOR/DME	2000
NASSAU, BS VOR/DME	GUAVA, BS FIX	3000
GUAVA, BS FIX	BNTTZ, BS FIX	3000

54V

FROM	TO	MEA
PALM BEACH, FL VORTAC	MRLIN, FL FIX	2000
MRLIN, FL FIX	PREDA, FL FIX	4000
PREDA, FL FIX	ISAAC, BS FIX	6000
ISAAC, BS FIX	OYSTA, BS FIX	8000
OYSTA, BS FIX	CAREY, BS FIX	6000
CAREY, BS FIX	MAJUR, OA FIX	2000
MAJUR, OA FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		

55V

FROM	TO	MEA
PALM BEACH, FL VORTAC	MRLIN, FL FIX	2000
MRLIN, FL FIX	PREDA, FL FIX	4000
PREDA, FL FIX	BEECH, BS FIX	4000
BEECH, BS FIX	BIMINI, BS VORTAC	4000
BIMINI, BS VORTAC	*RAJAY, BS FIX	4000
*11000 – MRA		
RAJAY, BS FIX	PRUNE, BS FIX	4000
PRUNE, BS FIX	HINZY, BS FIX	2000
HINZY, BS FIX	NASSAU, BS VOR/DME	
NASSAU, BS VOR/DME	BURRL, BS FIX	*3000
*1500 - MOCA		
BURRL, BS FIX	SEAAN, BS FIX	*3000
*1300 - MOCA		
SEAAN, BS FIX	MUVOD, BS FIX	*10000
*1300 - MOCA		
MUVOD, BS FIX	BRRGO, BS FIX	*16000
*1300 - MOCA		

FROM	TO	MEA

57V

FROM	TO	MEA
FORT LAUDERDALE, FL VOR/DME	DEKAL, OA FIX	6000
DEKAL, OA FIX	WIERS, BS FIX	6000
WIERS, BS FIX	BIMINI, BS VORTAC	3000
BIMINI, BS VORTAC *1300 - MOCA	CAREY, BS FIX	*2000
CAREY, BS FIX	MAJUR, OA FIX	2000
MAJUR, OA FIX *1500 - MOCA	NASSAU, BS VOR/DME	*2000

58V

FROM	TO	MEA
NASSAU, BS VOR/DME *1500 - MOCA	KURAY, BS FIX	*2000
KURAY, BS FIX *8000 - MRA **1300 - MOCA	*MELON, BS FIX	**2000
MELON, BS FIX *1300 - MOCA	HANKX, BS FIX	*2000
HANKX, BS FIX *1300 - MOCA	BARTS, BS FIX	*4000
BARTS, BS FIX	ANGLL, BS FIX	10000

62V

FROM	TO	MEA
VERO BEACH, FL VORTAC	ANGEE, FL FIX	2000
ANGEE, FL FIX	FORNL, FL FIX	2000
FORNL, FL FIX	SURFN, FL FIX	2000
SURFN, FL FIX *1300 - MOCA	BERTH, BS FIX	*4000
BERTH, BS FIX *1300 - MOCA	JAKEL, BS FIX	*4000
JAKEL, BS FIX *1400 - MOCA	FREEPORT, BS VOR/DME	*4000

63V

FROM	TO	MEA
PALM BEACH, FL VORTAC	TURPS, FL FIX	2000
TURPS, FL FIX	MIXAE, BS FIX	3000
MIXAE, BS FIX	HALBI, BS FIX	4000
HALBI, BS FIX	ULAMA, BS FIX	2000
ULAMA, BS FIX	FREEPORT, BS VOR/DME	2000
FREEPORT, BS VOR/DME *1400 - MOCA	CEGUR, BS FIX	*2000
CEGUR, BS FIX *1300 - MOCA	BURBO, BS FIX	*2000
BURBO, BS FIX *1300 - MOCA	BAYRU, BS FIX	*10000
BAYRU, BS FIX *1300 - MOCA	HANKX, BS FIX	*10000
HANKX, BS FIX *8000 - MRA **1300 - MOCA	*MELON, BS FIX	**2000
MELON, BS FIX *1300 - MOCA	KURAY, BS FIX	*2000
KURAY, BS FIX *1500 - MOCA	NASSAU, BS VOR/DME	*2000

FROM	TO	MEA

64V

VIRGINIA KEY, FL VOR/DME	KUCEP, FL FIX	5000
KUCEP, FL FIX	HEATT, FL FIX	5000
HEATT, FL FIX	MRLIN, FL FIX	5000
MRLIN, FL FIX	MUNRO, BS FIX	5000
MUNRO, BS FIX	FREEPORT, BS VOR/DME	2000

65V

NASSAU, BS VOR/DME *1500 - MOCA	PEACH, BS FIX	*2000
PEACH, BS FIX *5000 - MRA **1300 - MOCA	*SYDNY, BS FIX	**2000
SYDNY, BS FIX *1300 - MOCA	LAUTH, BS FIX	*5000
LAUTH, BS FIX *1400 - MOCA	FREEPORT, BS VOR/DME	*2000
FREEPORT, BS VOR/DME	RAPPS, BS FIX	3000
RAPPS, BS FIX	STIFF, BS FIX	8000
STIFF, BS FIX	ELDER, FL FIX	8000
ELDER, FL FIX	ADOOR, FL FIX	25000

66V

VIRGINIA KEY, FL VOR/DME	JANUS, OA FIX	2000
JANUS, OA FIX	PADUS, BS FIX	4000
PADUS, BS FIX	FREEPORT, BS VOR/DME	2000

68V

FORT LAUDERDALE, FL VOR/DME	MRLIN, FL FIX	6000
MRLIN, FL FIX	MUNRO, BS FIX	5000
MUNRO, BS FIX	FREEPORT, BS VOR/DME	2000

69V

BIMINI, BS VORTAC	BAHMA, BS FIX	3000
BAHMA, BS FIX	MAYKO, OA FIX	3000
MAYKO, OA FIX	FREEPORT, BS VOR/DME	3000
FREEPORT, BS VOR/DME *1400 - MOCA	JAMAX, BS FIX	*2000
JAMAX, BS FIX *1200 - MOCA	BENZI, BS FIX	*3000
BENZI, BS FIX	JOLTS, BS FIX	4000
JOLTS, BS FIX	BERTH, BS FIX	4000
BERTH, BS FIX	KIXAL, OA FIX	4000
KIXAL, OA FIX	WALIK, FL FIX	
WALIK, FL FIX	PALM BEACH, FL VORTAC	2000

70V

FORT LAUDERDALE, FL VOR/DME	TURBO, OA FIX	2000
TURBO, OA FIX	PADUS, BS FIX	7000
PADUS, BS FIX	FREEPORT, BS VOR/DME	2000
FREEPORT, BS VOR/DME	GRREG, BS FIX	3500
GRREG, BS FIX	MRRSH, BS FIX	3500

FROM	TO	MEA

71V

FREEPORT, BS VOR/DME *1400 - MOCA	WOPOP, BS FIX	*2000
WOPOP, BS FIX *1200 - MOCA	WLKER, BS FIX	*3000

ATLANTIC ROUTES

A300

KIKER, OA FIX	RAYAS, OA FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED		
RAYAS, OA FIX	DORADO, PR NDB	6000
PLING, PR FIX *1200 - MOCA	LENNT, OA FIX	*3000

A301

*URSUS, OA FIX *16000 - MRA	ZOLLA, OA FIX	10000
ZOLLA, OA FIX	FOWEE, OA FIX	10000
FOWEE, OA FIX	SKIPS, BS FIX	5000
SKIPS, BS FIX	BIMINI, BS VORTAC	4000

A315

BIMINI, BS VORTAC	SWIMM, BS FIX	5000
SWIMM, BS FIX *8000 - MRA	*TINKY, OA FIX	8000
TINKY, OA FIX *12500 - MRA	*PEKRE, BS FIX	12500
PEKRE, BS FIX *14000 - MRA	*JAYEE, BS FIX	14000
JAYEE, BS FIX *16500 – MRA	*HODGY, BS FIX	7000
HODGY, BS FIX *16500 - MRA	*AMBIS, BS FIX	7000
AMBIS, BS FIX	DUNNO, BS FIX	7000

A509

*URSUS, OA FIX *16000 - MRA	ELLEE, BS FIX	16000
ELLEE, BS FIX	EONNS, FL FIX	5000
EONNS, FL FIX	DOLPHIN, FL VORTAC	3000
DOLPHIN, FL VORTAC	MARCI, FL FIX	8000
MARCI, FL FIX	EPSON, OG FIX	6000
EPSON, OG FIX *1200 - MOCA	MINOW, OG FIX	*7000
MINOW, OG FIX *1200 – MOCA	ELIOM, OG FIX	*7000

A516

MILOK, OA FIX	RAYAS, OA FIX	#9000
#MEA EA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		

A516 -CONTINUED

FROM	TO	MEA
NAVIGATION EQUIPMENT OTHER THAN LF OF VHF REQUIRED.		
RAYAS, OA FIX	RAFEE, OA FIX	#9000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE. NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
ANNER, OA FIX	*PORQE, VI FIX	#9000
*8000 - MRA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATIONAL SIGNAL COVERAGE. NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
PORQE, VI FIX	*DANDE, VI FIX	6000
*3500 - MRA		
DANDE, VI FIX	SAINT MAARTEN, AN VOR/DME	2500

A523

FROM	TO	MEA
DORADO, PR NDB	CORAF, PR FIX	*2000
*1500 - MOCA		
CORAF, PR FIX	SAALR, PR FIX	*2000
*1500 - MOCA		
VERMO, PR FIX	THANK, PR FIX	*2000
*1300 - MOCA		

A555

FROM	TO	MEA
ILURI, OA FIX	*PORQE, VI FIX	#12000
*8000 - MRA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE. NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
PORQE, VI FIX	ST CROIX, VI VOR/DME	6000
DORADO, PR NDB	*IDAHO, PR FIX	2000
*15000 – MRA		
IDAHO, PR FIX	HARDE, PR FIX	*2000
*1300 - MOCA		
HARDE, PR FIX	GRADI, IB FIX	*2000
*1300 - MOCA		
GRADI, IB FIX	KARRN, OA FIX	*2000
*1300 - MOCA		
COCBU, IB FIX	GRAND TURK, TC VORTAC	*2000
*1500 - MOCA		
GRAND TURK, TC VORTAC	MAYAG, IB FIX	2000
BTLER, OA FIX	GUANA, OA FIX	2000
GUANA, OA FIX	INDEE, BS FIX	2000
INDEE, BS FIX	DUKKY, BS FIX	2000
DUKKY, BS FIX	EVETS, BS FIX	3000
EVETS, BS FIX	GEROT, OA FIX	3000
GEROT, OA FIX	DONEZ, OA FIX	3000
DONEZ, OA FIX	BOSAR, BS FIX	3000
BOSAR, BS FIX	LEPAS, BS FIX	*3000
*1300 - MOCA		
LEPAS, BS FIX	NASSAU, BS VOR/DME	*1500
*1500 - MOCA		
NASSAU, BS VOR/DME	HINZY, BS FIX	2000
HINZY, BS FIX	PRUNE, BS FIX	2000
PRUNE, BS FIX	*RAJAY, BS FIX	4000
*11000 - MRA		
RAJAY, BS FIX	BIMINI, BS VORTAC	4000

FROM	TO	MEA

A636

FROM	TO	MEA
BORINQUEN, PR VORTAC	KATOK, PR FIX	2000 MAA - 45000
ALBBE, BS FIX	GREAT INAGUA, BS NDB	4000

A638

FROM	TO	MEA
ST THOMAS, VI VOR/DME	GUYRO, VI FIX	4000
GUYRO, VI FIX	SLUGO, VI FIX	4000
SLUGO, VI FIX	SAINT MAARTEN, AN VOR/DME	3000

A699

FROM	TO	MEA
NUCAR, BS FIX	STIFF, BS FIX	8000
STIFF, BS FIX	RAMJT, OA FIX	8000
PERMT, FL FIX	PALM BEACH, FL VORTAC	6000

A756

FROM	TO	MEA
BODLO, OA FIX	GREAT INAGUA, BS NDB	3000
GREAT INAGUA, BS NDB	ROSEA, OA FIX	3000
ROSEA, OA FIX	DUKKY, BS FIX	3000

AR10

FROM	TO	MEA
DOLPHIN, FL VORTAC	TURBO, OA FIX	6000
TURBO, OA FIX	PREDA, FL FIX	6000
PREDA, FL FIX	ZAPPA, BS FIX	10000

AR11

FROM	TO	MEA
VIRGINIA KEY, FL VOR/DME	JANUS, OA FIX	#2000
#VIRGINIA KEY R-058 UNUSABLE JANUS TO VALLY		
JANUS, OA FIX	VALLY, FL FIX	*5000
*5000 - GNSS MEA		

AR3

FROM	TO	MEA
NASSAU, BS VOR/DME	KURAY, BS FIX	*2000
*1500 - MOCA		MAA - 45000
KURAY, BS FIX	*MELON, BS FIX	**2000
*8000 - MRA		
**1400 - MOCA		MAA - 45000
MELON, BS FIX	HANKX, BS FIX	*2000
*1400 - MOCA		MAA - 45000
HANKX, BS FIX	BARTS, BS FIX	*4000
*1400 - MOCA		MAA - 45000
BARTS, BS FIX	ANGLL, BS FIX	*10000
*1400 - MOCA		MAA - 45000
ANGLL, BS FIX	NUCAR, BS FIX	*8000
*1400 - MOCA		MAA - 45000
CARPX, OA FIX	PERIE, OA FIX	2500 MAA - 45000
PERIE, OA FIX	OLDEY, SC FIX	2500

FROM	TO	MEA

AR3 -CONTINUED

FROM	TO	MEA
		MAA - 45000
OLDEY, SC FIX	PANAL, OA FIX	2500 MAA - 45000
PANAL, OA FIX	CAROLINA BEACH, NC NDB	2500 MAA – 45000

AR4

FROM	TO	MEA
ASHLY, SC NDB	METTA, OA FIX	9000

AR5

FROM	TO	MEA
DINNS, FL NDB	JAWSS, FL FIX	2500 MAA - 45000

AR6

FROM	TO	MEA
ORLANDO, FL VORTAC	MALET, FL FIX	2700 MAA - 45000
MALET, FL FIX *4000 - MRA	*APOLO, FL FIX	4000 MAA - 45000
APOLO, FL FIX	PETEE, OA FIX	24000 MAA – 45000

AR8

FROM	TO	MEA
ELIZABETH CITY, NC VOR/DME	OHPEA, NC FIX	21000 MAA - 41000
OHPEA, NC FIX	TOMMZ, OA FIX	21000 MAA - 41000
TOMMZ, OA FIX	OXANA, OA FIX	21000 MAA - 41000

B24

FROM	TO	MEA
SEA ISLE, NJ VORTAC	FISSH, NJ FIX	15000 MAA - 45000
FISSH, NJ FIX	DASHA, OA FIX	15000 MAA - 45000

B503

FROM	TO	MEA
ENAMO, OA FIX *16500 - MRA	*HODGY, BS FIX	6000
HODGY, BS FIX	NASSAU, BS VOR/DME	7000

B646

FROM	TO	MEA
CANOA, FL FIX	FISH HOOK, FL NDB	2000 MAA - 45000
FISH HOOK, FL NDB	JOVCU, FL FIX	2000 MAA - 45000
MARATHON, FL NDB *1400 - MOCA	AVION, FL FIX	*6000 MAA - 45000
AVION, FL FIX	ELLEE, BS FIX	6000 MAA – 45000

FROM	TO	MEA

B646 -CONTINUED

ELLEE, BS FIX	FOWEE, OA FIX	*6000
*1400 - MOCA		MAA - 45000
FOWEE, OA FIX	LUCSS, BS FIX	*7000
VIA CHANGE OVER PT FOWEE		
*1400 - MOCA		MAA - 45000
LUCSS, BS FIX	JERRE, OA FIX	*4000
*1400 - MOCA		MAA - 45000
JERRE, OA FIX	*TINKY, OA FIX	**4000
*8000 - MRA		
**1400 - MOCA		MAA - 45000
TINKY, OA FIX	NICKO, BS FIX	*4000
*1500 - MOCA		MAA - 45000
NICKO, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		MAA - 45000
NASSAU, BS VOR/DME	OHBEE, BS FIX	*2000
*1500 - MOCA		MAA - 45000
OHBEE, BS FIX	MAMML, BS FIX	*4000
*1400 - MOCA		MAA - 45000
MAMML, BS FIX	EXTER, OA FIX	*5000
*1400 - MOCA		MAA – 45000

B760

BIMINI, BS VORTAC	LEEVI, BS FIX	4000
LEEVI, BS FIX	MENDL, BS FIX	8000
MENDL, BS FIX	BORDO, BS FIX	12000
BORDO, BS FIX	IMELA, OA FIX	12000

B891

POKEG, IB FIX	MACKI, OA FIX	4000
GRADI, IB FIX	NOPIT, OA FIX	10000

B892

MAYAGUEZ, PR VOR/DME	ANTEX, PR FIX	4000

G430

VIRGINIA KEY, FL VOR/DME	EONNS, FL FIX	3000
EONNS, FL FIX	AVION, FL FIX	4000

G432

ARMUR, PR FIX	CRSTL, PR FIX	6000
CRSTL, PR FIX	ALASK, PR FIX	6000
ALASK, PR FIX	CLAYO, PR FIX	6000
CLAYO, PR FIX	DORADO, PR NDB	6000
DORADO, PR NDB	CORAF, PR FIX	*2000
*1500 - MOCA		
CORAF, PR FIX	SAALR, PR FIX	*2000
*1500 - MOCA		
SAALR, PR FIX	VERMO, PR FIX	*2000
*1500 - MOCA		
VERMO, PR FIX	THANK, PR FIX	*2000
*1300 - MOCA		

FROM	TO	MEA

G437

CIEGO DE AVILA, CU VOR/DME	IMELA, OA FIX	14000
DYNAH, OA FIX	*JAYEE, BS FIX	6000
*14000 - MRA		
		MAA - 45000
JAYEE, BS FIX	JEFRY, BS FIX	*4000
*1400 - MOCA		MAA - 45000
JEFRY, BS FIX	BRONO, BS FIX	*4000
*1500 - MOCA		MAA - 45000
BRONO, BS FIX	WELKS, BS FIX	*2000
*1500 - MOCA		MAA - 45000
WELKS, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		
NASSAU, BS VOR/DME	INGRA, BS FIX	2000
INGRA, BS FIX	ELBOW, BS FIX	8000

G439

DOLPHIN, FL VORTAC	MNATE, FL FIX	3000
MNATE, FL FIX	TWNNS, FL FIX	5000
TWNNS, FL FIX	DROWN, FL FIX	5000

G446

OLDEY, SC FIX	PERIE, OA FIX	2500
PERIE, OA FIX	CARPX, OA FIX	2500
CARPX, OA FIX	SCOBY, OA FIX	2500
SCOBY, OA FIX	CASPR, OA FIX	2500
CASPR, OA FIX	NUCAR, BS FIX	2500
NUCAR, BS FIX	OMALY, OA FIX	5500
OMALY, OA FIX	SLEMA, OA FIX	5500
LASEE, OA FIX	ALUTE, OA FIX	5500
ALUTE, OA FIX	RENAH, OA FIX	5500
GRAND TURK, TC VORTAC	PAMMS, IB FIX	2000
PAMMS, IB FIX	BESAS, IB FIX	6000

G449

DORADO, PR NDB	VARNA, PR FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
HENLI, PR FIX	ANNER, OA FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
ANNER, OA FIX	ANADA, OA FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OF VHF REQUIRED.		

G629

GREAT INAGUA, BS NDB	RAPPR, OA FIX	3000
CATHI, OA FIX	PROVIDENCIALES, TC VOR/DME	1500
PROVIDENCIALES, TC VOR/DME	EGANN, IB FIX	1500
EGANN, IB FIX	RAHAM, IB FIX	2000
RAHAM, IB FIX	LYMIN, OA FIX	2000

FROM	TO	MEA

G648

GRAND TURK, TC VORTAC	PROVIDENCIALES, TC VOR/DME	1500
PROVIDENCIALES, TC VOR/DME	MICAS, IB FIX	2000

G765

MAXIM, FL FIX	FISH HOOK, FL NDB	*3000
*1300 - MOCA		MAA - 45000

L454

KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA FIX	6000
TAAPS, OA FIX	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA FIX	6000
VOGEL, OA FIX	GEENE, OA FIX	6000
GEENE, OA FIX	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA FIX	6000
FONDE, OA FIX	ELCAM, OA FIX	21000
ELCAM, OA FIX	WUZYU, OA FIX	21000
WUZYU, OA FIX	ANNGO, OA FIX	21000
ANNGO, OA FIX	BERGH, OA FIX	21000
BERGH, OA FIX	WEBBB, OA FIX	21000

L455

KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA FIX	6000
TAAPS, OA FIX	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA FIX	6000
VOGEL, OA FIX	GEENE, OA FIX	6000
GEENE, OA FIX	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA FIX	6000
FONDE, OA FIX	ELCAM, OA FIX	21000
ELCAM, OA FIX	WUZYU, OA FIX	21000
WUZYU, OA FIX	ANNGO, OA FIX	21000
ANNGO, OA FIX	BERGH, OA FIX	21000
BERGH, OA FIX	SAVIK, OA FIX	21000

L456

KENNEDY, NY VOR/DME	SHERL, NY FIX	15000
SHERL, NY FIX	FATON, OA FIX	15000
FATON, OA FIX	THROP, OA FIX	15000
THROP, OA FIX	GRAPT, OA FIX	15000
GRAPT, OA FIX	LEOES, OA FIX	15000
LEOES, OA FIX	FINIT, OA FIX	15000

L457

KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA FIX	6000
TAAPS, OA FIX	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA FIX	6000

L457 -CONTINUED

FROM	TO	MEA
VOGEL, OA FIX	GEENE, OA FIX	6000
GEENE, OA FIX	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA FIX	6000
FONDE, OA FIX	ELCAM, OA FIX	21000
ELCAM, OA FIX	WUZYU, OA FIX	21000
WUZYU, OA FIX	ANNGO, OA FIX	21000
ANNGO, OA FIX	BERGH, OA FIX	21000
BERGH, OA FIX	WEBBB, OA FIX	21000

L459

FROM	TO	MEA
KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA FIX	6000
TAAPS, OA FIX	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA FIX	6000
VOGEL, OA FIX	GEENE, OA FIX	6000
GEENE, OA FIX	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA FIX	6000
FONDE, OA FIX	ELCAM, OA FIX	21000
ELCAM, OA FIX	WUZYU, OA FIX	21000
WUZYU, OA FIX	ANNGO, OA FIX	21000
ANNGO, OA FIX	BERGH, OA FIX	21000
BERGH, OA FIX	SAVIK, OA FIX	21000

L461

FROM	TO	MEA
KENNEDY, NY VOR/DME	SHERL, NY FIX	15000
SHERL, NY FIX	FATON, OA FIX	15000
FATON, OA FIX	THROP, OA FIX	15000
THROP, OA FIX	GRAPT, OA FIX	15000
GRAPT, OA FIX	LEOES, OA FIX	15000
LEOES, OA FIX	FINIT, OA FIX	15000

Q100

FROM	TO	MEA
LEEVILLE, LA VORTAC *1500 - MOCA	REDFN, OG FIX	*6000
REDFN, OG FIX *1500 - MOCA	ROZZI, OG FIX	*6000
ROZZI, OG FIX *1500 - MOCA	REMIS, OG FIX	*6000
REMIS, OG FIX *1500 – MOCA	SARASOTA, FL VORTAC	*6000

Q102

FROM	TO	MEA
LEEVILLE, LA VORTAC *1500 - MOCA	BLVNS, OG FIX	*6000
BLVNS, OG FIX *1500 - MOCA	BUNNZ, OG FIX	*6000
BUNNZ, OG FIX *1500 – MOCA	BACCA, OG FIX	*6000

FROM	TO	MEA

Q102 -CONTINUED

BACCA, OG FIX	CIGAR, OG FIX	*6000
*1500 - MOCA		
CIGAR, OG FIX	BAGGS, OG FIX	*6000
*1500 - MOCA		
BAGGS, OG FIX	CYPRESS, FL VOR/DME	*6000
*1500 - MOCA		

Q105

HARVEY, LA VORTAC	FATSO, OG FIX	*6000
*1500 - MOCA		
FATSO, OG FIX	REDFN, OG FIX	*6000
*1500 - MOCA		
REDFN, OG FIX	BLVNS, OG FIX	*6000
*1500 – MOCA		

R507

SAPPO, OA FIX	*CONCH, OA FIX	#24000
*24000 - MRA		
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
CONCH, OA FIX	UTAHS, PR FIX	24000

R628

TANIA, OA FIX	ZOLLA, OA FIX	12000
ZOLLA, OA FIX	MENDL, BS FIX	10000
MENDL, BS FIX	*PEKRE, BS FIX	**6000
*12500 - MRA		
**1400 - MOCA		MAA - 45000
PEKRE, BS FIX	SANNS, BS FIX	*2000
*1500 - MOCA		MAA - 45000
SANNS, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		MAA – 45000

R760

ST CROIX, VI VOR/DME	GOUDA, VI FIX	5000
GOUDA, VI FIX	SAINT MAARTEN, AN VOR/DME	3000

R763

GRAND TURK, TC VORTAC	RNTRY, OA FIX	*14000
*1200 - MOCA		MAA - 45000

R888

ST CROIX, VI VOR/DME	MODUX, VI FIX	14000
MODUX, VI FIX	POINTE A PITRE, GP VOR/DME	14000

&95.3000 LOW ALTITUDE RNAV ROUTES

95.3200 RNAV ROUTE T200

FROM	TO	MEA	MAA
FOOTHILLS, GA VORTAC #EASTBOUND EXPECT 5000 WESTBOUND EXPECT 6000	RICHE, SC FIX	#4800	8000
RICHE, SC FIX #EASTBOUND EXPECT 5000 WESTBOUND EXPECT 6000	FLORENCE, SC VORTAC	#2500	8000

95.3201 RNAV ROUTE T201

FROM	TO	MEA	MAA
COLUMBIA, SC VORTAC #NORTHBOUND EXPECT 5000 SOUTHBOUND EXPECT 6000	LOCAS, NC FIX	#2500	7000
LOCAS, NC FIX #NORTHBOUND EXPECT 5000 SOUTHBOUND EXPECT 6000	JOTTA, NC FIX	#4400	7000

95.3202 RNAV ROUTE T202

FROM	TO	MEA	MAA
RICHE, SC FIX #NORTHBOUND EXPECT 5000 SOUTHBOUND EXPECT 6000	HUSTN, NC FIX	#2500	8000
HUSTN, NC FIX #NORTHBOUND EXPECT 5000 SOUTHBOUND EXPECT 6000	GANTS, NC FIX	#2600	8000

95.3203 RNAV ROUTE T203

FROM	TO	MEA	MAA
COLUMBIA, SC VORTAC #NORTHBOUND EXPECT 6000 SOUTHBOUND EXPECT 7000	LOCKS, SC FIX	#2500	7000
LOCKS, SC FIX #NORTHBOUND EXPECT 6000 SOUTHBOUND EXPECT 7000	BARRETTS MOUNTAIN, NC VOR/DME	#4900	7000
BARRETTS MOUNTAIN, NC VOR/DME #NORTHBOUND EXPECT 6000 SOUTHBOUND EXPECT 7000	PULASKI, VA VORTAC	#6000	7000

95.3204 RNAV ROUTE T204

FROM	TO	MEA	MAA
TAYLOR, FL VORTAC	BRUNSWICK, GA VORTAC	2100	15000

95.3205 RNAV ROUTE T205

FROM	TO	MEA	MAA
OCALA, FL VORTAC *2500 - MOCA	VALDOSTA, GA VOR/DME	*3000	15000

95.3207 RNAV ROUTE T207

FROM	TO	MEA	MAA
ORMOND BEACH, FL VORTAC	CARRA, FL FIX	2300	15000
CARRA, FL FIX	MONIA, GA FIX	1900	15000
MONIA, GA FIX	WAYCROSS, GA VORTAC	2300	15000

FROM	TO	MEA	MAA

95.3208 RNAV ROUTE T208

GATORS, FL VORTAC	CARRA, FL FIX	2100	15000
CARRA, FL FIX	ORMOND BEACH, FL VORTAC	2300	15000

95.3209 RNAV ROUTE T209

EHEJO, GA FIX	JAMTA, GA FIX	2000	17500
JAMTA, GA FIX	COLLIERS, SC VORTAC	2500	17500

95.3210 RNAV ROUTE T210

TAYLOR, FL VORTAC	BRADO, FL FIX	1900	9000

95.3211 RNAV ROUTE T211

OCALA, FL VORTAC	JUTTS, FL FIX	2500	15000
JUTTS, FL FIX	CARRA, FL FIX	1900	15000
CARRA, FL FIX	CRAIG, FL VORTAC	2100	15000

95.3213 RNAV ROUTE T213

LOUISVILLE, KY VORTAC	GAMKE, IN FIX	#3600	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
GAMKE, IN FIX	RICHMOND, IN VORTAC	#2800	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			

95.3215 RNAV ROUTE T215

LEXINGTON, KY VORTAC	GAMKE, IN FIX	#3000	8000
#NORTHBOUND EXPECT 6000 SOUTHBOUND EXPECT 5000			

95.3217 RNAV ROUTE T217

LEXINGTON, KY VORTAC	BOSTR, OH FIX	#3000	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
BOSTR, OH FIX	HEDEN, OH FIX	#2700	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
HEDEN, OH FIX	SPRINGFIELD, OH VOR/DME	#2800	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
SPRINGFIELD, OH VOR/DME	BONEE, OH FIX	#2900	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			

95.3219 RNAV ROUTE T219

NANWAK, AK NDB/DME	RUFVY, AK FIX	*2300	17500
*1700 - MOCA			
RUFVY, AK FIX	ACATE, AK FIX	*2000	17500
*1300 - MOCA			
ACATE, AK FIX	BROUS, AK FIX	*6000	17500
*5400 - MOCA			
BROUS, AK FIX	DILLINGHAM, AK VOR/DME	*6000	17500
*5000 - MOCA			

FROM	TO	MEA	MAA

95.3222 RNAV ROUTE T222

BAERE, AK FIX	ST PAUL ISLAND, AK NDB/DME	3600	17500
ST PAUL ISLAND, AK NDB/DME	RUFVY, AK FIX	*3000	17500
*1800 - MOCA			
RUFVY, AK FIX	BETHEL, AK VORTAC	*3000	17500
*1400 - MOCA			
BETHEL, AK VORTAC	MC GRATH, AK VORTAC	5000	17500
MC GRATH, AK VORTAC	NENANA, AK VORTAC	5000	17500
NENANA, AK VORTAC	FAIRBANKS, AK VORTAC	*4000	17500
*3200 - MOCA			

95.3223 RNAV ROUTE T223

CAPE NEWENHAM, AK NDB/DME	DILLINGHAM, AK VOR/DME	4400	17500
DILLINGHAM, AK VOR/DME	FAGIN, AK FIX	4400	17500
FAGIN, AK FIX	NONDA, AK FIX	8400	17500
NONDA, AK FIX	*BLUGA, AK FIX	**12400	17500
*10000 - MCA BLUGA, AK FIX , SW BND			
**11800 - MOCA			
BLUGA, AK FIX	*AMOTT, AK FIX	3000	17500
*7400 - MCA AMOTT, AK FIX , SW BND			
AMOTT, AK FIX	ANCHORAGE, AK VOR/DME	3000	17500

95.3225 RNAV ROUTE T225

HOOPER BAY, AK VOR/DME	AKELT, AK FIX	4600	17500
AKELT, AK FIX	ALMOT, AK FIX	4400	17500
ALMOT, AK FIX	UNALAKLEET, AK VOR/DME	3700	17500
UNALAKLEET, AK VOR/DME	EDMON, AK FIX	5000	17500
EDMON, AK FIX	VENCE, AK FIX	5900	17500
VENCE, AK FIX	GALENA, AK VOR/DME	3400	17500
GALENA, AK VOR/DME	KUHZE, AK FIX	3400	17500
KUHZE, AK FIX	CHOKK, AK FIX	6800	17500
CHOKK, AK FIX	TANANA, AK VOR/DME	4000	17500
TANANA, AK VOR/DME	REEBA, AK FIX	4000	17500
REEBA, AK FIX	*FAIRBANKS, AK VORTAC	5000	17500
*4700 - MCA FAIRBANKS, AK VORTAC , W BND			

95.3226 RNAV ROUTE T226

JOHNSTONE POINT, AK VOR/DME	*FIDAL, AK FIX	5000	17500
*7000 - MCA FIDAL, AK FIX , N BND			
FIDAL, AK FIX	*ROBES, AK FIX	8000	17500
*8900 - MCA ROBES, AK FIX , N BND			
ROBES, AK FIX	*KLUNG, AK FIX	10000	17500
*7100 - MCA KLUNG, AK FIX , S BND			
KLUNG, AK FIX	GULKANA, AK VOR/DME	7000	17500
GULKANA, AK VOR/DME	DOZEY, AK FIX	5000	17500
DOZEY, AK FIX	*PAXON, AK FIX	**8000	17500
*9500 - MCA PAXON, AK FIX , N BND			
**7300 - MOCA			
PAXON, AK FIX	*DONEL, AK FIX	**12000	17500
**11500 – MOCA			
*10600 - MCA DONEL, AK FIX , S BND			
DONEL, AK FIX	BIG DELTA, AK VORTAC	7000	17500
BIG DELTA, AK VORTAC	HUTIL, AK FIX	7000	17500
HEXAX, AK FIX	FORT YUKON, AK VORTAC	*4000	17500
*3100 - MOCA			

95.3227 RNAV ROUTE T227

FROM	TO	MEA	MAA
SHEMYA, AK VORTAC	JANNT, AK FIX	3400	17500
JANNT, AK FIX	BAERE, AK FIX	2900	17500
BAERE, AK FIX	ALEUT, AK FIX	3300	17500
ALEUT, AK FIX	MORDI, AK FIX	2500	17500
MORDI, AK FIX	BINAL, AK FIX	4900	17500
BINAL, AK FIX	PORT HEIDEN, AK NDB/DME	3800	17500
PORT HEIDEN, AK NDB/DME	CULTI, AK FIX	*3700	17500
*1900 - MOCA			
CULTI, AK FIX	BATTY, AK FIX	*6100	17500
*5600 - MOCA			
BATTY, AK FIX	AMOTT, AK FIX	**13000	17500
*5200 - MCA AMOTT, AK FIX , SW BND			
**12300 - MOCA			
AMOTT, AK FIX	BIG LAKE, AK VORTAC	*3400	17500
*2700 - MOCA			
BIG LAKE, AK VORTAC	SURES, AK FIX	7000	17500
SURES, AK FIX	CAWIN, AK FIX	*9700	17500
*8600 - MOCA			
CAWIN, AK FIX	LIBER, AK FIX	9000	17500
LIBER, AK FIX	*GLOWS, AK FIX	7100	17500
*4800 - MCA GLOWS, AK FIX , S BND			
GLOWS, AK FIX	FAIRBANKS, AK VORTAC	3400	17500
FAIRBANKS, AK VORTAC	PESGE, AK FIX	5500	17500
PESGE, AK FIX	FIPSU, AK FIX	8400	17500
FIPSU, AK FIX	*CUGOB, AK FIX	**11000	17500
*7000 - MCA CUGOB, AK FIX , S BND			
**10300 - MOCA			
CUGOB, AK FIX	SIKLV, AK FIX	4500	17500
SIKLV, AK FIX	DEADHORSE, AK VOR/DME	2200	17500

95.3228 RNAV ROUTE T228

FROM	TO	MEA	MAA
CAPE NEWENHAM, AK NDB/DME	KUCYE, AK FIX	4600	17500
KUCYE, AK FIX	RUFVY, AK FIX	2000	17500
RUFVY, AK FIX	HOOPER BAY, AK VOR/DME	3000	17500
HOOPER BAY, AK VOR/DME	NOME, AK VOR/DME	*5000	17500
*4400 - MOCA			
NOME, AK VOR/DME	HIKAX, AK FIX	7000	17500
HIKAX, AK FIX	SHISHMAREF, AK NDB	4000	17500
SHISHMAREF, AK NDB	ECIPI, AK FIX	*10000	17500
*2000 - MOCA			
ECIPI, AK FIX	JAPKI, AK FIX	*8000	17500
*3800 - MOCA			
JAPKI, AK FIX	PODKE, AK FIX	*13000	17500
*4200 - MOCA			
PODKE, AK FIX	CIRSU, AK FIX	3800	17500
CIRSU, AK FIX	BARROW, AK VOR/DME	2000	17500
BARROW, AK VOR/DME	DEADHORSE, AK VOR/DME	*2000	17500
*1500 - MOCA			
DEADHORSE, AK VOR/DME	ROCES, AK FIX	*2000	17500
*1300 - MOCA			

95.3229 RNAV ROUTE T229

FROM	TO	MEA	MAA
*FAIRBANKS, AK VORTAC	REEBA, AK FIX	5000	17500
*4700 - MCA FAIRBANKS, AK VORTAC , W BND			
REEBA, AK FIX	TANANA, AK VOR/DME	4000	17500
TANANA, AK VOR/DME	HUSLIA, AK VOR/DME	*6000	17500
*5500 - MOCA			
HUSLIA, AK VOR/DME	DESOY, AK FIX	4000	17500
DESOY, AK FIX	SELAWIK, AK VOR/DME	2500	
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	*3000	17500
*2500 - MOCA			
KOTZEBUE, AK VOR/DME	POINT HOPE, AK NDB	4000	17500

95.3230 RNAV ROUTE T230

FROM	TO	MEA	MAA
ST PAUL ISLAND, AK NDB/DME	CHINOOK, AK NDB	*3000	17500
*2700 - MOCA			

95.3231 RNAV ROUTE T231

FROM	TO	MEA	MAA
*FAIRBANKS, AK VORTAC	HOBOM, AK FIX	5100	17500
*4300 - MCA FAIRBANKS, AK VORTAC , W BND			
HOBOM, AK FIX	MIPMY, AK FIX	6300	17500
MIPMY, AK FIX	SELAWIK, AK VOR/DME	3300	17500
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	3400	17500

95.3232 RNAV ROUTE T232

FROM	TO	MEA	MAA
NORTHWAY, AK VORTAC	BIG DELTA, AK VORTAC	8000	
BIG DELTA, AK VORTAC	FAIRBANKS, AK VORTAC	*5000	17500
*4300 - MOCA			
FAIRBANKS, AK VORTAC	BETTLES, AK VOR/DME	*6000	17500
*5200 - MOCA			
BETTLES, AK VOR/DME	BRONX, AK FIX	9000	17500
BRONX, AK FIX	BARROW, AK VOR/DME	*4000	17500
*1200 - MOCA			

95.3233 RNAV ROUTE T233

FROM	TO	MEA	MAA
AMBLER, AK NDB/DME	KORKY, AK FIX	5000	17500
KORKY, AK FIX	ENCOR, AK FIX	7000	17500
ENCOR, AK FIX	EVANSVILLE, AK NDB	5000	17500

95.3234 RNAV ROUTE T234

FROM	TO	MEA	MAA
FAIRBANKS, AK VORTAC	TOLLO, AK FIX	5000	17500
TOLLO, AK FIX	RAMPA, AK FIX	7000	17500

95.3235 RNAV ROUTE T235

FROM	TO	MEA	MAA
ATQASUK, AK NDB	NUIQSUT VILLAGE, AK NDB	*3000	17500
*1300 - MOCA			

95.3236 RNAV ROUTE T236

FROM	TO	MEA	MAA
NENANA, AK VORTAC	RAMPA, AK FIX	7000	17500

95.3237 RNAV ROUTE T237

*HOMER, AK VOR/DME	WUXAN, AK FIX	**9000	17500
*4800 - MCA HOMER, AK VOR/DME , E BND			
**8500 - MOCA			
WUXAN, AK FIX	MIDDLETON ISLAND, AK VOR/DME	*5000	17500
*4100 - MOCA			

95.3238 RNAV ROUTE T238

RAMPA, AK FIX	BETTLES, AK VOR/DME	7000	17500

95.3240 RNAV ROUTE T240

BETTLES, AK VOR/DME	TEGDE, AK FIX	7800	17500
TEGDE, AK FIX	DERIK, AK FIX	9700	17500
DERIK, AK FIX	SHELO, AK FIX	3600	17500
SHELO, AK FIX	DEADHORSE, AK VOR/DME	2000	17500

95.3241 RNAV ROUTE T241

LATCH, AK FIX	LEVEL ISLAND, AK VOR/DME	5000	17500

95.3242 RNAV ROUTE T242

*TALKEETNA, AK VOR/DME	JOKAP, AK FIX	**16000	17500
*12100 - MCA TALKEETNA, AK VOR/DME , N BND			
**15300 - MOCA			
*JOKAP, AK FIX	KUTDE, AK FIX	6000	17500
*11500 - MCA JOKAP, AK FIX , S BND			
KUTDE, AK FIX	LACIL, AK FIX	*15000	17500
*9400 - MOCA			
LACIL, AK FIX	BARROW, AK VOR/DME	*8000	17500
*1800 - MOCA			

95.3243 RNAV ROUTE T243

PUNGO, NC FIX	ZOLMN, NC FIX	*4000	17000
*1500 - MOCA			

95.3244 RNAV ROUTE T244

ANCHORAGE, AK VOR/DME	*CAKAD, AK FIX	3000	17500
*6400 - MCA CAKAD, AK FIX , NW BND			
CAKAD, AK FIX	CEXIX, AK FIX	6600	17500
CEXIX, AK FIX	*BETPE, AK FIX	10000	17500
*7800 - MCA BETPE, AK FIX , SE BND			
BETPE, AK FIX	CHEFF, AK FIX	6400	17500
CHEFF, AK FIX	CONFI, AK FIX	5300	17500
CONFI, AK FIX	NOME, AK VOR/DME	3000	17500

95.3245 RNAV ROUTE T245

SEAL BEACH, CA VORTAC	SANTA MONICA, CA VOR/DME	2500	17500
SANTA MONICA, CA VOR/DME	SILEX, CA FIX	4000	17500

95.3246 RNAV ROUTE T246

BARROW, AK VOR/DME	GALENA, AK VOR/DME	9200	17500
GALENA, AK VOR/DME	MC GRATH, AK VORTAC	5800	17500

95.3246 RNAV ROUTE T246 - CONTINUED

MC GRATH, AK VORTAC	*WINOR, AK FIX	4900	17500
*7500 - MCA WINOR, AK FIX , SE BND			
WINOR, AK FIX	FFITZ, AK FIX	8200	17500
FFITZ, AK FIX	*FRIDA, AK FIX	8800	17500
*7600 - MCA FRIDA, AK FIX , NW BND			
FRIDA, AK FIX	*IVANN, AK FIX	6600	17500
*5900 - MCA IVANN, AK FIX , W BND			
IVANN, AK FIX	ANCHORAGE, AK VOR/DME	2200	17500

95.3247 RNAV ROUTE T247

SEAL BEACH, CA VORTAC	SANTA MONICA, CA VOR/DME	2500	17500
SANTA MONICA, CA VOR/DME	CANOG, CA FIX	5000	17500

95.3248 RNAV ROUTE T248

GAMBELL, AK NDB/DME	QAYAQ, AK FIX	3600	17500
QAYAQ, AK FIX	EMMONAK, AK VOR/DME	3000	17500

95.3249 RNAV ROUTE T249

VAN NUYS, CA VOR/DME	SANTA MONICA, CA VOR/DME	4700	17500
SANTA MONICA, CA VOR/DME	SEAL BEACH, CA VORTAC	2500	17500

95.3250 RNAV ROUTE T250

BETHEL, AK VORTAC	AKELT, AK FIX	3800	17500
AKELT, AK FIX	QAYAQ, AK FIX	3000	17500
QAYAQ, AK FIX	KUKULIAK, AK VOR/DME	3700	17500

95.3251 RNAV ROUTE T251

FARMINGTON, MO VORTAC	FORISTELL, MO VORTAC	3000	6000
FORISTELL, MO VORTAC	RIVRS, IL FIX	2700	6000

95.3252 RNAV ROUTE T252

NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	5900	17500
KOTZEBUE, AK VOR/DME	PERCI, AK FIX	3000	17500
PERCI, AK FIX	WARRT, AK FIX	7000	17500
WARRT, AK FIX	DEADHORSE, AK VOR/DME	3000	17500

95.3254 RNAV ROUTE T254

COLLEGE STATION, TX VORTAC	EAKES, TX FIX	3000	15000
EAKES, TX FIX	CREPO, TX FIX	3100	15000
CREPO, TX FIX	LAKE CHARLES, LA VORTAC	2200	15000

95.3257 RNAV ROUTE T257

BIG SUR, CA VORTAC	ISIFU, CA FIX	7300	17500

FROM	TO	MEA	MAA

95.3257 RNAV ROUTE T257 – CONTINUED

ISIFU, CA FIX	SUTRO, CA FIX	4900	17500
SUTRO, CA FIX	POINT REYES, CA VORTAC	4000	17500

95.3259 RNAV ROUTE T259

SAN JOSE, CA VOR/DME	CEDES, CA FIX	6200	17500
CEDES, CA FIX	MOVDD, CA FIX	5900	17500
MOVDD, CA FIX	SACRAMENTO, CA VORTAC	3200	17500

95.3260 RNAV ROUTE T260

NOME, AK VOR/DME	TIN CITY, AK NDB/DME	6900	17500
TIN CITY, AK NDB/DME	COGNU, AK FIX	5300	17500
COGNU, AK FIX	POINT HOPE, AK NDB	3000	17500

95.3261 RNAV ROUTE T261

WOODSIDE, CA VORTAC	ALTAM, CA FIX	5000	17500

95.3262 RNAV ROUTE T262

KODIAK, AK VOR/DME	*WUXAN, AK FIX	**6000	17500
*5200 - MCA WUXAN, AK FIX , E BND			
**3800 - MOCA			
WUXAN, AK FIX	JOHNSTONE POINT, AK VOR/DME	7000	17500

95.3263 RNAV ROUTE T263

SUNOL, CA FIX	SCAGGS ISLAND, CA VORTAC	4600	17500

95.3264 RNAV ROUTE T264

KODIAK, AK VOR/DME	ZAXUM, AK FIX	*6000	17500
*4000 - MOCA			
ZAXUM, AK FIX	MIDDLETON ISLAND, AK VOR/DME	*3000	17500
*2200 - MOCA			

95.3265 RNAV ROUTE T265

KELSI, IL FIX	BULLZ, IL FIX	*4000	8000
*2300 - MOCA			
BULLZ, IL FIX	VEENA, WI FIX	*4000	8000
*2600 - MOCA			

95.3266 RNAV ROUTE T266

COGHLAN ISLAND, AK NDB	FREDERICKS POINT, AK NDB	6500	17500
FREDERICKS POINT, AK NDB	ANNETTE ISLAND, AK VOR/DME	6200	17500

95.3267 RNAV ROUTE T267

NOME, AK VOR/DME	JIKSA, AK FIX	*6700	17500
*6000 - MOCA			
JIKSA, AK FIX	BALIN, AK FIX	*3400	17500
*2700 - MOCA			
BALIN, AK FIX	KOTZEBUE, AK VOR/DME	*3300	17500
*2600 - MOCA			

FROM	TO	MEA	MAA

95.3269 RNAV ROUTE T269

FROM	TO	MEA	MAA
ANNETTE ISLAND, AK VOR/DME	TOKEE, AK FIX	5700	17500
TOKEE, AK FIX	FLIPS, AK FIX	6300	17500
FLIPS, AK FIX	BIORKA ISLAND, AK VORTAC	6000	17500
BIORKA ISLAND, AK VORTAC	SALIS, AK FIX	5100	17500
SALIS, AK FIX	CENTA, AK FIX	*6200	17500
*2000 - MOCA			
CENTA, AK FIX	YAKUTAT, AK VOR/DME	2000	17500
YAKUTAT, AK VOR/DME	MALAS, AK FIX	2400	17500
MALAS, AK FIX	KATAT, AK FIX	*9000	17500
*5300 - MOCA			
KATAT, AK FIX	CASEL, AK FIX	*7000	17500
*3400 - MOCA			
CASEL, AK FIX	*JOHNSTONE POINT, AK VOR/DME	4800	17500
*4800 - MCA JOHNSTONE POINT, AK VOR/DME , E BND			
JOHNSTONE POINT, AK VOR/DME	*FIMIB, AK FIX	3200	17500
*5400 - MCA FIMIB, AK FIX , W BND			
FIMIB, AK FIX	*ANCHORAGE, AK VOR/DME	8800	17500
*6300 - MCA ANCHORAGE, AK VOR/DME , E BND			
ANCHORAGE, AK VOR/DME	YONEK, AK FIX	3000	17500
YONEK, AK FIX	*TORTE, AK FIX	5000	17500
*8400 - MCA TORTE, AK FIX , W BND			
TORTE, AK FIX	*VEILL, AK FIX	10600	17500
*8000 - MCA VEILL, AK FIX , E BND			
VEILL, AK FIX	SPARREVOHN, AK VOR/DME	6600	17500
SPARREVOHN, AK VOR/DME	ACRAN, AK FIX	5200	17500
ACRAN, AK FIX	VIDDA, AK FIX	6000	17500
VIDDA, AK FIX	BETHEL, AK VORTAC	2100	17500

95.3270 RNAV ROUTE T270

FROM	TO	MEA	MAA
NORTON BAY, AK NDB	HEXOG, AK FIX	*6000	17500
*5400 - MOCA			
HEXOG, AK FIX	SHISHMAREF, AK NDB	5000	17500

95.3271 RNAV ROUTE T271

FROM	TO	MEA	MAA
COLD BAY, AK VORTAC	BINAL, AK FIX	4400	17500
BINAL, AK FIX	KING SALMON, AK VORTAC	2700	17500
KING SALMON, AK VORTAC	JIVCO, AK FIX	3000	17500
JIVCO, AK FIX	WOLCI, AK FIX	4000	17500
WOLCI, AK FIX	*WIDVA, AK FIX	7000	17500
*8000 - MCA WIDVA, AK FIX , NE BND			
WIDVA, AK FIX	*ZINAM, AK FIX	11800	17500
*10700 - MCA ZINAM, AK FIX , SW BND			
ZINAM, AK FIX	AMOTT, AK FIX	2500	17500

95.3272 RNAV ROUTE T272

FROM	TO	MEA	MAA
HALLSVILLE, MO VORTAC	VANDALIA, IL VORTAC	2700	6000

95.3273 RNAV ROUTE T273

FROM	TO	MEA	MAA
FAIRBANKS, AK VORTAC	AYKID, AK FIX	6700	17500
AYKID, AK FIX	TUVVO, AK FIX	6000	17500
TUVVO, AK FIX	*SOTGE, AK FIX	11300	17500
*8000 - MCA SOTGE, AK FIX , S BND			
SOTGE, AK FIX	ROCES, AK FIX	*4000	17500
*2800 - MOCA			

95.3274 RNAV ROUTE T274

FROM	TO	MEA	MAA
NEWPORT, OR VORTAC	*CRAAF, OR FIX	5500	17500
*5000 - MCA CRAAF, OR FIX , SW BND			

95.3275 RNAV ROUTE T275

FROM	TO	MEA	MAA
BETHEL, AK VORTAC	UNALAKLEET, AK VOR/DME	5900	17500

95.3276 RNAV ROUTE T276

FROM	TO	MEA	MAA
COUGA, WA FIX	CARBY, WA FIX	6500	17500

95.3277 RNAV ROUTE T277

FROM	TO	MEA	MAA
BETTLES, AK VOR/DME	JIGTI, AK FIX	*6000	17500
*4000 - MOCA			
JIGTI, AK FIX	NOKFE, AK FIX	*8000	17500
*7000 - MOCA			
NOKFE, AK FIX	VOVUY, AK FIX	*10300	17500
*9400 - MOCA			
VOVUY, AK FIX	EPEHO, AK FIX	*16000	17500
*9500 - MOCA			
EPEHO, AK FIX	POINT LAY, AK NDB	*6400	17500
*5500 - MOCA			

95.3278 RNAV ROUTE T278

FROM	TO	MEA	MAA
*HAPIT, AK FIX	CSPER, AK FIX	4000	17500
CSPER, AK FIX	SISTERS ISLAND, AK VORTAC	5300	17500

95.3279 RNAV ROUTE T279

FROM	TO	MEA	MAA
ALEUT, AK FIX	BETHEL, AK VORTAC	3200	17500

95.3280 RNAV ROUTE T280

FROM	TO	MEA	MAA
FLIPS, AK FIX	LEVEL ISLAND, AK VOR/DME	*7000	17500
*6300 - MOCA			

95.3281 RNAV ROUTE T281

FROM	TO	MEA	MAA
YOZLE, NE FIX	BOKKI, NE FIX	4700	17500
BOKKI, NE FIX	AINSWORTH, NE VOR/DME	4600	17500
AINSWORTH, NE VOR/DME	LKOTA, SD FIX	4400	17500
LKOTA, SD FIX	PIERRE, SD VORTAC	4300	17500

95.3282 RNAV ROUTE T282

FROM	TO	MEA	MAA
VENCE, AK FIX	HORSI, AK FIX	5000	17500
HORSI, AK FIX	PERZO, AK FIX	4700	17500
PERZO, AK FIX	FAIRBANKS, AK VORTAC	4300	17500

95.3283 RNAV ROUTE T283

FROM	TO	MEA	MAA
SCOTTSBLUFF, NE VORTAC	GORDON, NE NDB	6300	17500
GORDON, NE NDB	WNDED, SD FIX	*5500	17500
*5000 - MOCA			
WNDED, SD FIX	PIERRE, SD VORTAC	5000	17500

95.3285 RNAV ROUTE T285

FROM	TO	MEA	MAA
NORTH PLATTE, NE VORTAC	THEDFORD, NE VOR/DME	5000	17500
THEDFORD, NE VOR/DME	MARSS, NE FIX	4900	17500
MARSS, NE FIX	VALENTINE, NE NDB	4800	17500
VALENTINE, NE NDB	LKOTA, SD FIX	4500	17500
LKOTA, SD FIX	WINNER, SD VOR	4300	17500
WINNER, SD VOR	HURON, SD VORTAC	4000	17500

95.3286 RNAV ROUTE T286

FROM	TO	MEA	MAA
RAPID CITY, SD VORTAC	GORDON, NE NDB	5700	17500
GORDON, NE NDB	EFFEX, NE FIX	5600	17500
EFFEX, NE FIX	THEDFORD, NE VOR/DME	5400	17500
THEDFORD, NE VOR/DME	BOKKI, NE FIX	4900	17500
BOKKI, NE FIX	GRAND ISLAND, NE VORTAC	4600	17500

95.3288 RNAV ROUTE T288

FROM	TO	MEA	MAA
RAPID CITY, SD VORTAC	WNDED, SD FIX	5000	17500
WNDED, SD FIX	VALENTINE, NE NDB	5000	17500
VALENTINE, NE NDB	AINSWORTH, NE VOR/DME	*4700	17500
*4200 - MOCA			
AINSWORTH, NE VOR/DME	FESNT, NE FIX	4500	17500
FESNT, NE FIX	WOLBACH, NE VORTAC	4300	17500

95.3502 RNAV ROUTE TK502

FROM	TO	MEA	MAA
WESTMINSTER, MD VORTAC	TAYLO, MD FIX	2700	17500
TAYLO, MD FIX	WINGO, PA FIX	*2500	17500
*2000 - MOCA			
WINGO, PA FIX	SINON, PA FIX	2400	17500
SINON, PA FIX	GRIBL, PA FIX	2400	17500
GRIBL, PA FIX	TOLAN, NJ FIX	2100	17500
TOLAN, NJ FIX	BALDE, NY FIX	*2100	17500
*1500 - MOCA			
BALDE, NY FIX	SPATE, NY FIX	*2100	17500
*1400 - MOCA			
SPATE, NY FIX	DECKR, NY FIX	2100	17500

95.3504 RNAV ROUTE TK504

FROM	TO	MEA	MAA
RUSEY, MD FIX	CIDOB, MD FIX	*1800	17500
*1500 - MOCA			
CIDOB, MD FIX	HAMOR, PA FIX	2300	17500
HAMOR, PA FIX	ARCUM, PA FIX	*2300	17500
*2000 - MOCA			
ARCUM, PA FIX	TULLY, PA FIX	2600	17500
TULLY, PA FIX	BORKE, NJ FIX	2000	17500
BORKE, NJ FIX	BANKA, NJ FIX	2000	17500

&95.4000 HIGH ALTITUDE RNAV ROUTES

95.4001 RNAV ROUTE Q1

FROM	TO	MEA	MAA
ELMAA, WA FIX *18000 - GNSS MEA #DME/DME/IRU RNAV MEA	POINT REYES, CA VORTAC	#*24000	45000

95.4002 RNAV ROUTE Q2

FROM	TO	MEA	MAA
BOILE, CA FIX *18000 - GNSS MEA #DME/DME/IRU MEA	HEDVI, AZ FIX	#*24000	45000
ITUCO, AZ FIX *18000 - GNSS MEA #DME/DME/IRU MEA	NEWMAN, TX VORTAC	#*26000	45000

95.4003 RNAV ROUTE Q3

FROM	TO	MEA	MAA
FEPOT, WA FIX *18000 - GNSS MEA #DME/DME/IRU RNAV MEA	POINT REYES, CA VORTAC	#*24000	45000

95.4004 RNAV ROUTE Q4

FROM	TO	MEA	MAA
BOILE, CA FIX *18000 - GNSS MEA #DME/DME/IRU MEA	SKTTR, AZ FIX	#*24000	45000
SKTTR, AZ FIX *18000 - GNSS MEA	EL PASO, TX VORTAC	#*26000	45000

95.4005 RNAV ROUTE Q5

FROM	TO	MEA	MAA
HAROB, WA FIX *18000 - GNSS MEA #DME/DME/IRU RNAV MEA	STIKM, CA FIX	#*26000	45000

95.4006 RNAV ROUTE Q6

FROM	TO	MEA	MAA
TALKEETNA, AK VOR/DME #GNSS REQUIRED	BARROW, AK VOR/DME	18000	45000

95.4007 RNAV ROUTE Q7

FROM	TO	MEA	MAA
JINMO, WA FIX *18000 - GNSS MEA #DME/DME/IRU RNAV MEA	AVENAL, CA VORTAC	#*24000	45000

95.4008 RNAV ROUTE Q8

FROM	TO	MEA	MAA
GALENA, AK VOR/DME #GNSS REQUIRED	ANCHORAGE, AK VOR/DME	18000	45000

FROM	TO	MEA	MAA
95.4009 RNAV ROUTE Q9			
SUMMA, WA FIX	DERBB, CA FIX	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU RNAV MEA			
95.4010 RNAV ROUTE Q10			
KUKULIAK, AK VOR/DME	EMMONAK, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4011 RNAV ROUTE Q11			
PAAGE, WA FIX	LOS ANGELES, CA VORTAC	#*26000	45000
*18000 - GNSS MEA			
#DME/DME/IRU RNAV MEA			
95.4012 RNAV ROUTE Q12			
KOTZEBUE, AK VOR/DME	DEADHORSE, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4013 RNAV ROUTE Q13			
PRFUM, AZ FIX	PAWLI, OR FIX	18000	45000
#GNSS REQUIRED			
95.4014 RNAV ROUTE Q14			
KODIAK, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4015 RNAV ROUTE Q15			
CHILY, AZ FIX	LOMIA, NV FIX	18000	45000
#GNSS REQUIRED			
95.4016 RNAV ROUTE Q16			
KODIAK, AK VOR/DME	MIDDLETON ISLAND, AK VOR/DME	18000	45000
#GNSS REQUIRED			
MIDDLETON ISLAND, AK VOR/DME	YAKUTAT, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4017 RNAV ROUTE Q17			
HOMER, AK VOR/DME	MIDDLETON ISLAND, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4018 RNAV ROUTE Q18			
GALENA, AK VOR/DME	BARROW, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4019 RNAV ROUTE Q19			
NASHVILLE, TN VORTAC	PLESS, IL FIX	#*20000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4020 RNAV ROUTE Q20			
CORONA, NM VORTAC	JUNCTION, TX VORTAC	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
95.4021 RNAV ROUTE Q21			
JONEZ, OK FIX	RAZORBACK, AR VORTAC	#*18000	45000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			
95.4022 RNAV ROUTE Q22			
GUSTI, LA FIX	CATLN, AL FIX	#*18000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
95.4023 RNAV ROUTE Q23			
FORT SMITH, AR VORTAC	RAZORBACK, AR VORTAC	#*18000	45000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			
95.4024 RNAV ROUTE Q24			
LAKE CHARLES, LA VORTAC	PAYTN, AL FIX	#*20000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
95.4025 RNAV ROUTE Q25			
MEEOW, AR FIX	WALNUT RIDGE, AR VORTAC	#*20000	45000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			
ELD, MEM, LIT, FAM, RZC, EIC, TXK, ARG, GQE			
WALNUT RIDGE, AR VORTAC	POCKET CITY, IN VORTAC	#*20000	45000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			
95.4026 RNAV ROUTE Q26			
WALNUT RIDGE, AR VORTAC	DEVAC, AL FIX	#*20000	33000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			
95.4027 RNAV ROUTE Q27			
FORT SMITH, AR VORTAC	ZALDA, AR FIX	#*18000	45000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			
95.4028 RNAV ROUTE Q28			
GRAZN, AR FIX	POCKET CITY, IN VORTAC	#*20000	45000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4029 RNAV ROUTE Q29

FROM	TO	MEA	MAA
HARES, LA FIX *18000 - GNSS MEA #*DME/DME/IRU MEA	MEMPHIS, TN VORTAC	#*18000	45000
MEMPHIS, TN VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	POCKET CITY, IN VORTAC	#*18000	45000

95.4030 RNAV ROUTE Q30

FROM	TO	MEA	MAA
SIDON, MS VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	VULCAN, AL VORTAC	#*18000	45000

95.4031 RNAV ROUTE Q31

FROM	TO	MEA	MAA
DHART, AR FIX *18000 - GNSS MEA #*DME/DME/IRU MEA	MARVELL, AR VOR/DME	#*18000	45000
MARVELL, AR VOR/DME *18000 - GNSS MEA #*DME/DME/IRU MEA	POCKET CITY, IN VORTAC	#*18000	45000

95.4032 RNAV ROUTE Q32

FROM	TO	MEA	MAA
EL DORADO, AR VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	NASHVILLE, TN VORTAC	#*20000	45000
NASHVILLE, TN VORTAC *18000 - GNSS MEA #*DME/DME/ IRU MEA	SWAPP, TN FIX	#*20000	45000

95.4033 RNAV ROUTE Q33

FROM	TO	MEA	MAA
DHART, AR FIX *18000 - GNSS MEA #*DME/DME/IRU MEA	LITTLE ROCK, AR VORTAC	#*20000	45000
LITTLE ROCK, AR VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	PROWL, MO FIX	#*20000	45000

95.4034 RNAV ROUTE Q34

FROM	TO	MEA	MAA
TEXARKANA, AR VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	MEMPHIS, TN VORTAC	#*24000	45000
MEMPHIS, TN VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	SWAPP, TN FIX	#*24000	45000

95.4035 RNAV ROUTE Q35

FROM	TO	MEA	MAA
KIMBERLY, OR VORTAC #DME/DME/IRU MEA	CORKR, AZ FIX	#9000	45000
CORKR, AZ FIX #DME/DME/IRU MEA	DRAKE, AZ VORTAC	#2000	45000

95.4036 RNAV ROUTE Q36

FROM	TO	MEA	MAA
RAZORBACK, AR VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	NASHVILLE, TN VORTAC	#*20000	45000
NASHVILLE, TN VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	SWAPP, TN FIX	#*20000	45000

FROM	TO	MEA	MAA

95.4037 RNAV ROUTE Q37

FORT STOCKTON, TX VORTAC *18000 - GNSS MEA #DME/DME/IRU MEA	CAVRN, TX FIX	#*25000	45000
CAVRN, TX FIX *18000 - GNSS MEA #DME/DME/IRU MEA	YORUB, NM FIX	#*25000	45000
YORUB, NM FIX *18000 - GNSS MEA #DME/DME/IRU MEA	IMMAS, NM FIX	#*25000	45000
IMMAS, NM FIX *18000 - GNSS MEA #DME/DME/IRU MEA	PUEBLO, CO VORTAC	#*25000	45000

95.4038 RNAV ROUTE Q38

ROKIT, TX FIX *18000 - GNSS MEA #*DME/DME/IRU MEA	BESOM, AL FIX	#*18000	45000

95.4040 RNAV ROUTE Q40

ALEXANDRIA, LA VORTAC *18000 - GNSS MEA #*DME/DME/IRU MEA	MISLE, AL FIX	#*18000	45000

95.4041 RNAV ROUTE Q41

CAWIN, AK FIX #GNSS REQUIRED	DEADHORSE, AK VOR/DME	18000	45000

95.4042 RNAV ROUTE Q42

KIRKSVILLE, MO VORTAC *18000 - GNSS MEA #DME/DME/IRU RNAV MEA	DANVILLE, IL VORTAC	#*34000	45000
DANVILLE, IL VORTAC *18000 - GNSS MEA #DME/DME/IRU RNAV MEA	MUNCIE, IN VOR/DME	#*34000	45000
MUNCIE, IN VOR/DME *18000 - GNSS MEA #DME/DME/IRU RNAV MEA	BRNAN, PA FIX	#*24000	45000
BRNAN, PA FIX *18000 - GNSS MEA	HOTEE, PA FIX	#*18000	45000
HOTEE, PA FIX *18000 - GNSS MEA	BTRIX, PA FIX	#*18000	45000
BTRIX, PA FIX *18000 - GNSS MEA	SPOTZ, PA FIX	#*18000	45000
SPOTZ, PA FIX *18000 - GNSS MEA	ZIMMZ, PA FIX	#*18000	45000

95.4043 RNAV ROUTE Q43

ANCHORAGE, AK VOR/DME #GNSS REQUIRED	BIG LAKE, AK VORTAC	18000	45000
BIG LAKE, AK VORTAC #GNSS REQUIRED	FAIRBANKS, AK VORTAC	18000	45000

FROM	TO	MEA	MAA
95.4044 RNAV ROUTE Q44			
NOME, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4045 RNAV ROUTE Q45			
DILLINGHAM, AK VOR/DME	NONDA, AK FIX	18000	45000
NONDA, AK FIX	AMOTT, AK FIX	18000	45000
95.4046 RNAV ROUTE Q46			
POINT HOPE, AK NDB	BARROW, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4047 RNAV ROUTE Q47			
KING SALMON, AK VORTAC	AMOTT, AK FIX	18000	45000
#GNSS REQUIRED			
95.4048 RNAV ROUTE Q48			
BARROW, AK VOR/DME	DEADHORSE, AK VOR/DME	18000	45000
#GNSS REQUIRED			
DEADHORSE, AK VOR/DME	ROCES, AK FIX	18000	45000
#GNSS REQUIRED			
95.4049 RNAV ROUTE Q49			
KODIAK, AK VOR/DME	AMOTT, AK FIX	18000	45000
#GNSS REQUIRED			
95.4051 RNAV ROUTE Q51			
KING SALMON, AK VORTAC	KOTZEBUE, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4053 RNAV ROUTE Q53			
KODIAK, AK VOR/DME	ILIAMNA, AK NDB/DME	18000	45000
#GNSS REQUIRED			
ILIAMNA, AK NDB/DME	KOTZEBUE, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4055 RNAV ROUTE Q55			
KODIAK, AK VOR/DME	NOME, AK VOR/DME	18000	45000
#GNSS REQUIRED			
95.4057 RNAV ROUTE Q57			
KING SALMON, AK VORTAC	MC GRATH, AK VORTAC	18000	45000
#GNSS REQUIRED			
95.4059 RNAV ROUTE Q59			
COLD BAY, AK VORTAC	BETHEL, AK VORTAC	18000	45000
#GNSS REQUIRED			
95.4061 RNAV ROUTE Q61			
FAIRBANKS, AK VORTAC	BARROW, AK VOR/DME	18000	45000
#GNSS REQUIRED			

FROM	TO	MEA	MAA

95.4062 RNAV ROUTE Q62

FROM	TO	MEA	MAA
NOLNN, OH FIX	WEEVR, OH FIX	#*18000	45000
*18000 - GNSS MEA			
WEEVR, OH FIX	PSKUR, OH FIX	#*18000	45000
*18000 - GNSS MEA			
PSKUR, OH FIX	FAALS, OH FIX	#*18000	45000
*18000 - GNSS MEA			
FAALS, OH FIX	ALEEE, OH FIX	#*18000	45000
*18000 - GNSS MEA			
ALEEE, OH FIX	QUARM, PA FIX	#*18000	45000
*18000 - GNSS MEA			
QUARM, PA FIX	BURNI, PA FIX	#*18000	45000
*18000 - GNSS MEA			
#GNSS MEA			
BURNI, PA FIX	MCMAN, PA FIX	#*18000	45000
*18000 - GNSS MEA			
#GNSS MEA			
MCMAN, PA FIX	VALLO, PA FIX	#*18000	45000
*18000 - GNSS MEA			
#GNSS MEA			
VALLO, PA FIX	RAVINE, PA VORTAC	#*18000	45000
*18000 - GNSS MEA			
#GNSS MEA			
RAVINE, PA VORTAC	SUZIE, PA FIX	#*18000	45000
*18000 - GNSS MEA			
SUZIE, PA FIX	SARAA, PA FIX	#*18000	45000
*18000 - GNSS MEA			

95.4104 RNAV ROUTE Q104

FROM	TO	MEA	MAA
DEFUN, FL FIX	ST PETERSBURG, FL VORTAC	#*18000	45000
*18000 - GNSS MEA			
#*DME/DME/IRU MEA			
ST PETERSBURG, FL VORTAC	CYPRESS, FL VOR/DME	#*18000	
*18000 - GNSS MEA			

95.4106 RNAV ROUTE Q106

FROM	TO	MEA	MAA
SMELZ, FL FIX	GADAY, AL FIX	#*18000	45000
*18000 - GNSS MEA			
DME/DME/IRU RNAV MEA			

95.4108 RNAV ROUTE Q108

FROM	TO	MEA	MAA
GADAY, AL FIX	HKUNA, FL FIX	#*18000	45000
*18000 - GNSS MEA			

95.4110 RNAV ROUTE Q110

FROM	TO	MEA	MAA
THNDR, FL FIX	KPASA, FL FIX	#*18000	45000
*18000 - GNSS MEA			
KPASA, FL FIX	FEONA, GA FIX	#*18000	45000
*18000 - GNSS MEA			
DME/DME/IRU RNAV MEA			

95.4112 RNAV ROUTE Q112

FROM	TO	MEA	MAA
INPIN, FL FIX	DEFUN, FL FIX	#*18000	45000
*18000 - GNSS MEA			
DME/DME/IRU RNAV MEA			

95.4116 RNAV ROUTE Q116

FROM	TO	MEA	MAA
KPASA, FL FIX	CEEYA, GA FIX	#*18000	45000
*18000 - GNSS MEA			
DME/DME/IRU RNAV MEA			

95.4118 RNAV ROUTE Q118

FROM	TO	MEA	MAA
KPASA, FL FIX	LENIE, GA FIX	#*18000	45000
*18000 - GNSS MEA #ME/DME/IRU RNAV MEA			

95.4120 RNAV ROUTE Q120

FROM	TO	MEA	MAA
SACRAMENTO, CA VORTAC	ZORUN, NV FIX	#*18000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
ZORUN, NV FIX	GALLI, NV FIX	#*24000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
GALLI, NV FIX	BIG PINEY, WY VOR/DME	#*23000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
BIG PINEY, WY VOR/DME	FOSIG, SD FIX	#*23000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
FOSIG, SD FIX	REDWOOD FALLS, MN VOR/DME	#*18000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			

95.4121 RNAV ROUTE Q121

FROM	TO	MEA	MAA
PARZZ, NV FIX	POCATELLO, ID VOR/DME	#*24000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
POCATELLO, ID VOR/DME	TOUGH, MT FIX	#*24000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			

95.4122 RNAV ROUTE Q122

FROM	TO	MEA	MAA
MOGEE, CA FIX	MACUS, NV FIX	#*18000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
MACUS, NV FIX	MCORD, NV FIX	#*28000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
MCORD, NV FIX	LUCIN, UT VORTAC	#*28000	45000
*18000 - GNSS MEA			
LUCIN, UT VORTAC	BEARR, UT FIX	#*28000	45000
*18000 - GNSS MEA			
BEARR, UT FIX	KURSE, WY FIX	#*28000	45000
*18000 - GNSS MEA			
KURSE, WY FIX	O'NEILL, NE VORTAC	#*21000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
O'NEILL, NE VORTAC	FORT DODGE, IA VORTAC	#*18000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			

95.4123 RNAV ROUTE Q123

FROM	TO	MEA	MAA
PARZZ, NV FIX	COKEE, MT FIX	#*24000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4124 RNAV ROUTE Q124

MOGEE, CA FIX *18000 - GNSS MEA #DME/DME/IRU MEA	MACUS, NV FIX	#*18000	45000
MACUS, NV FIX *18000 - GNSS MEA #DME/DME/IRU MEA	MCORD, NV FIX	#*28000	45000
MCORD, NV FIX *18000 - GNSS MEA	SLOWN, NV FIX	#*28000	45000
SLOWN, NV FIX *18000 - GNSS MEA	FASTE, NV FIX	#*28000	45000
FASTE, NV FIX *18000 - GNSS MEA #DME/DME/IRU MEA	BONNEVILLE, UT VORTAC	#*23000	45000
BONNEVILLE, UT VORTAC *18000 - GNSS MEA #DME/DME/IRU MEA	WAATS, UT FIX	#*18000	45000

95.4125 RNAV ROUTE Q125

PARZZ, NV FIX *18000 - GNSS MEA #DME/DME/IRU MEA	WLLES, MT FIX	#*24000	45000

95.4126 RNAV ROUTE Q126

TIPRE, CA FIX *18000 - GNSS MEA #DME/DME/IRU MEA	INSLO, NV FIX	#*21000	45000
INSLO, NV FIX *18000 - GNSS MEA #DME/DME/IRU MEA	GAROT, UT FIX	#*26000	45000
GAROT, UT FIX *18000 - GNSS MEA #DME/DME/IRU MEA	MEEKER, CO VOR/DME	#*19000	45000

95.4128 RNAV ROUTE Q128

LINDEN, CA VORTAC *18000 - GNSS MEA #DME/DME/IRU MEA	JSICA, NV FIX	#*18000	45000
JSICA, NV FIX *18000 - GNSS MEA #DME/DME/IRU MEA	EDLES, UT FIX	#*24000	45000
EDLES, UT FIX *10000 - MRA **18000 - GNSS MEA	*FLOOD, CO FIX	#*24000	45000
FLOOD, CO FIX *18000 - GNSS MEA #DME/DME/IRU MEA	ZAROS, CO FIX	#*20000	45000
ZAROS, CO FIX *18000 - GNSS MEA	BARTLESVILLE, OK VOR/DME	#*18000	45000
BARTLESVILLE, OK VOR/DME *18000 - GNSS MEA #DME/DME/IRU MEA	RAZORBACK, AR VORTAC	#*18000	45000
RAZORBACK, AR VORTAC *18000 - GNSS MEA #DME/DME/IRU MEA	PAMMO, AR FIX	#*18000	45000
PAMMO, AR FIX *18000 - GNSS MEA	MEMPHIS, TN VORTAC	#*18000	45000

FROM	TO	MEA	MAA
95.4130 RNAV ROUTE Q130			
LINDEN, CA VORTAC	JSICA, NV FIX	#*18000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
JSICA, NV FIX	REANA, NV FIX	#*29000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
REANA, NV FIX	MRRNY, UT FIX	#*28000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
MRRNY, UT FIX	RATTLESNAKE, NM VORTAC	#*22000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
RATTLESNAKE, NM VORTAC	DIXAN, NM FIX	#*22000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
DIXAN, NM FIX	MIRME, NM FIX	#*22000	45000
*18000 - GNSS MEA			
MIRME, NM FIX	PANHANDLE, TX VORTAC	#*18000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
95.4132 RNAV ROUTE Q132			
WEBGO, CA FIX	ANAHO, NV FIX	#*18000	45000
*18000 - GNSS MEA			
ANAHO, NV FIX	MYBAD, NV FIX	#*18000	45000
*18000 - GNSS MEA			
MYBAD, NV FIX	ZERAM, NV FIX	#*18000	45000
*18000 - GNSS MEA			
ZERAM, NV FIX	MAGPY, NV FIX	#*26000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
95.4134 RNAV ROUTE Q134			
DUGLE, CA FIX	TATOO, NV FIX	#*20000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
TATOO, NV FIX	JULIK, UT FIX	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
JULIK, UT FIX	HERSH, UT FIX	#*21000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
HERSH, UT FIX	VOAXA, CO FIX	#*21000	45000
*18000 - GNSS MEA			
95.4136 RNAV ROUTE Q136			
COALDALE, NV VORTAC	RUMPS, NV FIX	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
RUMPS, NV FIX	KATTS, NV FIX	#*24000	45000
*18000 - GNSS MEA			
KATTS, NV FIX	WEEMN, UT FIX	#*26000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
WEEMN, UT FIX	VOAXA, CO FIX	#*21000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4138 RNAV ROUTE Q138			
WILLIAMS, CA VORTAC	FIMUV, CA FIX	#*18000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
FIMUV, CA FIX	JENSA, NV FIX	#*22000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
JENSA, NV FIX	PUHGI, NV FIX	#*24000	45000
*18000 - GNSS MEA #DME/DME/IRU MEA			
PUHGI, NV FIX	ROOHZ, NV FIX	#*24000	45000
*18000 - GNSS MEA			
ROOHZ, NV FIX	PARZZ, NV FIX	#*24000	45000
*18000 - GNSS MEA			
PARZZ, NV FIX	UROCO, WY FIX	#*24000	45000
*18000 - GNSS MEA			
UROCO, WY FIX	RICCO, WY FIX	#*24000	45000
*18000 - GNSS MEA			
RICCO, WY FIX	MOTLY, SD FIX	#*24000	45000
*18000 - GNSS MEA			
MOTLY, SD FIX	ABERDEEN, SD VOR/DME	#*24000	45000
*18000 - GNSS MEA			
95.4406 RNAV ROUTE Q406			
BROADWAY, NJ VOR/DME	DBABE, NY FIX	#*18000	45000
*18000 - GNSS MEA			
DBABE, NY FIX	BASYE, NY FIX	#*18000	45000
*18000 - GNSS MEA			
BASYE, NY FIX	TRIBS, CT FIX	#*18000	45000
*18000 - GNSS MEA			
TRIBS, CT FIX	BIGGO, CT FIX	#*18000	45000
*18000 - GNSS MEA			
BIGGO, CT FIX	BARNES, MA VORTAC	#*18000	45000
*18000 - GNSS MEA			
95.4448 RNAV ROUTE Q448			
POTTSTOWN, PA VORTAC	LANNA, NJ FIX	#*18000	45000
*18000 - GNSS MEA			
LANNA, NJ FIX	DBABE, NY FIX	#*18000	45000
*18000 - GNSS MEA			
DBABE, NY FIX	BASYE, NY FIX	#*18000	45000
*18000 - GNSS MEA			
BASYE, NY FIX	TRIBS, CT FIX	#*18000	45000
*18000 - GNSS MEA			
TRIBS, CT FIX	BIGGO, CT FIX	#*18000	45000
*18000 - GNSS MEA			
BIGGO, CT FIX	BARNES, MA VORTAC	#*18000	45000
*18000 - GNSS MEA			
95.4480 RNAV ROUTE Q480			
ZANDR, OH FIX	BELLAIRE, OH VOR/DME	#*18000	45000
*18000 - GNSS MEA			
BELLAIRE, OH VOR/DME	LEJOY, PA FIX	#*18000	45000
*18000 - GNSS MEA			
LEJOY, PA FIX	VINSE, PA FIX	#*18000	45000
*18000 - GNSS MEA			
VINSE, PA FIX	BEETS, PA FIX	#*18000	45000
*18000 - GNSS MEA			
BEETS, PA FIX	HOTEE, PA FIX	#*18000	45000
*18000 - GNSS MEA			

FROM	TO	MEA	MAA

95.4480 RNAV ROUTE Q480 – CONTINUED

FROM	TO	MEA	MAA
HOTEE, PA FIX	BTRIX, PA FIX	#*18000	45000
*18000 - GNSS MEA			
BTRIX, PA FIX	SPOTZ, PA FIX	#*18000	45000
*18000 - GNSS MEA			
SPOTZ, PA FIX	CANDR, NJ FIX	#*18000	45000
*18000 - GNSS MEA			
CANDR, NJ FIX	JEFFF, NJ FIX	#*18000	45000
*18000 - GNSS MEA			
JEFFF, NJ FIX	KINGSTON, NY VOR/DME	#*18000	45000
*18000 - GNSS MEA			
KINGSTON, NY VOR/DME	LESWL, CT FIX	#*18000	45000
*18000 - GNSS MEA			
LESWL, CT FIX	BARNES, MA VORTAC	#*18000	45000
*18000 - GNSS MEA			
BARNES, MA VORTAC	KENNEBUNK, ME VORTAC	#*18000	45000
*18000 - GNSS MEA			

95.4501 RNAV ROUTE Q501

FROM	TO	MEA	MAA
SOBME, SD FIX	GOPHER, MN VORTAC	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRUMEA			
GOPHER, MN VORTAC	VIXIS, CANADA FIX	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU MEA			
#FOR THAT AIRSPACE OVER U.S. TERRITORY			

95.4502 RNAV ROUTE Q502

FROM	TO	MEA	MAA
SOBME, SD FIX	GOPHER, MN VORTAC	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU RNAV MEA			
GOPHER, MN VORTAC	KENPA, CANADA FIX	#*24000	45000
*18000 - GNSS MEA			
#FOR THAT AIRSPACE OVER U.S. TERRITORY			

95.4504 RNAV ROUTE Q504

FROM	TO	MEA	MAA
HEMDI, SD FIX	NOTAP, CANADA FIX	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU RNAV MEA			
#FOR THAT AIRSPACE OVER U.S. TERRITORY			

95.4505 RNAV ROUTE Q505

FROM	TO	MEA	MAA
HEMDI, SD FIX	OMAGA, CANADA FIX	#*24000	45000
*18000 - GNSS MEA			
#DME/DME/IRU RNAV MEA			
#FOR THAT AIRSPACE OVER U.S. TERRITORY			

&95.5000 GROUND-BASED HIGH ALTITUDE RNAV ROUTES

FROM/TO	TOTAL DISTANCE	CHANGEOVER DISTANCE	POINT FROM	TRACK ANGLE	MEA	MAA
J804R						
ANCHORAGE, AK VOR/DME	60.0				18000	45000
NOWEL, AK RP				133/314 TO NOWEL		
NOWEL, AK RP	90.5				18000	45000
MIDDLETON ISLAND, AK VOR/DME				134/316 TO MIDDLETON ISLAND		
MIDDLETON ISLAND, AK VOR/DME	170.9	121	MIDDLETON ISLAND	095/275 TO COP	24000	45000
SNOUT, AK RP				120/300 TO SNOUT		
SNOUT, AK RP	196.9	197	SNOUT	096/276 TO COP	24000	45000
EEDEN, AK RP				125/305 TO EEDEN		
EEDEN, AK RP	153.9	112	EEDEN	102/282 TO COP	24000	45000
FRIED, AK RP				129/309 TO FRIED		
J889R						
NOWEL, AK RP	75.0	10	NOWEL	112/294 TO COP	18000	45000
ARISE, AK RP				112/294 TO ARISE		
ARISE, AK RP	71.0			112/293 TO KONKS	18000	45000
KONKS, AK WP				293/113 TO KONKS		
KONKS, AK WP	116.0	40	KONKS	111/294 TO COP	18000	45000
LAIRE, AK RP				294/114 TO LAIRE		

&95.6001 VOR FEDERAL AIRWAYS

95.6001 VOR FEDERAL AIRWAY V1

FROM	TO	MEA
CRAIG, FL VORTAC	STARY, GA FIX	*4000
*2100 - MOCA		
STARY, GA FIX	RUBYS, SC FIX	*11000
*1200 - MOCA		
RUBYS, SC FIX	*BASSO, SC FIX	**11000
*3000 - MRA		
**2300 - MOCA		
BASSO, SC FIX	CHARLESTON, SC VORTAC	2000
CHARLESTON, SC VORTAC	*INLET, SC FIX	2000
*3000 - MRA		
INLET, SC FIX	GRAND STRAND, SC VORTAC	2000
GRAND STRAND, SC VORTAC	ASHES, NC FIX	2000
ASHES, NC FIX	LAYZE, NC FIX	5000
LAYZE, NC FIX	WALLO, NC FIX	*7000
*1600 - MOCA		
WALLO, NC FIX	KINSTON, NC VORTAC	2000
KINSTON, NC VORTAC	*ZAGGY, NC FIX	2000
*7000 - MRA		
ZAGGY, NC FIX	COFIELD, NC VORTAC	*3000
*1500 - MOCA		
COFIELD, NC VORTAC	DRONE, NC FIX	2000
DRONE, NC FIX	NORFOLK, VA VORTAC	*2500
*1600 - MOCA		
NORFOLK, VA VORTAC	CAPE CHARLES, VA VORTAC	*2500
*1800 - MOCA		
CAPE CHARLES, VA VORTAC	SALISBURY, MD VORTAC	2000
SALISBURY, MD VORTAC	WATERLOO, DE VOR/DME	#*2000
*1500 - MOCA		
#SALISBURY R-039 UNUSABLE BELOW 5000 MSL		
WATERLOO, DE VOR/DME	COYLE, NJ VORTAC	1800
COYLE, NJ VORTAC	DIXIE, NJ FIX	*2500
*1600 - MOCA		
DIXIE, NJ FIX	KENNEDY, NY VOR/DME	*2500
*1600 - MOCA		
KENNEDY, NY VOR/DME	DEER PARK, NY VOR/DME	1800
DEER PARK, NY VOR/DME	MADISON, CT VOR/DME	2000
MADISON, CT VOR/DME	HARTFORD, CT VOR/DME	2500
HARTFORD, CT VOR/DME	GRAYM, MA FIX	*3000
*2500 - MOCA		
GRAYM, MA FIX	BOSTON, MA VOR/DME	*4000
*2500 - MOCA		
*3000 - GNSS MEA		

95.6002 VOR FEDERAL AIRWAY V2

FROM	TO	MEA
*SEATTLE, WA VORTAC	VAMPS, WA FIX	
	E BND	**8000
	W BND	**4000
*4300 - MCA SEATTLE, WA VORTAC , E BND		
**3100 - MOCA		
VAMPS, WA FIX	*BEEZR, WA FIX	8000
*9000 - MRA		
BEEZR, WA FIX	ELLENSBURG, WA VORTAC	*8000
*6800 - MOCA		
ELLENSBURG, WA VORTAC	EDSEW, WA FIX	7000
EDSEW, WA FIX	MOSES LAKE, WA VOR/DME	4000
MOSES LAKE, WA VOR/DME	BATUM, WA FIX	4000

95.6002 VOR FEDERAL AIRWAY V2 - CONTINUED

FROM	TO	MEA
BATUM, WA FIX	SUBDY, WA FIX	5000
SUBDY, WA FIX	*SPOKANE, WA VORTAC	5000
*5200 - MCA SPOKANE, WA VORTAC , E BND		
SPOKANE, WA VORTAC	ROPES, WA FIX	7100
ROPES, WA FIX	MULLAN PASS, ID VOR/DME	9100
MULLAN PASS, ID VOR/DME	ALTON, MT FIX	9600
ALTON, MT FIX	MISSOULA, MT VOR/DME	
	SE BND	*9000
	NW BND	*9600
*8500 - MOCA		
MISSOULA, MT VOR/DME	HELENA, MT VORTAC	*13000
*10300 - MOCA		
HELENA, MT VORTAC	SWEDD, MT FIX	10000
SWEDD, MT FIX	CONNS, MT FIX	10800
CONNS, MT FIX	LIVINGSTON, MT VOR/DME	10000
LIVINGSTON, MT VOR/DME	REEPO, MT FIX	9700
REEPO, MT FIX	COLUS, MT FIX	
	W BND	9000
	E BND	7000
COLUS, MT FIX	BILLINGS, MT VORTAC	
	W BND	9000
	E BND	6400
BILLINGS, MT VORTAC	MILES CITY, MT VOR/DME	6000
MILES CITY, MT VOR/DME	DICKINSON, ND VORTAC	6000
DICKINSON, ND VORTAC	BISMARCK, ND VOR/DME	4600
BISMARCK, ND VOR/DME	JAMESTOWN, ND VOR/DME	4000
JAMESTOWN, ND VOR/DME	*CHAFE, ND FIX	3300
*6000 - MRA		
CHAFE, ND FIX	FARGO, ND VORTAC	
	W BND	3300
	E BND	2700
FARGO, ND VORTAC	ALEXANDRIA, MN VOR/DME	*3500
*3000 - MOCA		
ALEXANDRIA, MN VOR/DME	GOPHER, MN VORTAC	3400
GOPHER, MN VORTAC	PEGGS, MN FIX	3400
PEGGS, MN FIX	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	LONE ROCK, WI VOR/DME	3000
LONE ROCK, WI VOR/DME	MADISON, WI VORTAC	3000
MADISON, WI VORTAC	*WAITS, WI FIX	2800
*4000 - MRA		
WAITS, WI FIX	BADGER, WI VORTAC	2800
BADGER, WI VORTAC	*SUDDS, WI FIX	2900
*3500 - MRA		
SUDDS, WI FIX	MUSKEGON, MI VORTAC	2500
MUSKEGON, MI VORTAC	LANSING, MI VORTAC	2600
LANSING, MI VORTAC	SALEM, MI VORTAC	#*5000
*3000 - MOCA		
*3000 - GNSS MEA		
#LANSING R-115 UNUSABLE BELOW 5000.		
SALEM, MI VORTAC	DELOW, MI FIX	3000
DELOW, MI FIX	U.S. CANADIAN BORDER	*4000
*2800 - MOCA		
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	*3000
*2400 - MOCA		
BUFFALO, NY VOR/DME	ROCHESTER, NY VOR/DME	#2800
#R-083 UNUSABLE BELOW 11000.		
ROCHESTER, NY VOR/DME	MAGEN, NY FIX	2300
MAGEN, NY FIX	*KONDO, NY FIX	2300
*4800 - MRA		
KONDO, NY FIX	*WIFFY, NY FIX	2300
*3000 - MRA		
WIFFY, NY FIX	SYRACUSE, NY VORTAC	2300
SYRACUSE, NY VORTAC	STODA, NY FIX	2400
STODA, NY FIX	VASTS, NY FIX	3000

95.6002 VOR FEDERAL AIRWAY V2 - CONTINUED

FROM	TO	MEA
VASTS, NY FIX	UTICA, NY VORTAC	3400
UTICA, NY VORTAC	MARIA, NY FIX	3500
MARIA, NY FIX	ALBANY, NY VORTAC	3000
ALBANY, NY VORTAC	WARIC, MA FIX	5000
WARIC, MA FIX	GARDNER, MA VOR/DME	*4000
*3500 - MOCA		

95.6003 VOR FEDERAL AIRWAY V3

FROM	TO	MEA
KEY WEST, FL VORTAC	*BIPIN, FL FIX	#15000
*14500 - MCA BIPIN, FL FIX , W BND		
#GNSS MEA		
KEY WEST R-082 UNUSABLE.		
BIPIN, FL FIX	DROWN, FL FIX	#3000
#GNSS MEA		
DROWN, FL FIX	MNATE, FL FIX	5000
MNATE, FL FIX	DOLPHIN, FL VORTAC	*5000
*2800 - MOCA		
DOLPHIN, FL VORTAC	FORT LAUDERDALE, FL VOR/DME	#2100
#FORT LAUDERDALE R-213 UNUSABLE, USE DOLPHIN R-037		
FORT LAUDERDALE, FL VOR/DME	PALM BEACH, FL VORTAC	#2000
#FORT LAUDERDALE R-006 UNUSABLE, USE PALM BEACH R-189		
PALM BEACH, FL VORTAC	VERO BEACH, FL VORTAC	*3000
*2000 - MOCA		
VERO BEACH, FL VORTAC	MELBOURNE, FL VOR/DME	2000
MELBOURNE, FL VOR/DME	MALET, FL FIX	2000
MALET, FL FIX	ORMOND BEACH, FL VORTAC	*4000
*1600 - MOCA		
ORMOND BEACH, FL VORTAC	*SEBAG, FL FIX	**2000
*3000 - MRA		
**1400 - MOCA		
SEBAG, FL FIX	BRUNSWICK, GA VORTAC	*2000
*1400 - MOCA		
BRUNSWICK, GA VORTAC	*BROUN, GA FIX	**3000
*11000 - MRA		
**2200 - MOCA		
BROUN, GA FIX	*HARPS, GA FIX	**3000
*3800 - MRA		
**2200 - MOCA		
HARPS, GA FIX	KELER, GA FIX	*3000
*2200 - MOCA		
KELER, GA FIX	SAVANNAH, GA VORTAC	*3000
*1900 - MOCA		
SAVANNAH, GA VORTAC	OWENS, SC FIX	*3000
*1500 - MOCA		
OWENS, SC FIX	VANCE, SC VORTAC	2000
VANCE, SC VORTAC	FLORENCE, SC VORTAC	#*2000
*2000 - GNSS MEA		
#VANCE R-047 TO COP UNUSABLE BLO FL180 EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV.		
FLORENCE, SC VORTAC	TOWEY, SC FIX	2000
TOWEY, SC FIX	SANDHILLS, NC VORTAC	*8000
*1900 - MOCA		
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	2500
RALEIGH/DURHAM, NC VORTAC	*HARVY, VA FIX	3000
*3000 - MRA		
HARVY, VA FIX	*NUTTS, VA FIX	**6000
*9000 - MRA		
**4000 - GNSS MEA		

95.6003 VOR FEDERAL AIRWAY V3 - CONTINUED

FROM	TO	MEA
NUTTS, VA FIX	FLAT ROCK, VA VORTAC	#*6000
*4000 - GNSS MEA		
#FLAT ROCK R-220 UNUSABLE		
FLAT ROCK, VA VORTAC	GORDONSVILLE, VA VORTAC	2500
GORDONSVILLE, VA VORTAC	LURAY, VA FIX	6100
LURAY, VA FIX	*KERRE, VA FIX	**6000
*7000 - MRA		
**5000 - MOCA		
KERRE, VA FIX	MARTINSBURG, WV VORTAC	*6000
*5000 - MOCA		
MARTINSBURG, WV VORTAC	WESTMINSTER, MD VORTAC	*4000
*3300 - MOCA		
WESTMINSTER, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	MODENA, PA VORTAC	3500
MODENA, PA VORTAC	BIGGY, NJ FIX	#*2500
*2500 - GNSS MEA		
#MODENA R-056 UNUSABLE.		
BIGGY, NJ FIX	SOLBERG, NJ VOR/DME	2000
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	*3000
*2500 - MOCA		
CARMEL, NY VOR/DME	RACEY, CT FIX	2100
RACEY, CT FIX	HARTFORD, CT VOR/DME	3000
HARTFORD, CT VOR/DME	JEWIT, CT FIX	*2600
*2100 - MOCA		
JEWIT, CT FIX	WOONS, RI FIX	2500
WOONS, RI FIX	BOSTON, MA VOR/DME	2000
BOSTON, MA VOR/DME	PEASE, NH VOR/DME	3000
PEASE, NH VOR/DME	*YUKES, NH FIX	**3500
*5500 - MRA		
**2400 - MOCA		
YUKES, NH FIX	PARSO, ME FIX	*3500
*2400 - MOCA		
PARSO, ME FIX	AUGUSTA, ME VOR/DME	3500
AUGUSTA, ME VOR/DME	BANGOR, ME VORTAC	3000
BANGOR, ME VORTAC	HOULTON, ME VOR/DME	*2800
*2300 - MOCA		
HOULTON, ME VOR/DME	PRESQUE ISLE, ME VOR/DME	*3400
*2700 - MOCA		
PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	*6000
*3500 - MOCA		

95.6004 VOR FEDERAL AIRWAY V4

FROM	TO	MEA
TATOOSH, WA VORTAC	DIGGN, WA FIX	*5400
*4600 - MOCA		
DIGGN, WA FIX	LOFAL, WA FIX	*5400
*4300 - MOCA		
LOFAL, WA FIX	*SEATTLE, WA VORTAC	**4000
*5200 - MCA SEATTLE, WA VORTAC , E BND		
**2800 - MOCA		
SEATTLE, WA VORTAC	*BLAKO, WA FIX	
	E BND	**6000
	W BND	**4000
*7500 - MCA BLAKO, WA FIX , E BND		
**3100 – MOCA		
BLAKO, WA FIX	HUMPP, WA FIX	
	E BND	*10000
	W BND	*6400
*6200 - MOCA		
HUMPP, WA FIX	CHINS, WA FIX	*10000
*9000 – MOCA		

FROM	TO	MEA

95.6004 VOR FEDERAL AIRWAY V4 - CONTINUED

CHINS, WA FIX	TITON, WA FIX	
	E BND	*7000
	W BND	*10000
*7000 - MOCA		
TITON, WA FIX	GLEED, WA FIX	
	W BND	*7000
	E BND	*5500
*5000 - MOCA		
GLEED, WA FIX	YAKIMA, WA VORTAC	
	E BND	5000
	W BND	5500
YAKIMA, WA VORTAC	AMPLE, WA FIX	5000
AMPLE, WA FIX	PENDLETON, OR VORTAC	4000
PENDLETON, OR VORTAC	PIANO, OR FIX	
	SE BND	7000
	NW BND	6000
PIANO, OR FIX	LACED, OR FIX	
	NW BND	7000
	SE BND	10000
LACED, OR FIX	BAKER CITY, OR VOR/DME	10000
BAKER CITY, OR VOR/DME	PAYET, ID FIX	9000
PAYET, ID FIX	*EMETT, ID FIX	
	SE BND	5600
	NW BND	9000
*9400 - MRA		
EMETT, ID FIX	BOISE, ID VORTAC	5600
BOISE, ID VORTAC	CANEK, ID FIX	7000
CANEK, ID FIX	ALKAL, ID FIX	*9500
*8500 - MOCA		
ALKAL, ID FIX	GOODE, ID FIX	
	E BND	*8000
	W BND	*9500
*6200 - MOCA		
GOODE, ID FIX	JEROT, ID FIX	*8000
*6500 - MOCA		
JEROT, ID FIX	BURLEY, ID VOR/DME	6500
BURLEY, ID VOR/DME	MEDEA, ID FIX	*8400
*7800 - MOCA		
MEDEA, ID FIX	MALAD CITY, ID VOR/DME	9400
MALAD CITY, ID VOR/DME	FILOB, ID FIX	10900
FILOB, ID FIX	HODNI, ID FIX	*12000
*10800 - MOCA		
*10800 - GNSS MEA		
HODNI, ID FIX	GRIPS, WY FIX	*16000
*11700 - MOCA		
*11700 - GNSS MEA		
GRIPS, WY FIX	ROCK SPRINGS, WY VOR/DME	*11000
*10000 - MOCA		
*10000 - GNSS MEA		
ROCK SPRINGS, WY VOR/DME	CHEROKEE, WY VOR/DME	10000
CHEROKEE, WY VOR/DME	KLASH, WY FIX	
	E BND	13000
	W BND	11000
KLASH, WY FIX	*LARAMIE, WY VOR/DME	13000
*10600 - MCA LARAMIE, WY VOR/DME , W BND		
LARAMIE, WY VOR/DME	FLEMS, WY FIX	11000
FLEMS, WY FIX	BARGR, CO FIX	*11000
*10000 - MOCA		
BARGR, CO FIX	WISER, CO FIX	8400
WISER, CO FIX	GILL, CO VOR/DME	8000
GILL, CO VOR/DME	THURMAN, CO VORTAC	7000
THURMAN, CO VORTAC	GOODLAND, KS VORTAC	*7000
*6300 – MOCA		

FROM	TO	MEA

95.6004 VOR FEDERAL AIRWAY V4 - CONTINUED

FROM	TO	MEA
GOODLAND, KS VORTAC	HILL CITY, KS VORTAC	5500
HILL CITY, KS VORTAC	WESAL, KS FIX	*5500
*4000 - MOCA		
WESAL, KS FIX	SALINA, KS VORTAC	*4000
*2900 - MOCA		
SALINA, KS VORTAC	*VASCO, KS FIX	3000
*5000 - MRA		
VASCO, KS FIX	ALMAS, KS FIX	3000
ALMAS, KS FIX	TOPEKA, KS VORTAC	3600
TOPEKA, KS VORTAC	KANSAS CITY, MO VORTAC	2700
KANSAS CITY, MO VORTAC	LEXIN, MO FIX	2600
LEXIN, MO FIX	HALLSVILLE, MO VORTAC	*6000
*3000 - GNSS MEA		
HALLSVILLE, MO VORTAC	SADEN, MO FIX	2600
SADEN, MO FIX	ST LOUIS, MO VORTAC	*2400
*1700 - MOCA		
ST LOUIS, MO VORTAC	TROY, IL VORTAC	2400
TROY, IL VORTAC	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	POCKET CITY, IN VORTAC	3000
POCKET CITY, IN VORTAC	LAMBS, IN FIX	2500
LAMBS, IN FIX	*APALO, IN FIX	**3000
*4500 - MRA		
**2400 - MOCA		
APALO, IN FIX	DOWNS, KY FIX	*3000
*2400 - MOCA		
DOWNS, KY FIX	LOUISVILLE, KY VORTAC	*2600
*2300 - MOCA		
LOUISVILLE, KY VORTAC	FEDRA, KY FIX	2600
FEDRA, KY FIX	LEXINGTON, KY VORTAC	2800
LEXINGTON, KY VORTAC	CODEL, KY FIX	3000
CODEL, KY FIX	MASSE, KY FIX	*5000
*2500 - MOCA		
MASSE, KY FIX	CICKE, KY FIX	*5000
*2900 - MOCA		
CICKE, KY FIX	NEWCOMBE, KY VORTAC	3100
NEWCOMBE, KY VORTAC	CHARLESTON, WV VORTAC	3000
CHARLESTON, WV VORTAC	*ITALY, WV FIX	3000
*4000 - MRA		
ITALY, WV FIX	REACH, WV FIX	4000
REACH, WV FIX	ELKINS, WV VORTAC	4400
ELKINS, WV VORTAC	KESSEL, WV VOR/DME	6400
KESSEL, WV VOR/DME	ARMEL, VA VORTAC	5000

95.6005 VOR FEDERAL AIRWAY V5

FROM	TO	MEA
PECAN, GA VORTAC	VIENNA, GA VORTAC	2000
VIENNA, GA VORTAC	DUBLIN, GA VORTAC	2100
DUBLIN, GA VORTAC	ATHENS, GA VORTAC	*3000
*2200 - MOCA		
ATHENS, GA VORTAC	IRMOS, GA FIX	3000
IRMOS, GA FIX	CORCE, GA FIX	3800
CORCE, GA FIX	*AWSON, GA FIX	4600
*5000 - MRA		
AWSON, GA FIX	NELLO, GA FIX	*7000
*5500 - MOCA		
NELLO, GA FIX	*HOCHE, GA FIX	5400
*4000 - MCA HOCHE, GA FIX , SE BND		
HOCHE, GA FIX	CHOO CHOO, TN VORTAC	3000
CHOO CHOO, TN VORTAC	MCMIN, TN FIX	4000
MCMIN, TN FIX	HARME, TN FIX	*6000
*3700 - MOCA		
HARME, TN FIX	BOWLING GREEN, KY VORTAC	*2800
*2300 - MOCA		

FROM	TO	MEA

95.6005 VOR FEDERAL AIRWAY V5 - CONTINUED

FROM	TO	MEA
BOWLING GREEN, KY VORTAC	NEW HOPE, KY VOR/DME	*2900
*2300 - MOCA		
NEW HOPE, KY VOR/DME	LOUISVILLE, KY VORTAC	2700
LOUISVILLE, KY VORTAC	NERVE, KY FIX	*10000
*2700 - GNSS MEA		
NERVE, KY FIX	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	MOAKS, OH FIX	2800
MOAKS, OH FIX	PRUDE, OH FIX	*3000
*2300 - MOCA		
PRUDE, OH FIX	SHIRT, OH FIX	*4000
*2500 - MOCA		
SHIRT, OH FIX	*GLOOM, OH FIX	3000
*4000 - MRA		
GLOOM, OH FIX	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	MANSFIELD, OH VORTAC	3000
MANSFIELD, OH VORTAC	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	U.S. CANADIAN BORDER	2500

95.6006 VOR FEDERAL AIRWAY V6

FROM	TO	MEA
OAKLAND, CA VORTAC	COLLI, CA FIX	4000
COLLI, CA FIX	*PITTS, CA FIX	5000
*3800 - MCA PITTS, CA FIX , S BND		
PITTS, CA FIX	REJOY, CA FIX	*4000
*2400 - MOCA		
REJOY, CA FIX	SACRAMENTO, CA VORTAC	2000
SACRAMENTO, CA VORTAC	FOLLY, CA FIX	3000
FOLLY, CA FIX	*COLOM, CA FIX	5000
*9500 - MCA COLOM, CA FIX , NE BND		
COLOM, CA FIX	SQUAW VALLEY, CA VOR/DME	11000
SQUAW VALLEY, CA VOR/DME	*MUSTANG, NV VORTAC	13000
*12000 - MCA MUSTANG, NV VORTAC , SW BND		
MUSTANG, NV VORTAC	WADDS, NV FIX	10300
WADDS, NV FIX	*LOVELOCK, NV VORTAC	**10000
*8500 - MCA LOVELOCK, NV VORTAC , NE BND		
**9500 - MOCA		
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	12000
BATTLE MOUNTAIN, NV VORTAC	WELLS, NV VOR	*11000
*10100 - MOCA		
WELLS, NV VOR	LUCIN, UT VORTAC	10300
LUCIN, UT VORTAC	*OGDEN, UT VORTAC	9000
*10700 - MCA OGDEN, UT VORTAC , E BND		
OGDEN, UT VORTAC	EVIEW, UT FIX	
	E BND	12000
	W BND	7000
EVIEW, UT FIX	FORT BRIDGER, WY VOR/DME	12000
FORT BRIDGER, WY VOR/DME	ROCK SPRINGS, WY VOR/DME	10000
ROCK SPRINGS, WY VOR/DME	CHEROKEE, WY VOR/DME	10000
CHEROKEE, WY VOR/DME	MEDICINE BOW, WY VOR/DME	10000
MEDICINE BOW, WY VOR/DME	MOIST, WY FIX	9500
MOIST, WY FIX	*LITER, WY FIX	**10500
*10500 - MCA LITER, WY FIX , W BND		
**9500 - MOCA		
LITER, WY FIX	SIDNEY, NE VORTAC	*9500
*7600 - MOCA		
SIDNEY, NE VORTAC	NORTH PLATTE, NE VORTAC	6000
NORTH PLATTE, NE VORTAC	RAGAR, NE FIX	*5000
*4300 - MOCA		
RAGAR, NE FIX	GRAND ISLAND, NE VORTAC	*5000
*3600 – MOCA		

95.6006 VOR FEDERAL AIRWAY V6 - CONTINUED

FROM	TO	MEA
GRAND ISLAND, NE VORTAC	HUSKR, NE FIX	*4000
*3100 - MOCA		
HUSKR, NE FIX	OMAHA, IA VORTAC	4000
OMAHA, IA VORTAC	*LYMAN, IA FIX	3000
*4500 - MRA		
LYMAN, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	2700
IOWA CITY, IA VORTAC	DAVENPORT, IA VORTAC	2600
DAVENPORT, IA VORTAC	LEECS, IL FIX	2500
LEECS, IL FIX	DUPAGE, IL VOR/DME	*4000
*2700 - GNSS MEA		
NILES, IL FIX	CHETT, MI FIX	*3500
*2500 - MOCA		
CHETT, MI FIX	GIPPER, MI VORTAC	*3000
*2200 - MOCA		
GIPPER, MI VORTAC	BRYTO, IN FIX	*3500
*2400 - MOCA		
BRYTO, IN FIX	*PIONS, OH FIX	**4000
*4000 - MRA		
**2500 - MOCA		
PIONS, OH FIX	WATERVILLE, OH VOR/DME	*3300
*2300 - MOCA		
WATERVILLE, OH VOR/DME	SANDUSKY, OH VOR/DME	3000
SANDUSKY, OH VOR/DME	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	MOROW, OH FIX	3100
MOROW, OH FIX	HIRES, OH FIX	*5000
*2700 - MOCA		
*3000 - GNSS MEA		
HIRES, OH FIX	YOUNGSTOWN, OH VORTAC	2900
YOUNGSTOWN, OH VORTAC	MERCY, PA FIX	*5000
*3000 - MOCA		
*3000 - GNSS MEA		
MERCY, PA FIX	CLARION, PA VOR/DME	3600
CLARION, PA VOR/DME	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	SELINSGROVE, PA VORTAC	4000
SELINSGROVE, PA VORTAC	SNOWY, PA FIX	*5000
*3500 - MOCA		
*4000 - GNSS MEA		
SNOWY, PA FIX	ALLENTOWN, PA VORTAC	*4000
*3300 - MOCA		
ALLENTOWN, PA VORTAC	SOLBERG, NJ VOR/DME	#*3000
*2200 - MOCA		
# FJC R-115 UNUSABLE. USE SBJ R-295.		
SOLBERG, NJ VOR/DME	EMPYR, NY FIX	2300
EMPYR, NY FIX	NANCI, NY FIX	2700
NANCI, NY FIX	LA GUARDIA, NY VOR/DME	2600

95.6007 VOR FEDERAL AIRWAY V7

FROM	TO	MEA
DOLPHIN, FL VORTAC	SWAGS, FL FIX	*2000
*1500 - MOCA		
SWAGS, FL FIX	LEE COUNTY, FL VORTAC	2200
LEE COUNTY, FL VORTAC	JOCKS, FL FIX	2600
JOCKS, FL FIX	*CROWD, FL FIX	**2300
*5000 - MRA		
**1600 - MOCA		
CROWD, FL FIX	LAKELAND, FL VORTAC	2300
LAKELAND, FL VORTAC	*DADES, FL FIX	1800
*5000 - MRA		
DADES, FL FIX	*NITTS, FL FIX	2300
*3000 – MRA		

FROM	TO	MEA

95.6007 VOR FEDERAL AIRWAY V7

FROM	TO	MEA
NITTS, FL FIX	*ORATE, FL FIX	**3000
*3000 - MRA		
**1600 - MOCA		
ORATE, FL FIX	CROSS CITY, FL VORTAC	*2000
*1500 - MOCA		
CROSS CITY, FL VORTAC	SEMINOLE, FL VORTAC	2000
SEMINOLE, FL VORTAC	OALDY, AL FIX	2000
OALDY, AL FIX	WIREGRASS, AL VORTAC	2500
WIREGRASS, AL VORTAC	CLIOS, AL FIX	2200
CLIOS, AL FIX	BANBI, AL FIX	*2400
*2400 - GNSS MEA		
BANBI, AL FIX	MONTGOMERY, AL VORTAC	2400
MONTGOMERY, AL VORTAC	BOWIN, AL FIX	2000
BOWIN, AL FIX	VULCAN, AL VORTAC	3000
VULCAN, AL VORTAC	MUSCLE SHOALS, AL VORTAC	*2800
*2200 - MOCA		
MUSCLE SHOALS, AL VORTAC	GILLE, AL FIX	2500
GILLE, AL FIX	GRAHAM, TN VORTAC	*3000
*2400 - MOCA		
GRAHAM, TN VORTAC	VALER, TN FIX	3000
VALER, TN FIX	CENTRAL CITY, KY VORTAC	*3000
*2200 - MOCA		
CENTRAL CITY, KY VORTAC	POCKET CITY, IN VORTAC	2300
POCKET CITY, IN VORTAC	PRINC, IN FIX	2300
PRINC, IN FIX	LISLE, IN FIX	4500
LISLE, IN FIX	TERRE HAUTE, IN VORTAC	3000
TERRE HAUTE, IN VORTAC	*POTES, IN FIX	2500
*4000 - MRA		
POTES, IN FIX	BOILER, IN VORTAC	2500
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2700
CHICAGO HEIGHTS, IL VORTAC	*NILES, IL FIX	2500
*3500 - MRA		
*3000 - MCA NILES, IL FIX , N BND		
NILES, IL FIX	*LAIRD, IL FIX	3400
*2600 - MCA LAIRD, IL FIX , S BND		
LAIRD, IL FIX	THORR, IL FIX	2500
THORR, IL FIX	PAPPI, IL FIX	*2500
*1800 - MOCA		
PAPPI, IL FIX	TALOR, WI FIX	*4000
*1800 – MOCA		
TALOR, WI FIX	PETTY, WI FIX	*6000
*1900 - MOCA		
PETTY, WI FIX	PROOT, WI FIX	*4500
*1900 - MOCA		
PROOT, WI FIX	FALLS, WI VOR/DME	*3000
*2100 - MOCA		
FALLS, WI VOR/DME	GREEN BAY, WI VORTAC	3000
GREEN BAY, WI VORTAC	MENOMINEE, MI VOR/DME	2600
MENOMINEE, MI VOR/DME	SAWYER, MI VOR/DME	2900

95.6008 VOR FEDERAL AIRWAY V8

FROM	TO	MEA
DOYLE, CA FIX	LIMBO, CA FIX	3000
LIMBO, CA FIX	*WILMA, CA FIX	3200
*2800 - MCA WILMA, CA FIX , W BND		
WILMA, CA FIX	SEAL BEACH, CA VORTAC	2300
SEAL BEACH, CA VORTAC	AHEIM, CA FIX	*3000
*2200 - MOCA		
AHEIM, CA FIX	*OLLIE, CA FIX	3000
*4000 - MRA		
*4100 - MCA OLLIE, CA FIX , NE BND		

FROM	TO	MEA

95.6008 VOR FEDERAL AIRWAY V8

FROM	TO	MEA
OLLIE, CA FIX	PARADISE, CA VORTAC	5000
PARADISE, CA VORTAC	*RAVON, CA FIX	4500
*8800 - MCA RAVON, CA FIX , NE BND		
RAVON, CA FIX	GAREY, CA FIX	
	SW BND	8000
	NE BND	10500
GAREY, CA FIX	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 - MOCA		
BULGY, CA FIX	HECTOR, CA VORTAC	*9000
*7000 - MOCA		
HECTOR, CA VORTAC	GOFFS, CA VORTAC	*9000
*8200 - MOCA		
GOFFS, CA VORTAC	LYNSY, NV FIX	7600
LYNSY, NV FIX	MEADS, NV FIX	7500
MEADS, NV FIX	MORMON MESA, NV VORTAC	6000
MORMON MESA, NV VORTAC	MATZO, UT FIX	
	NE BND	12000
	SW BND	9000
MATZO, UT FIX	BRYCE CANYON, UT VORTAC	12300
BRYCE CANYON, UT VORTAC	HANKSVILLE, UT VORTAC	13300
HANKSVILLE, UT VORTAC	GRAND JUNCTION, CO VOR/DME	10000
GRAND JUNCTION, CO VOR/DME	*SQUAT, CO FIX	**10500
*11700 - MRA		
*11700 - MCA SQUAT, CO FIX , NE BND		
**9600 - MOCA		
SQUAT, CO FIX	RIFLE, CO VOR/DME	13200
RIFLE, CO VOR/DME	KREMMLING, CO VOR/DME	13400
KREMMLING, CO VOR/DME	*MILE HIGH, CO VORTAC	15500
*10300 - MCA MILE HIGH, CO VORTAC , W BND		
MILE HIGH, CO VORTAC	HOYTT, CO FIX	7600
HOYTT, CO FIX	AKRON, CO VOR/DME	7000
AKRON, CO VOR/DME	HAYES CENTER, NE VORTAC	6500
HAYES CENTER, NE VORTAC	GRAND ISLAND, NE VORTAC	*5500
*4900 - MOCA		
GRAND ISLAND, NE VORTAC	HUSKR, NE FIX	*4000
*3100 - MOCA		
HUSKR, NE FIX	OMAHA, IA VORTAC	4000
OMAHA, IA VORTAC	*LYMAN, IA FIX	3000
*4500 - MRA		
LYMAN, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	2700
IOWA CITY, IA VORTAC	MOLINE, IL VORTAC	2700
MOLINE, IL VORTAC	TRIDE, IL FIX	3300
TRIDE, IL FIX	JOLIET, IL VORTAC	2600
JOLIET, IL VORTAC	CHICAGO HEIGHTS, IL VORTAC	2500
CHICAGO HEIGHTS, IL VORTAC	HALIE, IN FIX	2600
HALIE, IN FIX	INKEN, IN FIX	*4000
*2300 - MOCA		
INKEN, IN FIX	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	GAREN, IN FIX	3000
GAREN, IN FIX	*GRABI, IN FIX	**4000
*4000 - MRA		
**2200 - MOCA		
GRABI, IN FIX	TWERP, OH FIX	*4000
*2200 - MOCA		
TWERP, OH FIX	FLAG CITY, OH VORTAC	2600
FLAG CITY, OH VORTAC	DUSKY, OH FIX	2600
DUSKY, OH FIX	MANSFIELD, OH VORTAC	3000
MANSFIELD, OH VORTAC	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	ATWOO, OH FIX	*4000
*3100 – MOCA		
*3100 - GNSS MEA		

95.6008 VOR FEDERAL AIRWAY V8 - CONTINUED

FROM	TO	MEA
ATWOO, OH FIX *3000 - MOCA	BELLAIRE, OH VOR/DME	*6000
BELLAIRE, OH VOR/DME *3100 - MOCA	GALLS, PA FIX	*3600
GALLS, PA FIX	GRANTSVILLE, MD VOR/DME	5000
GRANTSVILLE, MD VOR/DME *4500 - MOCA	MARTINSBURG, WV VORTAC	*5000
MARTINSBURG, WV VORTAC	WASHINGTON, DC VOR/DME	3300

95.6009 VOR FEDERAL AIRWAY V9

FROM	TO	MEA
LEEVILLE, LA VORTAC *1400 - MOCA	SAFES, LA FIX	*2000
SAFES, LA FIX *1600 - MOCA	WAVEZ, LA FIX	*4000
WAVEZ, LA FIX *1800 - MOCA	OYSTY, LA FIX	*3000
OYSTY, LA FIX	MC COMB, MS VORTAC	2000
MC COMB, MS VORTAC *4000 - MRA	*ROMAR, MS FIX	2100
ROMAR, MS FIX	JACKSON, MS VORTAC	2000
JACKSON, MS VORTAC *4000 - MRA	*BERRA, MS FIX	2000
BERRA, MS FIX	SIDON, MS VORTAC	2000
SIDON, MS VORTAC	MARVELL, AR VOR/DME	2100
MARVELL, AR VOR/DME	GILMORE, AR VOR/DME	1900
GILMORE, AR VOR/DME *2300 - MOCA	MALDEN, MO VORTAC	*3000
MALDEN, MO VORTAC *2300 - MOCA	FARMINGTON, MO VORTAC	*3000
FARMINGTON, MO VORTAC *2500 - MOCA	ARNOL, IL FIX	*3000
ARNOL, IL FIX	IMPER, MO FIX	2800
IMPER, MO FIX	ST LOUIS, MO VORTAC	2600
ST LOUIS, MO VORTAC *2100 - MOCA	SPINNER, IL VORTAC	*2700
SPINNER, IL VORTAC *2300 - MOCA	PONTIAC, IL VOR/DME	*3000
PONTIAC, IL VOR/DME	KELSI, IL FIX	3000
KELSI, IL FIX	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	JANESVILLE, WI VOR/DME	2700
JANESVILLE, WI VOR/DME	MADISON, WI VORTAC	3000
MADISON, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC *2300 - MOCA	GREEN BAY, WI VORTAC	*3000
GREEN BAY, WI VORTAC	IRON MOUNTAIN, MI VOR/DME	2900
IRON MOUNTAIN, MI VOR/DME *3300 - MOCA	HOUGHTON, MI VOR/DME	*3800

95.6010 VOR FEDERAL AIRWAY V10

FROM	TO	MEA
PUEBLO, CO VORTAC	LAMAR, CO VOR/DME	7000
LAMAR, CO VOR/DME *5200 - MOCA	ADEER, KS FIX	*5600
ADEER, KS FIX *4400 - MOCA	GARDEN CITY, KS VORTAC	*5000
GARDEN CITY, KS VORTAC	DODGE CITY, KS VORTAC	4600
DODGE CITY, KS VORTAC *4200 – MRA	*STAFF, KS FIX	4300

FROM	TO	MEA

95.60010 VOR FEDERAL AIRWAY V10 - CONTINUED

STAFF, KS FIX	HUTCHINSON, KS VOR/DME	3700
HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000
WAIVE, KS FIX	*FLOSS, KS FIX	3300
*5000 - MRA		
FLOSS, KS FIX	EMPORIA, KS VORTAC	3300
EMPORIA, KS VORTAC	JOHNSON COUNTY, KS VOR/DME	2700
JOHNSON COUNTY, KS VOR/DME	NAPOLEON, MO VORTAC	3000
NAPOLEON, MO VORTAC	KIRKSVILLE, MO VORTAC	3000
KIRKSVILLE, MO VORTAC	LOAMY, MO FIX	3000
LOAMY, MO FIX	BURLINGTON, IA VORTAC	*2700
*2200 - MOCA		
BURLINGTON, IA VORTAC	BRADFORD, IL VORTAC	2600
BRADFORD, IL VORTAC	PLANO, IL FIX	3000
NILES, IL FIX	CHETT, MI FIX	*3500
*2500 - MOCA		
CHETT, MI FIX	GIPPER, MI VORTAC	*3000
*2200 - MOCA		
GIPPER, MI VORTAC	LITCHFIELD, MI VOR/DME	2800
LITCHFIELD, MI VOR/DME	*CRUXX, MI FIX	3000
*7500 - MRA		
CRUXX, MI FIX	CARLETON, MI VORTAC	*3000
*2200 - MOCA		
CARLETON, MI VORTAC	U.S. CANADIAN BORDER	*3000
*2100 - MOCA		
U.S. CANADIAN BORDER	FAILS, OH FIX	*4000
*1800 - MOCA		
*2300 - GNSS MEA		
FAILS, OH FIX	*WONOP, OH FIX	**3000
*5000 - MRA		
**2000 - MOCA		
WONOP, OH FIX	YOUNGSTOWN, OH VORTAC	*5000
*2700 - MOCA		
*3000 - GNSS MEA		
YOUNGSTOWN, OH VORTAC	VOLAN, PA FIX	*5000
*3000 – MOCA		
*3000 - GNSS MEA		
VOLAN, PA FIX	TALLS, PA FIX	*5000
*3200 – MOCA		
*3300 - GNSS MEA		
TALLS, PA FIX	REVLOC, PA VOR/DME	4100
REVLOC, PA VOR/DME	LANCASTER, PA VORTAC	5000

95.6011 VOR FEDERAL AIRWAY V11

BROOKLEY, AL VORTAC	GREENE COUNTY, MS VORTAC	2000
GREENE COUNTY, MS VORTAC	SOSOE, MS FIX	*4000
*1800 - MOCA		
*3000 - GNSS MEA		
SOSOE, MS FIX	*RAKIN, MS FIX	**3000
*3000 - MRA		
**2400 - MOCA		
RAKIN, MS FIX	JACKSON, MS VORTAC	2400
JACKSON, MS VORTAC	*BERRA, MS FIX	2000
*4000 - MRA		
BERRA, MS FIX	SIDON, MS VORTAC	2000
SIDON, MS VORTAC	HOLLY SPRINGS, MS VORTAC	3000
HOLLY SPRINGS, MS VORTAC	DYERSBURG, TN VORTAC	*2500
*2000 - MOCA		
DYERSBURG, TN VORTAC	CUNNINGHAM, KY VORTAC	2400
CUNNINGHAM, KY VORTAC	WESON, KY FIX	2600
WESON, KY FIX	POCKET CITY, IN VORTAC	2200

FROM	TO	MEA

95.6011 VOR FEDERAL AIRWAY V11 - CONTINUED

POCKET CITY, IN VORTAC	MACKY, IN FIX	2300
MACKY, IN FIX	CLOWN, IN FIX	*3000
*2100 - MOCA		
CLOWN, IN FIX	SCOTO, IN FIX	*6000
*2100 - MOCA		
SCOTO, IN FIX	BRICKYARD, IN VORTAC	*2900
*2200 - MOCA		
BRICKYARD, IN VORTAC	WELDO, IN FIX	2900
WELDO, IN FIX	MARION, IN VOR/DME	2800
MARION, IN VOR/DME	FORT WAYNE, IN VORTAC	2600
FORT WAYNE, IN VORTAC	*GRABI, IN FIX	3000
*4000 - MRA		
GRABI, IN FIX	EDGEE, OH FIX	3000
EDGEE, OH FIX	*PIONS, OH FIX	4000
*4000 - MRA		
PIONS, OH FIX	*HIRED, MI FIX	6000
*6000 - MRA		
HIRED, MI FIX	*CRUXX, MI FIX	7500
*7500 - MRA		

95.6012 VOR FEDERAL AIRWAY V12

GAVIOTA, CA VORTAC	SAN MARCUS, CA VORTAC	6400
SAN MARCUS, CA VORTAC	*PALMDALE, CA VORTAC	9000
*6000 - MCA PALMDALE, CA VORTAC , W BND		
PALMDALE, CA VORTAC	HELDE, CA FIX	
	E BND	7500
	W BND	6000
HELDE, CA FIX	HECTOR, CA VORTAC	7500
HECTOR, CA VORTAC	CLIPP, CA FIX	9000
CLIPP, CA FIX	NEEDLES, CA VORTAC	*8000
*5300 - MOCA		
NEEDLES, CA VORTAC	DRAKE, AZ VORTAC	10000
DRAKE, AZ VORTAC	OATES, AZ FIX	10100
OATES, AZ FIX	WINSLOW, AZ VORTAC	10800
WINSLOW, AZ VORTAC	ZUNI, NM VORTAC	9000
ZUNI, NM VORTAC	*CARTY, NM FIX	11000
*10000 - MCA CARTY, NM FIX , W BND		
CARTY, NM FIX	*ALBUQUERQUE, NM VORTAC	9000
*10700 - MCA ALBUQUERQUE, NM VORTAC , E BND		
ALBUQUERQUE, NM VORTAC	OTTO, NM VOR	12000
OTTO, NM VOR	ANTON CHICO, NM VORTAC	*10000
*9400 - MOCA		
ANTON CHICO, NM VORTAC	TUCUMCARI, NM VORTAC	7700
TUCUMCARI, NM VORTAC	PANHANDLE, TX VORTAC	6000
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	*5500
*5000 - MOCA		
MITBEE, OK VORTAC	*CARON, OK FIX	**5000
*5000 - MRA		
**3700 - MOCA		
CARON, OK FIX	ANTHONY, KS VORTAC	3000
ANTHONY, KS VORTAC	WICHITA, KS VORTAC	3600
WICHITA, KS VORTAC	EMPORIA, KS VORTAC	3600
EMPORIA, KS VORTAC	JOHNSON COUNTY, KS VOR/DME	2700
JOHNSON COUNTY, KS VOR/DME	NAPOLEON, MO VORTAC	3000
NAPOLEON, MO VORTAC	FRANC, MO FIX	3000
FRANC, MO FIX	COLUMBIA, MO VOR/DME	2600
COLUMBIA, MO VOR/DME	STITH, MO FIX	*2600
*2100 - MOCA		
STITH, MO FIX	FORISTELL, MO VORTAC	2600
FORISTELL, MO VORTAC	TROY, IL VORTAC	2500
TROY, IL VORTAC	BIBLE GROVE, IL VORTAC	2300

FROM	TO	MEA

95.6012 VOR FEDERAL AIRWAY V12 - CONTINUED

FROM	TO	MEA
BIBLE GROVE, IL VORTAC	WORKE, IL FIX	2300
WORKE, IL FIX	OZMOE, IN FIX	*6000
*2600 - MOCA		
OZMOE, IN FIX	SHELBYVILLE, IN VORTAC	2500
SHELBYVILLE, IN VORTAC	RICHMOND, IN VORTAC	2800
RICHMOND, IN VORTAC	DAYTON, OH VOR/DME	2900
DAYTON, OH VOR/DME	*PIZZA, OH FIX	3000
*5000 - MRA		
PIZZA, OH FIX	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	ALLEGHENY, PA VOR/DME	3300
ALLEGHENY, PA VOR/DME	MILWO, PA FIX	4000
MILWO, PA FIX	JOHNSTOWN, PA VORTAC	4900
JOHNSTOWN, PA VORTAC	HARRISBURG, PA VORTAC	5000
HARRISBURG, PA VORTAC	BOBSS, PA FIX	3100
BOBSS, PA FIX	BAARN, PA FIX	3000

95.6013 VOR FEDERAL AIRWAY V13

FROM	TO	MEA
MC ALLEN, TX VOR/DME	*MANNY, TX FIX	**5000
*5000 - MRA		
**1700 - MOCA		
MANNY, TX FIX	ASCOT, TX FIX	*5000
*1500 - MOCA		
ASCOT, TX FIX	SOLON, TX FIX	*4000
*1500 - MOCA		
SOLON, TX FIX	CORPUS CHRISTI, TX VORTAC	1600
CORPUS CHRISTI, TX VORTAC	*WORRY, TX FIX	1700
*2100 – MRA		
WORRY, TX FIX	*AUSTS, TX FIX	1700
*2300 - MRA		
AUSTS, TX FIX	PALACIOS, TX VORTAC	1700
PALACIOS, TX VORTAC	HUMBLE, TX VORTAC	2000
HUMBLE, TX VORTAC	CLEEP, TX FIX	3000
CLEEP, TX FIX	*LEGGE, TX FIX	3100
*3000 - MRA		
LEGGE, TX FIX	LUFKIN, TX VORTAC	2100
LUFKIN, TX VORTAC	CARTH, TX FIX	*3800
*2400 - MOCA		
CARTH, TX FIX	BELCHER, LA VORTAC	3100
BELCHER, LA VORTAC	*IDDAS, LA FIX	2000
*3000 - MRA		
IDDAS, LA FIX	*DUBOW, AR FIX	2000
*4000 - MRA		
DUBOW, AR FIX	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	DEENS, AR FIX	2300
DEENS, AR FIX	RICH MOUNTAIN, OK VORTAC	*4600
*4000 - MOCA		
RICH MOUNTAIN, OK VORTAC	*HADES, AR FIX	**4600
*5000 - MRA		
**3900 - MOCA		
HADES, AR FIX	FORT SMITH, AR VORTAC	2000
FORT SMITH, AR VORTAC	*CHESO, AR FIX	3400
*5000 - MRA		
CHESO, AR FIX	RAZORBACK, AR VORTAC	3700
RAZORBACK, AR VORTAC	*PINNE, MO FIX	3000
*4500 - MRA		
PINNE, MO FIX	NEOSHO, MO VOR/DME	3000
NEOSHO, MO VOR/DME	NASHE, MO FIX	2900
NASHE, MO FIX	*DIZZI, MO FIX	2700
*3000 - MRA		
DIZZI, MO FIX	BUTLER, MO VORTAC	*2600
*2000 - MOCA		
BUTLER, MO VORTAC	NAPOLEON, MO VORTAC	2900
NAPOLEON, MO VORTAC	LAMONI, IA VORTAC	2900

FROM	TO	MEA

95.6013 VOR FEDERAL AIRWAY V13 – CONTINUED

LAMONI, IA VORTAC	*WIVEY, IA FIX	3000
*4300 - MRA		
WIVEY, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	*ANKEN, IA FIX	2700
*3500 - MCA ANKEN, IA FIX , N BND		
ANKEN, IA FIX	NEVAD, IA FIX	4000
NEVAD, IA FIX	ALOCK, IA FIX	*3300
*2700 - MOCA		
ALOCK, IA FIX	MASON CITY, IA VORTAC	3000
MASON CITY, IA VORTAC	FARMINGTON, MN VORTAC	3000
FARMINGTON, MN VORTAC	*WAGNR, MN FIX	**5500
*5500 - MRA		
**3400 - MOCA		
WAGNR, MN FIX	CINCI, MN FIX	*5500
*3400 - MOCA		
CINCI, MN FIX	SIREN, WI VOR/DME	*3400
*2700 - MOCA		
SIREN, WI VOR/DME	DULUTH, MN VORTAC	4000
DULUTH, MN VORTAC	WEMAN, MN FIX	4000
WEMAN, MN FIX	BYPOR, MN FIX	5000
BYPOR, MN FIX	U.S. CANADIAN BORDER	4000

95.6014 VOR FEDERAL AIRWAY V14

CHISUM, NM VORTAC	ONSOM, NM FIX	
	E BND	*7000
	W BND	*7500
*6000 - MOCA		
ONSOM, NM FIX	WINNS, TX FIX	*8000
*6300 - MOCA		
WINNS, TX FIX	FLATT, TX FIX	*8000
*5200 - MOCA		
FLATT, TX FIX	SHALO, TX FIX	5100
SHALO, TX FIX	LUBBOCK, TX VORTAC	*5100
*5000 - GNSS MEA		
LUBBOCK, TX VORTAC	CHILDRESS, TX VORTAC	5000
CHILDRESS, TX VORTAC	HOBART, OK VORTAC	3700
HOBART, OK VORTAC	CARFF, OK FIX	3600
CARFF, OK FIX	WILL ROGERS, OK VORTAC	3000
WILL ROGERS, OK VORTAC	TOTES, OK FIX	3700
TOTES, OK FIX	DROPS, OK FIX	*3700
*2500 - MOCA		
DROPS, OK FIX	TULSA, OK VORTAC	
	NE BND	2800
	SW BND	3800
TULSA, OK VORTAC	ADAIR, OK FIX	2500
ADAIR, OK FIX	NEOSHO, MO VOR/DME	3000
NEOSHO, MO VOR/DME	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	VICHY, MO VOR/DME	3000
VICHY, MO VOR/DME	STEER, MO FIX	*3000
*2300 - MOCA		
STEER, MO FIX	ST LOUIS, MO VORTAC	2600
ST LOUIS, MO VORTAC	VANDALIA, IL VORTAC	2500
VANDALIA, IL VORTAC	TERRE HAUTE, IN VORTAC	2400
TERRE HAUTE, IN VORTAC	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	MUNCIE, IN VOR/DME	2900
MUNCIE, IN VOR/DME	FLAG CITY, OH VORTAC	3000
FLAG CITY, OH VORTAC	OBRLN, OH FIX	*3500
*2400 - MOCA		

FROM	TO	MEA

95.6014 VOR FEDERAL AIRWAY V14 – CONTINUED

OBRLN, OH FIX	DRYER, OH VOR/DME	*3000
*2400 – MOCA		
DRYER, OH VOR/DME	JEFFERSON, OH VOR/DME	3000
JEFFERSON, OH VOR/DME	ERIE, PA VORTAC	2700
ERIE, PA VORTAC	HAMIT, PA FIX	3200
HAMIT, PA FIX	DUNKIRK, NY VORTAC	3300
DUNKIRK, NY VORTAC	BUFFALO, NY VOR/DME	3000
#BUFFALO, NY VOR/DME	GENESEO, NY VOR/DME	#4000
#BUFFALO R-106 UNUSABLE.		
GENESEO, NY VOR/DME	BEEPS, NY FIX	*4000
*3300 - MOCA		
BEEPS, NY FIX	SCIPO, NY FIX	*4000
*3400 - MOCA		
SCIPO, NY FIX	VESPE, NY FIX	4000
VESPE, NY FIX	GEORGETOWN, NY VORTAC	4000
GEORGETOWN, NY VORTAC	SHERB, NY FIX	4000
SHERB, NY FIX	COBIA, NY FIX	5000
COBIA, NY FIX	CASIL, NY FIX	*5000
*3800 - MOCA		
CASIL, NY FIX	ALBANY, NY VORTAC	3600
ALBANY, NY VORTAC	WARIC, MA FIX	5000
WARIC, MA FIX	GARDNER, MA VOR/DME	*4000
*3500 - MOCA		
GARDNER, MA VOR/DME	GRAYM, MA FIX	3000
GRAYM, MA FIX	NORWICH, CT VOR/DME	*3000
*2200 - MOCA		

95.6015 VOR FEDERAL AIRWAY V15

HOBBY, TX VOR/DME	NAVASOTA, TX VORTAC	2100
NAVASOTA, TX VORTAC	COLLEGE STATION, TX VORTAC	2000
COLLEGE STATION, TX VORTAC	SATTY, TX FIX	2200
SATTY, TX FIX	WACO, TX VORTAC	2000
WACO, TX VORTAC	CEDAR CREEK, TX VORTAC	2500
CEDAR CREEK, TX VORTAC	BONHAM, TX VORTAC	*3500
*2200 - MOCA		
BONHAM, TX VORTAC	*PRIZZ, OK FIX	**3600
*7000 - MRA		
**2100 - MOCA		
PRIZZ, OK FIX	MC ALESTER, OK VORTAC	*3000
*2500 - MOCA		
MC ALESTER, OK VORTAC	*HOFFE, OK FIX	2700
*4700 - MRA		
HOFFE, OK FIX	OKMULGEE, OK VOR/DME	2600
OKMULGEE, OK VOR/DME	MALTS, OK FIX	3500
MALTS, OK FIX	*PRYOR, OK FIX	**2900
*2900 - MRA		
**2200 - MOCA		
PRYOR, OK FIX	NEOSHO, MO VOR/DME	3000
SIOUX CITY, IA VORTAC	SIOUX FALLS, SD VORTAC	3400
SIOUX FALLS, SD VORTAC	HURON, SD VORTAC	3700
HURON, SD VORTAC	ABERDEEN, SD VOR/DME	3000
ABERDEEN, SD VOR/DME	BISMARCK, ND VOR/DME	*4700
*3500 - MOCA		
BISMARCK, ND VOR/DME	MINOT, ND VORTAC	4100

FROM	TO	MEA

95.6016 VOR FEDERAL AIRWAY V16

FROM	TO	MEA
LOS ANGELES, CA VORTAC	PRADO, CA FIX	4000
PRADO, CA FIX	PARADISE, CA VORTAC	4000
PARADISE, CA VORTAC	*SETER, CA FIX	5500
*12000 - MCA SETER, CA FIX , E BND		
SETER, CA FIX	*BANDS, CA FIX	
	E BND	13000
	W BND	9000
*13000 - MRA		
BANDS, CA FIX	GARNE, CA FIX	13000
GARNE, CA FIX	*PALM SPRINGS, CA VORTAC	
	E BND	8000
	W BND	12000
*11600 - MCA PALM SPRINGS, CA VORTAC , W BND		
PALM SPRINGS, CA VORTAC	BLYTHE, CA VORTAC	*8000
*7500 - MOCA		
BLYTHE, CA VORTAC	*VICKO, AZ FIX	6000
*9000 - MRA		
VICKO, AZ FIX	BUCKEYE, AZ VORTAC	6000
BUCKEYE, AZ VORTAC	PERKY, AZ FIX	5000
PERKY, AZ FIX	PHOENIX, AZ VORTAC	
	E BND	4000
W BND	5000	
PHOENIX, AZ VORTAC	*TOTEC, AZ FIX	5000
*5500 - MCA TOTEC, AZ FIX , E BND		
TOTEC, AZ FIX	*TUCSON, AZ VORTAC	6500
*8700 - MCA TUCSON, AZ VORTAC , E BND		
TUCSON, AZ VORTAC	COCHISE, AZ VORTAC	10500
COCHISE, AZ VORTAC	ANIMA, NM FIX	11000
ANIMA, NM FIX	*DARCE, NM FIX	
	E BND	9000
	W BND	11000
*11000 - MCA DARCE, NM FIX , W BND		
DARCE, NM FIX	COLUMBUS, NM VOR/DME	*9000
*8200 - MOCA		
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000
EL PASO, TX VORTAC	SALT FLAT, TX VORTAC	*8000
*7400 - MOCA		
SALT FLAT, TX VORTAC	DILLI, TX FIX	8000
DILLI, TX FIX	CAVRN, TX FIX	*10000
*7500 - MOCA		
CAVRN, TX FIX	WINK, TX VORTAC	*10000
*5300 - MOCA		
WINK, TX VORTAC	GOMIT, TX FIX	5500
GOMIT, TX FIX	PIZON, TX FIX	5000
PIZON, TX FIX	MERGE, TX FIX	*7000
*4400 - MOCA		
MERGE, TX FIX	BIG SPRING, TX VORTAC	4400
BIG SPRING, TX VORTAC	WEEPE, TX FIX	4200
WEEPE, TX FIX	*LORAN, TX FIX	4500
*6500 - MRA		
LORAN, TX FIX	MERKE, TX FIX	4500
MERKE, TX FIX	ABILENE, TX VORTAC	*4000
*3200 - MOCA		
ABILENE, TX VORTAC	*ROGEE, TX FIX	3600
*5000 - MRA		
ROGEE, TX FIX	BOWIE, TX VORTAC	*4500
*2900 - MOCA		
BOWIE, TX VORTAC	BONHAM, TX VORTAC	4000
BONHAM, TX VORTAC	PARIS, TX VOR/DME	2400
PARIS, TX VOR/DME	TEXARKANA, AR VORTAC	2000

FROM	TO	MEA

95.6016 VOR FEDERAL AIRWAY V16 - CONTINUED

TEXARKANA, AR VORTAC	*HOSES, AR FIX	2000
*3000 - MRA		
HOSES, AR FIX	SPARO, AR FIX	*4000
*2300 - MOCA		
SPARO, AR FIX	BUNNS, AR FIX	*6000
*1900 – MOCA		
BUNNS, AR FIX	PINE BLUFF, AR VOR/DME	2000
PINE BLUFF, AR VOR/DME	MARVELL, AR VOR/DME	1900
MARVELL, AR VOR/DME	HOLLY SPRINGS, MS VORTAC	2200
HOLLY SPRINGS, MS VORTAC	JACKS CREEK, TN VOR/DME	*2500
*2000 - MOCA		
JACKS CREEK, TN VOR/DME	SHELBYVILLE, TN VOR/DME	*3000
*2500 - MOCA		
SHELBYVILLE, TN VOR/DME	HINCH MOUNTAIN, TN VORTAC	5000
HINCH MOUNTAIN, TN VORTAC	BUCKY, TN FIX	5000
BUCKY, TN FIX	VOLUNTEER, TN VORTAC	3500
VOLUNTEER, TN VORTAC	*PENCE, TN FIX	3000
*4000 - MCA PENCE, TN FIX , NE BND		
PENCE, TN FIX	TAKEN, TN FIX	4000
TAKEN, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	6000
HOLSTON MOUNTAIN, TN VORTAC	DAMAS, TN FIX	6000
DAMAS, TN FIX	*STOVE, VA FIX	7500
*7500 - MCA STOVE, VA FIX , SW BND		
STOVE, VA FIX	SPEEL, VA FIX	6000
SPEEL, VA FIX	PULASKI, VA VORTAC	5400
PULASKI, VA VORTAC	ROANOKE, VA VORTAC	5300
ROANOKE, VA VORTAC	GOOZE, VA FIX	5000
GOOZE, VA FIX	OTINE, VA FIX	
	W BND	*5000
	E BND	*3000
*2900 - MOCA		
LYNCHBURG, VA VORTAC	FLAT ROCK, VA VORTAC	3000
FLAT ROCK, VA VORTAC	RICHMOND, VA VORTAC	2600
RICHMOND, VA VORTAC	*TAPPA, VA FIX	2000
*5000 - MCA TAPPA, VA FIX , NE BND		
TAPPA, VA FIX	PATUXENT, MD VORTAC	*5000
*1500 - MOCA		
*2000 - GNSS MEA		
PATUXENT, MD VORTAC	*GARED, MD FIX	**4500
*8000 - MRA		
**1500 - MOCA		
**4000 - GNSS MEA		
GARED, MD FIX	CHOPS, MD FIX	*4500
*1500 - MOCA		
*4000 - GNSS MEA		
CHOPS, MD FIX	SMYRNA, DE VORTAC	*2000
*1500 - MOCA		
SMYRNA, DE VORTAC	CEDAR LAKE, NJ VORTAC	1800
CEDAR LAKE, NJ VORTAC	COYLE, NJ VORTAC	*1900
*1300 - MOCA		
COYLE, NJ VORTAC	DIXIE, NJ FIX	*2500
*1600 - MOCA		
DIXIE, NJ FIX	KENNEDY, NY VOR/DME	*2500
*1600 - MOCA		
KENNEDY, NY VOR/DME	CALVERTON, NY VOR/DME	2000
CALVERTON, NY VOR/DME	CREAM, NY FIX	2000
CREAM, NY FIX	NORWICH, CT VOR/DME	2500
NORWICH, CT VOR/DME	WOONS, RI FIX	2500
WOONS, RI FIX	BOSTON, MA VOR/DME	2000

FROM	TO	MEA

95.6017 VOR FEDERAL AIRWAY V17

FROM	TO	MEA
BROWNSVILLE, TX VORTAC	HARLINGEN, TX VOR/DME	1600
HARLINGEN, TX VOR/DME	MC ALLEN, TX VOR/DME	2400
MC ALLEN, TX VOR/DME	FATOR, TX FIX	*2500
*1700 – MOCA		
FATOR, TX FIX	*NELEE, TX FIX	**4000
*5500 - MRA		
**2800 - MOCA		
NELEE, TX FIX	LAREDO, TX VORTAC	2500
LAREDO, TX VORTAC	*KAHAN, TX FIX	2400
*5000 - MRA		
KAHAN, TX FIX	COTULLA, TX VORTAC	*2400
*1800 - MOCA		
COTULLA, TX VORTAC	MILET, TX FIX	2500
MILET, TX FIX	SOMER, TX FIX	*4000
*2500 - MOCA		
SOMER, TX FIX	SAN ANTONIO, TX VORTAC	*3000
*2400 - MOCA		
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	3500
CENTEX, TX VORTAC	WACO, TX VORTAC	3600
WACO, TX VORTAC	*GAINS, TX FIX	**3000
*4000 - MRA		
**2500 - MOCA		
GAINS, TX FIX	*BRIAN, TX FIX	3000
*5000 - MRA		
BRIAN, TX FIX	GLEN ROSE, TX VORTAC	3000
GLEN ROSE, TX VORTAC	MILLSAP, TX VORTAC	3000
MILLSAP, TX VORTAC	BOWIE, TX VORTAC	3000
BOWIE, TX VORTAC	ARDMORE, OK VORTAC	3000
ARDMORE, OK VORTAC	WILL ROGERS, OK VORTAC	3100
WILL ROGERS, OK VORTAC	ODINS, OK FIX	3300
ODINS, OK FIX	CAMAR, OK FIX	*4900
*3600 - MOCA		
CAMAR, OK FIX	MITBEE, OK VORTAC	4300
MITBEE, OK VORTAC	FLACK, KS FIX	*4400
*3900 - MOCA		
FLACK, KS FIX	GARDEN CITY, KS VORTAC	4700
GARDEN CITY, KS VORTAC	*COFFE, KS FIX	**5500
*9000 - MRA		
**4600 - MOCA		
COFFE, KS FIX	GOODLAND, KS VORTAC	5500

95.6018 VOR FEDERAL AIRWAY V18

FROM	TO	MEA
GUTHRIE, TX VORTAC	BEKLE, TX FIX	*6000
*3300 - MOCA		
BEKLE, TX FIX	MILLSAP, TX VORTAC	*8000
*3500 - MOCA		
MILLSAP, TX VORTAC	GLEN ROSE, TX VORTAC	3000
GLEN ROSE, TX VORTAC	CEDAR CREEK, TX VORTAC	*3000
*2200 - MOCA		
CEDAR CREEK, TX VORTAC	QUITMAN, TX VOR/DME	2500
QUITMAN, TX VOR/DME	CADOZ, TX FIX	2400
CADOZ, TX FIX	BELCHER, LA VORTAC	2500
BELCHER, LA VORTAC	MONROE, LA VORTAC	2000
MONROE, LA VORTAC	*RINKY, LA FIX	2000
*3000 - MRA		
RINKY, LA FIX	*SIGNS, MS FIX	2000
*3800 - MRA		
SIGNS, MS FIX	*BLAKY, MS FIX	2000
*3600 - MRA		
BLAKY, MS FIX	JACKSON, MS VORTAC	2000
JACKSON, MS VORTAC	*BAETT, MS FIX	2500
*3500 – MRA		

FROM	TO	MEA

95.6018 VOR FEDERAL AIRWAY V18 - CONTINUED

BAETT, MS FIX	CONEE, MS FIX	2500
CONEE, MS FIX	MERIDIAN, MS VORTAC	2500
MERIDIAN, MS VORTAC	CRIMSON, AL VORTAC	2000
CRIMSON, AL VORTAC	VULCAN, AL VORTAC	2400
VULCAN, AL VORTAC	TRUST, AL FIX	3500
TRUST, AL FIX	TALLADEGA, AL VOR/DME	3700
TALLADEGA, AL VOR/DME	ATLANTA, GA VORTAC	4000
ATLANTA, GA VORTAC	CONNI, GA FIX	*3000
*2500 - MOCA		
CONNI, GA FIX	MADDI, GA FIX	*4000
*2300 - MOCA		
MADDI, GA FIX	CORVI, GA FIX	*5000
*2000 - MOCA		
CORVI, GA FIX	RAFFE, GA FIX	*6000
*2200 - MOCA		
RAFFE, GA FIX	COLLIERS, SC VORTAC	*2500
*2000 - MOCA		
COLLIERS, SC VORTAC	LASHE, SC FIX	2400
LASHE, SC FIX	NORMS, SC FIX	*3000
*2200 - MOCA		
NORMS, SC FIX	SACKS, SC FIX	*4000
*1700 - MOCA		
SACKS, SC FIX	CHARLESTON, SC VORTAC	2100

95.6019 VOR FEDERAL AIRWAY V19

CINCINNATI, KY VORTAC	APPLETON, OH VORTAC	*4000
*2800 – MOCA		

95.6020 VOR FEDERAL AIRWAY V20

MC ALLEN, TX VOR/DME	LATEX, TX FIX	1700
LATEX, TX FIX	ASCOT, TX FIX	*4000
*1900 - MOCA		
ASCOT, TX FIX	SOLON, TX FIX	*4000
*1500 - MOCA		
SOLON, TX FIX	CORPUS CHRISTI, TX VORTAC	1600
CORPUS CHRISTI, TX VORTAC	COPAN, TX FIX	1800
COPAN, TX FIX	BETZY, TX FIX	1700
BETZY, TX FIX	PALACIOS, TX VORTAC	2000
PALACIOS, TX VORTAC	*MAGUS, TX FIX	1800
*3000 - MRA		
MAGUS, TX FIX	KEEDS, TX FIX	1700
KEEDS, TX FIX	HOBBY, TX VOR/DME	2500
HOBBY, TX VOR/DME	BEAUMONT, TX VOR/DME	2100
BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000
LAKE CHARLES, LA VORTAC	LAFAYETTE, LA VORTAC	1800
LAFAYETTE, LA VORTAC	RESERVE, LA VOR/DME	2000
RESERVE, LA VOR/DME	GULFPORT, MS VORTAC	2000
GULFPORT, MS VORTAC	SEMMES, AL VORTAC	2000
SEMMES, AL VORTAC	MONROEVILLE, AL VORTAC	2000
MONROEVILLE, AL VORTAC	*PICKS, AL FIX	2300
*3500 - MRA		
PICKS, AL FIX	MONTGOMERY, AL VORTAC	2300
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	2000
TUSKEGEE, AL VOR/DME	MARVO, AL FIX	2100
MARVO, AL FIX	COLUMBUS, GA VORTAC	*2600
*2000 - MOCA		
COLUMBUS, GA VORTAC	GRANT, GA FIX	2800
GRANT, GA FIX	SMARR, GA FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		

FROM	TO	MEA

95.6020 VOR FEDERAL AIRWAY V20 – CONTINUED

FROM	TO	MEA
SMARR, GA FIX	SINCA, GA FIX	*4500
*2500 - MOCA		
*2500 - GNSS MEA		
SINCA, GA FIX	*GLOSS, GA FIX	**3000
*3500 – MRA		
**2000 - MOCA		
GLOSS, GA FIX	MADDI, GA FIX	*3000
*2200 - MOCA		
MADDI, GA FIX	ATHENS, GA VORTAC	*3000
*2100 - MOCA		
ATHENS, GA VORTAC	ELECTRIC CITY, SC VORTAC	*2800
*2200 - MOCA		
ELECTRIC CITY, SC VORTAC	ELLID, SC FIX	3000
ELLID, SC FIX	CLEVA, SC FIX	3400
CLEVA, SC FIX	TUXDO, NC FIX	5000
TUXDO, NC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000
SUGARLOAF MOUNTAIN, NC VORTAC	VAESE, NC FIX	6000
VAESE, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	*5000
*3600 - MOCA		
BARRETTS MOUNTAIN, NC VOR/DME	PROVE, NC FIX	3500
PROVE, NC FIX	LEAKS, NC FIX	3500
LEAKS, NC FIX	SOUTH BOSTON, VA VORTAC	3000
SOUTH BOSTON, VA VORTAC	*NUTTS, VA FIX	**3000
*9000 - MRA		
**2000 - MOCA		
NUTTS, VA FIX	MELIA, VA FIX	*3000
*2400 - MOCA		
MELIA, VA FIX	RICHMOND, VA VORTAC	2000
RICHMOND, VA VORTAC	*TAPPA, VA FIX	2000
*5000 - MCA TAPPA, VA FIX , NE BND		
TAPPA, VA FIX	*COLIN, VA FIX	**5000
*10000 - MCA COLIN, VA FIX , N BND		
**1500 - MOCA		
**2000 - GNSS MEA		
COLIN, VA FIX	NOTTINGHAM, MD VORTAC	*10000
*1800 - MOCA		
*2000 - GNSS MEA		

95.6021 VOR FEDERAL AIRWAY V21

FROM	TO	MEA
SANTA CATALINA, CA VORTAC	SEAL BEACH, CA VORTAC	4000
SEAL BEACH, CA VORTAC	AHEIM, CA FIX	*3000
*2200 - MOCA		
AHEIM, CA FIX	*OLLIE, CA FIX	3000
*4000 - MRA		
*4100 - MCA OLLIE, CA FIX , NE BND		
OLLIE, CA FIX	PARADISE, CA VORTAC	5000
PARADISE, CA VORTAC	*RAVON, CA FIX	4500
*8800 - MCA RAVON, CA FIX , NE BND		
RAVON, CA FIX	GAREY, CA FIX	
	NE BND	10500
	SW BND	8000
GAREY, CA FIX	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 - MOCA		
BULGY, CA FIX	HECTOR, CA VORTAC	*9000
*7000 – MOCA		

95.6021 VOR FEDERAL AIRWAY V21 - CONTINUED

FROM	TO	MEA
HECTOR, CA VORTAC	*WHIGG, CA FIX	10000
*12000 - MRA		
WHIGG, CA FIX	BOULDER CITY, NV VORTAC	10000
BOULDER CITY, NV VORTAC	MORMON MESA, NV VORTAC	7500
MORMON MESA, NV VORTAC	BERYL, UT FIX	9800
BERYL, UT FIX	MILFORD, UT VORTAC	10000
MILFORD, UT VORTAC	DELTA, UT VORTAC	9600
DELTA, UT VORTAC	FAIRFIELD, UT VORTAC	10300
FAIRFIELD, UT VORTAC	*WASATCH, UT VORTAC	9600
*8000 - MCA WASATCH, UT VORTAC , S BND		
WASATCH, UT VORTAC	OGDEN, UT VORTAC	7000
OGDEN, UT VORTAC	*CORIN, UT FIX	
	N BND	10000
	S BND	7600
*13000 - MRA		
CORIN, UT FIX	MALAD CITY, ID VOR/DME	10000
MALAD CITY, ID VOR/DME	BANNO, ID FIX	10000
BANNO, ID FIX	*POCATELLO, ID VOR/DME	9000
*8000 - MCA POCATELLO, ID VOR/DME , SE BND		
POCATELLO, ID VOR/DME	IDAHO FALLS, ID VOR/DME	7000
IDAHO FALLS, ID VOR/DME	*DUBOIS, ID VORTAC	7600
*8600 - MCA DUBOIS, ID VORTAC , N BND		
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	*12000
*11100 - MOCA		
DILLON, MT VOR/DME	*WHITEHALL, MT VOR/DME	**10000
*9300 - MCA WHITEHALL, MT VOR/DME , N BND		
**9000 - MOCA		
WHITEHALL, MT VOR/DME	*HELENA, MT VORTAC	10600
*10000 - MCA HELENA, MT VORTAC , SE BND		
HELENA, MT VORTAC	GREAT FALLS, MT VORTAC	10000
GREAT FALLS, MT VORTAC	CUT BANK, MT VORTAC	6000
CUT BANK, MT VORTAC	U.S. CANADIAN BORDER	6200

95.6023 VOR FEDERAL AIRWAY V23

FROM	TO	MEA
MISSION BAY, CA VORTAC	OCEANSIDE, CA VORTAC	3000
OCEANSIDE, CA VORTAC	BALBO, CA FIX	4000
BALBO, CA FIX	SEAL BEACH, CA VORTAC	
	NW BND	3000
	SE BND	4000
SEAL BEACH, CA VORTAC	LOS ANGELES, CA VORTAC	2500
LOS ANGELES, CA VORTAC	*CHATY, CA FIX	4000
*5400 - MCA CHATY, CA FIX , NW BND		
CHATY, CA FIX	*CASTA, CA FIX	6000
*8300 - MCA CASTA, CA FIX , NW BND		
CASTA, CA FIX	GORMAN, CA VORTAC	9500
GORMAN, CA VORTAC	*GRAPE, CA FIX	9500
*9500 - MCA GRAPE, CA FIX , S BND		
GRAPE, CA FIX	*LAMPE, CA FIX	
	NW BND	5000
	SE BND	9500
*7800 - MCA LAMPE, CA FIX , SE BND		
LAMPE, CA FIX	SHAFTER, CA VORTAC	
	NW BND	3000
	SE BND	6000
SHAFTER, CA VORTAC	DELNO, CA FIX	3000
DELNO, CA FIX	LATON, CA FIX	*3000
*2000 - MOCA		
LATON, CA FIX	CLOVIS, CA VORTAC	2000
CLOVIS, CA VORTAC	BEREN, CA FIX	2100
BEREN, CA FIX	WRAPS, CA FIX	*4000
*3000 – MOCA		

95.6023 VOR FEDERAL AIRWAY V23 - CONTINUED

FROM	TO	MEA
WRAPS, CA FIX	LINDEN, CA VORTAC	3000
LINDEN, CA VORTAC	SACRAMENTO, CA VORTAC	2000
SACRAMENTO, CA VORTAC	GRIME, CA FIX	*2000
*1600 - MOCA		
GRIME, CA FIX	YUBBA, CA FIX	*4000
*2000 - MOCA		
YUBBA, CA FIX	*GRIDD, CA FIX	**4000
*4000 - MRA		
**3400 - MOCA		
GRIDD, CA FIX	RED BLUFF, CA VORTAC	*3000
*1700 - MOCA		
RED BLUFF, CA VORTAC	BEIRA, CA FIX	
	NW BND	8000
	SE BND	3000
BEIRA, CA FIX	*SHATA, CA FIX	
	NW BND	**8000
	SE BND	**6500
*8000 - MCA SHATA, CA FIX , NW BND		
**5500 - MOCA		
SHATA, CA FIX	FORT JONES, CA VOR/DME	10000
FORT JONES, CA VOR/DME	TALEM, OR FIX	*10000
*9400 - MOCA		
TALEM, OR FIX	*ROGUE VALLEY, OR VORTAC	
	NW BND	8000
	SE BND	10000
*7000 - MCA ROGUE VALLEY, OR VORTAC , SE BND		
ROGUE VALLEY, OR VORTAC	MOURN, OR FIX	7000
MOURN, OR FIX	*CURTI, OR FIX	**8000
*7000 - MRA		
**6500 - MOCA		
CURTI, OR FIX	EUGENE, OR VORTAC	
	NW BND	*4000
*4000 - MOCA		
EUGENE, OR VORTAC	TURNO, OR FIX	3000
TURNO, OR FIX	RAWER, OR FIX	5000
RAWER, OR FIX	BATTLE GROUND, WA VORTAC	4000
BATTLE GROUND, WA VORTAC	*MALAY, WA FIX	
	NW BND	6000
	SE BND	5000
*9500 - MRA		
MALAY, WA FIX	*MCKEN, WA FIX	
	S BND	6000
	N BND	5000
*4100 - MCA MCKEN, WA FIX , S BND		
MCKEN, WA FIX	SEATTLE, WA VORTAC	3000
SEATTLE, WA VORTAC	PAINE, WA VOR/DME	3000
PAINE, WA VOR/DME	EGRET, WA FIX	4500
EGRET, WA FIX	ACORD, WA FIX	3500
ACORD, WA FIX	WHATCOM, WA VORTAC	*3000
*2200 - MOCA		
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	3000

95.6024 VOR FEDERAL AIRWAY V24

FROM	TO	MEA
ABERDEEN, SD VOR/DME	WATERTOWN, SD VORTAC	3600
WATERTOWN, SD VORTAC	REDWOOD FALLS, MN VOR/DME	3800
REDWOOD FALLS, MN VOR/DME	*ALMAY, MN FIX	**3400
*5000 - MRA		
**2700 - MOCA		
ALMAY, MN FIX	KASPR, MN FIX	*3400
*2700 – MOCA		

FROM	TO	MEA

95.6024 VOR FEDERAL AIRWAY V24 - CONTINUED

KASPR, MN FIX	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	LONE ROCK, WI VOR/DME	3000
LONE ROCK, WI VOR/DME	GLARS, WI FIX	*3400
*2800 - MOCA		
GLARS, WI FIX	JANESVILLE, WI VOR/DME	*2800
*2300 – MOCA		
JANESVILLE, WI VOR/DME	FARMM, IL FIX	2900
FARMM, IL FIX	NORTHBROOK, IL VOR/DME	2700
PEOTONE, IL VORTAC	KENLA, IN FIX	2400
KENLA, IN FIX	VAGES, IN FIX	2600
VAGES, IN FIX	*POTES, IN FIX	**4000
*4000 - MRA		
**2300 – MOCA		
POTES, IN FIX	JAKKS, IN FIX	*4000
*2300 - MOCA		
JAKKS, IN FIX	BRICKYARD, IN VORTAC	2700

95.6025 VOR FEDERAL AIRWAY V25

MISSION BAY, CA VORTAC	REDIN, CA FIX	3000
REDIN, CA FIX	PACIF, CA FIX	*6000
*2000 - MOCA		
PACIF, CA FIX	ALBAS, CA FIX	*3000
*2000 - MOCA		
ALBAS, CA FIX	*FERMY, CA FIX	2100
*2700 - MCA FERMY, CA FIX , NW BND		
FERMY, CA FIX	*HERMO, CA FIX	3200
*2700 - MCA HERMO, CA FIX , SE BND		
HERMO, CA FIX	LOS ANGELES, CA VORTAC	2500
LOS ANGELES, CA VORTAC	*MERMA, CA FIX	2000
*3000 - MRA		
MERMA, CA FIX	EXERT, CA FIX	2000
EXERT, CA FIX	VENTURA, CA VOR/DME	5000
VENTURA, CA VOR/DME	*SAN MARCUS, CA VORTAC	6000
*7600 - MCA SAN MARCUS, CA VORTAC , NW BND		
SAN MARCUS, CA VORTAC	POZOE, CA FIX	8600
POZOE, CA FIX	PASO ROBLES, CA VORTAC	
	NW BND	6000
	SE BND	7000
PASO ROBLES, CA VORTAC	SALINAS, CA VORTAC	5500
SALINAS, CA VORTAC	*SANTY, CA FIX	**5000
*7000 - MRA		
**4000 - MOCA		
SANTY, CA FIX	WOODSIDE, CA VORTAC	5000
WOODSIDE, CA VORTAC	SAN FRANCISCO, CA VOR/DME	4500
SAN FRANCISCO, CA VOR/DME	SUTRO, CA FIX	3500
SUTRO, CA FIX	GOBBS, CA FIX	3000
GOBBS, CA FIX	POINT REYES, CA VORTAC	3500
POINT REYES, CA VORTAC	FREES, CA FIX	3500
FREES, CA FIX	*GETER, CA FIX	6000
*12000 - MCA GETER, CA FIX , N BND		
GETER, CA FIX	*LAPED, CA FIX	**12000
*9000 - MRA		
*11000 - MCA LAPED, CA FIX , S BND		
**6300 - MOCA		
LAPED, CA FIX	*GRENY, CA FIX	9000
*5500 - MCA GRENY, CA FIX , S BND		
GRENY, CA FIX	RED BLUFF, CA VORTAC	3000
RED BLUFF, CA VORTAC	HOMAN, CA FIX	*4000
*4000 - MOCA		
HOMAN, CA FIX	*ITMOR, CA FIX	**5000
*7000 - MCA ITMOR, CA FIX , N BND		
**4000 - MOCA		
**4000 - GNSS MEA		

FROM	TO	MEA

95.6025 VOR FEDERAL AIRWAY V25 - CONTINUED

FROM	TO	MEA
ITMOR, CA FIX	MUREX, CA FIX	*11000
*9600 - MOCA		
*10000 - GNSS MEA		
MUREX, CA FIX	KLAMATH FALLS, OR VORTAC	
	N BND	*8500
	S BND	*11000
*8500 – MOCA		
KLAMATH FALLS, OR VORTAC	SPRAG, OR FIX	*12000
*9500 - MOCA		
*10000 - GNSS MEA		
SPRAG, OR FIX	OCTAD, OR FIX	*12000
*9500 - MOCA		
*10000 - GNSS MEA		
OCTAD, OR FIX	DESCHUTES, OR VORTAC	
	S BND	*12000
	N BND	*7000
*6700 - MOCA		
*10000 - GNSS MEA, S BND		
DESCHUTES, OR VORTAC	*GASHE, OR FIX	**7000
*10000 - MRA		
**6500 - MOCA		
GASHE, OR FIX	*KLICKITAT, OR VOR/DME	**7000
*5400 - MCA KLICKITAT, OR VOR/DME , N BND		
**6500 - MOCA		
KLICKITAT, OR VOR/DME	GUBSE, WA FIX	7800
GUBSE, WA FIX	YAKIMA, WA VORTAC	
	N BND	*5000
	S BND	*7800
*4500 - MOCA		
YAKIMA, WA VORTAC	*ELLENSBURG, WA VORTAC	5600
*6800 - MCA ELLENSBURG, WA VORTAC , N BND		
ELLENSBURG, WA VORTAC	*WENATCHEE, WA VOR/DME	8600
*7400 - MCA WENATCHEE, WA VOR/DME , S BND		

95.6026 VOR FEDERAL AIRWAY V26

FROM	TO	MEA
BLUE MESA, CO VOR/DME	MONTROSE, CO VOR/DME	12500
MONTROSE, CO VOR/DME	GRAND JUNCTION, CO VOR/DME	11000
GRAND JUNCTION, CO VOR/DME	RAYMN, CO FIX	
	NE BND	11000
	SW BND	10000
RAYMN, CO FIX	MEEKER, CO VOR/DME	11000
MEEKER, CO VOR/DME	STRIM, CO FIX	11000
STRIM, CO FIX	CHEROKEE, WY VOR/DME	10000
CHEROKEE, WY VOR/DME	*ALCOS, WY FIX	11600
*9900 - MRA		
ALCOS, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	
	NE BND	*8400
	SW BND	*9700
*7900 - MOCA		
MUDDY MOUNTAIN, WY VOR/DME	SALON, WY FIX	8000
SALON, WY FIX	*RULER, SD FIX	**13000
*9000 - MRA		
**9200 – MOCA		

95.6026 VOR FEDERAL AIRWAY V26 - CONTINUED

FROM	TO	MEA
RULER, SD FIX	*RAPID CITY, SD VORTAC	
	E BND	8000
	W BND	13000
*6500 - MCA RAPID CITY, SD VORTAC , W BND		
RAPID CITY, SD VORTAC	PHILIP, SD VOR/DME	5000
PHILIP, SD VOR/DME	PIERRE, SD VORTAC	*4400
*3700 - MOCA		
PIERRE, SD VORTAC	HURON, SD VORTAC	4000
HURON, SD VORTAC	*OBITT, SD FIX	**5000
*5000 - MRA		
**4000 - GNSS MEA		
OBITT, SD FIX	GHENT, MN FIX	*6000
*3400 - MOCA		
*4000 - GNSS MEA		
GHENT, MN FIX	REDWOOD FALLS, MN VOR/DME	*5000
*4000 - GNSS MEA		
REDWOOD FALLS, MN VOR/DME	BEEGR, MN FIX	*3000
*2500 - MOCA		
BEEGR, MN FIX	LYDIA, MN FIX	*5500
*2400 - MOCA		
LYDIA, MN FIX	FARMINGTON, MN VORTAC	*3500
*2500 - MOCA		
FARMINGTON, MN VORTAC	PRESS, WI FIX	*3500
*2800 - MOCA		
PRESS, WI FIX	ELPAS, WI FIX	*5500
*2600 - MOCA		
ELPAS, WI FIX	EAU CLAIRE, WI VORTAC	*3500
*2800 - MOCA		
EAU CLAIRE, WI VORTAC	EDGRR, WI FIX	*4500
*2900 - MOCA		
EDGRR, WI FIX	WAUSAU, WI VORTAC	#*6000
*3600 - MOCA		
*3600 - GNSS MEA		
#WAUSAU R-271 UNUSABLE BYD 10 NM, USE EAU CLAIRE R-087.		
WAUSAU, WI VORTAC	GREEN BAY, WI VORTAC	#3000
#GNSS REQUIRED		
GREEN BAY, WI VORTAC	NEROE, WI FIX	3000
NEROE, WI FIX	WELKO, MI FIX	*5000
*2400 - MOCA		
WELKO, MI FIX	WHITE CLOUD, MI VOR/DME	2700
WHITE CLOUD, MI VOR/DME	LANSING, MI VORTAC	3000
LANSING, MI VORTAC	SALEM, MI VORTAC	#*5000
*3000 - GNSS MEA		
#LANSING R-115 UNUSABLE BELOW 5000.		
SALEM, MI VORTAC	DETROIT, MI VOR/DME	2900
DETROIT, MI VOR/DME	U.S. CANADIAN BORDER	*3400
*2300 - MOCA		
U.S. CANADIAN BORDER	GEMNI, OH FIX	*3400
*2300 - MOCA		
GEMNI, OH FIX	DRYER, OH VOR/DME	*3000
*2200 - MOCA		

95.6027 VOR FEDERAL AIRWAY V27

FROM	TO	MEA
MISSION BAY, CA VORTAC	REDIN, CA FIX	3000
REDIN, CA FIX	PACIF, CA FIX	*6000
*2000 - MOCA		
PACIF, CA FIX	AVOLS, CA FIX	*3000
*2000 - MOCA		
AVOLS, CA FIX	SANTA CATALINA, CA VORTAC	4000
SANTA CATALINA, CA VORTAC	EXERT, CA FIX	4000
EXERT, CA FIX	VENTURA, CA VOR/DME	5000

FROM	TO	MEA

95.6027VOR FEDERAL AIRWAY V27 - CONTINUED

FROM	TO	MEA
VENTURA, CA VOR/DME	KWANG, CA FIX	5000
KWANG, CA FIX	*GOLET, CA FIX	**4000
*5000 - MCA GOLET, CA FIX , NW BND		
**2300 – MOCA		
GOLET, CA FIX	GAVIOTA, CA VORTAC	6400
GAVIOTA, CA VORTAC	*ORCUT, CA FIX	6000
*6000 - MCA ORCUT, CA FIX , S BND		
ORCUT, CA FIX	MORRO BAY, CA VORTAC	4000
MORRO BAY, CA VORTAC	BLANC, CA FIX	4000
BLANC, CA FIX	BIG SUR, CA VORTAC	7000
BIG SUR, CA VORTAC	CARME, CA FIX	7000
CARME, CA FIX	SHOEY, CA FIX	*6000
*5200 - MOCA		
SHOEY, CA FIX	*EUGEN, CA FIX	**6000
*7000 - MRA		
**3000 - MOCA		
EUGEN, CA FIX	*TAILS, CA FIX	**6000
*7000 - MRA		
**3000 - MOCA		
TAILS, CA FIX	HADLY, CA FIX	*6000
*3000 - MOCA		
HADLY, CA FIX	SEEMS, CA FIX	*4000
*3000 - MOCA		
SEEMS, CA FIX	STINS, CA FIX	*3500
*3000 - MOCA		
STINS, CA FIX	POINT REYES, CA VORTAC	3500
POINT REYES, CA VORTAC	FREES, CA FIX	3500
FREES, CA FIX	MENDOCINO, CA VORTAC	6000
MENDOCINO, CA VORTAC	OLRIO, CA FIX	6700
OLRIO, CA FIX	FORTUNA, CA VORTAC	
	NW BND	4000
	SE BND	6700
FORTUNA, CA VORTAC	CRESCENT CITY, CA VORTAC	*3000
*1700 - MOCA		
CRESCENT CITY, CA VORTAC	*ROOTY, OR FIX	6400
*11000 - MRA		
ROOTY, OR FIX	LEDGE, OR FIX	6400
LEDGE, OR FIX	NORTH BEND, OR VORTAC	
	S BND	6400
	N BND	4000
NORTH BEND, OR VORTAC	*GAMMA, OR FIX	
	S BND	4000
	N BND	4500
*6200 - MRA		
GAMMA, OR FIX	NEWPORT, OR VORTAC	4500
NEWPORT, OR VORTAC	CUTEL, OR FIX	
	N BND	*8000
	S BND	*3000
*3000 - MOCA		
*4000 - GNSS MEA, N BND		
CUTEL, OR FIX	DANES, OR FIX	
	N BND	*8000
	S BND	*5000
*3600 - MOCA		
*4000 - GNSS MEA		
DANES, OR FIX	ASTORIA, OR VOR/DME	*8000
*5000 - MOCA		
*5000 - GNSS MEA		
ASTORIA, OR VOR/DME	HOQUIAM, WA VORTAC	3700
HOQUIAM, WA VORTAC	*CARRO, WA FIX	3200
*4000 - MRA		
CARRO, WA FIX	SEATTLE, WA VORTAC	3000

95.6028 VOR FEDERAL AIRWAY V28

FROM	TO	MEA
OAKLAND, CA VORTAC	*SALAD, CA FIX	4000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	ALTAM, CA FIX	5000
ALTAM, CA FIX	HAIRE, CA FIX	4500
HAIRE, CA FIX	**LINDEN, CA VORTAC	*3000
*2000 – MOCA		
**4000 - MCA LINDEN, CA VORTAC , NE BND		
LINDEN, CA VORTAC	*KATSO, CA FIX	5000
*9000 - MCA KATSO, CA FIX , NE BND		
KATSO, CA FIX	*SPOOK, CA FIX	10500
*15000 - MCA SPOOK, CA FIX , N BND		
SPOOK, CA FIX	RICHY, CA FIX	*15000
*12000 - MOCA		
RICHY, CA FIX	*MUSTANG, NV VORTAC	13000
*10500 - MCA MUSTANG, NV VORTAC , S BND		

95.6029 VOR FEDERAL AIRWAY V29

FROM	TO	MEA
SNOW HILL, MD VORTAC	*SALISBURY, MD VORTAC	**2000
*5000 - MCA SALISBURY, MD VORTAC , N BND		
**1500 - MOCA		
SALISBURY, MD VORTAC	*EZIZI, DE FIX	5000
*7000 - MCA EZIZI, DE FIX , N BND		
EZIZI, DE FIX	*LAFLN, DE FIX	**7000
*7000 - MCA LAFLN, DE FIX , S BND		
**5000 - GNSS MEA		
LAFLN, DE FIX	SMYRNA, DE VORTAC	1800
SMYRNA, DE VORTAC	DUPONT, DE VORTAC	#*10000
*1800 - GNSS MEA		
#DUPONT R-181 UNUSABLE BELOW 10000.		
DUPONT, DE VORTAC	MODENA, PA VORTAC	#*6000
*1800 - MOCA		
*2000 - GNSS MEA		
#DUPONT R-358 UNUSABLE		
MODENA, PA VORTAC	POTTSTOWN, PA VORTAC	2400
POTTSTOWN, PA VORTAC	*HIKES, PA FIX	2900
*4000 - MRA		
HIKES, PA FIX	EAST TEXAS, PA VOR/DME	2900
EAST TEXAS, PA VOR/DME	SLATT, PA FIX	4000
SLATT, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	SCOFF, PA FIX	4000
SCOFF, PA FIX	BINGHAMTON, NY VORTAC	3600
BINGHAMTON, NY VORTAC	CORTA, NY FIX	*4000
*3600 - MOCA		
CORTA, NY FIX	VESPE, NY FIX	4500
VESPE, NY FIX	SYRACUSE, NY VORTAC	*4000
*3600 - MOCA		
SYRACUSE, NY VORTAC	PAGER, NY FIX	*2400
*1800 - MOCA		
PAGER, NY FIX	WATERTOWN, NY VORTAC	*2600
*2000 - MOCA		
WATERTOWN, NY VORTAC	*LETUS, NY FIX	**3000
*4000 - MRA		
**1900 - MOCA		
LETUS, NY FIX	MASSENA, NY VORTAC	#3000
#GNSS MEA ONLY		
MASSENA R-255 UNUSABLE. GNSS REQUIRED		

95.6030 VOR FEDERAL AIRWAY V30

FROM	TO	MEA
BADGER, WI VORTAC	SQUIB, MI FIX	2900
SQUIB, MI FIX	PULLMAN, MI VOR/DME	3500
PULLMAN, MI VOR/DME	LITCHFIELD, MI VOR/DME	2800
LITCHFIELD, MI VOR/DME	*HIRED, MI FIX	3000
*6000 - MRA		
HIRED, MI FIX	WATERVILLE, OH VOR/DME	3000
WATERVILLE, OH VOR/DME	SANDUSKY, OH VOR/DME	3000
SANDUSKY, OH VOR/DME	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	CAPEL, OH FIX	3600
CAPEL, OH FIX	VOLAN, PA FIX	*3600
*2800 - MOCA		
VOLAN, PA FIX	CLARION, PA VOR/DME	3600
CLARION, PA VOR/DME	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	SELINSGROVE, PA VORTAC	4000
SELINSGROVE, PA VORTAC	EAST TEXAS, PA VOR/DME	4000
EAST TEXAS, PA VOR/DME	LANNA, NJ FIX	2600
LANNA, NJ FIX	SOLBERG, NJ VOR/DME	2000

95.6031 VOR FEDERAL AIRWAY V31

FROM	TO	MEA
PATUXENT, MD VORTAC	*ARUYE, MD FIX	2500
*6000 - MRA		
ARUYE, MD FIX	#NOTTINGHAM, MD VORTAC	*6000
*3000 - GNSS MEA		
#R-138 UNUSABLE BELOW 6000'.		
BALTIMORE, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	*SUEDE, PA FIX	**12000
*4500 - MRA		
**5000 - GNSS MEA		
SUEDE, PA FIX	GRAMO, PA FIX	*12000
*5000 - GNSS MEA		
GRAMO, PA FIX	HARRISBURG, PA VORTAC	*7000
*5000 - GNSS MEA		
HARRISBURG, PA VORTAC	*MORTO, PA FIX	3000
*5000 - MRA		
MORTO, PA FIX	SELINSGROVE, PA VORTAC	5000
SELINSGROVE, PA VORTAC	WATSO, PA FIX	*3500
*3000 - MOCA		
WATSO, PA FIX	WILLIAMSPORT, PA VOR/DME	3800
WILLIAMSPORT, PA VOR/DME	ELMIRA, NY VOR/DME	4000
ELMIRA, NY VOR/DME	GIBBE, NY FIX	3800
GIBBE, NY FIX	BEEPS, NY FIX	3500
BEEPS, NY FIX	ROCHESTER, NY VOR/DME	4000
ROCHESTER, NY VOR/DME	AIRCO, NY FIX	4000
AIRCO, NY FIX	U.S. CANADIAN BORDER	*8000
*4000 - GNSS MEA		

95.6032 VOR FEDERAL AIRWAY V32

FROM	TO	MEA
MUSTANG, NV VORTAC	HAZEN, NV VORTAC	*10000
*9200 - MOCA		
HAZEN, NV VORTAC	LOVELOCK, NV VORTAC	8000
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	11000
BATTLE MOUNTAIN, NV VORTAC	*BULLION, NV VOR/DME	**10000
*10800 - MCA BULLION, NV VOR/DME , E BND		
**9400 - MOCA		
BULLION, NV VOR/DME	SPATS, NV FIX	13000
SPATS, NV FIX	BONNEVILLE, UT VORTAC	*11000
*10000 – MOCA		
BONNEVILLE, UT VORTAC	*WASATCH, UT VORTAC	9000
*10400 - MCA WASATCH, UT VORTAC , NE BND		
WASATCH, UT VORTAC	FORT BRIDGER, WY VOR/DME	12000

FROM	TO	MEA

95.6033 VOR FEDERAL AIRWAY V33

HARCUM, VA VORTAC	*COLIN, VA FIX	**4000
*10000 - MCA COLIN, VA FIX , N BND		
**1600 - MOCA		
**2000 - GNSS MEA		
COLIN, VA FIX	NOTTINGHAM, MD VORTAC	*10000
*1800 - MOCA		
*2000 - GNSS MEA		
BALTIMORE, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	*SUEDE, PA FIX	**12000
*4500 - MRA		
**5000 - GNSS MEA		
SUEDE, PA FIX	GRAMO, PA FIX	*12000
*5000 - GNSS MEA		
GRAMO, PA FIX	HARRISBURG, PA VORTAC	*7000
*5000 - GNSS MEA		
HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	#BRADFORD, PA VOR/DME	4000
#BRADFORD R-006 UNUSABLE USE BUF R-187		
BRADFORD, PA VOR/DME	BUFFALO, NY VOR/DME	*11000
*5000 - GNSS MEA		

95.6034 VOR FEDERAL AIRWAY V34

ROCHESTER, NY VOR/DME	HANCOCK, NY VOR/DME	4000
HANCOCK, NY VOR/DME	*WEETS, NY FIX	6000
*6000 - MRA		
WEETS, NY FIX	PAWLING, NY VOR/DME	4000
PAWLING, NY VOR/DME	MADISON, CT VOR/DME	3000
MADISON, CT VOR/DME	SANDY POINT, RI VOR/DME	*2000
*1400 - MOCA		
SANDY POINT, RI VOR/DME	NANTUCKET, MA VOR/DME	2000

95.6035 VOR FEDERAL AIRWAY V35

DOLPHIN, FL VORTAC	CURVE, FL FIX	*2000
*1500 - MOCA		
CURVE, FL FIX	*DEEDS, FL FIX	**5000
*4000 - MRA		
**1300 - MOCA		
DEEDS, FL FIX	LEE COUNTY, FL VORTAC	2200
LEE COUNTY, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	ENDED, FL FIX	2500
ENDED, FL FIX	CROSS CITY, FL VORTAC	*3000
*1500 – MOCA		
CROSS CITY, FL VORTAC	GREENVILLE, FL VORTAC	2000
GREENVILLE, FL VORTAC	*SALER, GA FIX	2500
*3000 - MRA		
SALER, GA FIX	PECAN, GA VORTAC	2000
PECAN, GA VORTAC	MACON, GA VORTAC	2000
MACON, GA VORTAC	SINCA, GA FIX	2500
SINCA, GA FIX	*GLOSS, GA FIX	**3000
*3500 - MRA		
**2000 - MOCA		
GLOSS, GA FIX	MADDI, GA FIX	*3000
*2200 - MOCA		
MADDI, GA FIX	ATHENS, GA VORTAC	*3000
*2100 - MOCA		
ATHENS, GA VORTAC	ELECTRIC CITY, SC VORTAC	*2800
*2200 - MOCA		
ELECTRIC CITY, SC VORTAC	ELLID, SC FIX	3000
ELLID, SC FIX	CLEVA, SC FIX	3400
CLEVA, SC FIX	TUXDO, NC FIX	5000

FROM	TO	MEA

95.6035 VOR FEDERAL AIRWAY V35 - CONTINUED

FROM	TO	MEA
TUXDO, NC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000
SUGARLOAF MOUNTAIN, NC VORTAC	*BUSIC, NC FIX	8000
*9000 - MCA BUSIC, NC FIX , N BND		
BUSIC, NC FIX	*ROANS, TN FIX	**9000
*9000 - MCA ROANS, TN FIX , S BND		
**8200 - MOCA		
ROANS, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	7000
HOLSTON MOUNTAIN, TN VORTAC	GLADE SPRING, VA VOR/DME	6000
GLADE SPRING, VA VOR/DME	STACY, VA FIX	6000
STACY, VA FIX	CHARLESTON, WV VORTAC	*4500
*4000 - MOCA		
CHARLESTON, WV VORTAC	BENZO, WV FIX	*4000
*3000 - MOCA		
BENZO, WV FIX	CLARKSBURG, WV VOR/DME	3200
CLARKSBURG, WV VOR/DME	MORGANTOWN, WV VORTAC	4000
MORGANTOWN, WV VORTAC	INDIAN HEAD, PA VORTAC	*5000
*4400 - MOCA		
INDIAN HEAD, PA VORTAC	JOHNSTOWN, PA VORTAC	*5000
*4500 - MOCA		
JOHNSTOWN, PA VORTAC	TYRONE, PA VORTAC	4500
TYRONE, PA VORTAC	PHILIPSBURG, PA VORTAC	4500
PHILIPSBURG, PA VORTAC	STONYFORK, PA VOR/DME	4500
STONYFORK, PA VOR/DME	ELMIRA, NY VOR/DME	*4500
*3900 - MOCA		
ELMIRA, NY VOR/DME	SCIPO, NY FIX	*3700
*3100 - MOCA		
SCIPO, NY FIX	SYRACUSE, NY VORTAC	3500

95.6036 VOR FEDERAL AIRWAY V36

FROM	TO	MEA
U.S. CANADIAN BORDER	SAULT STE MARIE, MI VOR/DME	*4600
*3100 - MOCA		
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*5000
*2800 - MOCA		
U.S. CANADIAN BORDER	#BUFFALO, NY VOR/DME	*6000
*2700 - MOCA		
*3000 - GNSS MEA		
#BUFFALO R-314 UNUSABLE BELOW 6000		
BUFFALO, NY VOR/DME	*BURST, NY FIX	**11000
*11000 - MCA BURST, NY FIX , NW BND		
**4000 - GNSS MEA		
BURST, NY FIX	THINK, NY FIX	4000
THINK, NY FIX	#ELMIRA, NY VOR/DME	3500
#ELMIRA R-122 UNUSABLE BELOW FL180 BEYOND 40 NM.		
ELMIRA, NY VOR/DME	HAWLY, PA FIX	#4500
#GNSS MEA		
HAWLY, PA FIX	HOPCE, NJ FIX	*15500
*3600 - MOCA		
*4000 - GNSS MEA		
HOPCE, NJ FIX	NEION, NJ FIX	*13500
*3600 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6037 VOR FEDERAL AIRWAY V37

CRAIG, FL VORTAC	CARVL, FL FIX	2100
CARVL, FL FIX	BRUNSWICK, GA VORTAC	2000
BRUNSWICK, GA VORTAC	*BROUN, GA FIX	**3000
*11000 - MRA		
**2200 - MOCA		
BROUN, GA FIX	*HARPS, GA FIX	**3000
*3800 - MRA		
**2200 - MOCA		
HARPS, GA FIX	KELER, GA FIX	*3000
*2200 - MOCA		
SAVANNAH, GA VORTAC	ALLENDALE, SC VOR	*6000
*1600 - MOCA		
*4000 - GNSS MEA		
ALLENDALE, SC VOR	COLUMBIA, SC VORTAC	*3000
*2000 - GNSS MEA		
COLUMBIA, SC VORTAC	RICHE, SC FIX	*4000
*2400 - MOCA		
*2400 - GNSS MEA		
RICHE, SC FIX	CHARLOTTE, NC VOR/DME	2500
CHARLOTTE, NC VOR/DME	OWALT, NC FIX	3000
OWALT, NC FIX	JOTTA, NC FIX	*6000
*3500 - MOCA		
JOTTA, NC FIX	DOILY, VA FIX	*7000
*5100 - MOCA		
DOILY, VA FIX	PULASKI, VA VORTAC	*6000
*5000 - MOCA		
PULASKI, VA VORTAC	HAWKI, WV FIX	8000
HAWKI, WV FIX	ELKINS, WV VORTAC	6000
ELKINS, WV VORTAC	CLARKSBURG, WV VOR/DME	*5000
*3900 - MOCA		
CLARKSBURG, WV VOR/DME	TEDDS, WV FIX	#*4000
*3200 - MOCA		
#CLARKSBURG R-003 UNUSABLE BYD 23NM		
TEDDS, WV FIX	AKSAR, PA FIX	*4000
*4000 - GNSS MEA		
AKSAR, PA FIX	ELLWOOD CITY, PA VORTAC	*4000
*3200 - MOCA		
ELLWOOD CITY, PA VORTAC	ERIE, PA VORTAC	3000
ERIE, PA VORTAC	U.S. CANADIAN BORDER	3000

95.6038 VOR FEDERAL AIRWAY V38

MOLINE, IL VORTAC	TRIDE, IL FIX	3300
TRIDE, IL FIX	MEDAN, IL FIX	*4000
*2200 - MOCA		
MEDAN, IL FIX	PEOTONE, IL VORTAC	2400
PEOTONE, IL VORTAC	LUCIT, IN FIX	2500
LUCIT, IN FIX	CLEFT, IN FIX	*4000
*2400 - MOCA		
CLEFT, IN FIX	FORT WAYNE, IN VORTAC	2800
FORT WAYNE, IN VORTAC	FLAG CITY, OH VORTAC	2500
FLAG CITY, OH VORTAC	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	ZANESVILLE, OH VOR/DME	3000
ZANESVILLE, OH VOR/DME	PARKERSBURG, WV VORTAC	3000
PARKERSBURG, WV VORTAC	SACKY, WV FIX	3000
SACKY, WV FIX	*JULEA, WV FIX	3000
*5000 - MRA		
JULEA, WV FIX	BENZO, WV FIX	3300
BENZO, WV FIX	ELKINS, WV VORTAC	4000
ELKINS, WV VORTAC	*DEKAY, WV FIX	9000
*9500 - MRA		
DEKAY, WV FIX	CEROL, VA FIX	9000

FROM	TO	MEA

95.6038 VOR FEDERAL AIRWAY V38 - CONTINUED

CEROL, VA FIX	GORDONSVILLE, VA VORTAC	6000
GORDONSVILLE, VA VORTAC	*ROOKY, VA FIX	2500
*2500 - MRA		
ROOKY, VA FIX	RICHMOND, VA VORTAC	2100
RICHMOND, VA VORTAC	HARCUM, VA VORTAC	2000
HARCUM, VA VORTAC	CAPE CHARLES, VA VORTAC	2000

95.6039 VOR FEDERAL AIRWAY V39

SANDHILLS, NC VORTAC	SOUTH BOSTON, VA VORTAC	2500
SOUTH BOSTON, VA VORTAC	SHEPS, VA FIX	*3000
*2000 - MOCA		
SHEPS, VA FIX	GORDONSVILLE, VA VORTAC	3000
GORDONSVILLE, VA VORTAC	LURAY, VA FIX	6100
LURAY, VA FIX	*KERRE, VA FIX	**6000
*7000 - MRA		
**5000 - MOCA		
KERRE, VA FIX	MARTINSBURG, WV VORTAC	*6000
*5000 - MOCA		
MARTINSBURG, WV VORTAC	HYPER, MD FIX	*5000
*3900 - MOCA		
HYPER, MD FIX	BINNS, PA FIX	4000
BINNS, PA FIX	*SUEDE, PA FIX	4500
*4500 - MRA		
SUEDE, PA FIX	DELRO, PA FIX	4500
DELRO, PA FIX	LANCASTER, PA VORTAC	3000
LANCASTER, PA VORTAC	BOYER, PA FIX	*2900
*2400 - MOCA		
BOYER, PA FIX	EAST TEXAS, PA VOR/DME	*3000
*2400 - MOCA		
EAST TEXAS, PA VOR/DME	SPARTA, NJ VORTAC	2700
SPARTA, NJ VORTAC	CARMEL, NY VOR/DME	2600
CARMEL, NY VOR/DME	SOARS, CT FIX	3000
SOARS, CT FIX	STUBY, CT FIX	*6000
*4100 - MOCA		
STUBY, CT FIX	CHESTER, MA VOR/DME	4000
CHESTER, MA VOR/DME	VAPER, MA FIX	*3700
*3200 - MOCA		
VAPER, MA FIX	GARDNER, MA VOR/DME	*3500
*2900 - MOCA		
GARDNER, MA VOR/DME	CONCORD, NH VORTAC	4000
CONCORD, NH VORTAC	AUGUSTA, ME VOR/DME	3500
AUGUSTA, ME VOR/DME	RINTH, ME FIX	*3000
*2000 - MOCA		
RINTH, ME FIX	MILLINOCKET, ME VOR/DME	*3000
*2400 - MOCA		
MILLINOCKET, ME VOR/DME	PRESQUE ISLE, ME VOR/DME	*3000
*2500 - MOCA		
PRESQUE ISLE, ME VOR/DME	GRINS, ME FIX	*5000
*3000 - MOCA		
GRINS, ME FIX	U.S. CANADIAN BORDER	3000

95.6040 VOR FEDERAL AIRWAY V40

DRYER, OH VOR/DME	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	CUTTA, OH FIX	3000

FROM	TO	MEA

95.6041 VOR FEDERAL AIRWAY V41

CUTTA, OH FIX	YOUNGSTOWN, OH VORTAC	*5000
*3600 - GNSS MEA		

95.6043 VOR FEDERAL AIRWAY V43

APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	#3000
#R-055 UNUSABLE.		
TIVERTON, OH VOR/DME	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	YOUNGSTOWN, OH VORTAC	3000
YOUNGSTOWN, OH VORTAC	ERIE, PA VORTAC	*5000
*3000 - GNSS MEA		
ERIE, PA VORTAC	U.S. CANADIAN BORDER	3000
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	*3000
*2400 - MOCA		

95.6044 VOR FEDERAL AIRWAY V44

COLUMBIA, MO VOR/DME	HODGS, MO FIX	2800
HODGS, MO FIX	FORISTELL, MO VORTAC	*2800
*2200 - MOCA		
FORISTELL, MO VORTAC	MOODS, IL FIX	2600
MOODS, IL FIX	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	SAMSVILLE, IL VOR/DME	2400
SAMSVILLE, IL VOR/DME	NABB, IN VORTAC	3000
NABB, IN VORTAC	FALMOUTH, KY VOR/DME	2700
FALMOUTH, KY VOR/DME	YORK, KY VORTAC	3300
YORK, KY VORTAC	PARKERSBURG, WV VORTAC	3300
PARKERSBURG, WV VORTAC	BENDS, WV FIX	3000
BENDS, WV FIX	MORGANTOWN, WV VORTAC	4000
MORGANTOWN, WV VORTAC	KEYER, WV FIX	5000
KEYER, WV FIX	MARTINSBURG, WV VORTAC	*5000
*4100 - MOCA		
MARTINSBURG, WV VORTAC	WOOLY, MD FIX	3200
WOOLY, MD FIX	BALTIMORE, MD VORTAC	2600
BALTIMORE, MD VORTAC	PALEO, MD FIX	*2200
*1700 - MOCA		
PALEO, MD FIX	SPEAK, MD FIX	*13500
*2000 - GNSS MEA		
SPEAK, MD FIX	SEA ISLE, NJ VORTAC	*7000
*1500 - MOCA		
*2000 - GNSS MEA		
SEA ISLE, NJ VORTAC	*KARRS, NJ FIX	**6000
*7000 - MRA		
**1500 - MOCA		
**2000 - GNSS MEA		
KARRS, NJ FIX	*GAMBY, NJ FIX	**7000
*6000 - MRA		
**1300 - MOCA		
**2000 - GNSS MEA		
GAMBY, NJ FIX	*SATES, NJ FIX	**5000
*6000 - MRA		
**1300 – MOCA		
**2000 - GNSS MEA		
SATES, NJ FIX	DEER PARK, NY VOR/DME	*5000
*1600 - MOCA		
*2000 - GNSS MEA		
DEER PARK, NY VOR/DME	*NESSI, CT FIX	2000
*4000 - MRA		
NESSI, CT FIX	BRIDGEPORT, CT VOR/DME	2000
BRIDGEPORT, CT VOR/DME	PAWLING, NY VOR/DME	3000
PAWLING, NY VOR/DME	ATHOS, NY FIX	3100

95.6044 VOR FEDERAL AIRWAY V44 - CONTINUED

FROM	TO	MEA
ATHOS, NY FIX	GROUP, NY FIX	*8000
*3000 - GNSS MEA		
GROUP, NY FIX	ALBANY, NY VORTAC	*6000
*2300 - MOCA		
*2800 - GNSS MEA		

95.6045 VOR FEDERAL AIRWAY V45

FROM	TO	MEA
NEW BERN, NC VOR/DME	KINSTON, NC VORTAC	2500
KINSTON, NC VORTAC	WENDI, NC FIX	2000
WENDI, NC FIX	RALEIGH/DURHAM, NC VORTAC	2600
RALEIGH/DURHAM, NC VORTAC	CHAPL, NC FIX	2000
CHAPL, NC FIX	GREENSBORO, NC VORTAC	3000
GREENSBORO, NC VORTAC	*PROVE, NC FIX	2700
*3500 - MCA PROVE, NC FIX , NW BND		
PROVE, NC FIX	*FREON, NC FIX	4300
*4800 - MCA FREON, NC FIX , NW BND		
FREON, NC FIX	PULASKI, VA VORTAC	6200
PULASKI, VA VORTAC	BLUEFIELD, WV VORTAC	6000
BLUEFIELD, WV VORTAC	CHARLESTON, WV VORTAC	*6000
*5000 - MOCA		
CHARLESTON, WV VORTAC	HENDERSON, WV VORTAC	3000
HENDERSON, WV VORTAC	*BREMN, OH FIX	**10000
*10000 - MCA BREMN, OH FIX , S BND		
**3000 - GNSS MEA		
BREMN, OH FIX	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	DUSKY, OH FIX	3000
DUSKY, OH FIX	WATERVILLE, OH VOR/DME	2600
WATERVILLE, OH VOR/DME	*HIRED, MI FIX	3000
*6000 - MRA		
HIRED, MI FIX	JACKSON, MI VOR/DME	3000
JACKSON, MI VOR/DME	LANSING, MI VORTAC	3000
LANSING, MI VORTAC	SAGINAW, MI VOR/DME	2600
SAGINAW, MI VOR/DME	SEEKS, MI FIX	2200
SEEKS, MI FIX	ALPENA, MI VORTAC	*3500
*2600 - MOCA		
ALPENA, MI VORTAC	SAULT STE MARIE, MI VOR/DME	2900

95.6046 VOR FEDERAL AIRWAY V46

FROM	TO	MEA
DEER PARK, NY VOR/DME	CALVERTON, NY VOR/DME	1900
CALVERTON, NY VOR/DME	HAMPTON, NY VORTAC	1900
HAMPTON, NY VORTAC	LIBBE, NY FIX	*2500
*1800 - MOCA		
LIBBE, NY FIX	CLAMY, MA FIX	*3000
*2000 - MOCA		
CLAMY, MA FIX	NANTUCKET, MA VOR/DME	2000

95.6047 VOR FEDERAL AIRWAY V47

FROM	TO	MEA
PINE BLUFF, AR VOR/DME	GILMORE, AR VOR/DME	*4000
*1800 – MOCA		
GILMORE, AR VOR/DME	DYERSBURG, TN VORTAC	2500
DYERSBURG, TN VORTAC	CUNNINGHAM, KY VORTAC	2400
CUNNINGHAM, KY VORTAC	WESON, KY FIX	2600
WESON, KY FIX	POCKET CITY, IN VORTAC	2200
POCKET CITY, IN VORTAC	HOLAN, IN FIX	2600
HOLAN, IN FIX	SACKO, IN FIX	*3500
*2100 - MOCA		
*3000 - GNSS MEA		

FROM	TO	MEA

95.6047 VOR FEDERAL AIRWAY V47 – CONTINUED

SACKO, IN FIX *2300 – MOCA *3000 - GNSS MEA	MAIZE, IN FIX	*6000
MAIZE, IN FIX *2400 - MOCA *3000 - GNSS MEA	NABB, IN VORTAC	*3500
NABB, IN VORTAC	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	MIZZA, OH FIX	2800
MIZZA, OH FIX	ROSEWOOD, OH VORTAC	3000
ROSEWOOD, OH VORTAC	FLAG CITY, OH VORTAC	3000
FLAG CITY, OH VORTAC	WATERVILLE, OH VOR/DME	2500

95.6048 VOR FEDERAL AIRWAY V48

OTTUMWA, IA VOR/DME	BURLINGTON, IA VORTAC	2500
BURLINGTON, IA VORTAC	PEORIA, IL VORTAC	2400
PEORIA, IL VORTAC *2300 - MOCA	MAROC, IL FIX	*3000
MAROC, IL FIX	PONTIAC, IL VOR/DME	2400

95.6049 VOR FEDERAL AIRWAY V49

VULCAN, AL VORTAC *4200 - MRA	*BOUNT, AL FIX	3100
BOUNT, AL FIX *7000 - MRA **2400 - MOCA	*FOLSO, AL FIX	**3100
FOLSO, AL FIX *2400 - MOCA	MASHA, AL FIX	*3000
MASHA, AL FIX *2200 - MOCA	DECATUR, AL VOR/DME	*3000
DECATUR, AL VOR/DME	ELKED, AL FIX	2500
ELKED, AL FIX *2700 - MOCA	NASHVILLE, TN VORTAC	*3500
NASHVILLE, TN VORTAC *3000 - MRA	*TANDS, TN FIX	2700
TANDS, TN FIX	BOWLING GREEN, KY VORTAC	2700
BOWLING GREEN, KY VORTAC	MYSTIC, KY VOR	2700
MYSTIC, KY VOR	NABB, IN VORTAC	3000

95.6050 VOR FEDERAL AIRWAY V50

HASTINGS, NE VOR/DME	PAWNEE CITY, NE VORTAC	4000
PAWNEE CITY, NE VORTAC	ST JOSEPH, MO VORTAC	4000
ST JOSEPH, MO VORTAC	KIRKSVILLE, MO VORTAC	3000
KIRKSVILLE, MO VORTAC	QUINCY, IL VORTAC	2700
QUINCY, IL VORTAC *2100 - MOCA	SPINNER, IL VORTAC	*3000
SPINNER, IL VORTAC	ADDERS, IL VORTAC	3000
ADDERS, IL VORTAC	TERRE HAUTE, IN VORTAC	2500
TERRE HAUTE, IN VORTAC	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	DAYTON, OH VOR/DME	3000

FROM	TO	MEA

95.6051 VOR FEDERAL AIRWAY V51

PAHOKEE, FL VORTAC	*SHEDS, FL FIX	2000
*3000 - MRA		
SHEDS, FL FIX	VERO BEACH, FL VORTAC	2000
VERO BEACH, FL VORTAC	OVIDO, FL FIX	4000
OVIDO, FL FIX	ORMOND BEACH, FL VORTAC	3000
ORMOND BEACH, FL VORTAC	*BULLI, FL FIX	**2000
*3000 - MRA		
**1400 - MOCA		
BULLI, FL FIX	*ASTOR, FL FIX	**2000
*3000 - MRA		
**1400 - MOCA		
ASTOR, FL FIX	CRAIG, FL VORTAC	2100
CRAIG, FL VORTAC	#ALMA, GA VORTAC	*5000
*1700 - MOCA		
*4000 - GNSS MEA		
#ALMA R-144 NA BELOW 10000		
#LMA, GA VORTAC	#DUBLIN, GA VORTAC	#*3000
*2000 - GNSS MEA		
#ALMA R-345 UNUSABLE, USE DUBLIN R-170		
DUBLIN, GA VORTAC	ATHENS, GA VORTAC	*3000
*2200 - MOCA		
ATHENS, GA VORTAC	IRMOS, GA FIX	3000
IRMOS, GA FIX	CORCE, GA FIX	3800
CORCE, GA FIX	TALLE, GA FIX	5300
TALLE, GA FIX	HARRIS, GA VORTAC	7000
HARRIS, GA VORTAC	ETOWA, TN FIX	7000
ETOWA, TN FIX	HINCH MOUNTAIN, TN VORTAC	5000
HINCH MOUNTAIN, TN VORTAC	LIVINGSTON, TN VORTAC	5000
LIVINGSTON, TN VORTAC	LOUISVILLE, KY VORTAC	3200
LOUISVILLE, KY VORTAC	NABB, IN VORTAC	*10000
*2300 - MOCA		
NABB, IN VORTAC	SHELBYVILLE, IN VORTAC	*3000
*2300 - MOCA		
SHELBYVILLE, IN VORTAC	OCKEL, IN FIX	3000
OCKEL, IN FIX	BOILER, IN VORTAC	*2500
*2100 - MOCA		
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2700

95.6052 VOR FEDERAL AIRWAY V52

DES MOINES, IA VORTAC	OTTUMWA, IA VOR/DME	2700
OTTUMWA, IA VOR/DME	QUINCY, IL VORTAC	2600
QUINCY, IL VORTAC	*RIVRS, IL FIX	2600
*6000 – MRA		
RIVRS, IL FIX	ST LOUIS, MO VORTAC	2600
ST LOUIS, MO VORTAC	TROY, IL VORTAC	2400
TROY, IL VORTAC	CRATS, IL FIX	2600
CRATS, IL FIX	POCKET CITY, IN VORTAC	*4500
*2100 - MOCA		
POCKET CITY, IN VORTAC	CENTRAL CITY, KY VORTAC	2300
CENTRAL CITY, KY VORTAC	BOWLING GREEN, KY VORTAC	2400
BOWLING GREEN, KY VORTAC	LIVINGSTON, TN VORTAC	2900

95.6053 VOR FEDERAL AIRWAY V53

CHARLESTON, SC VORTAC	COLUMBIA, SC VORTAC	2000
COLUMBIA, SC VORTAC	WILLS, SC FIX	4000
WILLS, SC FIX	SPARTANBURG, SC VORTAC	2700
SPARTANBURG, SC VORTAC	CARTT, SC FIX	*3000
*2300 - MOCA		

FROM	TO	MEA

95.6053 VOR FEDERAL AIRWAY V53 - CONTINUED

FROM	TO	MEA
CARTT, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000
SUGARLOAF MOUNTAIN, NC VORTAC	*BUSIC, NC FIX	8000
*9000 - MCA BUSIC, NC FIX , N BND		
BUSIC, NC FIX	*ROANS, TN FIX	**9000
*9000 - MCA ROANS, TN FIX , S BND		
**8200 - MOCA		
ROANS, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	7000
HOLSTON MOUNTAIN, TN VORTAC	HAZARD, KY VOR/DME	6400
HAZARD, KY VOR/DME	IRVIN, KY FIX	4000
IRVIN, KY FIX	LEXINGTON, KY VORTAC	3000
LEXINGTON, KY VORTAC	FEDRA, KY FIX	2800
FEDRA, KY FIX	LOUISVILLE, KY VORTAC	2600
LOUISVILLE, KY VORTAC	HOUSE, IN FIX	*10000
*3000 - MOCA		
HOUSE, IN FIX	MOUTH, IN FIX	*2800
*2300 - MOCA		
MOUTH, IN FIX	BRICKYARD, IN VORTAC	2700

95.6054 VOR FEDERAL AIRWAY V54

FROM	TO	MEA
WACO, TX VORTAC	CEDAR CREEK, TX VORTAC	2500
CEDAR CREEK, TX VORTAC	QUITMAN, TX VOR/DME	2500
QUITMAN, TX VOR/DME	TEXARKANA, AR VORTAC	2300
TEXARKANA, AR VORTAC	*WASHO, AR FIX	2200
*4000 - MRA		
WASHO, AR FIX	CANEY, AR FIX	*3500
*1800 - MOCA		
CANEY, AR FIX	MALVE, AR FIX	*3500
*1900 - MOCA		
MALVE, AR FIX	LITTLE ROCK, AR VORTAC	2000
LITTLE ROCK, AR VORTAC	MARVELL, AR VOR/DME	1900
MARVELL, AR VOR/DME	HOLLY SPRINGS, MS VORTAC	2200
HOLLY SPRINGS, MS VORTAC	MUSCLE SHOALS, AL VORTAC	3000
MUSCLE SHOALS, AL VORTAC	TANNE, AL FIX	2400
TANNE, AL FIX	ROCKET, AL VORTAC	2900
ROCKET, AL VORTAC	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	*CRAND, GA FIX	3000
*4500 - MCA CRAND, GA FIX , E BND		
CRAND, GA FIX	MELLS, GA FIX	6000
MELLS, GA FIX	HARRIS, GA VORTAC	*6000
*5200 – MOCA		
HARRIS, GA VORTAC	DILLA, GA FIX	7500
DILLA, GA FIX	RESTS, SC FIX	*8000
*6800 - MOCA		
RESTS, SC FIX	CLEVA, SC FIX	5000
CLEVA, SC FIX	SPARTANBURG, SC VORTAC	*4000
*3300 - GNSS MEA		
SPARTANBURG, SC VORTAC	CHARLOTTE, NC VOR/DME	#4000
#CHARLOTTE R-081 UNUSABLE BELOW 15000		
CHARLOTTE, NC VOR/DME	LOCAS, NC FIX	3000
LOCAS, NC FIX	SANDHILLS, NC VORTAC	2500
SANDHILLS, NC VORTAC	*RAEFO, NC FIX	**6000
*6000 - MRA		
**2000 - MOCA		
**3000 - GNSS MEA		
RAEFO, NC FIX	FAYETTEVILLE, NC VOR/DME	*2800
*1900 – MOCA		
FAYETTEVILLE, NC VOR/DME	*JOSCH, NC FIX	2000
*5000 - MRA		
JOSCH, NC FIX	KINSTON, NC VORTAC	2000

FROM	TO	MEA

95.6055 VOR FEDERAL AIRWAY V55

FROM	TO	MEA
DAYTON, OH VOR/DME	FORT WAYNE, IN VORTAC	2800
FORT WAYNE, IN VORTAC	GOSHEN, IN VORTAC	2700
GOSHEN, IN VORTAC	GIPPER, MI VORTAC	2900
GIPPER, MI VORTAC	KEELER, MI VOR/DME	*4000
*2300 - MOCA		
KEELER, MI VOR/DME	PULLMAN, MI VOR/DME	4000
PULLMAN, MI VOR/DME	MUSKEGON, MI VORTAC	2500
MUSKEGON, MI VORTAC	WHALL, MI FIX	2400
WHALL, MI FIX	NEROE, WI FIX	*5000
*2400 - MOCA		
NEROE, WI FIX	GREEN BAY, WI VORTAC	3000
GREEN BAY, WI VORTAC	STEVENS POINT, WI VORTAC	3000
STEVENS POINT, WI VORTAC	EAU CLAIRE, WI VORTAC	3000
EAU CLAIRE, WI VORTAC	SIREN, WI VOR/DME	*5000
*2800 - MOCA		
*3000 - GNSS MEA		
#SIREN, WI VOR/DME	#BRAINERD, MN VORTAC	*6000
*2800 - MOCA		
*3000 - GNSS MEA		
#SIREN R-293 UNUSABLE, USE BRAINERD R-111		
BRAINERD, MN VORTAC	PARK RAPIDS, MN VOR/DME	3300
PARK RAPIDS, MN VOR/DME	BETRA, MN FIX	*4500
*3000 - MOCA		
BETRA, MN FIX	GRAND FORKS, ND VOR/DME	*3300
*2300 - MOCA		
GRAND FORKS, ND VOR/DME	*BEHQY, ND FIX	**8000
*12000 - MRA		
**3600 - MOCA		
BEHQY, ND FIX	BISMARCK, ND VOR/DME	3900

95.6056 VOR FEDERAL AIRWAY V56

FROM	TO	MEA
MERIDIAN, MS VORTAC	KEWANEE, MS VORTAC	2000
KEWANEE, MS VORTAC	MONTGOMERY, AL VORTAC	*5500
*2300 - MOCA		
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	2000
TUSKEGEE, AL VOR/DME	MARVO, AL FIX	2100
MARVO, AL FIX	COLUMBUS, GA VORTAC	*2600
*2000 - MOCA		
COLUMBUS, GA VORTAC	*PRATZ, GA FIX	2500
*3000 - MRA		
PRATZ, GA FIX	MACON, GA VORTAC	#2500
#GNSS MEA		
MACON R-265 UNUSABLE GNSS REQUIRED		
MACON, GA VORTAC	MISTY, GA FIX	*6000
*2200 - MOCA		
MISTY, GA FIX	COLLIERS, SC VORTAC	2300
COLLIERS, SC VORTAC	COLUMBIA, SC VORTAC	3000
COLUMBIA, SC VORTAC	FLORENCE, SC VORTAC	2000
FLORENCE, SC VORTAC	FAYETTEVILLE, NC VOR/DME	2300
FAYETTEVILLE, NC VOR/DME	*ROZBO, NC FIX	2000
*5000 - MRA		
ROZBO, NC FIX	WALLO, NC FIX	2000
WALLO, NC FIX	KROVE, NC FIX	*3000
*2400 - MOCA		
KROVE, NC FIX	NEW BERN, NC VOR/DME	*2400
*1800 - MOCA		

95.6057 VOR FEDERAL AIRWAY V57

FROM	TO	MEA
LEXINGTON, KY VORTAC	FALMOUTH, KY VOR/DME	3000

95.6058 VOR FEDERAL AIRWAY V58

FROM	TO	MEA
GRACE, PA FIX	*EARED, PA FIX	3400
*4000 - MRA		
EARED, PA FIX	PHILIPSBURG, PA VORTAC	*6000
*4100 - MOCA		
*5000 - GNSS MEA		
PHILIPSBURG, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	LOPEZ, PA FIX	4500
LOPEZ, PA FIX	LAKE HENRY, PA VORTAC	4000
LAKE HENRY, PA VORTAC	KINGSTON, NY VOR/DME	4000
KINGSTON, NY VOR/DME	HARTFORD, CT VOR/DME	3200
HARTFORD, CT VOR/DME	GROTON, CT VOR/DME	2500
GROTON, CT VOR/DME	SANDY POINT, RI VOR/DME	*2000
*1500 - MOCA		
SANDY POINT, RI VOR/DME	NANTUCKET, MA VOR/DME	2000

95.6059 VOR FEDERAL AIRWAY V59

FROM	TO	MEA
PULASKI, VA VORTAC	BECKLEY, WV VORTAC	6000
BECKLEY, WV VORTAC	*ITALY, WV FIX	**5000
*4000 - MRA		
**4300 - MOCA		
ITALY, WV FIX	WARDO, WV FIX	*5000
*4300 - MOCA		
WARDO, WV FIX	PARKERSBURG, WV VORTAC	3000
PARKERSBURG, WV VORTAC	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	BRIGGS, OH VOR/DME	3000

95.6060 VOR FEDERAL AIRWAY V60

FROM	TO	MEA
GALLUP, NM VORTAC	*CUBBA, NM FIX	11000
*10000 - MCA CUBBA, NM FIX , W BND		
CUBBA, NM FIX	ALBUQUERQUE, NM VORTAC	8600
ALBUQUERQUE, NM VORTAC	OTTO, NM VOR	10000
OTTO, NM VOR	FORT UNION, NM VORTAC	10000

95.6061 VOR FEDERAL AIRWAY V61

FROM	TO	MEA
GRAND ISLAND, NE VORTAC	PAWNEE CITY, NE VORTAC	*4000
*3200 - MOCA		
PAWNEE CITY, NE VORTAC	ROBINSON, KS VOR/DME	2800
ROBINSON, KS VOR/DME	BOWLR, KS FIX	2600

95.6062 VOR FEDERAL AIRWAY V62

FROM	TO	MEA
GALLUP, NM VORTAC	CABZO, NM FIX	11000
CABZO, NM FIX	ZIASE, NM FIX	10000
ZIASE, NM FIX	SANTA FE, NM VORTAC	9000
SANTA FE, NM VORTAC	ANTON CHICO, NM VORTAC	10000
ANTON CHICO, NM VORTAC	FLUTY, NM FIX	8000
FLUTY, NM FIX	TEXICO, TX VORTAC	6500
TEXICO, TX VORTAC	SPADE, TX FIX	5900
SPADE, TX FIX	LUBBOCK, TX VORTAC	5000
LUBBOCK, TX VORTAC	*ROTAN, TX FIX	**6000
*4500 - MRA		
**5000 - MOCA		
ROTAN, TX FIX	ABILENE, TX VORTAC	3700
ABILENE, TX VORTAC	FLECK, TX FIX	3300
FLECK, TX FIX	GEENI, TX FIX	*4000
*3300 - MOCA		
GEENI, TX FIX	GLEN ROSE, TX VORTAC	*3500
*3000 - MOCA		

FROM	TO	MEA

95.6063 VOR FEDERAL AIRWAY V63

FROM	TO	MEA
BOWIE, TX VORTAC	TEXOMA, OK VOR/DME	3000
TEXOMA, OK VOR/DME	MC ALESTER, OK VORTAC	2800
MC ALESTER, OK VORTAC	RAZORBACK, AR VORTAC	*4000
*3000 - MOCA		
RAZORBACK, AR VORTAC	GAMPS, AR FIX	3500
GAMPS, AR FIX	JENKY, MO FIX	*4000
*3100 - MOCA		
JENKY, MO FIX	BILIE, MO FIX	3300
BILIE, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	PLADD, MO FIX	3000
PLADD, MO FIX	ROACH, MO FIX	*4000
*2400 - MOCA		
ROACH, MO FIX	BARTI, MO FIX	*4000
*2500 - MOCA		
BARTI, MO FIX	GIBSN, MO FIX	3000
GIBSN, MO FIX	HALLSVILLE, MO VORTAC	2900
HALLSVILLE, MO VORTAC	QUINCY, IL VORTAC	2900
QUINCY, IL VORTAC	BURLINGTON, IA VORTAC	2600
BURLINGTON, IA VORTAC	MOLINE, IL VORTAC	2600
MOLINE, IL VORTAC	DAVENPORT, IA VORTAC	3000
DAVENPORT, IA VORTAC	*MIHAL, IL FIX	2700
*4000 - MRA		
MIHAL, IL FIX	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	JANESVILLE, WI VOR/DME	2700
#JANESVILLE, WI VOR/DME	*DEBOW, WI FIX	**4000
*10000 - MRA		
**3000 - GNSS MEA		
#JANESVILLE R-044 UNUSABLE, USE BADGER R-226		
DEBOW, WI FIX	RASTT, WI FIX	*4000
*4000 - GNSS MEA		
RASTT, WI FIX	BADGER, WI VORTAC	*3000
*3000 - GNSS MEA		
BADGER, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	#STEVENS POINT, WI VORTAC	*4000
*3000 - MOCA		
*3000 - GNSS MEA		
#WAUSAU R-171 UNUSABLE BYD 8 NM, USE STEVENS POINT R-354		
STEVENS POINT, WI VORTAC	TAYUY, WI FIX	3100
TAYUY, WI FIX	#WAUSAU, WI VORTAC	3100
#WAUSAU R-171 UNUSABLE BYD 8 NM, USE STEVENS POINT R-354		
WAUSAU, WI VORTAC	#RHINELANDER, WI VORTAC	*4000
*4000 - GNSS MEA		
#WAUSAU R-005 UNUSABLE BYD 10 NM. GNSS REQUIRED BEYOND 10 NM. RHINELANDER R-185 UNUSABLE BYD 10 NM. GNSS REQUIRED BEYOND 10 NM.		
RHINELANDER, WI VORTAC	HOUGHTON, MI VOR/DME	3500

95.6064 VOR FEDERAL AIRWAY V64

FROM	TO	MEA
LOS ANGELES, CA VORTAC	LIMBO, CA FIX	3000
LIMBO, CA FIX	*WILMA, CA FIX	3200
*2800 - MCA WILMA, CA FIX , W BND		
WILMA, CA FIX	SEAL BEACH, CA VORTAC	2300
SEAL BEACH, CA VORTAC	TUSTI, CA FIX	
	E BND	3000
	W BND	2500
TUSTI, CA FIX	*COREL, CA FIX	6000
*7400 - MCA COREL, CA FIX , E BND		
COREL, CA FIX	PERIS, CA FIX	8000
PERIS, CA FIX	HEMET, CA FIX	
	E BND	*11000
	W BND	*10000
*6600 – MOCA		

FROM	TO	MEA

95.6064 VOR FEDERAL AIRWAY V64 - CONTINUED

HEMET, CA FIX	HAPPE, CA FIX	*11000
*10200 - MOCA		
HAPPE, CA FIX	BALDI, CA FIX	10500
BALDI, CA FIX	CORLA, CA FIX	
	W BND	9700
	E BND	8000
CORLA, CA FIX	*THERMAL, CA VORTAC	
	W BND	8400
	E BND	6000
*7700 - MCA THERMAL, CA VORTAC , W BND		
THERMAL, CA VORTAC	BLYTHE, CA VORTAC	7000

95.6065 VOR FEDERAL AIRWAY V65

DRYER, OH VOR/DME	SANDUSKY, OH VOR/DME	*3000
*2100 - MOCA		
SANDUSKY, OH VOR/DME	CARLETON, MI VORTAC	*3000
*2400 - MOCA		

95.6066 VOR FEDERAL AIRWAY V66

MISSION BAY, CA VORTAC	*RYAHH, CA FIX	4000
*6200 - MCA RYAHH, CA FIX , E BND		
RYAHH, CA FIX	BARET, CA FIX	
	E BND	8000
	W BND	5500
BARET, CA FIX	*KUMBA, CA FIX	8000
*6700 - MCA KUMBA, CA FIX , W BND		
KUMBA, CA FIX	IMPERIAL, CA VORTAC	4100
IMPERIAL, CA VORTAC	BARD, AZ VORTAC	3600
BARD, AZ VORTAC	*MOHAK, AZ FIX	
	W BND	4000
	E BND	6000
*6000 - MCA MOHAK, AZ FIX , E BND		
MOHAK, AZ FIX	*JUDTH, AZ FIX	**6000
*6000 - MCA JUDTH, AZ FIX , W BND		
**4000 - MOCA		
JUDTH, AZ FIX	GILA BEND, AZ VORTAC	
	W BND	6000
	E BND	4000
GILA BEND, AZ VORTAC	FLIER, AZ FIX	6500
FLIER, AZ FIX	TUCSON, AZ VORTAC	*8000
*6700 - MOCA		
TUCSON, AZ VORTAC	SULLI, AZ FIX	8000
SULLI, AZ FIX	MESCA, AZ FIX	
	SE BND	9500
	NW BND	8000
MESCA, AZ FIX	DOUGLAS, AZ VORTAC	9500
DOUGLAS, AZ VORTAC	ANIMA, NM FIX	*11000
*8700 - MOCA		
ANIMA, NM FIX	*DARCE, NM FIX	
	E BND	9000
	W BND	11000
*11000 - MCA DARCE, NM FIX , W BND		
DARCE, NM FIX	COLUMBUS, NM VOR/DME	*9000
*8200 - MOCA		
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000
EL PASO, TX VORTAC	HUDSPETH, TX VORTAC	7500

FROM	TO	MEA

95.6066 VOR FEDERAL AIRWAY V66 - CONTINUED

FROM	TO	MEA
HUDSPETH, TX VORTAC *8000 - MOCA	PECOS, TX VOR/DME	*9000
PECOS, TX VOR/DME	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC *4400 - MOCA	BYPAS, TX FIX	*5000
BYPAS, TX FIX *5000 - MRA **4300 - MOCA	*HYMAN, TX FIX	**6000
HYMAN, TX FIX *4500 - MOCA	TYEES, TX FIX	*7000
TYEES, TX FIX *4300 - MOCA	ABILENE, TX VORTAC	*7000
ABILENE, TX VORTAC	TRUSS, TX FIX	3500
TRUSS, TX FIX	MILLSAP, TX VORTAC	3700
CRIMSON, AL VORTAC *2000 - MOCA	BROOKWOOD, AL VORTAC	*2500
BROOKWOOD, AL VORTAC	KYLEE, AL FIX	3000
KYLEE, AL FIX	LAGRANGE, GA VORTAC	3400
LAGRANGE, GA VORTAC	CANER, GA FIX	3500
CANER, GA FIX	GRANT, GA FIX	2800
GRANT, GA FIX *2500 - MOCA *2500 - GNSS MEA	SMARR, GA FIX	*4000
SMARR, GA FIX *2500 - MOCA *2500 - GNSS MEA	SINCA, GA FIX	*4500
SINCA, GA FIX *3500 - MRA **2000 - MOCA	*GLOSS, GA FIX	**3000
GLOSS, GA FIX *2200 - MOCA	MADDI, GA FIX	*3000
MADDI, GA FIX *2100 - MOCA	ATHENS, GA VORTAC	*3000
ATHENS, GA VORTAC	GREENWOOD, SC VORTAC	2500
GREENWOOD, SC VORTAC *2100 - MOCA *2500 - GNSS MEA	RICHE, SC FIX	*4000
RICHE, SC FIX *2300 - MOCA *2500 - GNSS MEA	SANDHILLS, NC VORTAC	*8000
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	2500
RALEIGH/DURHAM, NC VORTAC	FRANKLIN, VA VORTAC	2500

95.6067 VOR FEDERAL AIRWAY V67

FROM	TO	MEA
CHOO CHOO, TN VORTAC	SHELBYVILLE, TN VOR/DME	4000
SHELBYVILLE, TN VOR/DME *2500 - MOCA	GRAHAM, TN VORTAC	*4000
GRAHAM, TN VORTAC *2200 - MOCA	LANKY, TN FIX	*4000
LANKY, TN FIX *2200 - MOCA	CUNNINGHAM, KY VORTAC	*3000
CUNNINGHAM, KY VORTAC	MARION, IL VOR/DME	2600
MARION, IL VOR/DME	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	VANDALIA, IL VORTAC	2500
VANDALIA, IL VORTAC	SPINNER, IL VORTAC	2500
SPINNER, IL VORTAC	BURLINGTON, IA VORTAC	2500
BURLINGTON, IA VORTAC	IOWA CITY, IA VORTAC	2600
IOWA CITY, IA VORTAC	CEDAR RAPIDS, IA VOR/DME	2700
CEDAR RAPIDS, IA VOR/DME	WATERLOO, IA VORTAC	2900
WATERLOO, IA VORTAC	FOYDE, IA FIX	3000
FOYDE, IA FIX	ROCHESTER, MN VOR/DME	3500

FROM	TO	MEA

95.6068 VOR FEDERAL AIRWAY V68

MONTROSE, CO VOR/DME	CONES, CO VOR/DME	12000
CONES, CO VOR/DME	DOVE CREEK, CO VORTAC	12000
DOVE CREEK, CO VORTAC	CORTEZ, CO VOR/DME	9800
CORTEZ, CO VOR/DME	PLATA, NM FIX	10600
PLATA, NM FIX	RATTLESNAKE, NM VORTAC	10000
RATTLESNAKE, NM VORTAC	OTINS, NM FIX	9000
OTINS, NM FIX	PEDRA, NM FIX	*11500
*10000 - MOCA		
PEDRA, NM FIX	*ALBUQUERQUE, NM VORTAC	9000
*10000 - MCA ALBUQUERQUE, NM VORTAC , SE BND		
ALBUQUERQUE, NM VORTAC	CORONA, NM VORTAC	12000
CORONA, NM VORTAC	HONDS, NM FIX	9000
HONDS, NM FIX	CHISUM, NM VORTAC	
	NW BND	9000
	SE BND	6500
CHISUM, NM VORTAC	HAGER, NM FIX	
	NW BND	*9000
	SE BND	*6500
*5000 - MOCA		
HAGER, NM FIX	HOBBS, NM VORTAC	6500
HOBBS, NM VORTAC	ANEEL, TX FIX	5200
ANEEL, TX FIX	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC	JOKES, TX FIX	4500
JOKES, TX FIX	STEEP, TX FIX	*5000
*4200 - MOCA		
STEEP, TX FIX	TANKR, TX FIX	4400
TANKR, TX FIX	SAN ANGELO, TX VORTAC	3700
SAN ANGELO, TX VORTAC	JUNCTION, TX VORTAC	4000
JUNCTION, TX VORTAC	CENTER POINT, TX VORTAC	3800
CENTER POINT, TX VORTAC	SAN ANTONIO, TX VORTAC	4000
SAN ANTONIO, TX VORTAC	*BRAUN, TX FIX	3100
*5500 - MRA		
BRAUN, TX FIX	MARCS, TX FIX	3100
MARCS, TX FIX	CRAYS, TX FIX	*2900
*2000 - MOCA		
CRAYS, TX FIX	INDUSTRY, TX VORTAC	2500
INDUSTRY, TX VORTAC	SEALY, TX FIX	2100
SEALY, TX FIX	HOBBY, TX VOR/DME	2000

95.6069 VOR FEDERAL AIRWAY V69

EL DORADO, AR VORTAC	PINE BLUFF, AR VOR/DME	2000
PINE BLUFF, AR VOR/DME	BILLI, AR FIX	2000
BILLI, AR FIX	*HILLE, AR FIX	**6000
*6000 - MRA		
**1500 – MOCA		
HILLE, AR FIX	WALNUT RIDGE, AR VORTAC	*4000
*3000 - MOCA		
WALNUT RIDGE, AR VORTAC	FARMINGTON, MO VORTAC	3000
FARMINGTON, MO VORTAC	TROY, IL VORTAC	*3000
*2500 - MOCA		
TROY, IL VORTAC	SPINNER, IL VORTAC	2500
SPINNER, IL VORTAC	PONTIAC, IL VOR/DME	*3000
*2300 - MOCA		
PONTIAC, IL VOR/DME	JOLIET, IL VORTAC	*3000
*2200 - MOCA		

95.6070 VOR FEDERAL AIRWAY V70

FROM	TO	MEA
U.S. MEXICAN BORDER	BROWNSVILLE, TX VORTAC	*5000
*1500 - MOCA		
BROWNSVILLE, TX VORTAC	*MADRE, TX FIX	1600
*5000 - MRA		
MADRE, TX FIX	RAYMO, TX FIX	1600
RAYMO, TX FIX	JIMIE, TX FIX	*4000
*1600 - MOCA		
JIMIE, TX FIX	JETTY, TX FIX	*4000
*1800 - MOCA		
JETTY, TX FIX	CORPUS CHRISTI, TX VORTAC	2000
CORPUS CHRISTI, TX VORTAC	COPAN, TX FIX	1800
COPAN, TX FIX	BETZY, TX FIX	1700
BETZY, TX FIX	PALACIOS, TX VORTAC	2000
PALACIOS, TX VORTAC	SCHOLES, TX VORTAC	2600
SCHOLES, TX VORTAC	SABINE PASS, TX VOR/DME	2000
SABINE PASS, TX VOR/DME	LAKE CHARLES, LA VORTAC	1700
LAKE CHARLES, LA VORTAC	LAFAYETTE, LA VORTAC	1800
LAFAYETTE, LA VORTAC	*ROSEY, LA FIX	2000
*5000 - MRA		
ROSEY, LA FIX	BATON ROUGE, LA VORTAC	2000
BATON ROUGE, LA VORTAC	PICAYUNE, MS VOR/DME	2000
PICAYUNE, MS VOR/DME	GREENE COUNTY, MS VORTAC	2000
GREENE COUNTY, MS VORTAC	MONROEVILLE, AL VORTAC	2000
MONROEVILLE, AL VORTAC	CHAFF, AL FIX	2000
CHAFF, AL FIX	RUTEL, AL FIX	*2500
*1800 - MOCA		
RUTEL, AL FIX	CRENS, AL FIX	*4500
*1800 - MOCA		
CRENS, AL FIX	EUFAULA, AL VORTAC	2400
EUFAULA, AL VORTAC	VIENNA, GA VORTAC	2400
VIENNA, GA VORTAC	*OCONE, GA FIX	**3000
*3000 - MRA		
**2100 - MOCA		
OCONE, GA FIX	MILEN, GA FIX	*3000
*1800 - MOCA		MAA - 9000
MILEN, GA FIX	ALLENDALE, SC VOR	*3000
*1800 - MOCA		
GRAND STRAND, SC VORTAC	#WILMINGTON, NC VORTAC	*3100
*3100 - GNSS MEA		
#WILMINGTON R-240 UNUSABLE		
WILMINGTON, NC VORTAC	BEULA, NC FIX	*8000
*5000 - GNSS MEA		
BEULA, NC FIX	KINSTON, NC VORTAC	2000
KINSTON, NC VORTAC	PEARS, NC FIX	*2500
*1600 - MOCA		
PEARS, NC FIX	COFIELD, NC VORTAC	*3000
*2000 - MOCA		

95.6071 VOR FEDERAL AIRWAY V71

FROM	TO	MEA
BATON ROUGE, LA VORTAC	RELAY, LA FIX	2000
RELAY, LA FIX	*WRACK, LA FIX	**2200
*4000 - MRA		
**1700 - MOCA		
WRACK, LA FIX	WILIN, MS FIX	2200
WILIN, MS FIX	NATCHEZ, MS VOR/DME	2200
NATCHEZ, MS VOR/DME	MONROE, LA VORTAC	2000
MONROE, LA VORTAC	EL DORADO, AR VORTAC	2100
EL DORADO, AR VORTAC	SPARO, AR FIX	
	S BND	*2500
	N BND	*4000
*1800 - MOCA		

95.6071 VOR FEDERAL AIRWAY V71 - CONTINUED

FROM	TO	MEA
SPARO, AR FIX	CANEY, AR FIX	*4000
*1700 - MOCA		
CANEY, AR FIX	HOT SPRINGS, AR VOR/DME	
	N BND	2500
	S BND	3000
HOT SPRINGS, AR VOR/DME	OLLAS, AR FIX	*3600
*3100 - MOCA		
OLLAS, AR FIX	HAAWK, AR FIX	*4500
*2500 – MOCA		
HAAWK, AR FIX	HARRISON, AR VOR/DME	*10000
*3700 - MOCA		
*4000 - GNSS MEA		
HARRISON, AR VOR/DME	RASON, MO FIX	3200
RASON, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	*SHIRE, MO FIX	**3000
*4000 - MRA		
**2500 - MOCA		
SHIRE, MO FIX	BUTLER, MO VORTAC	*3000
*2500 - MOCA		
BUTLER, MO VORTAC	TOPEKA, KS VORTAC	3100
TOPEKA, KS VORTAC	PAWNEE CITY, NE VORTAC	*4000
*2800 - MOCA		
PAWNEE CITY, NE VORTAC	LINCOLN, NE VORTAC	3000
LINCOLN, NE VORTAC	DWELL, NE FIX	*3300
*2600 - MOCA		
DWELL, NE FIX	COLUMBUS, NE VOR/DME	*3500
*3000 - MOCA		
COLUMBUS, NE VOR/DME	O'NEILL, NE VORTAC	4000
O'NEILL, NE VORTAC	WINNER, SD VOR	4000
WINNER, SD VOR	PIERRE, SD VORTAC	4100
PIERRE, SD VORTAC	LINTN, ND FIX	*5500
*3600 - MOCA		
LINTN, ND FIX	BISMARCK, ND VOR/DME	
	S BND	5500
	N BND	3600
BISMARCK, ND VOR/DME	CENTR, ND FIX	
	W BND	5600
	E BND	4000
CENTR, ND FIX	WILLISTON, ND VORTAC	*5600
*3900 - MOCA		

95.6072 VOR FEDERAL AIRWAY V72

FROM	TO	MEA
RAZORBACK, AR VORTAC	EDUGE, AR FIX	3500
EDUGE, AR FIX	REEDS, MO FIX	*4000
*2900 - MOCA		
REEDS, MO FIX	DOGWOOD, MO VORTAC	*3400
*2900 - MOCA		
DOGWOOD, MO VORTAC	GOBEY, MO FIX	3400
GOBEY, MO FIX	MAPLES, MO VORTAC	3400
MAPLES, MO VORTAC	BUNKS, MO FIX	3000
BUNKS, MO FIX	FARMINGTON, MO VORTAC	3500
FARMINGTON, MO VORTAC	NIKEL, IL FIX	*3000
*2500 - MOCA		
NIKEL, IL FIX	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	BIBLE GROVE, IL VORTAC	2600
BIBLE GROVE, IL VORTAC	MATTOON, IL VOR/DME	2500
MATTOON, IL VOR/DME	BLOOMINGTON, IL VOR/DME	2700

95.6073 VOR FEDERAL AIRWAY V73

TULSA, OK VORTAC	FRAKS, OK FIX	3000
FRAKS, OK FIX	WICHITA, KS VORTAC	4000
WICHITA, KS VORTAC	HUTCHINSON, KS VOR/DME	3600
HUTCHINSON, KS VOR/DME	SALINA, KS VORTAC	3400

95.6074 VOR FEDERAL AIRWAY V74

GARDEN CITY, KS VORTAC	DODGE CITY, KS VORTAC	4600
DODGE CITY, KS VORTAC	*SAFER, KS FIX	4300
*4000 - MRA		
SAFER, KS FIX	ANTHONY, KS VORTAC	3400
ANTHONY, KS VORTAC	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	MANON, OK FIX	2700
MANON, OK FIX	TULSA, OK VORTAC	2500
TULSA, OK VORTAC	OWETA, OK FIX	3200
OWETA, OK FIX	MALTS, OK FIX	*2800
*1900 - MOCA		
MALTS, OK FIX	FORT SMITH, AR VORTAC	3000
FORT SMITH, AR VORTAC	CHARR, AR FIX	2500
CHARR, AR FIX	MAGGA, AR FIX	4000
MAGGA, AR FIX	DANIL, AR FIX	*4500
*4000 - MOCA		
DANIL, AR FIX	OLLAS, AR FIX	*4500
*2600 - MOCA		
OLLAS, AR FIX	MAUME, AR FIX	*4500
*2700 - MOCA		
MAUME, AR FIX	LITTLE ROCK, AR VORTAC	3500
LITTLE ROCK, AR VORTAC	PINE BLUFF, AR VOR/DME	2500
PINE BLUFF, AR VOR/DME	GREENVILLE, MS VOR/DME	2000
GREENVILLE, MS VOR/DME	JACKSON, MS VORTAC	*2500
*1800 - MOCA		

95.6075 VOR FEDERAL AIRWAY V75

MORGANTOWN, WV VORTAC	BELLAIRE, OH VOR/DME	4000
BELLAIRE, OH VOR/DME	ATWOO, OH FIX	*6000
*3000 - MOCA		
ATWOO, OH FIX	BRIGGS, OH VOR/DME	*4000
*3100 - MOCA		
*3100 - GNSS MEA		
BRIGGS, OH VOR/DME	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	U.S. CANADIAN BORDER	#*4000
*2200 – MOCA		

95.6076 VOR FEDERAL AIRWAY V76

LUBBOCK, TX VORTAC	*WELCH, TX FIX	5200
*7000 - MRA		
WELCH, TX FIX	PATTS, TX FIX	*6100
*5200 - MOCA		
PATTS, TX FIX	BIG SPRING, TX VORTAC	4700
BIG SPRING, TX VORTAC	*HYMAN, TX FIX	4500
*5000 - MRA		
HYMAN, TX FIX	*WATOR, TX FIX	4500
*7000 - MRA		
WATOR, TX FIX	SAN ANGELO, TX VORTAC	4500

FROM	TO	MEA

95.6076 VOR FEDERAL AIRWAY V76 - CONTINUED

SAN ANGELO, TX VORTAC	EVILE, TX FIX	3700
EVILE, TX FIX	BREDY, TX FIX	3800
BREDY, TX FIX	LLANO, TX VORTAC	3500
LLANO, TX VORTAC	CENTEX, TX VORTAC	3200
CENTEX, TX VORTAC	MOUZE, TX FIX	2200
MOUZE, TX FIX	INDUSTRY, TX VORTAC	2100
INDUSTRY, TX VORTAC	SEALY, TX FIX	2100
SEALY, TX FIX	HOBBY, TX VOR/DME	2000

95.6077 VOR FEDERAL AIRWAY V77

SAN ANGELO, TX VORTAC	ABILENE, TX VORTAC	4000
ABILENE, TX VORTAC *3400 - MOCA	WICHITA FALLS, TX VORTAC	*3900
WICHITA FALLS, TX VORTAC	FOYER, OK FIX	2900
FOYER, OK FIX *4900 - MRA	*FLECH, OK FIX	3000
FLECH, OK FIX *5400 - MRA **2800 - MOCA	*NEADS, OK FIX	**3800
NEADS, OK FIX	WILL ROGERS, OK VORTAC	3000
WILL ROGERS, OK VORTAC	CASTN, OK FIX	3500
CASTN, OK FIX	WENDY, OK FIX	4000
WENDY, OK FIX	PIONEER, OK VORTAC	2900
PIONEER, OK VORTAC	WICHITA, KS VORTAC	3600
WICHITA, KS VORTAC *5000 - MRA	*FLOSS, KS FIX	3600
FLOSS, KS FIX *5000 - MRA **2800 - MOCA	*WILSY, KS FIX	**5000
WILSY, KS FIX *2900 - MOCA	HEYDN, KS FIX	*4500
HEYDN, KS FIX	TOPEKA, KS VORTAC	3700
TOPEKA, KS VORTAC	ST JOSEPH, MO VORTAC	3000
ST JOSEPH, MO VORTAC	LAMONI, IA VORTAC	2900
LAMONI, IA VORTAC *4300 - MRA	*WIVEY, IA FIX	3000
WIVEY, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC *4000 - MRA	*MIXIN, IA FIX	3000
MIXIN, IA FIX	NEWTON, IA VOR/DME	3000
NEWTON, IA VOR/DME	WATERLOO, IA VORTAC	2800
WATERLOO, IA VORTAC *2400 - MOCA	WAUKON, IA VORTAC	*3000

95.6078 VOR FEDERAL AIRWAY V78

HURON, SD VORTAC *3100 - MOCA	WATERTOWN, SD VORTAC	*3700
WATERTOWN, SD VORTAC *3300 - MOCA	CLAPS, MN FIX	*5500
CLAPS, MN FIX	DARWIN, MN VORTAC	3000
DARWIN, MN VORTAC	GOPHER, MN VORTAC	3000
GOPHER, MN VORTAC	EAU CLAIRE, WI VORTAC	3400
EAU CLAIRE, WI VORTAC	RHINELANDER, WI VORTAC	3700
RHINELANDER, WI VORTAC	IRON MOUNTAIN, MI VOR/DME	4300
IRON MOUNTAIN, MI VOR/DME	VUKFI, MI FIX	3100
VUKFI, MI FIX *2200 - MOCA	ESCANABA, MI VOR/DME	*3000
ESCANABA, MI VOR/DME	SCHOOLCRAFT COUNTY, MI VOR/DME	2500
SCHOOLCRAFT COUNTY, MI VOR/DME	PELLSTON, MI VORTAC	2600

FROM	TO	MEA

95.6078 VOR FEDERAL AIRWAY V78 - CONTINUED

PELLSTON, MI VORTAC	*RABBO, MI FIX	2600
*3500 - MRA		
RABBO, MI FIX	ALPENA, MI VORTAC	2600
ALPENA, MI VORTAC	ZABLE, MI FIX	3000
ZABLE, MI FIX	BANJO, MI FIX	*5000
*2900 - MOCA		
BANJO, MI FIX	BENNY, MI FIX	*3000
*2200 - MOCA		
BENNY, MI FIX	SAGINAW, MI VOR/DME	2200

95.6079 VOR FEDERAL AIRWAY V79

HASTINGS, NE VOR/DME	LINCOLN, NE VORTAC	4000

95.6080 VOR FEDERAL AIRWAY V80

AKRON, CO VOR/DME	HOLYO, CO FIX	6400
HOLYO, CO FIX	NORTH PLATTE, NE VORTAC	*6500
*5000 - MOCA		
NORTH PLATTE, NE VORTAC	O'NEILL, NE VORTAC	*5400
*4400 - MOCA		
O'NEILL, NE VORTAC	TYNDA, SD FIX	*4000
*3500 - MOCA		
TYNDA, SD FIX	DOLTS, SD FIX	*4000
*3200 - MOCA		
DOLTS, SD FIX	SIOUX FALLS, SD VORTAC	3400

95.6081 VOR FEDERAL AIRWAY V81

DUSVI, MX FIX	MARFA, TX VOR/DME	10000
MARFA, TX VOR/DME	FORT STOCKTON, TX VORTAC	9000
FORT STOCKTON, TX VORTAC	MIDLAND, TX VORTAC	4500
MIDLAND, TX VORTAC	PATTS, TX FIX	4500
PATTS, TX FIX	*WELCH, TX FIX	**6100
*7000 - MRA		
**5200 - MOCA		
WELCH, TX FIX	LUBBOCK, TX VORTAC	5200
LUBBOCK, TX VORTAC	PLAINVIEW, TX VOR/DME	5000
PLAINVIEW, TX VOR/DME	*YOCAN, TX FIX	**5400
*6500 - MRA		
**4900 - MOCA		
YOCAN, TX FIX	PANHANDLE, TX VORTAC	5400
PANHANDLE, TX VORTAC	LANTT, TX FIX	6100
LANTT, TX FIX	EXELL, TX FIX	5400
EXELL, TX FIX	DALHART, TX VORTAC	5900
DALHART, TX VORTAC	TOBE, CO VOR/DME	8800
TOBE, CO VOR/DME	PUEBLO, CO VORTAC	7700
PUEBLO, CO VORTAC	*JOWEE, CO FIX	9500
*10000 - MCA JOWEE, CO FIX , N BND		
BLACK FOREST, CO VOR/DME	*HOHUM, CO FIX	#10000
*9500 - MRA		
#GNSS MEA		
BLACK FOREST R-325 UNUSABLE		
HOHUM, CO FIX	SIGNE, CO FIX	9200
SIGNE, CO FIX	JEFFCO, CO VOR/DME	*9200
*8600 - MOCA		
JEFFCO, CO VOR/DME	WISER, CO FIX	8000
WISER, CO FIX	CHEYENNE, WY VORTAC	9000

95.6081 VOR FEDERAL AIRWAY V81 - CONTINUED

CHEYENNE, WY VORTAC	SCOTTSBLUFF, NE VORTAC	8000
SCOTTSBLUFF, NE VORTAC	CHADRON, NE VOR/DME	7000

95.6082 VOR FEDERAL AIRWAY V82

BAUDETTE, MN VOR/DME	BRAINERD, MN VORTAC	*7000
*3400 - MOCA		
*3500 - GNSS MEA		
BRAINERD, MN VORTAC	GOPHER, MN VORTAC	3000
GOPHER, MN VORTAC	FARMINGTON, MN VORTAC	*3500
*2700 - MOCA		
FARMINGTON, MN VORTAC	*CORDY, MN FIX	3000
*4000 - MRA		
CORDY, MN FIX	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	DELLS, WI VORTAC	3000

95.6083 VOR FEDERAL AIRWAY V83

CARLSBAD, NM VORTAC	CHISUM, NM VORTAC	5900
CHISUM, NM VORTAC	HONDS, NM FIX	
	NW BND	9000
	SE BND	6500
HONDS, NM FIX	CORONA, NM VORTAC	9000
CORONA, NM VORTAC	OTTO, NM VOR	9000
OTTO, NM VOR	*LACRO, NM FIX	9000
*10500 - MRA		
LACRO, NM FIX	SANTA FE, NM VORTAC	9000
SANTA FE, NM VORTAC	NAMBE, NM FIX	
	N BND	11000
	S BND	9000
NAMBE, NM FIX	TAOS, NM VORTAC	11000
TAOS, NM VORTAC	*ALAMOSA, CO VORTAC	11600
*10400 - MCA ALAMOSA, CO VORTAC , S BND		
ALAMOSA, CO VORTAC	GOSIP, CO FIX	
	E BND	*14000
	W BND	*10400
*10100 - MOCA		
GOSIP, CO FIX	PUEBLO, CO VORTAC	8300
PUEBLO, CO VORTAC	DRAKE, CO FIX	7600
DRAKE, CO FIX	BLACK FOREST, CO VOR/DME	9000

95.6084 VOR FEDERAL AIRWAY V84

NORTHBROOK, IL VOR/DME	*KUBBS, IL FIX	**2500
*4000 - MRA		
**1900 - MOCA		
KUBBS, IL FIX	*STORY, IL FIX	**2500
*3500 - MRA		
**1900 – MOCA		
STORY, IL FIX	PIVOT, MI FIX	*2500
*1900 - MOCA		
PIVOT, MI FIX	*JYBEE, MI FIX	**4000
*4000 - MRA		
**1900 - MOCA		
JYBEE, MI FIX	PULLMAN, MI VOR/DME	*4000
*2200 - MOCA		
PULLMAN, MI VOR/DME	LANSING, MI VORTAC	3000

FROM	TO	MEA

95.6084 VOR FEDERAL AIRWAY V84 - CONTINUED

LANSING, MI VORTAC	FLINT, MI VORTAC	2700
FLINT, MI VORTAC	PECK, MI VORTAC	2800
PECK, MI VORTAC	U.S. CANADIAN BORDER	*3500
*2900 - MOCA		
U.S. CANADIAN BORDER	#BUFFALO, NY VOR/DME	*6000
*2400 - MOCA		
*3000 - GNSS MEA		
#BUFFALO R-282 UNUSABLE BELOW 6000		
BUFFALO, NY VOR/DME	GENESEO, NY VOR/DME	#4000
#BUF R-106 UNUSABLE.		
GENESEO, NY VOR/DME	BEEPS, NY FIX	*4000
*3300 - MOCA		
BEEPS, NY FIX	SYRACUSE, NY VORTAC	*3500
*2600 - MOCA		

95.6085 VOR FEDERAL AIRWAY V85

FALCON, CO VORTAC	*HYGEN, CO FIX	8000
*11300 - MCA HYGEN, CO FIX , NW BND		
HYGEN, CO FIX	*ALLAN, CO FIX	**13500
*16000 - MRA		
*15400 - MCA ALLAN, CO FIX , NW BND		
**12600 - MOCA		
ALLAN, CO FIX	LARAMIE, WY VOR/DME	16000
LARAMIE, WY VOR/DME	MEDICINE BOW, WY VOR/DME	9400
MEDICINE BOW, WY VOR/DME	MULTI, WY FIX	10800
MULTI, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	
	N BND	8000
	S BND	10800
MUDDY MOUNTAIN, WY VOR/DME	RIVERTON, WY VOR/DME	8500
RIVERTON, WY VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	9600
BOYSEN RESERVOIR, WY VOR/DME	CODY, WY VOR/DME	9600
CODY, WY VOR/DME	EDDAR, MT FIX	8400
EDDAR, MT FIX	BILLINGS, MT VORTAC	
	S BND	8400
	N BND	7000

95.6086 VOR FEDERAL AIRWAY V86

MISSOULA, MT VOR/DME	COPPERTOWN, MT VOR/DME	*13000
*11300 - MOCA		
*12000 - GNSS MEA		
COPPERTOWN, MT VOR/DME	*WHITEHALL, MT VOR/DME	10500
*9100 - MCA WHITEHALL, MT VOR/DME , W BND		
WHITEHALL, MT VOR/DME	*BOZEMAN, MT VOR/DME	8500
*9300 - MCA BOZEMAN, MT VOR/DME , SE BND		
BOZEMAN, MT VOR/DME	LIVINGSTON, MT VOR/DME	10400
LIVINGSTON, MT VOR/DME	REEPO, MT FIX	9700
REEPO, MT FIX	COLUS, MT FIX	
	W BND	9000
	E BND	7000
COLUS, MT FIX	BILLINGS, MT VORTAC	
	W BND	9000
	E BND	6400

FROM	TO	MEA

95.6086 VOR FEDERAL AIRWAY V86 - CONTINUED

BILLINGS, MT VORTAC	KRONA, MT FIX	
	NW BND	6200
	SE BND	8000
KRONA, MT FIX	SHERIDAN, WY VOR/DME	8000
SHERIDAN, WY VOR/DME	WETON, WY FIX	#*10900
*7000 - MOCA		
*7000 - GNSS MEA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
WETON, WY FIX	*KOCYE, WY FIX	**13000
*15000 - MRA		
**7000 - MOCA		
**7000 - GNSS MEA		
KOCYE, WY FIX	KARAS, WY FIX	*13000
*8600 - MOCA		
*9000 - GNSS MEA		
KARAS, WY FIX	*PACTO, SD FIX	**11100
*9700 - MRA		
**9400 - MOCA		
**10000 - GNSS MEA		
PACTO, SD FIX	RAPID CITY, SD VORTAC	
	E BND	*8000
	W BND	*9700
*7100 - MOCA		

95.6087 VOR FEDERAL AIRWAY V87

PANOCHE, CA VORTAC	SALINAS, CA VORTAC	6000
SALINAS, CA VORTAC	*SANTY, CA FIX	**5000
*7000 - MRA		
**4000 - MOCA		
SANTY, CA FIX	WOODSIDE, CA VORTAC	5000
WOODSIDE, CA VORTAC	SAN FRANCISCO, CA VOR/DME	4500
SAN FRANCISCO, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	4000
SCAGGS ISLAND, CA VORTAC	MAXWELL, CA VORTAC	5000
MAXWELL, CA VORTAC	RED BLUFF, CA VORTAC	3000

95.6088 VOR FEDERAL AIRWAY V88

TULSA, OK VORTAC	VINTA, OK FIX	2600
VINTA, OK FIX	NARCI, OK FIX	*4500
*2300 - MOCA		
*4000 - GNSS MEA		
NARCI, OK FIX	WACCO, MO FIX	*8000
*3100 - MOCA		
*4000 - GNSS MEA		
WACCO, MO FIX	*MIRTH, MO FIX	3000
*3700 - MRA		
MIRTH, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	VICHY, MO VOR/DME	3000
VICHY, MO VOR/DME	STEER, MO FIX	*3000
*2300 - MOCA		
STEER, MO FIX	TROY, IL VORTAC	2700

95.6089 VOR FEDERAL AIRWAY V89

GILL, CO VOR/DME	HAMER, WY FIX	8000
HAMER, WY FIX	CHEYENNE, WY VORTAC	8500
CHEYENNE, WY VORTAC	LITER, WY FIX	8000
LITER, WY FIX	CHADRON, NE VOR/DME	7800

FROM	TO	MEA

95.6090 VOR FEDERAL AIRWAY V90

SALEM, MI VORTAC *2700 - MOCA	U.S. CANADIAN BORDER	*4000
BEWEL, OH FIX	DUNKIRK, NY VORTAC	3000

95.6091 VOR FEDERAL AIRWAY V91

SARDI, NY FIX *1900 - MOCA	CALVERTON, NY VOR/DME	*2500
CALVERTON, NY VOR/DME *4000 - MRA	*NESSI, CT FIX	2000
NESSI, CT FIX	BRIDGEPORT, CT VOR/DME	2000
BRIDGEPORT, CT VOR/DME *4100 - MOCA	ALBANY, NY VORTAC	*6000
ALBANY, NY VORTAC *5000 - GNSS MEA	GLENS FALLS, NY VORTAC	*7000
GLENS FALLS, NY VORTAC *5000 - GNSS MEA	ENSON, VT FIX	*10000
ENSON, VT FIX *2800 - MOCA	BURLINGTON, VT VOR/DME	*4000
BURLINGTON, VT VOR/DME	PLATTSBURGH, NY VORTAC	2600
PLATTSBURGH, NY VORTAC *3200 - MOCA *3500 - GNSS MEA	U.S. CANADIAN BORDER	*6000

95.6092 VOR FEDERAL AIRWAY V92

BEBEE, IL FIX *3500 - MRA *3000 - MCA NILES, IL FIX , N BND	*NILES, IL FIX	3400
NILES, IL FIX	CHICAGO HEIGHTS, IL VORTAC	2500
CHICAGO HEIGHTS, IL VORTAC	HALIE, IN FIX	2600
HALIE, IN FIX *2300 - MOCA	INKEN, IN FIX	*4000
INKEN, IN FIX	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	BAGEL, IN FIX	2700
BAGEL, IN FIX *2400 - MOCA	EDGEE, OH FIX	*3000
EDGEE, OH FIX	WATERVILLE, OH VOR/DME	3000
WATERVILLE, OH VOR/DME	MANSFIELD, OH VORTAC	2900
MANSFIELD, OH VORTAC	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	BELLAIRE, OH VOR/DME	3000
BELLAIRE, OH VOR/DME *3100 - MOCA	GALLS, PA FIX	*3600
GALLS, PA FIX	GRANTSVILLE, MD VOR/DME	5000
GRANTSVILLE, MD VOR/DME	ARMEL, VA VORTAC	5000

95.6093 VOR FEDERAL AIRWAY V93

PATUXENT, MD VORTAC *10000 - MRA **1700 - MOCA	*GRACO, MD FIX	**2500
GRACO, MD FIX *1600 - MOCA	PALEO, MD FIX	*10000
PALEO, MD FIX *1700 – MOCA	BALTIMORE, MD VORTAC	*2200

95.6093 VOR FEDERAL AIRWAY V93 - CONTINUED

FROM	TO	MEA
BALTIMORE, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	*ROAST, PA FIX	**4500
*10000 - MRA		
**2600 - MOCA		
ROAST, PA FIX	LANCASTER, PA VORTAC	*4500
*2600 - MOCA		
LANCASTER, PA VORTAC	HAILS, PA FIX	3400
HAILS, PA FIX	SNOWY, PA FIX	4000
SNOWY, PA FIX	LYTEL, PA FIX	4000
LYTEL, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	LAKE HENRY, PA VORTAC	4000
LAKE HENRY, PA VORTAC	HELON, NY FIX	4000
HELON, NY FIX	SPECL, NY FIX	4000
KINGSTON, NY VOR/DME	PAWLING, NY VOR/DME	3000
PAWLING, NY VOR/DME	CHESTER, MA VOR/DME	4000
CHESTER, MA VOR/DME	KEENE, NH VORTAC	*4000
*3500 - GNSS MEA		
KEENE, NH VORTAC	CONCORD, NH VORTAC	5000
CONCORD, NH VORTAC	KENNEBUNK, ME VORTAC	3000
KENNEBUNK, ME VORTAC	BRNNS, ME FIX	*3000
*1600 - MOCA		
BRNNS, ME FIX	BANGOR, ME VORTAC	3000
BANGOR, ME VORTAC	PRINCETON, ME VOR/DME	3000
PRINCETON, ME VOR/DME	U.S. CANADIAN BORDER	*2500
*1500 - MOCA		

95.6094 VOR FEDERAL AIRWAY V94

FROM	TO	MEA
BLYTHE, CA VORTAC	*VICKO, AZ FIX	6000
*9000 - MRA		
VICKO, AZ FIX	GILA BEND, AZ VORTAC	*9000
*5200 - MOCA		
GILA BEND, AZ VORTAC	*POTER, AZ FIX	5000
*8000 - MRA		
POTER, AZ FIX	STANFIELD, AZ VORTAC	5000
STANFIELD, AZ VORTAC	*TOTEC, AZ FIX	**5000
*5500 - MCA TOTEC, AZ FIX , E BND		
**4300 - MOCA		
TOTEC, AZ FIX	CROME, AZ FIX	
	E BND	8000
	W BND	6500
CROME, AZ FIX	SAN SIMON, AZ VORTAC	10000
SAN SIMON, AZ VORTAC	DEMING, NM VORTAC	*9000
*8100 - MOCA		
DEMING, NM VORTAC	*MOLLY, NM FIX	**9000
*10000 - MRA		
**7700 - MOCA		
MOLLY, NM FIX	NEWMAN, TX VORTAC	9000
NEWMAN, TX VORTAC	SALT FLAT, TX VORTAC	8800
SALT FLAT, TX VORTAC	DILLI, TX FIX	8000
DILLI, TX FIX	CAVRN, TX FIX	*10000
*7500 - MOCA		
CAVRN, TX FIX	WINK, TX VORTAC	*10000
*5300 – MOCA		
WINK, TX VORTAC	NOTES, TX FIX	5500
NOTES, TX FIX	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC	BYPAS, TX FIX	*5000
*4400 - MOCA		
BYPAS, TX FIX	*HYMAN, TX FIX	**6000
*5000 - MRA		
**4300 – MOCA		

FROM	TO	MEA

95.6094 VOR FEDERAL AIRWAY V94 - CONTINUED

HYMAN, TX FIX	TUSCOLA, TX VOR/DME	*6000
*4100 - MOCA		
TUSCOLA, TX VOR/DME	GEENI, TX FIX	4000
GEENI, TX FIX	GLEN ROSE, TX VORTAC	*3500
*3000 - MOCA		
GLEN ROSE, TX VORTAC	CEDAR CREEK, TX VORTAC	*3000
*2200 - MOCA		
CEDAR CREEK, TX VORTAC	GREGG COUNTY, TX VORTAC	2500
GREGG COUNTY, TX VORTAC	ELM GROVE, LA VORTAC	2000
ELM GROVE, LA VORTAC	*WETER, LA FIX	2400
*3000 - MRA		
WETER, LA FIX	MONROE, LA VORTAC	*2400
*1800 - MOCA		
MONROE, LA VORTAC	GREENVILLE, MS VOR/DME	2100
GREENVILLE, MS VOR/DME	HOLLY SPRINGS, MS VORTAC	*3000
*2100 - MOCA		
HOLLY SPRINGS, MS VORTAC	JACKS CREEK, TN VOR/DME	*2500
*2000 - MOCA		
JACKS CREEK, TN VOR/DME	VALER, TN FIX	*3000
*2200 - MOCA		
VALER, TN FIX	TEACH, TN FIX	*4000
*2500 - MOCA		
TEACH, TN FIX	BOWLING GREEN, KY VORTAC	2600

95.6095 VOR FEDERAL AIRWAY V95

GILA BEND, AZ VORTAC	*POTER, AZ FIX	5000
*8000 - MRA		
POTER, AZ FIX	PHOENIX, AZ VORTAC	8000
PHOENIX, AZ VORTAC	WINSLOW, AZ VORTAC	10000
WINSLOW, AZ VORTAC	*BUTTE, AZ FIX	
	NE BND	11000
	SW BND	8700
*9600 - MRA		
BUTTE, AZ FIX	CASTI, AZ FIX	
	NE BND	11000
	SW BND	8700
CASTI, AZ FIX	DERMA, NM FIX	*13000
*11400 - MOCA		
DERMA, NM FIX	RATTLESNAKE, NM VORTAC	
	E BND	8300
	W BND	13000
RATTLESNAKE, NM VORTAC	*DURANGO, CO VOR/DME	9700
*13200 - MCA DURANGO, CO	VOR/DME , N BND	
DURANGO, CO VOR/DME	ZEANS, CO FIX	
	S BND	12000
	N BND	16100
ZEANS, CO FIX	LAZON, CO FIX	16100
LAZON, CO FIX	POWES, CO FIX	
	N BND	15000
	S BND	16100
POWES, CO FIX	*BLUE MESA, CO VOR/DME	
	SW BND	16100
	NE BND	12800
*12600 - MCA BLUE MESA, CO	VOR/DME , S BND	
*12900 - MCA BLUE MESA, CO	VOR/DME , NE BND	
BLUE MESA, CO VOR/DME	ROMLY, CO FIX	
	NE BND	16200
	SW BND	12000
ROMLY, CO FIX	*GORJE, CO FIX	16200
*17000 - MRA		

95.6095 VOR FEDERAL AIRWAY V95 - CONTINUED

FROM	TO	MEA
GORJE, CO FIX	*HOHUM, CO FIX	**17000
*9500 - MRA		
*13100 - MCA HOHUM, CO FIX , S BND		
**16200 - MOCA		
HOHUM, CO FIX	FALCON, CO VORTAC	9000

95.6096 VOR FEDERAL AIRWAY V96

FROM	TO	MEA
BRICKYARD, IN VORTAC	KOKOMO, IN VORTAC	2700
KOKOMO, IN VORTAC	FORT WAYNE, IN VORTAC	2600
FORT WAYNE, IN VORTAC	ILLIE, OH FIX	*5000
*2200 - MOCA		
ILLIE, OH FIX	ANNTS, OH FIX	*16000
*2100 - MOCA		
ANNTS, OH FIX	DETROIT, MI VOR/DME	*3000
*2000 - MOCA		

95.6097 VOR FEDERAL AIRWAY V97

FROM	TO	MEA
DOLPHIN, FL VORTAC	LA BELLE, FL VORTAC	*3000
*1500 - MOCA		
LA BELLE, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	DARBS, FL FIX	2000
DARBS, FL FIX	PLYER, FL FIX	*6000
*4000 - GNSS MEA		
PLYER, FL FIX	CLAMP, FL FIX	*7000
*1400 - MOCA		
*4000 - GNSS MEA		
CLAMP, FL FIX	HEVVN, FL FIX	*6000
*1400 - MOCA		
*4000 - GNSS MEA		
HEVVN, FL FIX	ADDAX, FL FIX	*3000
*1400 - MOCA		
*2000 - GNSS MEA		
ADDAX, FL FIX	SEMINOLE, FL VORTAC	2000
SEMINOLE, FL VORTAC	PECAN, GA VORTAC	2100
PECAN, GA VORTAC	AMAPO, GA FIX	2300
AMAPO, GA FIX	*PRATZ, GA FIX	**3000
*3000 - MRA		
*4000 - MCA PRATZ, GA FIX , N BND		
**2300 - MOCA		
PRATZ, GA FIX	OLISY, GA FIX	*4000
*2700 - MOCA		
*3000 - GNSS MEA		
OLISY, GA FIX	ATLANTA, GA VORTAC	*3000
*2400 - MOCA		
ATLANTA, GA VORTAC	BAPPY, GA FIX	*4000
*3300 – MOCA		
BAPPY, GA FIX	NELLO, GA FIX	5000
NELLO, GA FIX	MELLS, GA FIX	*10000
*5800 - GNSS MEA		
MELLS, GA FIX	*HINDE, TN FIX	7400
*6600 - MCA HINDE, TN FIX , S BND		
HINDE, TN FIX	TALLA, TN FIX	6600
TALLA, TN FIX	VOLUNTEER, TN VORTAC	4200
VOLUNTEER, TN VORTAC	NOISE, TN FIX	3800
NOISE, TN FIX	LONDON, KY VORTAC	5000

95.6097 VOR FEDERAL AIRWAY V97 - CONTINUED

FROM	TO	MEA
LONDON, KY VORTAC	REBEL, KY FIX	*3400
*2800 – MOCA		
REBEL, KY FIX	LEXINGTON, KY VORTAC	2800
LEXINGTON, KY VORTAC	DARKS, KY FIX	3000
DARKS, KY FIX	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	SHELBYVILLE, IN VORTAC	2800
SHELBYVILLE, IN VORTAC	OCKEL, IN FIX	3000
OCKEL, IN FIX	BOILER, IN VORTAC	*2500
*2100 - MOCA		
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2700
CHICAGO HEIGHTS, IL VORTAC	*NILES, IL FIX	2500
*3500 - MRA		
*3000 - MCA NILES, IL FIX , N BND		
NILES, IL FIX	BEBEE, IL FIX	3400
FARMM, IL FIX	JANESVILLE, WI VOR/DME	2900
JANESVILLE, WI VOR/DME	THEBO, WI FIX	3000
THEBO, WI FIX	LONE ROCK, WI VOR/DME	*3400
*2800 - MOCA		
LONE ROCK, WI VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	PEGGS, MN FIX	3000
PEGGS, MN FIX	GOPHER, MN VORTAC	3400

95.6098 VOR FEDERAL AIRWAY V98

FROM	TO	MEA
DAYTON, OH VOR/DME	HINES, OH FIX	3000
HINES, OH FIX	*WOCKY, OH FIX	7000
*7000 - MRA		
*7000 - MCA WOCKY, OH FIX , S BND		
WOCKY, OH FIX	*PIONS, OH FIX	10000
*4000 - MRA		
*10000 - MCA PIONS, OH FIX , S BND		
PIONS, OH FIX	MIZAR, MI FIX	3000
U.S. CANADIAN BORDER	MASSENA, NY VORTAC	2100
#MASSENA, NY VORTAC	U.S. CANADIAN BORDER	*2100
*2100 - GNSS MEA		
#GNSS MEA ONLY		
MASSENA R-085 UNUSABLE. GNSS REQUIRED		

95.6099 VOR FEDERAL AIRWAY V99

FROM	TO	MEA
LA GUARDIA, NY VOR/DME	OUTTE, CT FIX	*4000
*1700 - MOCA		
OUTTE, CT FIX	SORRY, CT FIX	*4000
*2600 - MOCA		
SORRY, CT FIX	HARTFORD, CT VOR/DME	3000

95.6100 VOR FEDERAL AIRWAY V100

FROM	TO	MEA
MEDICINE BOW, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	9500
SCOTTSBLUFF, NE VORTAC	ALLIANCE, NE VOR/DME	6300
ALLIANCE, NE VOR/DME	AINSWORTH, NE VOR/DME	*7500
*5600 - MOCA		
AINSWORTH, NE VOR/DME	O'NEILL, NE VORTAC	4500
O'NEILL, NE VORTAC	SIOUX CITY, IA VORTAC	3700
SIOUX CITY, IA VORTAC	FORT DODGE, IA VORTAC	3000
FORT DODGE, IA VORTAC	WATERLOO, IA VORTAC	3000
WATERLOO, IA VORTAC	DUBUQUE, IA VORTAC	2900
DUBUQUE, IA VORTAC	ROCKFORD, IL VOR/DME	2900
ROCKFORD, IL VOR/DME	FARMM, IL FIX	2800
FARMM, IL FIX	NORTHBROOK, IL VOR/DME	2700

FROM	TO	MEA

95.60100 VOR FEDERAL AIRWAY V100 - CONTINUED

NORTHBROOK, IL VOR/DME	*MINCE, MI FIX	2500
*3500 – MRA		
MINCE, MI FIX	MUSKY, MI FIX	2500
MUSKY, MI FIX	KEELER, MI VOR/DME	2400
KEELER, MI VOR/DME	LITCHFIELD, MI VOR/DME	2600

95.6101 VOR FEDERAL AIRWAY V101

GILL, CO VOR/DME	LIBEL, CO FIX	*10000
*8900 - MOCA		
LIBEL, CO FIX	BROCC, CO FIX	16000
BROCC, CO FIX	LORIN, CO FIX	13000
LORIN, CO FIX	HAYDEN, CO VOR/DME	
	E BND	13000
	W BND	11000
HAYDEN, CO VOR/DME	STRIM, CO FIX	10000
STRIM, CO FIX	*RENAE, CO FIX	11000
*13000 - MRA		
RENAE, CO FIX	VERNAL, UT VOR/DME	11000
VERNAL, UT VOR/DME	*NEOLA, UT FIX	10000
*12000 - MCA NEOLA, UT FIX , W BND		
NEOLA, UT FIX	*WASATCH, UT VORTAC	15000
*11000 - MCA WASATCH, UT VORTAC , E BND		
WASATCH, UT VORTAC	OGDEN, UT VORTAC	7000
OGDEN, UT VORTAC	*KREBS, UT FIX	9400
*13000 - MRA		
KREBS, UT FIX	BLIDA, UT FIX	9400
BLIDA, UT FIX	MALTT, ID FIX	11400
MALTT, ID FIX	*BURLEY, ID VOR/DME	
	NW BND	**8000
	SE BND	**11400
*9300 - MCA BURLEY, ID VOR/DME , SE BND		
**7400 - MOCA		
BURLEY, ID VOR/DME	*REAPS, ID FIX	7000
*8600 - MCA REAPS, ID FIX , NW BND		
REAPS, ID FIX	HAILEY, ID NDB/DME	8600
HAILEY, ID NDB/DME	SOLDE, ID FIX	8600

95.6102 VOR FEDERAL AIRWAY V102

*SALT FLAT, TX VORTAC	CARLSBAD, NM VORTAC	10800
*10000 - MCA SALT FLAT, TX VORTAC , NE BND		
*CARLSBAD, NM VORTAC	HOBBS, NM VORTAC	5600
*7000 - MCA CARLSBAD, NM VORTAC , SW BND		
HOBBS, NM VORTAC	LUBBOCK, TX VORTAC	*6000
*5400 - MOCA		
LUBBOCK, TX VORTAC	GUTHRIE, TX VORTAC	5000
GUTHRIE, TX VORTAC	*SNEED, TX FIX	**3700
*4000 - MRA		
**3000 - MOCA		
SNEED, TX FIX	*ELECT, TX FIX	2700
*3500 - MRA		
ELECT, TX FIX	WICHITA FALLS, TX VORTAC	2700

95.6103 VOR FEDERAL AIRWAY V103

CHESTERFIELD, SC VOR/DME	GREENSBORO, NC VORTAC	2500
GREENSBORO, NC VORTAC	HENBY, VA FIX	3500

FROM	TO	MEA

95.6103 VOR FEDERAL AIRWAY V103 - CONTINUED

HENBY, VA FIX	TABER, VA FIX	5100
TABER, VA FIX	ROANOKE, VA VORTAC	5600
ROANOKE, VA VORTAC	*NATTS, WV FIX	5600
*6000 - MRA		
NATTS, WV FIX	VELLI, WV FIX	7000
VELLI, WV FIX	ELKINS, WV VORTAC	*7000
*6400 - MOCA		
ELKINS, WV VORTAC	CLARKSBURG, WV VOR/DME	*5000
*3900 - MOCA		
CLARKSBURG, WV VOR/DME	BELLAIRE, OH VOR/DME	#3400
#CKB R-335 UNUSABLE BELOW 9000, USE AIR R-158.		
BELLAIRE, OH VOR/DME	ATWOO, OH FIX	*6000
*3000 - MOCA		
ATWOO, OH FIX	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	U.S. CANADIAN BORDER	*9000
*2700 - MOCA		
U.S. CANADIAN BORDER	DETROIT, MI VOR/DME	*4000
*2700 - MOCA		
DETROIT, MI VOR/DME	PONTIAC, MI VORTAC	*3000
*2400 - MOCA		
PONTIAC, MI VORTAC	LANSING, MI VORTAC	3000

95.6104 VOR FEDERAL AIRWAY V104

U.S. CANADIAN BORDER	MASSENA, NY VORTAC	#*2100
*1600 - MOCA		
#GNSS MEA ONLY		
MASSENA R-314 UNUSABLE GNSS REQUIRED		
MASSENA, NY VORTAC	MALAE, NY FIX	#*3500
*2700 - MOCA		
#GNSS MEA ONLY		
MASSENA R-119 UNUSABLE. GNSS REQUIRED		
MALAE, NY FIX	PLATTSBURGH, NY VORTAC	*7000
*6100 - MOCA		
*6100 - GNSS MEA		
PLATTSBURGH, NY VORTAC	BURLINGTON, VT VOR/DME	2600
BURLINGTON, VT VOR/DME	MONTPELIER, VT VOR/DME	6000
MONTPELIER, VT VOR/DME	AYZOO, NH FIX	*5400
*4800 - MOCA		
AYZOO, NH FIX	BERLIN, NH VOR/DME	*7000
*5600 - MOCA		
BERLIN, NH VOR/DME	ANSYN, ME FIX	6500
ANSYN, ME FIX	BANGOR, ME VORTAC	4000

95.6105 VOR FEDERAL AIRWAY V105

TUCSON, AZ VORTAC	STANFIELD, AZ VORTAC	*8000
*6700 - MOCA		
STANFIELD, AZ VORTAC	PHOENIX, AZ VORTAC	5000
PHOENIX, AZ VORTAC	KARLO, AZ FIX	10000
KARLO, AZ FIX	DRAKE, AZ VORTAC	*12000
*10000 - MOCA		
*10000 - GNSS MEA		
DRAKE, AZ VORTAC	WINDS, AZ FIX	10000
WINDS, AZ FIX	BOULDER CITY, NV VORTAC	*7000
*6000 - MOCA		
BOULDER CITY, NV VORTAC	*LAS VEGAS, NV VORTAC	6000
*8500 - MCA LAS VEGAS, NV VORTAC , W BND		

95.6105 VOR FEDERAL AIRWAY V105 - CONTINUED

FROM	TO	MEA
LAS VEGAS, NV VORTAC	*HARLS, NV FIX	
	W BND	10500
	E BND	7000
*11000 - MRA		
HARLS, NV FIX	LUCKY, NV FIX	10500
LUCKY, NV FIX	*HIDEN, CA FIX	14000
*14000 - MRA		
HIDEN, CA FIX	BEATTY, NV VORTAC	
	NW BND	*11000
	SE BND	*12000
*8400 - MOCA		
BEATTY, NV VORTAC	COALDALE, NV VORTAC	*11000
*9600 - MOCA		
COALDALE, NV VORTAC	*YERIN, NV FIX	**14000
*12500 - MCA YERIN, NV FIX , SE BND		
**11200 - MOCA		
YERIN, NV FIX	CHIME, NV FIX	
	NW BND	10000
	SE BND	11500
CHIME, NV FIX	MUSTANG, NV VORTAC	10000

95.6106 VOR FEDERAL AIRWAY V106

FROM	TO	MEA
JOHNSTOWN, PA VORTAC	HUDON, PA FIX	*5000
*4500 - MOCA		
HUDON, PA FIX	RASHE, PA FIX	*7000
*4000 - MOCA		
*4000 - GNSS MEA		
RASHE, PA FIX	SELINSGROVE, PA VORTAC	*14000
*4000 - GNSS MEA		
SELINSGROVE, PA VORTAC	DIANO, PA FIX	3700
DIANO, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	LAKE HENRY, PA VORTAC	4000
LAKE HENRY, PA VORTAC	WEARD, NY FIX	4000
WEARD, NY FIX	*WEETS, NY FIX	6000
*6000 - MRA		MAA - 14500
WEETS, NY FIX	PAWLING, NY VOR/DME	4000
PAWLING, NY VOR/DME	COBOL, MA FIX	*4000
*3500 - MOCA		
COBOL, MA FIX	BARNES, MA VORTAC	*3500
*3000 - MOCA		
BARNES, MA VORTAC	GARDNER, MA VOR/DME	*3500
*3000 - MOCA		
GARDNER, MA VOR/DME	MANCHESTER, NH VOR/DME	4000
MANCHESTER, NH VOR/DME	RAYMY, NH FIX	*2600
*2100 - MOCA		
RAYMY, NH FIX	KENNEBUNK, ME VORTAC	*5500
*2200 - MOCA		
*3000 - GNSS MEA		

95.6107 VOR FEDERAL AIRWAY V107

FROM	TO	MEA
LOS ANGELES, CA VORTAC	STABO, CA FIX	2500
STABO, CA FIX	*SANTA MONICA, CA VOR/DME	3000
*3700 - MCA SANTA MONICA, CA VOR/DME , W BND		
SANTA MONICA, CA VOR/DME	*FILLMORE, CA VORTAC	5000
*7500 - MCA FILLMORE, CA VORTAC , NW BND		
FILLMORE, CA VORTAC	PIRUE, CA FIX	
	SE BND	*8000
	NW BND	*9000
*7200 – MOCA		

FROM	TO	MEA

95.6107 VOR FEDERAL AIRWAY V107 - CONTINUED

FROM	TO	MEA
PIRUE, CA FIX	REYES, CA FIX	*11000
*9200 – MOCA		
REYES, CA FIX	DERBB, CA FIX	11000
DERBB, CA FIX	AVENAL, CA VORTAC	*7000
*6500 - MOCA		
AVENAL, CA VORTAC	*PANOCHE, CA VORTAC	7000
*5500 - MCA PANOCHE, CA VORTAC , SE BND		
PANOCHE, CA VORTAC	*CATHE, CA FIX	**7000
*7000 - MCA CATHE, CA FIX , NW BND		
**5700 - MOCA		
CATHE, CA FIX	VINCO, CA FIX	*7000
*6400 - MOCA		
VINCO, CA FIX	MABRY, CA FIX	
	S BND	7000
	N BND	6000
MABRY, CA FIX	MISON, CA FIX	
	N BND	5500
	S BND	7000
MISON, CA FIX	IMPLY, CA FIX	
	SE BND	7000
	NW BND	4500
IMPLY, CA FIX	OAKLAND, CA VORTAC	
	SE BND	7000
	NW BND	4000
OAKLAND, CA VORTAC	COMMO, CA FIX	*5000
*4000 - MOCA		
COMMO, CA FIX	POINT REYES, CA VORTAC	5000
POINT REYES, CA VORTAC	BOARS, CA FIX	5000

95.6108 VOR FEDERAL AIRWAY V108

FROM	TO	MEA
SANTA ROSA, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	4500
SCAGGS ISLAND, CA VORTAC	CONCORD, CA VOR/DME	3000
CONCORD, CA VOR/DME	OAKEY, CA FIX	3500
OAKEY, CA FIX	LINDEN, CA VORTAC	2000
MEEKER, CO VOR/DME	RED TABLE, CO VOR/DME	*14000
*12800 - MOCA		
RED TABLE, CO VOR/DME	*STAMY, CO FIX	16400
*12300 - MCA STAMY, CO FIX , W BND		
STAMY, CO FIX	*BLACK FOREST, CO VOR/DME	12000
*10700 - MCA BLACK FOREST, CO VOR/DME , W BND		
BLACK FOREST, CO VOR/DME	ADANE, CO FIX	9500
ADANE, CO FIX	HUGO, CO VOR/DME	9000
HUGO, CO VOR/DME	GOODLAND, KS VORTAC	*7000
*6300 - MOCA		
GOODLAND, KS VORTAC	HILL CITY, KS VORTAC	5500

95.6109 VOR FEDERAL AIRWAY V109

FROM	TO	MEA
PANOCHE, CA VORTAC	VOLTA, CA FIX	5000
VOLTA, CA FIX	#MANTECA, CA VOR/DME	*3000
*3000 - GNSS MEA		
#MANTECA R-147 UNUSABLE		
MANTECA, CA VOR/DME	BYRON, CA FIX	2000
BYRON, CA FIX	ALTAM, CA FIX	
	W BND	4500
	E BND	3500
ALTAM, CA FIX	*SALAD, CA FIX	5000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	OAKLAND, CA VORTAC	4000

FROM	TO	MEA

95.6110 VOR FEDERAL AIRWAY V110

DEMING, NM VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	8000

95.6111 VOR FEDERAL AIRWAY V111

BIG SUR, CA VORTAC	SALINAS, CA VORTAC	7000
SALINAS, CA VORTAC	CATHE, CA FIX	5500
CATHE, CA FIX	KARNN, CA FIX	5500
KARNN, CA FIX	PATYY, CA FIX	5000
PATYY, CA FIX	MODESTO, CA VOR/DME	*3000
*1500 - MOCA		

95.6112 VOR FEDERAL AIRWAY V112

HOQUIAM, WA VORTAC	ILWAC, WA FIX	2500
ILWAC, WA FIX	ASTORIA, OR VOR/DME	3000
ASTORIA, OR VOR/DME	PITER, OR FIX	5000
PITER, OR FIX	*BATTLE GROUND, WA VORTAC	
	E BND	4000
	W BND	5000
*4700 - MCA BATTLE GROUND, WA VORTAC , E BND		
BATTLE GROUND, WA VORTAC	GYMME, WA FIX	
	E BND	7000
	W BND	6500
GYMME, WA FIX	KLICKITAT, OR VOR/DME	*7000
*6400 - MOCA		
KLICKITAT, OR VOR/DME	*LOAMS, OR FIX	5300
*6000 - MRA		
LOAMS, OR FIX	*ECHOD, OR FIX	4000
*6000 - MRA		
ECHOD, OR FIX	PENDLETON, OR VORTAC	4000
PENDLETON, OR VORTAC	LYLES, WA FIX	4000
LYLES, WA FIX	*RODNA, WA FIX	**5000
*6000 - MRA		
**4400 - MOCA		
RODNA, WA FIX	SPOKANE, WA VORTAC	5000
SPOKANE, WA VORTAC	DIANN, WA FIX	
	SW BND	*7000
	NE BND	*11000
*5500 - MOCA		
DIANN, WA FIX	U.S. CANADIAN BORDER	*11000
*9700 - MOCA		

95.6113 VOR FEDERAL AIRWAY V113

MORRO BAY, CA VORTAC	PASO ROBLES, CA VORTAC	5000
PASO ROBLES, CA VORTAC	PRIEST, CA VOR	6000
PRIEST, CA VOR	*PANOCHE, CA VORTAC	7000
*5500 - MCA PANOCHE, CA VORTAC , SE BND		
PANOCHE, CA VORTAC	VOLTA, CA FIX	5000
VOLTA, CA FIX	#MANTECA, CA VOR/DME	*3000
*3000 - GNSS MEA		
#MANTECA R-147 UNUSABLE		
MANTECA, CA VOR/DME	LINDEN, CA VORTAC	2000
*LINDEN, CA VORTAC	KATSO, CA FIX	5000
*4000 - MCA LINDEN, CA VORTAC , NE BND		
*KATSO, CA FIX	SPOOK, CA FIX	10500
*9000 - MCA KATSO, CA FIX , NE BND		

FROM	TO	MEA

95.6113 VOR FEDERAL AIRWAY V113 - CONTINUED

*SPOOK, CA FIX	RICHY, CA FIX	**15000
*15000 - MCA SPOOK, CA FIX , N BND		
**12000 – MOCA		
RICHY, CA FIX	*MUSTANG, NV VORTAC	13000
*10500 - MCA MUSTANG, NV VORTAC , S BND		
MUSTANG, NV VORTAC	NICER, NV FIX	10300
NICER, NV FIX	ROBUD, NV FIX	*12000
*10600 - MOCA		
ROBUD, NV FIX	SOD HOUSE, NV VORTAC	*10000
*9000 - MOCA		
SOD HOUSE, NV VORTAC	ROME, OR VOR/DME	10000
ROME, OR VOR/DME	*RENOL, ID FIX	9400
*7300 - MCA RENOL, ID FIX , SW BND		
RENOL, ID FIX	*BOISE, ID VORTAC	6000
*8200 - MCA BOISE, ID VORTAC , NE BND		
BOISE, ID VORTAC	SALMON, ID VOR/DME	16500
SALMON, ID VOR/DME	SLIPP, MT FIX	13000
SLIPP, MT FIX	*COPPERTOWN, MT VOR/DME	
	SW BND	13000
	NE BND	11000
*10200 - MCA COPPERTOWN, MT VOR/DME , SW BND		
COPPERTOWN, MT VOR/DME	HELENA, MT VORTAC	*13000
*10800 - MOCA		
HELENA, MT VORTAC	LEWISTOWN, MT VOR/DME	11100

95.6114 VOR FEDERAL AIRWAY V114

PANHANDLE, TX VORTAC	CAUDE, TX FIX	*5400
*4900 - MOCA		
CAUDE, TX FIX	*DOGIN, TX FIX	5000
*6500 - MRA		
DOGIN, TX FIX	CHILDRESS, TX VORTAC	*5000
*4500 - MOCA		
CHILDRESS, TX VORTAC	VASTY, TX FIX	3700
VASTY, TX FIX	WICHITA FALLS, TX VORTAC	3200
WICHITA FALLS, TX VORTAC	BONHAM, TX VORTAC	3000
BONHAM, TX VORTAC	QUITMAN, TX VOR/DME	2500
QUITMAN, TX VOR/DME	GREGG COUNTY, TX VORTAC	2400
GREGG COUNTY, TX VORTAC	CARTH, TX FIX	2300
CARTH, TX FIX	EXITE, LA FIX	*3000
*1700 - MOCA		
EXITE, LA FIX	COVEX, LA FIX	*3500
*1700 - MOCA		
COVEX, LA FIX	*NUBOY, LA FIX	**4500
*6000 - MRA		
**1700 – MOCA		
NUBOY, LA FIX	BOYCE, LA FIX	
	SE BND	2000
	NW BND	4500
BOYCE, LA FIX	ALEXANDRIA, LA VORTAC	2000
ALEXANDRIA, LA VORTAC	*MIKLE, LA FIX	2000
*3000 - MRA		
MIKLE, LA FIX	BATON ROUGE, LA VORTAC	2000
BATON ROUGE, LA VORTAC	VEILS, LA FIX	2800
VEILS, LA FIX	RESERVE, LA VOR/DME	2000
RESERVE, LA VOR/DME	GULFPORT, MS VORTAC	2000
GULFPORT, MS VORTAC	*MINDO, MS FIX	**6000
*6000 - MRA		
**2000 - GNSS MEA		
MINDO, MS FIX	EATON, MS VORTAC	*6000
*2000 - GNSS MEA		

95.6115 VOR FEDERAL AIRWAY V115

FROM	TO	MEA
CRESTVIEW, FL VORTAC	PIGON, AL FIX	2500
PIGON, AL FIX	*REDDI, AL FIX	2500
*5500 - MRA		
REDDI, AL FIX	MONTGOMERY, AL VORTAC	2500
MONTGOMERY, AL VORTAC	BEING, AL FIX	2000
BEING, AL FIX	VULCAN, AL VORTAC	3000
VULCAN, AL VORTAC	WILED, AL FIX	3500
WILED, AL FIX	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	ETOWA, TN FIX	3000
ETOWA, TN FIX	GROSS, TN FIX	3100
GROSS, TN FIX	VOLUNTEER, TN VORTAC	3000
VOLUNTEER, TN VORTAC	MALIN, TN FIX	4500
MALIN, TN FIX	ROSAR, KY FIX	5000
ROSAR, KY FIX	HAZARD, KY VOR/DME	5200
HAZARD, KY VOR/DME	WHIRL, WV FIX	4000
WHIRL, WV FIX	CHARLESTON, WV VORTAC	3000
CHARLESTON, WV VORTAC	*MORAN, WV FIX	3000
*3500 - MRA		
MORAN, WV FIX	PARKERSBURG, WV VORTAC	3000
PARKERSBURG, WV VORTAC	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	ATWOO, OH FIX	3000
ATWOO, OH FIX	CAPEL, OH FIX	*6000
*3500 - MOCA		
CAPEL, OH FIX	FRANKLIN, PA VOR	3500
FRANKLIN, PA VOR	TIDIOUTE, PA VORTAC	3800
TIDIOUTE, PA VORTAC	JAMESTOWN, NY VOR/DME	*4000
*3400 - MOCA		
JAMESTOWN, NY VOR/DME	LANGS, NY FIX	3900
LANGS, NY FIX	BUFFALO, NY VOR/DME	*11000
*3500 - MOCA		
*5000 - GNSS MEA		

95.6116 VOR FEDERAL AIRWAY V116

FROM	TO	MEA
WILLA, IL FIX	*NEPTS, MI FIX	**4000
*3000 - MRA		
**1800 - MOCA		
NEPTS, MI FIX	KEELER, MI VOR/DME	2400
KEELER, MI VOR/DME	KALAMAZOO, MI VOR/DME	2600
KALAMAZOO, MI VOR/DME	JACKSON, MI VOR/DME	2700
JACKSON, MI VOR/DME	SALEM, MI VORTAC	3000
SALEM, MI VORTAC	U.S. CANADIAN BORDER	*3000
*2400 – MOCA		
U.S. CANADIAN BORDER	*TRACE, OH FIX	**7000
*11000 - MRA		
**1900 - MOCA		
TRACE, OH FIX	ERIE, PA VORTAC	*3000
*2200 - MOCA		
ERIE, PA VORTAC	BRADFORD, PA VOR/DME	4000
BRADFORD, PA VOR/DME	STONYFORK, PA VOR/DME	4500
STONYFORK, PA VOR/DME	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	SPARTA, NJ VORTAC	4000

95.6117 VOR FEDERAL AIRWAY V117

FROM	TO	MEA
PARKERSBURG, WV VORTAC	BELLAIRE, OH VOR/DME	3000
BELLAIRE, OH VOR/DME	WISKE, WV FIX	3300

95.6118 VOR FEDERAL AIRWAY V118

FROM	TO	MEA
MEDICINE BOW, WY VOR/DME	LARAMIE, WY VOR/DME	9400
LARAMIE, WY VOR/DME	*SENSE, WY FIX	11000
*9900 - MCA SENSE, WY FIX , W BND		
SENSE, WY FIX	CHEYENNE, WY VORTAC	8800

95.6119 VOR FEDERAL AIRWAY V119

FROM	TO	MEA
NEWCOMBE, KY VORTAC	CROUP, OH FIX	2800
CROUP, OH FIX	HENDERSON, WV VORTAC	*5500
*2400 - MOCA		
*2800 - GNSS MEA		
HENDERSON, WV VORTAC	*JACEE, WV FIX	2700
*3500 - MRA		
JACEE, WV FIX	PARKERSBURG, WV VORTAC	2700
PARKERSBURG, WV VORTAC	ANTIO, OH FIX	3000
ANTIO, OH FIX	BURGS, WV FIX	3400
BURGS, WV FIX	OTOWN, PA FIX	*3700
*3100 - MOCA		
OTOWN, PA FIX	INDIAN HEAD, PA VORTAC	*5000
*4400 - MOCA		
INDIAN HEAD, PA VORTAC	QUARY, PA FIX	*5000
*4500 - MOCA		
QUARY, PA FIX	TALLS, PA FIX	4000
TALLS, PA FIX	CLARION, PA VOR/DME	*3700
*3200 - MOCA		
CLARION, PA VOR/DME	BRADFORD, PA VOR/DME	#4200
# BFD R-232 UNUSABLE. USE CIP R-050.		
BRADFORD, PA VOR/DME	WELLSVILLE, NY VORTAC	*4500
*4000 - MOCA		
WELLSVILLE, NY VORTAC	BURST, NY FIX	4500
BURST, NY FIX	GENESEO, NY VOR/DME	4000
GENESEO, NY VOR/DME	ROCHESTER, NY VOR/DME	2800

95.6120 VOR FEDERAL AIRWAY V120

FROM	TO	MEA
*SEATTLE, WA VORTAC	TAGOR, WA FIX	
	E BND	**8500
	W BND	**5000
*6300 - MCA SEATTLE, WA VORTAC , E BND		
**5000 - MOCA		
TAGOR, WA FIX	CASHS, WA FIX	*12000
*11400 - MOCA		
CASHS, WA FIX	*WENATCHEE, WA VOR/DME	
	E BND	**7500
	W BND	**12000
*8200 - MCA WENATCHEE, WA VOR/DME , W BND		
**6700 - MOCA		
WENATCHEE, WA VOR/DME	EPHRATA, WA VORTAC	5500
EPHRATA, WA VORTAC	WIPES, WA FIX	4000
WIPES, WA FIX	*SPOKANE, WA VORTAC	5000
*5200 - MCA SPOKANE, WA VORTAC , E BND		
SPOKANE, WA VORTAC	KARPS, ID FIX	
	E BND	*9000
	W BND	*8000
*7200 - MOCA		
KARPS, ID FIX	MULLAN PASS, ID VOR/DME	9100
MULLAN PASS, ID VOR/DME	CHARL, MT FIX	*13000
*9600 - MOCA		

95.6120 VOR FEDERAL AIRWAY V120 - CONTINUED

CHARL, MT FIX	*SHIMY, MT FIX	**13000
*7000 - MRA		
*7900 - MCA SHIMY, MT FIX , W BND		
**12100 - MOCA		
SHIMY, MT FIX	GREAT FALLS, MT VORTAC	6800
GREAT FALLS, MT VORTAC	LEWISTOWN, MT VOR/DME	8400
LEWISTOWN, MT VOR/DME	ESTRO, MT FIX	7700
ESTRO, MT FIX	MILES CITY, MT VOR/DME	*9000
*7500 - MOCA		
MILES CITY, MT VOR/DME	DUPREE, SD VORTAC	*10000
*6600 - MOCA		
DUPREE, SD VORTAC	PIERRE, SD VORTAC	*4300
*3700 - MOCA		
PIERRE, SD VORTAC	MITCHELL, SD VOR/DME	*3900
*3400 - MOCA		
MITCHELL, SD VOR/DME	FRYRE, SD FIX	3700
FRYRE, SD FIX	SIOUX FALLS, SD VORTAC	3700
SIOUX FALLS, SD VORTAC	BILOO, IA FIX	3600
BILOO, IA FIX	*GRUVE, IA FIX	**6800
*8000 - MRA		
**2900 - MOCA		
GRUVE, IA FIX	BANCO, IA FIX	6800
BANCO, IA FIX	MASON CITY, IA VORTAC	3000
MASON CITY, IA VORTAC	*AREDA, IA FIX	3000
*3500 - MRA		
AREDA, IA FIX	*SEATS, IA FIX	3000
*3500 - MRA		
SEATS, IA FIX	WATERLOO, IA VORTAC	3000

95.6121 VOR FEDERAL AIRWAY V121

FORT JONES, CA VOR/DME	*BAYTS, OR FIX	**10000
*10000 - MRA		
*9000 - MCA BAYTS, OR FIX , S BND		
**9400 - MOCA		
BAYTS, OR FIX	ROGUE VALLEY, OR VORTAC	*8000
*7500 – MOCA		
ROGUE VALLEY, OR VORTAC	MOURN, OR FIX	7000
MOURN, OR FIX	*ROSEBURG, OR VOR/DME	
	W BND	5500
	E BND	7000
*5700 - MCA ROSEBURG, OR VOR/DME , E BND		
ROSEBURG, OR VOR/DME	NORTH BEND, OR VORTAC	5000
NORTH BEND, OR VORTAC	*SCOTY, OR FIX	
	NE BND	5000
	SW BND	4200
*5500 - MRA		
SCOTY, OR FIX	*VAUGN, OR FIX	**5000
*7000 - MRA		
**4500 - MOCA		
VAUGN, OR FIX	*EUGENE, OR VORTAC	
	NE BND	4000
	SW BND	5000
*3700 - MCA EUGENE, OR VORTAC , NE BND		
EUGENE, OR VORTAC	DOSEE, OR FIX	
	NE BND	6000
	SW BND	5200
DOSEE, OR FIX	*VIDAS, OR FIX	
	NE BND	8000
	SW BND	6000
*8800 - MCA VIDAS, OR FIX , NE BND		

95.6121 VOR FEDERAL AIRWAY V121 – CONTINUED

FROM	TO	MEA
VIDAS, OR FIX	WHIFF, OR FIX	
	NE BND	*13000
	SW BND	*9000
*7500 - MOCA		
*8000 - GNSS MEA		
WHIFF, OR FIX	SNOKY, OR FIX	*13000
*12200 - MOCA		
SNOKY, OR FIX	*DESCHUTES, OR VORTAC	
	NE BND	8000
	SW BND	13000
*10000 - MCA DESCHUTES, OR VORTAC , SW BND		
DESCHUTES, OR VORTAC	JABOT, OR FIX	
	NE BND	9000
	SW BND	7000
JABOT, OR FIX	KIMBERLY, OR VORTAC	9000
KIMBERLY, OR VORTAC	*BAKER CITY, OR VOR/DME	12000
*10000 - MCA BAKER CITY, OR VOR/DME , SW BND		
BAKER CITY, OR VOR/DME	DONNELLY, ID VOR/DME	11000
DONNELLY, ID VOR/DME	SALMON, ID VOR/DME	12000
SALMON, ID VOR/DME	NOSEY, MT FIX	12000
NOSEY, MT FIX	DILLON, MT VOR/DME	
	E BND	*10000
	W BND	*12000
*9100 - MOCA		

95.6122 VOR FEDERAL AIRWAY V122

FROM	TO	MEA
CRESCENT CITY, CA VORTAC	REFIX, CA FIX	
	SW BND	4000
	NE BND	8000
REFIX, CA FIX	OBRIN, OR FIX	
	NE BND	8000
	SW BND	6000
OBRIN, OR FIX	*PAPLE, OR FIX	8000
*10100 – MRA		
PAPLE, OR FIX	GNATS, OR FIX	8000
GNATS, OR FIX	ROGUE VALLEY, OR VORTAC	
	SW BND	8000
	NE BND	5500
ROGUE VALLEY, OR VORTAC	BRUTE, OR FIX	
	E BND	9000
	W BND	5000
BRUTE, OR FIX	LANKS, OR FIX	
	W BND	*6500
	E BND	*9000
*5800 - MOCA		
LANKS, OR FIX	KLAMATH FALLS, OR VORTAC	*9000
*8500 - MOCA		
KLAMATH FALLS, OR VORTAC	LAKEVIEW, OR VORTAC	9600
LAKEVIEW, OR VORTAC	ROME, OR VOR/DME	12000

95.6123 VOR FEDERAL AIRWAY V123

FROM	TO	MEA
MITCH, MD FIX	SWANN, MD FIX	*5500
*3000 - GNSS MEA		
SWANN, MD FIX	TACKS, MD FIX	*7000
*4000 - GNSS MEA		

FROM	TO	MEA

95.6123 VOR FEDERAL AIRWAY V123 - CONTINUED

FROM	TO	MEA
TACKS, MD FIX	WOODSTOWN, NJ VORTAC	*2000
*1500 – MOCA		
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	*3000
*2000 - MOCA		
ROBBINSVILLE, NJ VORTAC	MINKS, NJ FIX	2000
MINKS, NJ FIX	LA GUARDIA, NY VOR/DME	2600
LA GUARDIA, NY VOR/DME	FAMMA, NY FIX	2000
FAMMA, NY FIX	HAARP, CT FIX	3000
HAARP, CT FIX	*RYMES, CT FIX	**5000
*5000 - MRA		
**2000 - MOCA		
**3000 - GNSS MEA		
RYMES, CT FIX	CARMEL, NY VOR/DME	2500
CARMEL, NY VOR/DME	*WIGAN, NY FIX	3000
*4500 - MRA		
WIGAN, NY FIX	GROUP, NY FIX	*8000
*3000 - GNSS MEA		
GROUP, NY FIX	ALBANY, NY VORTAC	*6000
*2300 - MOCA		
*2800 - GNSS MEA		
ALBANY, NY VORTAC	*CAMBRIDGE, NY VOR/DME	#**4000
*4500 - MCA CAMBRIDGE, NY	VOR/DME , N BND	
**3000 - MOCA		
#ALB R-067 UNUSABLE.		
CAMBRIDGE, NY VOR/DME	GLENS FALLS, NY VORTAC	4500

95.6124 VOR FEDERAL AIRWAY V124

FROM	TO	MEA
BONHAM, TX VORTAC	PARIS, TX VOR/DME	2400
PARIS, TX VOR/DME	DEENS, AR FIX	*4000
*2000 - MOCA		
DEENS, AR FIX	HOT SPRINGS, AR VOR/DME	*5000
*2600 - MOCA		
HOT SPRINGS, AR VOR/DME	LONNS, AR FIX	3000
LONNS, AR FIX	LITTLE ROCK, AR VORTAC	*2500
*1900 – MOCA		
LITTLE ROCK, AR VORTAC	TAFTE, AR FIX	*4000
*1600 - MOCA		
TAFTE, AR FIX	*HILLE, AR FIX	**6000
*6000 - MRA		
**1500 - MOCA		
HILLE, AR FIX	GILMORE, AR VOR/DME	*4000
*1700 - MOCA		
GILMORE, AR VOR/DME	JACKS CREEK, TN VOR/DME	*3000
*2300 - MOCA		
JACKS CREEK, TN VOR/DME	GRAHAM, TN VORTAC	2500

95.6125 VOR FEDERAL AIRWAY V125

FROM	TO	MEA
CAPE GIRARDEAU, MO VOR/DME	NIKEL, IL FIX	3500
NIKEL, IL FIX	BURCK, IL FIX	*4500
*2300 - MOCA		
BURCK, IL FIX	ST LOUIS, MO VORTAC	*3500
*2600 - MOCA		

FROM	TO	MEA

95.6126 VOR FEDERAL AIRWAY V126

BEARZ, IN FIX	HALIE, IN FIX	3000
HALIE, IN FIX	INKEN, IN FIX	*4000
*2300 - MOCA		
INKEN, IN FIX	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	BAGEL, IN FIX	2700
BAGEL, IN FIX	EDGEE, OH FIX	*3000
*2400 - MOCA		
EDGEE, OH FIX	WATERVILLE, OH VOR/DME	3000
WATERVILLE, OH VOR/DME	SANDUSKY, OH VOR/DME	3000
SANDUSKY, OH VOR/DME	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	JEFFERSON, OH VOR/DME	3000
JEFFERSON, OH VOR/DME	ERIE, PA VORTAC	2700
ERIE, PA VORTAC	BRADFORD, PA VOR/DME	4000
BRADFORD, PA VOR/DME	STONYFORK, PA VOR/DME	4500
STONYFORK, PA VOR/DME	LAKE HENRY, PA VORTAC	4000
LAKE HENRY, PA VORTAC	SPARTA, NJ VORTAC	4000

95.6127 VOR FEDERAL AIRWAY V127

BRADFORD, IL VORTAC	*WYNET, IL FIX	2700
*3300 - MRA		
WYNET, IL FIX	POLO, IL VOR/DME	2600
POLO, IL VOR/DME	ROCKFORD, IL VOR/DME	2700

95.6128 VOR FEDERAL AIRWAY V128

JANESVILLE, WI VOR/DME	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	KELSI, IL FIX	2700
KELSI, IL FIX	SMARS, IL FIX	3000
SMARS, IL FIX	KANKAKEE, IL VOR/DME	2700
KANKAKEE, IL VOR/DME	KENLA, IN FIX	2400
KENLA, IN FIX	VAGES, IN FIX	2600
VAGES, IN FIX	*POTES, IN FIX	**4000
*4000 - MRA		
**2300 - MOCA		
POTES, IN FIX	JAKKS, IN FIX	*4000
*2300 - MOCA		
JAKKS, IN FIX	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	DECEE, IN FIX	2600
DECEE, IN FIX	CINCINNATI, KY VORTAC	2800
CINCINNATI, KY VORTAC	CALIF, KY FIX	2600
CALIF, KY FIX	YORK, KY VORTAC	4000
YORK, KY VORTAC	CROUP, OH FIX	*3300
*2300 - MOCA		
CROUP, OH FIX	RULEY, WV FIX	3200
RULEY, WV FIX	CHARLESTON, WV VORTAC	3600
CHARLESTON, WV VORTAC	SWIFT, WV FIX	3400
SWIFT, WV FIX	BITES, WV FIX	*5000
*4400 - MOCA		
*4400 - GNSS MEA		
BITES, WV FIX	VELLI, WV FIX	7000
VELLI, WV FIX	BOIER, WV FIX	*8000
*7100 - MOCA		
*7100 - GNSS MEA		
BOIER, WV FIX	LURAY, VA FIX	*10000
*6900 - MOCA		
*6900 - GNSS MEA		
LURAY, VA FIX	CASANOVA, VA VORTAC	6300

FROM	TO	MEA

95.6129 VOR FEDERAL AIRWAY V129

SPINNER, IL VORTAC *2000 - MOCA	PEORIA, IL VORTAC	*2500
PEORIA, IL VORTAC	GENSO, IL FIX	2500
GENSO, IL FIX	DAVENPORT, IA VORTAC	3000
DAVENPORT, IA VORTAC *2300 - MOCA	DUBUQUE, IA VORTAC	*2900
DUBUQUE, IA VORTAC *2600 - MOCA	QUEST, WI FIX	*3100
QUEST, WI FIX	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	EAU CLAIRE, WI VORTAC	3000
EAU CLAIRE, WI VORTAC *3100 - MOCA	DULUTH, MN VORTAC	*4000
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME *3100 - MOCA	INTERNATIONAL FALLS, MN VORTAC	*3600
INTERNATIONAL FALLS, MN	U.S. CANADIAN BORDER	2500

95.6130 VOR FEDERAL AIRWAY V130

ALBANY, NY VORTAC *3900 - MOCA *4000 - GNSS MEA	STELA, MA FIX	*6000
STELA, MA FIX	BRADLEY, CT VORTAC	3900
BRADLEY, CT VORTAC	NORWICH, CT VOR/DME	2600
NORWICH, CT VOR/DME	MINNK, RI FIX	2000
MINNK, RI FIX	FALMA, RI FIX	3000
FALMA, RI FIX	MARTHAS VINEYARD, MA VOR/DME	3000

95.6131 VOR FEDERAL AIRWAY V131

OKMULGEE, OK VOR/DME	TULSA, OK VORTAC	2700
TULSA, OK VORTAC	TYROE, KS FIX	3000
TYROE, KS FIX	CHANUTE, KS VOR/DME	2800
CHANUTE, KS VOR/DME	TOPEKA, KS VORTAC	2900

95.6132 VOR FEDERAL AIRWAY V132

MEDICINE BOW, WY VOR/DME	MOIST, WY FIX	9500
MOIST, WY FIX	CHEYENNE, WY VORTAC	9000
CHEYENNE, WY VORTAC	RAYME, CO FIX	8500
RAYME, CO FIX	AKRON, CO VOR/DME	6800
AKRON, CO VOR/DME	GOODLAND, KS VORTAC	6400
GOODLAND, KS VORTAC	ORION, KS FIX	5500
ORION, KS FIX *10000 - MRA **4200 - MOCA	*RANSO, KS FIX	**10000
RANSO, KS FIX *4400 - MOCA	DISKS, KS FIX	*10000
DISKS, KS FIX *5000 - MRA **3300 - MOCA	*SPELT, KS FIX	**5000
SPELT, KS FIX	HUTCHINSON, KS VOR/DME	3200
HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000
WAIVE, KS FIX *5000 - MRA	*FLOSS, KS FIX	3300
FLOSS, KS FIX *2800 – MOCA	CHANUTE, KS VOR/DME	*5000

95.6132 VOR FEDERAL AIRWAY V132 - CONTINUED

FROM	TO	MEA
CHANUTE, KS VOR/DME	NALLY, KS FIX	2800
NALLY, KS FIX	NASHE, MO FIX	2700
NASHE, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	FORNEY, MO VOR	3000
FORNEY, MO VOR	LENOX, MO FIX	3000

95.6133 VOR FEDERAL AIRWAY V133

FROM	TO	MEA
LINCO, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	4000
BARRETTS MOUNTAIN, NC VOR/DME	MULBE, NC FIX	5400
MULBE, NC FIX	STOVE, VA FIX	7200
STOVE, VA FIX	PINEE, WV FIX	*13000
*7000 - MOCA		
*7000 - GNSS MEA		
PINEE, WV FIX	CHARLESTON, WV VORTAC	*7000
*5000 - MOCA		
*5000 - GNSS MEA		
CHARLESTON, WV VORTAC	ZANESVILLE, OH VOR/DME	3000
ZANESVILLE, OH VOR/DME	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	MANSFIELD, OH VORTAC	3000
MANSFIELD, OH VORTAC	SANDUSKY, OH VOR/DME	3000
SANDUSKY, OH VOR/DME	GEMNI, OH FIX	*3000
*2000 - MOCA		
GEMNI, OH FIX	U.S. CANADIAN BORDER	3400
U.S. CANADIAN BORDER	DETROIT, MI VOR/DME	*3400
*2300 - MOCA		
DETROIT, MI VOR/DME	SALEM, MI VORTAC	*3000
*2300 - MOCA		
SALEM, MI VORTAC	SAGINAW, MI VOR/DME	3000
SAGINAW, MI VOR/DME	WHIPP, MI FIX	2400
WHIPP, MI FIX	*LADIN, MI FIX	**5000
*5000 - MRA		
**2800 - MOCA		
LADIN, MI FIX	BORIN, MI FIX	*5000
*2700 - MOCA		
BORIN, MI FIX	TRAVERSE CITY, MI VORTAC	*5000
*2500 – MOCA		
TRAVERSE CITY, MI VORTAC	ESCANABA, MI VOR/DME	*5000
*2700 - MOCA		
ESCANABA, MI VOR/DME	SAWYER, MI VOR/DME	2800
SAWYER, MI VOR/DME	HOUGHTON, MI VOR/DME	*4500
*3400 - MOCA		
HOUGHTON, MI VOR/DME	U.S. CANADIAN BORDER	*3100
*2500 - MOCA		
U.S. CANADIAN BORDER	INTERNATIONAL FALLS, MN VORTAC	*3000
*2500 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6134 VOR FEDERAL AIRWAY V134

FROM	TO	MEA
*FAIRFIELD, UT VORTAC	CARBON, UT VOR/DME	#13000
*10800 - MCA FAIRFIELD, UT VORTAC , E BND		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		

FROM	TO	MEA

95.6134 VOR FEDERAL AIRWAY V134 - CONTINUED

*CARBON, UT VOR/DME	GRAND JUNCTION, CO VOR/DME	
	W BND	11900
*10200 - MCA CARBON, UT VOR/DME , W BND		
GRAND JUNCTION, CO VOR/DME	*PACES, CO FIX	11500
*13000 - MRA		
PACES, CO FIX	#SLOLM, CO FIX	13000
#MTA V134 NE TO V220 NW 12900		
SLOLM, CO FIX	*GLENO, CO FIX	14000
*16000 - MRA		
GLENO, CO FIX	RED TABLE, CO VOR/DME	14000
RED TABLE, CO VOR/DME	HERLS, CO FIX	
	E BND	16000
	W BND	14000
HERLS, CO FIX	*FUNDS, CO FIX	16000
*16500 - MRA		
FUNDS, CO FIX	BREWS, CO FIX	16500
BREWS, CO FIX	*FALCON, CO VORTAC	
	W BND	16500
	E BND	10000
*11600 - MCA FALCON, CO VORTAC , W BND		

95.6135 VOR FEDERAL AIRWAY V135

BARD, AZ VORTAC	BLYTHE, CA VORTAC	*5000
*3900 - MOCA		
BLYTHE, CA VORTAC	PARKER, CA VORTAC	5400
PARKER, CA VORTAC	NEEDLES, CA VORTAC	6000
NEEDLES, CA VORTAC	*GOFFS, CA VORTAC	
	NW BND	8000
	SE BND	6300
*8600 - MCA GOFFS, CA VORTAC , NW BND		
GOFFS, CA VORTAC	*WHIGG, CA FIX	**12000
*12000 - MRA		
**9500 - MOCA		
WHIGG, CA FIX	CLARR, CA FIX	*12000
*9900 – MOCA		
CLARR, CA FIX	*HIDEN, CA FIX	**12000
*14000 - MRA		
**8500 - MOCA		
HIDEN, CA FIX	BEATTY, NV VORTAC	
	NW BND	*11000
	SE BND	*12000
*8400 - MOCA		
BEATTY, NV VORTAC	TEZUM, NV FIX	*11000
*9600 - MOCA		
TEZUM, NV FIX	TONOPAH, NV VORTAC	11000

95.6136 VOR FEDERAL AIRWAY V136

HINCH MOUNTAIN, TN VORTAC	SWELL, TN FIX	5000
SWELL, TN FIX	VOLUNTEER, TN VORTAC	3000
VOLUNTEER, TN VORTAC	AUBRY, TN FIX	5000
AUBRY, TN FIX	*PITTE, TN FIX	6000
*7000 - MCA PITTE, TN FIX , E BND		
PITTE, TN FIX	AFTEN, TN FIX	7000
AFTEN, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	6000

FROM	TO	MEA

95.6136 VOR FEDERAL AIRWAY V136 - CONTINUED

HOLSTON MOUNTAIN, TN VORTAC	DAMAS, TN FIX	6000
DAMAS, TN FIX	STOVE, VA FIX	7500
STOVE, VA FIX	SPEEL, VA FIX	6000
SPEEL, VA FIX	PULASKI, VA VORTAC	5400
PULASKI, VA VORTAC	PIGGS, VA FIX	5500
PIGGS, VA FIX	DUNCE, VA FIX	3500
DUNCE, VA FIX	SOUTH BOSTON, VA VORTAC	2800
SOUTH BOSTON, VA VORTAC	*ALDAN, NC FIX	2600
*3000 - MRA		
ALDAN, NC FIX	RALEIGH/DURHAM, NC VORTAC	2600
RALEIGH/DURHAM, NC VORTAC	LANHO, NC FIX	3000
LANHO, NC FIX	FAYETTEVILLE, NC VOR/DME	2000
FAYETTEVILLE, NC VOR/DME	GRAND STRAND, SC VORTAC	*3000
*2100 - MOCA		

95.6137 VOR FEDERAL AIRWAY V137

IMPERIAL, CA VORTAC	*BRAWL, CA FIX	**3700
*4500 - MRA		
**2300 - MOCA		
BRAWL, CA FIX	HENOM, CA FIX	3700
HENOM, CA FIX	THERMAL, CA VORTAC	3900
THERMAL, CA VORTAC	*PALM SPRINGS, CA VORTAC	4000
*11200 - MCA PALM SPRINGS, CA VORTAC , NW BND		
PALM SPRINGS, CA VORTAC	*WHETO, CA FIX	
	NW BND	**12000
	SE BND	**7000
*12400 - MCA WHETO, CA FIX , NW BND		
**6000 - MOCA		
WHETO, CA FIX	MORON, CA FIX	
	SE BND	12000
	NW BND	13500
MORON, CA FIX	*ARRAN, CA FIX	13500
*12000 - MCA ARRAN, CA FIX , E BND		
ARRAN, CA FIX	*PALMDALE, CA VORTAC	10700
*7000 - MCA PALMDALE, CA VORTAC , E BND		
PALMDALE, CA VORTAC	VICKY, CA FIX	*8000
*5800 – MOCA		
VICKY, CA FIX	JEFFY, CA FIX	
	E BND	8000
	W BND	9000
JEFFY, CA FIX	GORMAN, CA VORTAC	
	E BND	8000
	W BND	10100
GORMAN, CA VORTAC	*TAFTO, CA FIX	10000
*9000 - MCA TAFTO, CA FIX , SE BND		
TAFTO, CA FIX	AVENAL, CA VORTAC	
	SE BND	5500
	NW BND	4500
AVENAL, CA VORTAC	PRIEST, CA VOR	6500
PRIEST, CA VOR	SALINAS, CA VORTAC	6000

95.6138 VOR FEDERAL AIRWAY V138

RIVERTON, WY VOR/DME	HUNTZ, WY FIX	9000
HUNTZ, WY FIX	MEDICINE BOW, WY VOR/DME	11200
MEDICINE BOW, WY VOR/DME	MILKY, WY FIX	10600
MILKY, WY FIX	CHEYENNE, WY VORTAC	9200
CHEYENNE, WY VORTAC	PIETY, WY FIX	8000

FROM	TO	MEA

95.6138 VOR FEDERAL AIRWAY V138 - CONTINUED

FROM	TO	MEA
PIETY, WY FIX	SIDNEY, NE VORTAC	7600
GRAND ISLAND, NE VORTAC	BRADY, NE FIX	3600
BRADY, NE FIX	GAMBL, NE FIX	4100
GAMBL, NE FIX	LINCOLN, NE VORTAC	3300
LINCOLN, NE VORTAC	OMAHA, IA VORTAC	4000
OMAHA, IA VORTAC	*MADUP, IA FIX	**4500
*5500 - MRA		
**2900 - MOCA		
**3000 - GNSS MEA		
MADUP, IA FIX	FORT DODGE, IA VORTAC	*3900
*2900 - MOCA		
*3000 - GNSS MEA		
FORT DODGE, IA VORTAC	MASON CITY, IA VORTAC	3000
MASON CITY, IA VORTAC	WAUKON, IA VORTAC	3000

95.6139 VOR FEDERAL AIRWAY V139

FROM	TO	MEA
FLORENCE, SC VORTAC	*DELKO, NC FIX	2000
*2500 - MRA		
DELKO, NC FIX	WILMINGTON, NC VORTAC	2000
WILMINGTON, NC VORTAC	*KOBBY, NC FIX	2000
*4000 - MRA		
KOBBY, NC FIX	*WIDGE, NC FIX	2000
*4000 - MRA		
WIDGE, NC FIX	NEW BERN, NC VOR/DME	2000
NEW BERN, NC VOR/DME	*PEARS, NC FIX	2000
*4000 - MCA PEARS, NC FIX , NE BND		
PEARS, NC FIX	*SUNNS, NC FIX	**6000
*5000 - MCA SUNNS, NC FIX , SE BND		
**2000 - MOCA		
SUNNS, NC FIX	NORFOLK, VA VORTAC	*2000
*1600 - MOCA		
NORFOLK, VA VORTAC	CAPE CHARLES, VA VORTAC	*2500
*1800 - MOCA		
CAPE CHARLES, VA VORTAC	SNOW HILL, MD VORTAC	2000
SNOW HILL, MD VORTAC	CBEAV, MD FIX	2000
CBEAV, MD FIX	SEA ISLE, NJ VORTAC	*2500
*1700 - MOCA		
SEA ISLE, NJ VORTAC	AVALO, NJ FIX	*4500
*4000 - GNSS MEA		
AVALO, NJ FIX	HARBO, NJ FIX	*6000
*4000 - GNSS MEA		
HARBO, NJ FIX	*DRIFT, NJ FIX	**7500
*6000 - MRA		
**3000 - GNSS MEA		
DRIFT, NJ FIX	MANTA, NJ FIX	*12000
*3000 - GNSS MEA		
MANTA, NJ FIX	PLUME, NJ FIX	*7000
*2000 - MOCA		
*3000 - GNSS MEA		
PLUME, NJ FIX	*KOPPY, NY FIX	**4000
*5000 - MRA		
**3000 - MOCA		
**3000 - GNSS MEA		
KOPPY, NY FIX	BEADS, NY FIX	*4000
*3000 - MOCA		
*3000 - GNSS MEA		
BEADS, NY FIX	HAMPTON, NY VORTAC	*2500
*1600 - MOCA		
HAMPTON, NY VORTAC	PROVIDENCE, RI VORTAC	2000

FROM	TO	MEA

95.6139 VOR FEDERAL AIRWAY V139 - CONTINUED

PROVIDENCE, RI VORTAC	INNDY, MA FIX	*3000
*2000 - GNSS MEA		
INNDY, MA FIX	*TONNI, MA FIX	6000
*6000 - MRA		
TONNI, MA FIX	SEEDY, NH FIX	*5000
*4000 - GNSS MEA		
SEEDY, NH FIX	KENNEBUNK, ME VORTAC	*2500
*1800 - MOCA		

95.6140 VOR FEDERAL AIRWAY V140

PANHANDLE, TX VORTAC	SAYRE, OK VORTAC	5000
SAYRE, OK VORTAC	*WAXEY, OK FIX	4000
*5000 – MRA		
WAXEY, OK FIX	ODINS, OK FIX	*4000
*3300 - MOCA		
ODINS, OK FIX	KINGFISHER, OK VORTAC	*3500
*3100 - MOCA		
KINGFISHER, OK VORTAC	LASTS, OK FIX	3000
LASTS, OK FIX	IBAAH, OK FIX	*4500
*3100 - MOCA		
IBAAH, OK FIX	TULSA, OK VORTAC	3300
TULSA, OK VORTAC	*PRYOR, OK FIX	2700
*2900 - MRA		
PRYOR, OK FIX	RAZORBACK, AR VORTAC	*3400
*2800 - MOCA		
RAZORBACK, AR VORTAC	SPRAY, AR FIX	*3400
*2900 - MOCA		
SPRAY, AR FIX	HARRISON, AR VOR/DME	*4000
*3500 - MOCA		
HARRISON, AR VOR/DME	VILLO, AR FIX	3000
VILLO, AR FIX	WALNUT RIDGE, AR VORTAC	
	W BND	3000
	E BND	2500
WALNUT RIDGE, AR VORTAC	HELMS, MO FIX	2400
HELMS, MO FIX	DYERSBURG, TN VORTAC	2000
DYERSBURG, TN VORTAC	GOSHN, TN FIX	*3500
*2300 - MOCA		
GOSHN, TN FIX	NASHVILLE, TN VORTAC	3000
NASHVILLE, TN VORTAC	HARME, TN FIX	*3000
*2400 - MOCA		
HARME, TN FIX	LIVINGSTON, TN VORTAC	3000
LIVINGSTON, TN VORTAC	LONDON, KY VORTAC	3900
LONDON, KY VORTAC	HAZARD, KY VOR/DME	4000
HAZARD, KY VOR/DME	STACY, VA FIX	*5000
*4200 - MOCA		
*4200 - GNSS MEA		
STACY, VA FIX	*KENYA, WV FIX	5000
*13000 - MRA		
KENYA, WV FIX	BLUEFIELD, WV VORTAC	5400
BLUEFIELD, WV VORTAC	OBERS, WV FIX	5600
OBERS, WV FIX	MONTEBELLO, VA VOR/DME	6000
MONTEBELLO, VA VOR/DME	HOODE, VA FIX	6100
HOODE, VA FIX	CASANOVA, VA VORTAC	3200

95.6141 VOR FEDERAL AIRWAY V141

NANTUCKET, MA VOR/DME	GAILS, MA FIX	1700
GAILS, MA FIX	*CELTS, MA FIX	**3000
*2500 - MRA		
**2000 - MOCA		
CELTS, MA FIX	BOSTON, MA VOR/DME	2000

FROM	TO	MEA

95.6141 VOR FEDERAL AIRWAY V141 - CONTINUED

MANCHESTER, NH VOR/DME	CONCORD, NH VORTAC	*2900
*2000 - MOCA		
CONCORD, NH VORTAC	KELLI, NH FIX	*5000
*4400 - MOCA		
KELLI, NH FIX	LEBANON, NH VOR/DME	*4000
*3600 - MOCA		
LEBANON, NH VOR/DME	*RUCKY, VT FIX	**6000
*5500 - MRA		
**4000 - MOCA		
RUCKY, VT FIX	GREEK, VT FIX	6000
GREEK, VT FIX	*BURLINGTON, VT VOR/DME	6000
*4100 - MCA BURLINGTON, VT VOR/DME , SE BND		
#BURLINGTON, VT VOR/DME	BUGSY, NY FIX	*9000
*5100 – MOCA		
*5500 - GNSS MEA		
#MASSENA R-129 UNSABLE USE BURLINGTON R-311		
BUGSY, NY FIX	#MASSENA, NY VORTAC	*9000
*4000 - MOCA		
*4000 - GNSS MEA		
#MASSENA R-129 UNUSABLE USE BURLINGTON R-311		

95.6142 VOR FEDERAL AIRWAY V142

*TWIN FALLS, ID VORTAC	MURTH, ID FIX	
	E BND	13000
	W BND	7800
*12000 - MCA TWIN FALLS, ID VORTAC , E BND		
MURTH, ID FIX	OCLEY, ID FIX	
	E BND	15000
	W BND	9500
OCLEY, ID FIX	*SHEAR, UT FIX	**16500
*16500 - MCA SHEAR, UT FIX , W BND		
**12400 - MOCA		
SHEAR, UT FIX	*MALAD CITY, ID VOR/DME	
	SW BND	11000
	NE BND	10000
*13500 - MCA MALAD CITY, ID VOR/DME , SW BND		
MALAD CITY, ID VOR/DME	*ORNEY, UT FIX	10000
*11100 - MCA ORNEY, UT FIX , E BND		
ORNEY, UT FIX	FORT BRIDGER, WY VOR/DME	12000
FORT BRIDGER, WY VOR/DME	ROCK SPRINGS, WY VOR/DME	10000

95.6143 VOR FEDERAL AIRWAY V143

GIZMO, NC FIX	GREENSBORO, NC VORTAC	3000
GREENSBORO, NC VORTAC	LEAKS, NC FIX	3000
LEAKS, NC FIX	LYNCHBURG, VA VORTAC	3000
LYNCHBURG, VA VORTAC	*ELLON, VA FIX	
	N BND	5000
	S BND	3200
*4100 - MCA ELLON, VA FIX , N BND		
ELLON, VA FIX	*CLYFF, VA FIX	4600
*6000 - MCA CLYFF, VA FIX , N BND		
CLYFF, VA FIX	MONTEBELLO, VA VOR/DME	6400
MONTEBELLO, VA VOR/DME	LURAY, VA FIX	6000
LURAY, VA FIX	*KERRE, VA FIX	**6000
*7000 - MRA		
**5000 - MOCA		
KERRE, VA FIX	MARTINSBURG, WV VORTAC	*6000
*5000 – MOCA		

FROM	TO	MEA

95.6143 VOR FEDERAL AIRWAY V143 - CONTINUED

MARTINSBURG, WV VORTAC	HYPER, MD FIX	*5000
*3900 - MOCA		
HYPER, MD FIX	BINNS, PA FIX	4000
BINNS, PA FIX	*SUEDE, PA FIX	4500
*4500 - MRA		
SUEDE, PA FIX	DELRO, PA FIX	4500
DELRO, PA FIX	LANCASTER, PA VORTAC	3000
LANCASTER, PA VORTAC	POTTSTOWN, PA VORTAC	4500
POTTSTOWN, PA VORTAC	YARDLEY, PA VOR/DME	*6900
*4000 - GNSS MEA		

95.6144 VOR FEDERAL AIRWAY V144

BRADFORD, IL VORTAC	KANKAKEE, IL VOR/DME	2700
KANKAKEE, IL VOR/DME	RODNY, IN FIX	2400
RODNY, IN FIX	MAPPS, IN FIX	*3000
*2200 - MOCA		
MAPPS, IN FIX	CLEFT, IN FIX	*4000
*2400 - MOCA		
CLEFT, IN FIX	FORT WAYNE, IN VORTAC	2800
FORT WAYNE, IN VORTAC	*BUZZI, OH FIX	**6000
*4000 - MCA BUZZI, OH FIX , E BND		
**3000 - MOCA		
BUZZI, OH FIX	APPLETON, OH VORTAC	*4000
*2600 - MOCA		
APPLETON, OH VORTAC	ZANESVILLE, OH VOR/DME	3000
ZANESVILLE, OH VOR/DME	BEALL, OH FIX	3000
BEALL, OH FIX	MORGANTOWN, WV VORTAC	4000
MORGANTOWN, WV VORTAC	KESSEL, WV VOR/DME	5700
KESSEL, WV VOR/DME	LINDEN, VA VORTAC	5000

95.6145 VOR FEDERAL AIRWAY V145

UTICA, NY VORTAC	WEEPY, NY FIX	*3400
*2800 - MOCA		
WEEPY, NY FIX	FLOOR, NY FIX	*3000
*2000 - MOCA		
FLOOR, NY FIX	WATERTOWN, NY VORTAC	*3000
*2500 - MOCA		
WATERTOWN, NY VORTAC	U.S. CANADIAN BORDER	*3000
*1600 - MOCA		

95.6146 VOR FEDERAL AIRWAY V146

ALBANY, NY VORTAC	CHESTER, MA VOR/DME	4100
CHESTER, MA VOR/DME	BARNES, MA VORTAC	*4000
*3200 - MOCA		
BARNES, MA VORTAC	PUTNAM, CT VOR/DME	*3000
*2500 - MOCA		
PUTNAM, CT VOR/DME	PROVIDENCE, RI VORTAC	3000
PROVIDENCE, RI VORTAC	MARTHAS VINEYARD, MA VOR/DME	2000
MARTHAS VINEYARD, MA VOR/DME	NANTUCKET, MA VOR/DME	2000

95.6147 VOR FEDERAL AIRWAY V147

YARDLEY, PA VOR/DME	EAST TEXAS, PA VOR/DME	2500

FROM	TO	MEA

95.6147 VOR FEDERAL AIRWAY V147 - CONTINUED

EAST TEXAS, PA VOR/DME	SLATT, PA FIX	4000
SLATT, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	ELMIRA, NY VOR/DME	4000
ELMIRA, NY VOR/DME	GENESEO, NY VOR/DME	4000
GENESEO, NY VOR/DME	ROCHESTER, NY VOR/DME	2800

95.6148 VOR FEDERAL AIRWAY V148

FALCON, CO VORTAC	*LIMEX, CO FIX	8500
*9000 - MRA		
LIMEX, CO FIX	THURMAN, CO VORTAC	7500
THURMAN, CO VORTAC	MCJEF, NE FIX	*7000
*6500 - MOCA		
MCJEF, NE FIX	HAYES CENTER, NE VORTAC	*7000
*5600 - MOCA		
HAYES CENTER, NE VORTAC	NORTH PLATTE, NE VORTAC	*4900
*4500 - MOCA		
NORTH PLATTE, NE VORTAC	O'NEILL, NE VORTAC	*5400
*4400 - MOCA		
O'NEILL, NE VORTAC	TYNDA, SD FIX	*4000
*3500 - MOCA		
TYNDA, SD FIX	DOLTS, SD FIX	*4000
*3200 - MOCA		
DOLTS, SD FIX	SIOUX FALLS, SD VORTAC	3400
SIOUX FALLS, SD VORTAC	REDWOOD FALLS, MN VOR/DME	3700
REDWOOD FALLS, MN VOR/DME	MAYER, MN FIX	2800
MAYER, MN FIX	GOPHER, MN VORTAC	3000
GOPHER, MN VORTAC	ALEEN, WI FIX	*5000
*2700 - MOCA		
ALEEN, WI FIX	HAYWARD, WI VOR/DME	*10000
*2800 - MOCA		
HAYWARD, WI VOR/DME	IRONWOOD, MI VORTAC	*10000
*3000 - MOCA		
IRONWOOD, MI VORTAC	HOUGHTON, MI VOR/DME	*3700
*3100 - MOCA		

95.6149 VOR FEDERAL AIRWAY V149

MAZIE, PA FIX	#ALLENTOWN, PA VORTAC	#*6000
*3000 - GNSS MEA		
#ALLENTOWN R-157 UNUSABLE		
ALLENTOWN, PA VORTAC	LAKE HENRY, PA VORTAC	4000
LAKE HENRY, PA VORTAC	BINGHAMTON, NY VORTAC	4000

95.6150 VOR FEDERAL AIRWAY V150

SAN FRANCISCO, CA VOR/DME	SUTRO, CA FIX	3500
SUTRO, CA FIX	GOBBS, CA FIX	3000
GOBBS, CA FIX	SAUSALITO, CA VORTAC	4000
SAUSALITO, CA VORTAC	COMMO, CA FIX	4000
COMMO, CA FIX	REBAS, CA FIX	
	SW BND	4000
	NE BND	3000
REBAS, CA FIX	EMBER, CA FIX	3000
EMBER, CA FIX	SACRAMENTO, CA VORTAC	
	NE BND	2000
	SW BND	3000

FROM	TO	MEA

95.6151 VOR FEDERAL AIRWAY V151

GAILS, MA FIX	PROVIDENCE, RI VORTAC	*3000
*2000 - GNSS MEA		
PROVIDENCE, RI VORTAC	PUTNAM, CT VOR/DME	3000
PUTNAM, CT VOR/DME	GARDNER, MA VOR/DME	3000
GARDNER, MA VOR/DME	KEENE, NH VORTAC	3600
KEENE, NH VORTAC	STRUM, NH FIX	3600
STRUM, NH FIX	*UNKER, NH FIX	6000
*6000 - MRA		
UNKER, NH FIX	MCADM, NH FIX	4500
MCADM, NH FIX	LEBANON, NH VOR/DME	*4000
*3500 - MOCA		
LEBANON, NH VOR/DME	ZIECH, VT FIX	*4000
*3600 - MOCA		
ZIECH, VT FIX	MONTPELIER, VT VOR/DME	*4400
*3900 - MOCA		
MONTPELIER, VT VOR/DME	BURLINGTON, VT VOR/DME	6000

95.6152 VOR FEDERAL AIRWAY V152

ST PETERSBURG, FL VORTAC	JENSN, FL FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
JENSN, FL FIX	KIZER, FL FIX	2900
KIZER, FL FIX	ORMOND BEACH, FL VORTAC	2700

95.6153 VOR FEDERAL AIRWAY V153

LAKE HENRY, PA VORTAC	GROWS, NY FIX	4500
GROWS, NY FIX	GEORGETOWN, NY VORTAC	*4500
*3800 – MOCA		
*4000 - GNSS MEA		
GEORGETOWN, NY VORTAC	SYRACUSE, NY VORTAC	4000

95.6154 VOR FEDERAL AIRWAY V154

ROME, GA VORTAC	MACON, GA VORTAC	*4000
*3400 - MOCA		MAA - 7000
MACON, GA VORTAC	DUBLIN, GA VORTAC	2100
DUBLIN, GA VORTAC	*OCONE, GA FIX	2000
*3000 - MRA		
OCONE, GA FIX	SAVANNAH, GA VORTAC	*3000
*1800 - MOCA		

95.6155 VOR FEDERAL AIRWAY V155

COLUMBUS, GA VORTAC	GRANT, GA FIX	2800
GRANT, GA FIX	SMARR, GA FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
SMARR, GA FIX	SINCA, GA FIX	*4500
*2500 – MOCA		
*2500 - GNSS MEA		

95.6155 VOR FEDERAL AIRWAY V155 – CONTINUED

SINCA, GA FIX	BEYLO, GA FIX	*5000
*2400 - MOCA		
*2400 - GNSS MEA		
BEYLO, GA FIX	COLLIERS, SC VORTAC	*3000
*2100 - MOCA		
COLLIERS, SC VORTAC	*WIDER, SC FIX	2500
*4000 - MRA		
WIDER, SC FIX	*BLOTS, SC FIX	2500
*4000 - MRA		
BLOTS, SC FIX	CHESTERFIELD, SC VOR/DME	2300
CHESTERFIELD, SC VOR/DME	LILLS, NC FIX	2300
LILLS, NC FIX	SANDHILLS, NC VORTAC	*8000
*2000 - MOCA		
*2400 - GNSS MEA		
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	2500
RALEIGH/DURHAM, NC VORTAC	WIPER, NC FIX	2300
WIPER, NC FIX	#LAWRENCEVILLE, VA VORTAC	*9000
*2000 - MOCA		
*2300 - GNSS MEA		
#LAWRENCEVILLE R-042 UNUSABLE		
LAWRENCEVILLE, VA VORTAC	*MANGE, VA FIX	**4000
*5000 - MRA		
**2000 - GNSS MEA		
MANGE, VA FIX	MELIA, VA FIX	*5000
*1800 - MOCA		
*2000 - GNSS MEA		
MELIA, VA FIX	#FLAT ROCK, VA VORTAC	2000
#FLAT ROCK R-214 UNUSABLE		
FLAT ROCK, VA VORTAC	BROOKE, VA VORTAC	*2000
*2000 - GNSS MEA		

95.6156 VOR FEDERAL AIRWAY V156

CEDAR RAPIDS, IA VOR/DME	MOSCO, IA FIX	3200
MOSCO, IA FIX	MOLINE, IL VORTAC	2600
MOLINE, IL VORTAC	BRADFORD, IL VORTAC	2800
BRADFORD, IL VORTAC	PEOTONE, IL VORTAC	2700
PEOTONE, IL VORTAC	LUCIT, IN FIX	2500
LUCIT, IN FIX	MAPPS, IN FIX	*4000
*2400 - MOCA		
MAPPS, IN FIX	KNOX, IN VOR/DME	*3000
*2200 - MOCA		
KNOX, IN VOR/DME	GIPPER, MI VORTAC	2600
GIPPER, MI VORTAC	KALAMAZOO, MI VOR/DME	3000

95.6157 VOR FEDERAL AIRWAY V157

#KEY WEST, FL VORTAC	DVALL, FL FIX	*3000
*1400 - MOCA		
*GNSS MEA		
#KEY WEST R-037 UNUSABLE.		
DVALL, FL FIX	*FAMIN, FL FIX	**5000
*5700 - MRA		
**1300 - MOCA		
**3000 - GNSS MEA		
FAMIN, FL FIX	DOLPHIN, FL VORTAC	*5000
*1600 – MOCA		
*3000 - GNSS MEA		

95.6157 VOR FEDERAL AIRWAY V157 - CONTINUED

FROM	TO	MEA
DOLPHIN, FL VORTAC	THNDR, FL FIX	*3000
*1500 - MOCA		
THNDR, FL FIX	LA BELLE, FL VORTAC	*3000
*1600 - MOCA		
LA BELLE, FL VORTAC	RINSE, FL FIX	*2000
*1400 - MOCA		
RINSE, FL FIX	LAKELAND, FL VORTAC	2200
LAKELAND, FL VORTAC	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	TAYLOR, FL VORTAC	2000
TAYLOR, FL VORTAC	WAYCROSS, GA VORTAC	2300
WAYCROSS, GA VORTAC	ALMA, GA VORTAC	#2000
#ALMA R-189 UNUSABLE USE WAYCROSS R-009.		
ALMA, GA VORTAC	LOTTS, GA FIX	*10000
*1800 - MOCA		
*2000 - GNSS MEA		
LOTTS, GA FIX	ALLENDALE, SC VOR	*9000
*1700 - MOCA		
ALLENDALE, SC VOR	VANCE, SC VORTAC	*6000
*2000 - GNSS MEA		
#VANCE, SC VORTAC	FLORENCE, SC VORTAC	*2000
*2000 - GNSS MEA		
#VANCE R-047 TO COP UNUSABLE BLO FL180 EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV.		
FLORENCE, SC VORTAC	FAYETTEVILLE, NC VOR/DME	2300
FAYETTEVILLE, NC VOR/DME	*JOSCH, NC FIX	2000
*5000 - MRA		
JOSCH, NC FIX	KINSTON, NC VORTAC	2000
KINSTON, NC VORTAC	TAR RIVER, NC VORTAC	2200
TAR RIVER, NC VORTAC	#LAWRENCEVILLE, VA VORTAC	*4500
*2500 - MOCA		
#LAWRENCEVILLE R-177 UNUSABLE BELOW 6000, USE TAR RIVER R-354.		
#LAWRENCEVILLE, VA VORTAC	DALTO, VA FIX	*4000
*2000 - GNSS MEA		
#LAWRENCEVILLE R-042 UNUSABLE.		
DALTO, VA FIX	RICHMOND, VA VORTAC	2000
RICHMOND, VA VORTAC	*TAPPA, VA FIX	2000
*5000 - MCA TAPPA, VA FIX , NE BND		
TAPPA, VA FIX	PATUXENT, MD VORTAC	*5000
*1500 - MOCA		
*2000 - GNSS MEA		
PATUXENT, MD VORTAC	*GARED, MD FIX	**4500
*8000 - MRA		
**1500 - MOCA		
**4000 - GNSS MEA		
GARED, MD FIX	CHOPS, MD FIX	*4500
*1500 - MOCA		
*4000 - GNSS MEA		
CHOPS, MD FIX	SMYRNA, DE VORTAC	*2000
*1500 - MOCA		
SMYRNA, DE VORTAC	WOODSTOWN, NJ VORTAC	*1900
*1500 - MOCA		
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	*3000
*2000 - MOCA		
ROBBINSVILLE, NJ VORTAC	MINKS, NJ FIX	2000
MINKS, NJ FIX	LA GUARDIA, NY VOR/DME	2600
LA GUARDIA, NY VOR/DME	FAMMA, NY FIX	2000
FAMMA, NY FIX	HAARP, CT FIX	3000
HAARP, CT FIX	KINGSTON, NY VOR/DME	*7000
*2800 - MOCA		
*4000 - GNSS MEA		

95.6157 VOR FEDERAL AIRWAY V157 - CONTINUED

KINGSTON, NY VOR/DME	*WIGAN, NY FIX	3000
*4500 - MRA		
WIGAN, NY FIX	GROUP, NY FIX	*8000
*3000 - GNSS MEA		
GROUP, NY FIX	ALBANY, NY VORTAC	*6000
*2300 - MOCA		
*2800 - GNSS MEA		

95.6158 VOR FEDERAL AIRWAY V158

MASON CITY, IA VORTAC	POUND, IA FIX	3000
POUND, IA FIX	DUBUQUE, IA VORTAC	*6000
*3100 - MOCA		
DUBUQUE, IA VORTAC	POLO, IL VOR/DME	2800
POLO, IL VOR/DME	SHOOF, IL FIX	2700

95.6159 VOR FEDERAL AIRWAY V159

VIRGINIA KEY, FL VOR/DME	NITNY, FL FIX	2100
NITNY, FL FIX	JUPEM, FL FIX	3000
JUPEM, FL FIX	VERO BEACH, FL VORTAC	2600
VERO BEACH, FL VORTAC	*PRESK, FL FIX	3000
*2500 - MRA		
PRESK, FL FIX	ORLANDO, FL VORTAC	2000
ORLANDO, FL VORTAC	*SHIMM, FL FIX	2000
*3000 - MRA		
SHIMM, FL FIX	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	CROSS CITY, FL VORTAC	2000
CROSS CITY, FL VORTAC	GREENVILLE, FL VORTAC	2000
GREENVILLE, FL VORTAC	*SALER, GA FIX	2500
*3000 - MRA		
SALER, GA FIX	PECAN, GA VORTAC	2000
PECAN, GA VORTAC	*SHANY, GA FIX	2000
*2800 - MRA		
SHANY, GA FIX	EUFAULA, AL VORTAC	2100
EUFAULA, AL VORTAC	TUSKEGEE, AL VOR/DME	2000
TUSKEGEE, AL VOR/DME	KENTT, AL FIX	*2600
*1900 - MOCA		
KENTT, AL FIX	KYLEE, AL FIX	3800
KYLEE, AL FIX	VULCAN, AL VORTAC	3800
VULCAN, AL VORTAC	HAMILTON, AL VORTAC	*2600
*2200 - MOCA		
HAMILTON, AL VORTAC	HOLLY SPRINGS, MS VORTAC	2300
HOLLY SPRINGS, MS VORTAC	GILMORE, AR VOR/DME	2500
GILMORE, AR VOR/DME	WALNUT RIDGE, AR VORTAC	2800
WALNUT RIDGE, AR VORTAC	DOGWOOD, MO VORTAC	*3400
*2800 - MOCA		
DOGWOOD, MO VORTAC	SPRINGFIELD, MO VORTAC	4300
SPRINGFIELD, MO VORTAC	*OLIVA, MO FIX	**3000
*6000 - MRA		
**2500 - MOCA		
OLIVA, MO FIX	TRALE, MO FIX	*3000
*2500 - MOCA		
TRALE, MO FIX	AUGIE, MO FIX	*3000
*2500 - MOCA		
AUGIE, MO FIX	HODEN, MO FIX	2700
HODEN, MO FIX	NAPOLEON, MO VORTAC	*3000
*2400 - MOCA		
NAPOLEON, MO VORTAC	ST JOSEPH, MO VORTAC	2900

95.6159 VOR FEDERAL AIRWAY V159 - CONTINUED

FROM	TO	MEA
ST JOSEPH, MO VORTAC	VIKKI, IA FIX	3000
VIKKI, IA FIX	OMAHA, IA VORTAC	3400
OMAHA, IA VORTAC	SIOUX CITY, IA VORTAC	3000
SIOUX CITY, IA VORTAC	OBERT, NE FIX	*4500
*2700 - MOCA		
OBERT, NE FIX	YANKTON, SD VOR/DME	3400
YANKTON, SD VOR/DME	MITCHELL, SD VOR/DME	3300
MITCHELL, SD VOR/DME	HURON, SD VORTAC	3000

95.6160 VOR FEDERAL AIRWAY V160

FROM	TO	MEA
*BLUE MESA, CO VOR/DME	**MURFE, CO FIX	16200
**15600 - MRA		
*12900 - MCA BLUE MESA, CO VOR/DME , NE BND		
MURFE, CO FIX	*LARKS, CO FIX	**15000
*15600 - MRA		
**14400 - MOCA		
LARKS, CO FIX	**SIGNE, CO FIX	*14400
*13800 – MOCA		
**11500 - MCA SIGNE, CO FIX , SW BND		
SIGNE, CO FIX	FALCON, CO VORTAC	8800
FALCON, CO VORTAC	WITNE, CO FIX	8000
WITNE, CO FIX	SAYGE, CO FIX	*8000
*7200 - MOCA		
SAYGE, CO FIX	TUMBL, CO FIX	*8000
*6800 - MOCA		
TUMBL, CO FIX	SIDNEY, NE VORTAC	*8000
*6800 - MOCA		

95.6161 VOR FEDERAL AIRWAY V161

FROM	TO	MEA
THREE RIVERS, TX VORTAC	LEMIG, TX FIX	2000
LEMIG, TX FIX	CENTER POINT, TX VORTAC	4000
CENTER POINT, TX VORTAC	LLANO, TX VORTAC	4000
LLANO, TX VORTAC	*BUILT, TX FIX	**6000
*6000 - MRA		
**2800 - MOCA		
BUILT, TX FIX	DUFFA, TX FIX	*6000
*2700 – MOCA		
DUFFA, TX FIX	MILLSAP, TX VORTAC	3000
MILLSAP, TX VORTAC	BOWIE, TX VORTAC	3000
BOWIE, TX VORTAC	ARDMORE, OK VORTAC	3000
ARDMORE, OK VORTAC	PHARA, OK FIX	3000
PHARA, OK FIX	OKMULGEE, OK VOR/DME	*3000
*2300 - MOCA		
OKMULGEE, OK VOR/DME	TULSA, OK VORTAC	2700
TULSA, OK VORTAC	NOVEL, OK FIX	3000
NOVEL, OK FIX	OSWEGO, KS VORTAC	2800
OSWEGO, KS VORTAC	NALLY, KS FIX	*3000
*2400 - MOCA		
NALLY, KS FIX	BUTLER, MO VORTAC	*3000
*2500 - MOCA		
BUTLER, MO VORTAC	NAPOLEON, MO VORTAC	2900
NAPOLEON, MO VORTAC	LAMONI, IA VORTAC	2900
LAMONI, IA VORTAC	*WIVEY, IA FIX	3000
*4300 – MRA		
WIVEY, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	*ANKEN, IA FIX	2700
*3500 - MCA ANKEN, IA FIX , N BND		
ANKEN, IA FIX	NEVAD, IA FIX	4000

95.6161 VOR FEDERAL AIRWAY V161 - CONTINUED

FROM	TO	MEA
NEVAD, IA FIX *2700 - MOCA	ALOCK, IA FIX	*3300
ALOCK, IA FIX	MASON CITY, IA VORTAC	3000
MASON CITY, IA VORTAC	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME *4000 - MRA	*CORDY, MN FIX	3000
CORDY, MN FIX	FARMINGTON, MN VORTAC	3000
FARMINGTON, MN VORTAC *2700 - MOCA	GOPHER, MN VORTAC	*3500
GOPHER, MN VORTAC	BRAINERD, MN VORTAC	3000
BRAINERD, MN VORTAC	GRAND RAPIDS, MN VOR/DME	3400
GRAND RAPIDS, MN VOR/DME *3100 - MOCA	SQEAK, MN FIX	*5000
SQEAK, MN FIX *4000 - MRA	*BEBEL, MN FIX	5000
BEBEL, MN FIX	INTERNATIONAL FALLS, MN VORTAC	3000
INTERNATIONAL FALLS, MN VORTAC	U.S. CANADIAN BORDER	3000

95.6162 VOR FEDERAL AIRWAY V162

FROM	TO	MEA
HARRISBURG, PA VORTAC	BOBSS, PA FIX	3100
BOBSS, PA FIX	EAST TEXAS, PA VOR/DME	3000
EAST TEXAS, PA VOR/DME #ALLENTOWN R-240 UNUSABLE BELOW 9000 USE EAST TEXAS R-059	#ALLENTOWN, PA VORTAC	3000
ALLENTOWN, PA VORTAC	HUGUENOT, NY VOR/DME	3500

95.6163 VOR FEDERAL AIRWAY V163

FROM	TO	MEA
U.S. MEXICAN BORDER *1400 - MOCA	BROWNSVILLE, TX VORTAC	*2000
BROWNSVILLE, TX VORTAC *5000 - MRA	*MANNY, TX FIX	1700
MANNY, TX FIX *1500 - MOCA	ASCOT, TX FIX	*5000
ASCOT, TX FIX *1500 – MOCA	SOLON, TX FIX	*4000
SOLON, TX FIX	CORPUS CHRISTI, TX VORTAC	1600
CORPUS CHRISTI, TX VORTAC	SINTO, TX FIX	1700
SINTO, TX FIX	THREE RIVERS, TX VORTAC	1900
THREE RIVERS, TX VORTAC *3000 - MRA	*YENNS, TX FIX	2000
YENNS, TX FIX *2500 - MOCA	SAN ANTONIO, TX VORTAC	*3000
SAN ANTONIO, TX VORTAC *2900 - MOCA	SLIMM, TX FIX	*3500
SLIMM, TX FIX *3000 - MOCA	GOOCH SPRINGS, TX VORTAC	*3500
GOOCH SPRINGS, TX VORTAC *4000 - MRA **2700 - MOCA	*TENAT, TX FIX	**3500
TENAT, TX FIX *2700 - MOCA	GLEN ROSE, TX VORTAC	*3500

FROM	TO	MEA

95.6164 VOR FEDERAL AIRWAY V164

U.S. CANADIAN BORDER	*BULGE, NY FIX	3100
*6000 - MCA BULGE, NY FIX , S BND		
BULGE, NY FIX	BUFFALO, NY VOR/DME	*6000
*2100 - MOCA		
*3000 - GNSS MEA		
BUFFALO, NY VOR/DME	*BENEE, NY FIX	**11000
*11000 - MRA		
**4400 - MOCA		
**5000 - GNSS MEA		
BENEE, NY FIX	WELLSVILLE, NY VORTAC	*6000
*4500 - MOCA		
*5000 - GNSS MEA		
WELLSVILLE, NY VORTAC	STONYFORK, PA VOR/DME	4500
STONYFORK, PA VOR/DME	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	DIANO, PA FIX	4000
DIANO, PA FIX	EAST TEXAS, PA VOR/DME	*4000
*3500 - MOCA		

95.6165 VOR FEDERAL AIRWAY V165

MISSION BAY, CA VORTAC	SARGS, CA FIX	3000
SARGS, CA FIX	OCEANSIDE, CA VORTAC	2500
OCEANSIDE, CA VORTAC	BALBO, CA FIX	4000
BALBO, CA FIX	SEAL BEACH, CA VORTAC	
	NW BND	3000
	SE BND	4000
SEAL BEACH, CA VORTAC	LOS ANGELES, CA VORTAC	2500
LOS ANGELES, CA VORTAC	*VALEY, CA FIX	4000
*5600 - MCA VALEY, CA FIX , N BND		
VALEY, CA FIX	*SAUGS, CA FIX	6000
*6600 - MCA SAUGS, CA FIX , NW BND		
SAUGS, CA FIX	LAKE HUGHES, CA VORTAC	8000
LAKE HUGHES, CA VORTAC	JEFFY, CA FIX	8000
JEFFY, CA FIX	*LOPES, CA FIX	9000
*8400 - MCA LOPES, CA FIX , S BND		
LOPES, CA FIX	*ARVIN, CA FIX	7800
*6900 - MCA ARVIN, CA FIX , SE BND		
ARVIN, CA FIX	SHAFTER, CA VORTAC	3000
SHAFTER, CA VORTAC	TULE, CA VOR/DME	3000
TULE, CA VOR/DME	DINUB, CA FIX	3500
DINUB, CA FIX	SELMA, CA FIX	
	NW BND	2500
	SE BND	3500
SELMA, CA FIX	*CLOVIS, CA VORTAC	2000
*4000 - MCA CLOVIS, CA VORTAC , N BND		
CLOVIS, CA VORTAC	*COGOL, CA FIX	
	N BND	6500
	S BND	5000
*8500 - MCA COGOL, CA FIX , N BND		
COGOL, CA FIX	MARRI, CA FIX	#*16000
*13600 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
MARRI, CA FIX	*MUSTANG, NV VORTAC	**13000
*10000 - MCA MUSTANG, NV VORTAC , S BND		
**11000 – MOCA		
MUSTANG, NV VORTAC	PYRAM, NV FIX	*11000
*9700 - MOCA		
*10000 - GNSS MEA		

FROM	TO	MEA

95.6165 VOR FEDERAL AIRWAY V165 - CONTINUED

PYRAM, NV FIX	BINNZ, NV FIX	
	NW BND	*14000
	SE BND	*12000
*11000 - MOCA		
*11000 - GNSS MEA		
BINNZ, NV FIX	CHOIR, CA FIX	*14000
*12200 - MOCA		
CHOIR, CA FIX	LAKEVIEW, OR VORTAC	
	SE BND	*14000
	NW BND	*11000
*10500 - MOCA		
LAKEVIEW, OR VORTAC	URBIA, OR FIX	9500
URBIA, OR FIX	*DESCHUTES, OR VORTAC	
	SE BND	9500
	NW BND	7000
*9300 - MCA DESCHUTES, OR VORTAC , NW BND		
DESCHUTES, OR VORTAC	BOTTL, OR FIX	
	NW BND	12500
	SE BND	7000
BOTTL, OR FIX	WALDO, OR FIX	12500
WALDO, OR FIX	ELKES, OR FIX	
	NW BND	7800
	SE BND	12500
ELKES, OR FIX	*MAVER, OR FIX	
	SE BND	12500
	NW BND	7000
*9400 - MCA MAVER, OR FIX , SE BND		
MAVER, OR FIX	RAWER, OR FIX	*5000
*3600 - MOCA		
RAWER, OR FIX	NEWBERG, OR VOR/DME	4000
NEWBERG, OR VOR/DME	PITER, OR FIX	4000
PITER, OR FIX	CETRA, WA FIX	6000
CETRA, WA FIX	OLYMPIA, WA VORTAC	
	N BND	4000
	S BND	6000
OLYMPIA, WA VORTAC	*CARRO, WA FIX	**4000
*4000 - MRA		
**1900 - MOCA		
CARRO, WA FIX	ARPEE, WA FIX	*6000
*5200 - MOCA		
ARPEE, WA FIX	DIGGN, WA FIX	*5000
*2700 - MOCA		
DIGGN, WA FIX	PENN COVE, WA VOR/DME	*5000
*2100 – MOCA		
PENN COVE, WA VOR/DME	ISLND, WA FIX	*5000
*1500 - MOCA		
ISLND, WA FIX	CANDL, WA FIX	*5000
*2800 - MOCA		
CANDL, WA FIX	WHATCOM, WA VORTAC	*4000
*1900 - MOCA		

95.6166 VOR FEDERAL AIRWAY V166

PARKERSBURG, WV VORTAC	MOSIC, WV FIX	3000
MOSIC, WV FIX	CLARKSBURG, WV VOR/DME	*3600
*3100 - MOCA		
CLARKSBURG, WV VOR/DME	TYGAR, WV FIX	3600
TYGAR, WV FIX	UGJOB, WV FIX	4700
UGJOB, WV FIX	KESSEL, WV VOR/DME	6300
KESSEL, WV VOR/DME	CAPON, WV FIX	*5000
*4500 – MOCA		

FROM	TO	MEA

95.6166 VOR FEDERAL AIRWAY V166 - CONTINUED

CAPON, WV FIX *3500 - MOCA	MARTINSBURG, WV VORTAC	*5000
MARTINSBURG, WV VORTAC *3300 - MOCA	WESTMINSTER, MD VORTAC	*4000
WESTMINSTER, MD VORTAC *2500 - MOCA	BELAY, MD FIX	*3000
BELAY, MD FIX *6000 - MRA	*BAINS, MD FIX	2000
BAINS, MD FIX	DUPONT, DE VORTAC	2000
DUPONT, DE VORTAC	WOODSTOWN, NJ VORTAC	2000 MAA - 8000
WOODSTOWN, NJ VORTAC	BRIEF, NJ FIX	1900
BRIEF, NJ FIX	LEEAH, NJ FIX	7000
LEEAH, NJ FIX	SEA ISLE, NJ VORTAC	3000

95.6167 VOR FEDERAL AIRWAY V167

HANCOCK, NY VOR/DME	HELON, NY FIX	4100
HELON, NY FIX	KINGSTON, NY VOR/DME	4000
KINGSTON, NY VOR/DME	HARTFORD, CT VOR/DME	3200
HARTFORD, CT VOR/DME *2100 - MOCA	JEWIT, CT FIX	*2600
JEWIT, CT FIX *2000 - MOCA	PROVIDENCE, RI VORTAC	*2500
PROVIDENCE, RI VORTAC *1800 - MOCA	PEAKE, MA FIX	*2500
PEAKE, MA FIX *1600 - MOCA	MARCONI, MA VOR/DME	*3000
MARCONI, MA VOR/DME *1600 - MOCA *4000 - GNSS MEA	KENNEBUNK, ME VORTAC	*5000

95.6168 VOR FEDERAL AIRWAY V168

VULCAN, AL VORTAC	LAGRANGE, GA VORTAC	4000
LAGRANGE, GA VORTAC	MILER, AL FIX	2600
MILER, AL FIX *2400 - MOCA *3000 - GNSS MEA	EFORD, AL FIX	*3000
EFORD, AL FIX #WIREGRASS R-360 UNUSABLE BEYOND EFORD	#WIREGRASS, AL VORTAC	2400

95.6169 VOR FEDERAL AIRWAY V169

TOBE, CO VOR/DME	HUGO, CO VOR/DME	8000
HUGO, CO VOR/DME *6600 – MOCA	THURMAN, CO VORTAC	*7200
THURMAN, CO VORTAC *6200 - MOCA	AKRON, CO VOR/DME	*7000
AKRON, CO VOR/DME	SIDNEY, NE VORTAC	6400
SIDNEY, NE VORTAC *6000 - MOCA	SCOTTSBLUFF, NE VORTAC	*7000
SCOTTSBLUFF, NE VORTAC	CHADRON, NE VOR/DME	7000
CHADRON, NE VOR/DME *6000 - MOCA	WAXER, NE FIX	*7000
WAXER, NE FIX	RAPID CITY, SD VORTAC	6000
RAPID CITY, SD VORTAC	DUPREE, SD VORTAC	5000
DUPREE, SD VORTAC	BISMARCK, ND VOR/DME	4700
BISMARCK, ND VOR/DME	DEVILS LAKE, ND VOR/DME	4000

95.6170 VOR FEDERAL AIRWAY V170

FROM	TO	MEA
DEVILS LAKE, ND VOR/DME	JAMESTOWN, ND VOR/DME	3500
JAMESTOWN, ND VOR/DME	ABERDEEN, SD VOR/DME	3300
ABERDEEN, SD VOR/DME	SIOUX FALLS, SD VORTAC	*5000
*3300 - MOCA		
SIOUX FALLS, SD VORTAC	WORTHINGTON, MN VOR/DME	3400
WORTHINGTON, MN VOR/DME	FAIRMONT, MN VOR/DME	3300
FAIRMONT, MN VOR/DME	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	DELLS, WI VORTAC	3000
DELLS, WI VORTAC	BADGER, WI VORTAC	3000
BADGER, WI VORTAC	PETTY, WI FIX	2700
PETTY, WI FIX	RAINE, MI FIX	4000
RAINE, MI FIX	PULLMAN, MI VOR/DME	2200
PULLMAN, MI VOR/DME	HEBEL, MI FIX	3000
HEBEL, MI FIX	LESSY, MI FIX	*4500
*3000 - MOCA		
LESSY, MI FIX	SALEM, MI VORTAC	3000
ERIE, PA VORTAC	BRADFORD, PA VOR/DME	4000
BRADFORD, PA VOR/DME	SLATE RUN, PA VORTAC	4000
SLATE RUN, PA VORTAC	SELINSGROVE, PA VORTAC	4000
SELINSGROVE, PA VORTAC	RAVINE, PA VORTAC	*4000
*3300 - MOCA		
RAVINE, PA VORTAC	BOYER, PA FIX	3500
BOYER, PA FIX	MODENA, PA VORTAC	*3000
*2400 - MOCA		
MODENA, PA VORTAC	#DUPONT, DE VORTAC	*6000
*1800 - MOCA		
*2000 - GNSS MEA		
#DUPONT R-358 UNUSABLE		
DUPONT, DE VORTAC	KERNO, MD FIX	#*2000
*2000 - GNSS MEA		
#DUPONT R-233 UNUSABLE BEYOND 22NM.		
KERNO, MD FIX	SWANN, MD FIX	*2500
*1500 - MOCA		
*2500 - GNSS MEA		
SWANN, MD FIX	PALEO, MD FIX	2500
PALEO, MD FIX	POLLA, MD FIX	2200
		MAA – 13000

95.6171 VOR FEDERAL AIRWAY V171

LEXINGTON, KY VORTAC	MCFEE, KY FIX	3000
MCFEE, KY FIX	LOUISVILLE, KY VORTAC	2600
LOUISVILLE, KY VORTAC	SCOTO, IN FIX	*10000
*3000 - MOCA		
SCOTO, IN FIX	TERRE HAUTE, IN VORTAC	*4000
*3000 - MOCA		
TERRE HAUTE, IN VORTAC	DANVILLE, IL VORTAC	2500
DANVILLE, IL VORTAC	PEOTONE, IL VORTAC	2500
PEOTONE, IL VORTAC	JOLIET, IL VORTAC	2400
JOLIET, IL VORTAC	NOAHE, IL FIX	2700
NOAHE, IL FIX	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	GLARS, WI FIX	2900
GLARS, WI FIX	LONE ROCK, WI VOR/DME	*3400
*2800 - MOCA		
LONE ROCK, WI VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	EMILS, MN FIX	3000
EMILS, MN FIX	FARMINGTON, MN VORTAC	*5500
*3000 - GNSS MEA		
FARMINGTON, MN VORTAC	JONNA, MN FIX	*3500
*2500 - MOCA		
*3000 - GNSS MEA		

95.6171 VOR FEDERAL AIRWAY V171 - CONTINUED

FROM	TO	MEA
JONNA, MN FIX	DARWIN, MN VORTAC	2900
DARWIN, MN VORTAC	ALEXANDRIA, MN VOR/DME	3000
ALEXANDRIA, MN VOR/DME *3000 - MOCA	STARR, MN FIX	*3500
STARR, MN FIX *4000 - MRA **3500 - MOCA	*SHELS, MN FIX	**6000
SHELS, MN FIX	GRAND FORKS, ND VOR/DME	3000
GRAND FORKS, ND VOR/DME	ROSEAU, MN VOR/DME	2900

95.6172 VOR FEDERAL AIRWAY V172

FROM	TO	MEA
NORTH PLATTE, NE VORTAC *4500 - MOCA	WOLBACH, NE VORTAC	*5400
WOLBACH, NE VORTAC	COLUMBUS, NE VOR/DME	3800
COLUMBUS, NE VOR/DME	OMAHA, IA VORTAC	3700
OMAHA, IA VORTAC	WUNOT, IA FIX	3800
WUNOT, IA FIX *5500 - MRA **3800 - MOCA	*LINDE, IA FIX	**5500
LINDE, IA FIX	GUMBO, IA FIX	3500
GUMBO, IA FIX	NEWTON, IA VOR/DME	3300
NEWTON, IA VOR/DME	CEDAR RAPIDS, IA VOR/DME	2800
CEDAR RAPIDS, IA VOR/DME	LISBO, IA FIX	2700
LISBO, IA FIX	LOTTE, IA FIX	3300
LOTTE, IA FIX *4000 - MRA	*MIHAL, IL FIX	2700
MIHAL, IL FIX	POLO, IL VOR/DME	2700
POLO, IL VOR/DME	DUPAGE, IL VOR/DME	2600

95.6173 VOR FEDERAL AIRWAY V173

FROM	TO	MEA
SPINNER, IL VORTAC *2300 - MOCA	PEOTONE, IL VORTAC	*4500

95.6174 VOR FEDERAL AIRWAY V174

FROM	TO	MEA
YORK, KY VORTAC	HENDERSON, WV VORTAC	3300
HENDERSON, WV VORTAC *2700 - MOCA	GAYED, WV FIX	*4000
GAYED, WV FIX *5500 - MRA	*CARLA, WV FIX	5500
CARLA, WV FIX	ELKINS, WV VORTAC	5500

95.6175 VOR FEDERAL AIRWAY V175

FROM	TO	MEA
MALDEN, MO VORTAC *2600 - MOCA	BUNKS, MO FIX	*4000
BUNKS, MO FIX	VICHY, MO VOR/DME	3000
VICHY, MO VOR/DME	ZIPUR, MO FIX	3000
ZIPUR, MO FIX	HALLSVILLE, MO VORTAC	2600
HALLSVILLE, MO VORTAC	MACON, MO VOR/DME	2600
MACON, MO VOR/DME	KIRKSVILLE, MO VORTAC	2700
KIRKSVILLE, MO VORTAC	DES MOINES, IA VORTAC	2800

95.6175 VOR FEDERAL AIRWAY V175 - CONTINUED

FROM	TO	MEA
DES MOINES, IA VORTAC	*LINDE, IA FIX	3500
*5500 - MRA		
LINDE, IA FIX	*MADUP, IA FIX	**5500
*5500 - MRA		
**2900 - MOCA		
MADUP, IA FIX	*WELTE, IA FIX	5500
*3900 - MRA		
WELTE, IA FIX	SIOUX CITY, IA VORTAC	3000
SIOUX CITY, IA VORTAC	OYENS, IA FIX	4400
OYENS, IA FIX	WORTHINGTON, MN VOR/DME	3600
WORTHINGTON, MN VOR/DME	REDWOOD FALLS, MN VOR/DME	3400
REDWOOD FALLS, MN VOR/DME	ALEXANDRIA, MN VOR/DME	3500
ALEXANDRIA, MN VOR/DME	PARK RAPIDS, MN VOR/DME	3000
PARK RAPIDS, MN VOR/DME	BLUOX, MN FIX	
	S BND	3500
	NW BND	7000
BLUOX, MN FIX	ROSEAU, MN VOR/DME	*7000
*2800 - MOCA		
*3300 - GNSS MEA		
ROSEAU, MN VOR/DME	U.S. CANADIAN BORDER	*3600
*2500 - MOCA		

95.6176 VOR FEDERAL AIRWAY V176

FROM	TO	MEA
CARLETON, MI VORTAC	U.S. CANADIAN BORDER	*3000
*2100 - MOCA		

95.6177 VOR FEDERAL AIRWAY V177

FROM	TO	MEA
JOLIET, IL VORTAC	NUELG, IL FIX	2600
NUELG, IL FIX	JANESVILLE, WI VOR/DME	*4000
*2300 - MOCA		
JANESVILLE, WI VOR/DME	MADISON, WI VORTAC	3000
MADISON, WI VORTAC	STEVENS POINT, WI VORTAC	2800
#STEVENS POINT, WI VORTAC	TAYUY, WI FIX	3100
#WAUSAU R-171 UNUSABLE BEYOND 8 NM, USE STEVENS POINT R-354		
TAYUY, WI FIX	#WAUSAU, WI VORTAC	3100
#WAUSAU R-171 UNUSABLE BYD 8 NM, USE STEVENS POINT R-354		
#WAUSAU, WI VORTAC	BAITS, WI FIX	*4500
*3600 - MOCA		
*4500 - GNSS MEA		
#WAUSAU R-310 UNUSABLE BYD 10 NM, GNSS REQUIRED BYD 10 NM		
BAITS, WI FIX	HAYWARD, WI VOR/DME	*10000
*3100 - MOCA		
*10000 - GNSS MEA		
HAYWARD, WI VOR/DME	DULUTH, MN VORTAC	*10000
*3000 - MOCA		
DULUTH, MN VORTAC	ELY, MN VOR/DME	3600

95.6178 VOR FEDERAL AIRWAY V178

FROM	TO	MEA
HALLSVILLE, MO VORTAC	BNTON, MO FIX	2800
BNTON, MO FIX	VICHY, MO VOR/DME	*2800
*2200 - MOCA		
VICHY, MO VOR/DME	FARMINGTON, MO VORTAC	3300
FARMINGTON, MO VORTAC	CAPE GIRARDEAU, MO VOR/DME	3000
CAPE GIRARDEAU, MO VOR/DME	CUNNINGHAM, KY VORTAC	2400

95.6178 VOR FEDERAL AIRWAY V178 - CONTINUED

FROM	TO	MEA
CUNNINGHAM, KY VORTAC	CENTRAL CITY, KY VORTAC	2600
CENTRAL CITY, KY VORTAC	NEW HOPE, KY VOR/DME	2700
NEW HOPE, KY VOR/DME	MAUDD, KY FIX	2700
MAUDD, KY FIX	MCFEE, KY FIX	5000
MCFEE, KY FIX	LEXINGTON, KY VORTAC	3000
LEXINGTON, KY VORTAC	TRENT, KY FIX	3400
TRENT, KY FIX	SLINK, WV FIX	*8000
*4200 - GNSS MEA		
SLINK, WV FIX	BLUEFIELD, WV VORTAC	*6000
*5400 - GNSS MEA		

95.6179 VOR FEDERAL AIRWAY V179

FROM	TO	MEA
BRUNSWICK, GA VORTAC	DUBLIN, GA VORTAC	2000
DUBLIN, GA VORTAC	HUSKY, GA FIX	*3000
*2100 - MOCA		

95.6180 VOR FEDERAL AIRWAY V180

FROM	TO	MEA
INTERNATIONAL FALLS, MN VORTAC	U.S. CANADIAN BORDER	2900

95.6181 VOR FEDERAL AIRWAY V181

FROM	TO	MEA
KIRKSVILLE, MO VORTAC	LAMONI, IA VORTAC	2900
LAMONI, IA VORTAC	OMAHA, IA VORTAC	3000
OMAHA, IA VORTAC	NORFOLK, NE VOR/DME	3500
NORFOLK, NE VOR/DME	YANKTON, SD VOR/DME	3700
YANKTON, SD VOR/DME	#SIOUX FALLS, SD VORTAC	3400
#SIOUX FALLS R-340 UNUSABLE BELOW 4000		
SIOUX FALLS, SD VORTAC	*OBITT, SD FIX	**4000
*5000 - MRA		
**3500 – MOCA		
OBITT, SD FIX	WATERTOWN, SD VORTAC	*4000
*3200 - MOCA		
WATERTOWN, SD VORTAC	BANEY, ND FIX	4500
BANEY, ND FIX	FARGO, ND VORTAC	
	N BND	2800
	S BND	3900
FARGO, ND VORTAC	GRAND FORKS, ND VOR/DME	2600
GRAND FORKS, ND VOR/DME	HUMBOLDT, MN VORTAC	2600
HUMBOLDT, MN VORTAC	U.S. CANADIAN BORDER	2800

95.6182 VOR FEDERAL AIRWAY V182

FROM	TO	MEA
NORTH BEND, OR VORTAC	*GAMMA, OR FIX	
	S BND	4000
	N BND	4500
*6200 - MRA		
GAMMA, OR FIX	NEWPORT, OR VORTAC	4500
NEWPORT, OR VORTAC	NEWBERG, OR VOR/DME	6000
NEWBERG, OR VOR/DME	*BATTLE GROUND, WA VORTAC	4000
*4700 - MCA BATTLE GROUND, WA VORTAC , E BND		
BATTLE GROUND, WA VORTAC	GYMME, WA FIX	
	E BND	7000
	W BND	6500
GYMME, WA FIX	KLICKITAT, OR VOR/DME	*7000
*6400 – MOCA		

95.6182 VOR FEDERAL AIRWAY V182 - CONTINUED

FROM	TO	MEA
KLICKITAT, OR VOR/DME	*BREED, OR FIX	5300
*5700 - MRA		
BREED, OR FIX	*UKIAH, OR FIX	8000
*9400 - MCA UKIAH, OR FIX , E BND		
UKIAH, OR FIX	*BAKER CITY, OR VOR/DME	**13000
*10000 - MCA BAKER CITY, OR VOR/DME , W BND		
**11000 - MOCA		
BAKER CITY, OR VOR/DME	*IBEAM, OR FIX	9000
*12000 - MCA IBEAM, OR FIX , NE BND		
IBEAM, OR FIX	LEZLE, WA FIX	*12000
*8100 - MOCA		
LEZLE, WA FIX	NEZ PERCE, ID VOR/DME	*7000
*6200 - MOCA		

95.6183 VOR FEDERAL AIRWAY V183

FROM	TO	MEA
*SAN MARCUS, CA VORTAC	TAFTO, CA FIX	9000
*7500 - MCA SAN MARCUS, CA VORTAC , N BND		
*TAFTO, CA FIX	MARIC, CA FIX	**6000
*6000 - MCA TAFTO, CA FIX , S BND		
**4500 - MOCA		
*MARIC, CA FIX	SHAFTER, CA VORTAC	3000
*5000 - MCA MARIC, CA FIX , S BND		

95.6184 VOR FEDERAL AIRWAY V184

FROM	TO	MEA
ERIE, PA VORTAC	TIDIOUTE, PA VORTAC	3500
TIDIOUTE, PA VORTAC	PHILIPSBURG, PA VORTAC	*5000
*4000 - MOCA		
PHILIPSBURG, PA VORTAC	HARRISBURG, PA VORTAC	4000
HARRISBURG, PA VORTAC	DELRO, PA FIX	3000
DELRO, PA FIX	MODENA, PA VORTAC	*10000
*3900 - MOCA		
*4000 - GNSS MEA		
MODENA, PA VORTAC	WOODSTOWN, NJ VORTAC	2000
WOODSTOWN, NJ VORTAC	CEDAR LAKE, NJ VORTAC	1900
CEDAR LAKE, NJ VORTAC	ATLANTIC CITY, NJ VORTAC	1800
ATLANTIC CITY, NJ VORTAC	PANZE, NJ FIX	*2000
*1500 - MOCA		
PANZE, NJ FIX	FALON, NJ FIX	*5000
*1500 - MOCA		
*2000 - GNSS MEA		
FALON, NJ FIX	ZIGGI, NJ FIX	*2500
*1600 - MOCA		

95.6185 VOR FEDERAL AIRWAY V185

FROM	TO	MEA
SAVANNAH, GA VORTAC	*SPONG, GA FIX	**3000
*5000 - MRA		
**2200 - MOCA		
SPONG, GA FIX	COLLIERS, SC VORTAC	*3000
*2200 - MOCA		
COLLIERS, SC VORTAC	GREENWOOD, SC VORTAC	2400
GREENWOOD, SC VORTAC	*UNMAN, SC FIX	3000
*4000 - MCA UNMAN, SC FIX , N BND		
UNMAN, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000

95.6185 VOR FEDERAL AIRWAY V185 - CONTINUED

FROM	TO	MEA
SUGARLOAF MOUNTAIN, NC VORTAC	MUMMI, NC FIX	7000
MUMMI, NC FIX	SNOWBIRD, TN VORTAC	8000
SNOWBIRD, TN VORTAC	*PENCE, TN FIX	7000
*4000 - MCA PENCE, TN FIX , SE BND		
PENCE, TN FIX	VOLUNTEER, TN VORTAC	3000

95.6186 VOR FEDERAL AIRWAY V186

FROM	TO	MEA
SAN MARCUS, CA VORTAC	DEANO, CA FIX	6000
DEANO, CA FIX	HENER, CA FIX	5000
HENER, CA FIX	FILLMORE, CA VORTAC	6000
FILLMORE, CA VORTAC	VAN NUYS, CA VOR/DME	5500
VAN NUYS, CA VOR/DME	TIFNI, CA FIX	5000
TIFNI, CA FIX	PARADISE, CA VORTAC	4000
PARADISE, CA VORTAC	TANNR, CA FIX	5500
TANNR, CA FIX	POGGI, CA VORTAC	5000

95.6187 VOR FEDERAL AIRWAY V187

FROM	TO	MEA
SOCORRO, NM VORTAC	ALBUQUERQUE, NM VORTAC	8000
ALBUQUERQUE, NM VORTAC	*CURLY, NM FIX	9000
*9500 - MCA CURLY, NM FIX , NW BND		
CURLY, NM FIX	*MISSY, NM FIX	11000
*9000 - MRA		
MISSY, NM FIX	RATTLESNAKE, NM VORTAC	8700
RATTLESNAKE, NM VORTAC	RIZAL, CO FIX	9100
RIZAL, CO FIX	MANCA, CO FIX	10900
MANCA, CO FIX	HERRM, CO FIX	*15000
*12200 - MOCA		
HERRM, CO FIX	*GRAND JUNCTION, CO VOR/DME	12100
*10700 - MCA GRAND JUNCTION, CO VOR/DME , S BND		
GRAND JUNCTION, CO VOR/DME	*TESSY, CO FIX	10000
*10500 - MRA		
*10700 - MCA TESSY, CO FIX , N BND		
TESSY, CO FIX	RACER, CO FIX	*12000
*11000 – MOCA		
RACER, CO FIX	*RENAE, CO FIX	**13000
*13000 - MRA		
**10700 - MOCA		
RENAE, CO FIX	ROCK SPRINGS, WY VOR/DME	*13000
*11700 - MOCA		
ROCK SPRINGS, WY VOR/DME	RIVERTON, WY VOR/DME	*12000
*10000 - MOCA		
*10000 - GNSS MEA		
RIVERTON, WY VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	9600
BOYSEN RESERVOIR, WY VOR/DME	PRYER, MT FIX	11000
PRYER, MT FIX	*BILLINGS, MT VORTAC	
	SE BND	11000
	NW BND	7000
*6500 - MCA BILLINGS, MT VORTAC , S BND		
BILLINGS, MT VORTAC	TASSE, MT FIX	
	SE BND	6000
	NW BND	8000
TASSE, MT FIX	*JUGAP, MT FIX	8000
*9500 - MCA JUGAP, MT FIX , NW BND		
JUGAP, MT FIX	GREAT FALLS, MT VORTAC	*11000
*10300 – MOCA		

95.6187 VOR FEDERAL AIRWAY V187 - CONTINUED

FROM	TO	MEA
GREAT FALLS, MT VORTAC	ROSOE, MT FIX	
	NE BND	8000
	SW BND	10000
ROSOE, MT FIX	MISSOULA, MT VOR/DME	*13000
*11400 - MOCA		
MISSOULA, MT VOR/DME	LOLLO, MT FIX	
	NE BND	*10000
	SW BND	*13000
*9300 - MOCA		
LOLLO, MT FIX	RIVAL, MT FIX	
	NE BND	*12000
	SW BND	*13000
*9000 - MOCA		
RIVAL, MT FIX	OFINO, ID FIX	*13000
*9900 - MOCA		
OFINO, ID FIX	NEZ PERCE, ID VOR/DME	
	SW BND	5500
	NE BND	10000
NEZ PERCE, ID VOR/DME	DATES, WA FIX	7000
DATES, WA FIX	PASCO, WA VOR/DME	4000
PASCO, WA VOR/DME	NIALS, WA FIX	3500
NIALS, WA FIX	FEBUS, WA FIX	4700
FEBUS, WA FIX	*ELLENSBURG, WA VORTAC	6000
*6700 - MCA ELLENSBURG, WA VORTAC , W BND		
ELLENSBURG, WA VORTAC	THICK, WA FIX	
	E BND	7700
	W BND	10000
THICK, WA FIX	MOUNT, WA FIX	10000
MOUNT, WA FIX	ORTIN, WA FIX	
	W BND	8000
	E BND	10000
ORTIN, WA FIX	MCCHORD, WA VORTAC	6000
MCCHORD, WA VORTAC	OLYMPIA, WA VORTAC	6000
OLYMPIA, WA VORTAC	RINDS, WA FIX	4000
RINDS, WA FIX	ASTORIA, OR VOR/DME	5000

95.6188 VOR FEDERAL AIRWAY V188

FROM	TO	MEA
CARLETON, MI VORTAC	U.S. CANADIAN BORDER	*3000
*2200 - MOCA		
U.S. CANADIAN BORDER	FAILS, OH FIX	*4000
*1800 - MOCA		
*2300 - GNSS MEA		
FAILS, OH FIX	*WONOP, OH FIX	**3000
*5000 - MRA		
**2000 - MOCA		
WONOP, OH FIX	*CLERI, OH FIX	**3000
*5000 - MRA		
**2200 - MOCA		
CLERI, OH FIX	JEFFERSON, OH VOR/DME	*3000
*2400 - MOCA		
JEFFERSON, OH VOR/DME	TIDIOUTE, PA VORTAC	3500
TIDIOUTE, PA VORTAC	SLATE RUN, PA VORTAC	4000
SLATE RUN, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	SWANK, PA FIX	4500
SWANK, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	SPARTA, NJ VORTAC	4000
SPARTA, NJ VORTAC	CARMEL, NY VOR/DME	*3000
*2500 - MOCA		
CARMEL, NY VOR/DME	GROTON, CT VOR/DME	3000

FROM	TO	MEA

95.6189 VOR FEDERAL AIRWAY V189

FROM	TO	MEA
WRIGHT BROTHERS, NC VOR/DME	*DAREZ, NC FIX	**8000
*8000 - MCA DAREZ, NC FIX , E BND		
**3000 - GNSS MEA		
DAREZ, NC FIX	TAR RIVER, NC VORTAC	*6000
*3000 - MOCA		
*4000 - GNSS MEA		
TAR RIVER, NC VORTAC	FRANKLIN, VA VORTAC	2000
FRANKLIN, VA VORTAC	HOPEWELL, VA VORTAC	3000

95.6190 VOR FEDERAL AIRWAY V190

FROM	TO	MEA
PHOENIX, AZ VORTAC	*LAKEY, AZ FIX	5000
*7800 - MCA LAKEY, AZ FIX , NE BND		
LAKEY, AZ FIX	GRINE, AZ FIX	
	NE BND	*9000
	SW BND	*6000
*5300 - MOCA		
GRINE, AZ FIX	PEAKS, AZ FIX	*10000
*6700 - MOCA		
PEAKS, AZ FIX	TEDDI, AZ FIX	
	NE BND	13000
	SW BND	10000
TEDDI, AZ FIX	ST JOHNS, AZ VORTAC	*13000
*11000 - MOCA		
*11000 - GNSS MEA		
ST JOHNS, AZ VORTAC	ACOMA, NM FIX	*11500
*10800 - MOCA		
ACOMA, NM FIX	*ALBUQUERQUE, NM VORTAC	9000
*11500 - MCA ALBUQUERQUE, NM VORTAC , NE BND		
ALBUQUERQUE, NM VORTAC	RENCO, NM FIX	13000
RENCO, NM FIX	*FORT UNION, NM VORTAC	12000
*11300 - MCA FORT UNION, NM VORTAC , SW BND		
FORT UNION, NM VORTAC	DALHART, TX VORTAC	*10000
*9200 - MOCA		
DALHART, TX VORTAC	MITBEE, OK VORTAC	*7000
*5400 - MOCA		
MITBEE, OK VORTAC	*CARON, OK FIX	**5000
*5000 - MRA		
**3700 - MOCA		
CARON, OK FIX	PIONEER, OK VORTAC	*5000
*2700 - MOCA		
PIONEER, OK VORTAC	BARTLESVILLE, OK VOR/DME	3000
BARTLESVILLE, OK VOR/DME	OSWEGO, KS VORTAC	2500
OSWEGO, KS VORTAC	WACCO, MO FIX	3000
WACCO, MO FIX	*MIRTH, MO FIX	3000
*3700 - MRA		
MIRTH, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	MAPLES, MO VORTAC	3000
MAPLES, MO VORTAC	BUNKS, MO FIX	3000
BUNKS, MO FIX	FARMINGTON, MO VORTAC	3500
FARMINGTON, MO VORTAC	MARION, IL VOR/DME	3000
MARION, IL VOR/DME	*TEXAS, IL FIX	2000
*2500 - MRA		
TEXAS, IL FIX	POCKET CITY, IN VORTAC	2200

FROM	TO	MEA

95.6191 VOR FEDERAL AIRWAY V191

TROY, IL VORTAC	ADDERS, IL VORTAC	2500
ADDERS, IL VORTAC	ROBERTS, IL VOR/DME	2800
ROBERTS, IL VOR/DME	NEWTT, IL FIX	2500
NEWTT, IL FIX	*BOJAK, IL FIX	**5000
*5000 - MRA		
**2100 - MOCA		
BOJAK, IL FIX	NORTHBROOK, IL VOR/DME	2500
NORTHBROOK, IL VOR/DME	BADGER, WI VORTAC	2900
BADGER, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	RHINELANDER, WI VORTAC	*4500
*3000 - MOCA		
RHINELANDER, WI VORTAC	IRONWOOD, MI VORTAC	*8000
*3100 - MOCA		
IRONWOOD, MI VORTAC	DULUTH, MN VORTAC	3500
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	GRAND RAPIDS, MN VOR/DME	3000

95.6192 VOR FEDERAL AIRWAY V192

CHAMPAIGN, IL VORTAC	TERRE HAUTE, IN VORTAC	2500
TERRE HAUTE, IN VORTAC	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	MUNCIE, IN VOR/DME	2900
MUNCIE, IN VOR/DME	DAYTON, OH VOR/DME	2800

95.6193 VOR FEDERAL AIRWAY V193

MUSKY, MI FIX	PULLMAN, MI VOR/DME	*3000
*2000 - MOCA		
PULLMAN, MI VOR/DME	CLOCK, MI FIX	*3000
*2400 - MOCA		
CLOCK, MI FIX	WHITE CLOUD, MI VOR/DME	2800
WHITE CLOUD, MI VOR/DME	TRAVERSE CITY, MI VORTAC	3200
TRAVERSE CITY, MI VORTAC	PELLSTON, MI VORTAC	3000
PELLSTON, MI VORTAC	SAULT STE MARIE, MI VOR/DME	3000

95.6194 VOR FEDERAL AIRWAY V194

CEDAR CREEK, TX VORTAC	KISER, TX FIX	2100
KISER, TX FIX	COLLEGE STATION, TX VORTAC	4000
COLLEGE STATION, TX VORTAC	PRARI, TX FIX	2000
PRARI, TX FIX	SEALY, TX FIX	3500
SEALY, TX FIX	HOBBY, TX VOR/DME	2000
HOBBY, TX VOR/DME	SABINE PASS, TX VOR/DME	3000
SABINE PASS, TX VOR/DME	GUSTI, LA FIX	*4000
*1600 - MOCA		
GUSTI, LA FIX	LAFAYETTE, LA VORTAC	2800
LAFAYETTE, LA VORTAC	*ROSEY, LA FIX	2000
*5000 - MRA		
ROSEY, LA FIX	BATON ROUGE, LA VORTAC	2000
BATON ROUGE, LA VORTAC	MC COMB, MS VORTAC	2200
MC COMB, MS VORTAC	MIZZE, MS FIX	*3000
*2000 - MOCA		
MIZZE, MS FIX	*PAULD, MS FIX	3000
*5000 - MRA		
*3000 - MCA PAULD, MS FIX , SW BND		
PAULD, MS FIX	MERIDIAN, MS VORTAC	2100
LIBERTY, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	3000
RALEIGH/DURHAM, NC VORTAC	TAR RIVER, NC VORTAC	2500
TAR RIVER, NC VORTAC	COFIELD, NC VORTAC	1800
COFIELD, NC VORTAC	SUNNS, NC FIX	*2000
*1600 - MOCA		

95.6195 VOR FEDERAL AIRWAY V195

FROM	TO	MEA
MANTECA, CA VOR/DME	TRACY, CA FIX	
	NE BND	2500
	SW BND	4000
TRACY, CA FIX	SUNOL, CA FIX	5200
SUNOL, CA FIX	OAKLAND, CA VORTAC	4000
OAKLAND, CA VORTAC	CROIT, CA FIX	4000
CROIT, CA FIX	*CORDD, CA FIX	5000
*6200 - MCA CORDD, CA FIX , N BND		
CORDD, CA FIX	*RAGGS, CA FIX	**8500
*8500 - MRA		
**5000 - MOCA		
RAGGS, CA FIX	*BESSA, CA FIX	**8500
*8500 - MCA BESSA, CA FIX , S BND		
**4800 - MOCA		
BESSA, CA FIX	WILLIAMS, CA VORTAC	5300
WILLIAMS, CA VORTAC	RED BLUFF, CA VORTAC	*3000
*1700 - MOCA		
RED BLUFF, CA VORTAC	BURRS, CA FIX	3000
BURRS, CA FIX	*TOMAD, CA FIX	6000
*7000 - MRA		
*7000 - MCA TOMAD, CA FIX , W BND		
TOMAD, CA FIX	*YAGER, CA FIX	**9500
*7700 - MCA YAGER, CA FIX , E BND		
**7900 - MOCA		
YAGER, CA FIX	FORTUNA, CA VORTAC	6000

95.6196 VOR FEDERAL AIRWAY V196

FROM	TO	MEA
UTICA, NY VORTAC	*BECKS, NY FIX	**5000
*10000 - MRA		
**4500 - MOCA		
BECKS, NY FIX	SARANAC LAKE, NY VOR/DME	5000
SARANAC LAKE, NY VOR/DME	PLATTSBURGH, NY VORTAC	5000

95.6197 VOR FEDERAL AIRWAY V197

FROM	TO	MEA
PARADISE, CA VORTAC	POMONA, CA VORTAC	#4500
#MTA V264 E TO V197 NW 11800		
POMONA, CA VORTAC	*HASSA, CA FIX	6500
*10000 - MCA HASSA, CA FIX , NW BND		
HASSA, CA FIX	*PALMDALE, CA VORTAC	10500
*8700 - MCA PALMDALE, CA VORTAC , SE BND		
PALMDALE, CA VORTAC	*FISCH, CA FIX	5000
*8100 - MCA FISCH, CA FIX , NW BND		
FISCH, CA FIX	*KELEN, CA FIX	10000
*9100 - MCA KELEN, CA FIX , SE BND		
KELEN, CA FIX	*ARVIN, CA FIX	7800
*6900 - MCA ARVIN, CA FIX , SE BND		
ARVIN, CA FIX	SHAFTER, CA VORTAC	3000

95.6198 VOR FEDERAL AIRWAY V198

FROM	TO	MEA
SAN SIMON, AZ VORTAC	COLUMBUS, NM VOR/DME	8700
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000

95.6198 VOR FEDERAL AIRWAY V198 - CONTINUED

FROM	TO	MEA
EL PASO, TX VORTAC	HUDSPETH, TX VORTAC	7500
HUDSPETH, TX VORTAC	AGAZY, TX FIX	*11000
*8900 - MOCA		
AGAZY, TX FIX	DOWES, TX FIX	*8000
*6400 - MOCA		
DOWES, TX FIX	FORT STOCKTON, TX VORTAC	5000
FORT STOCKTON, TX VORTAC	JUNCTION, TX VORTAC	*8000
*5500 - MOCA		
JUNCTION, TX VORTAC	DOSSY, TX FIX	3800
DOSSY, TX FIX	*COMFY, TX FIX	4000
*4000 - MRA		
COMFY, TX FIX	SAN ANTONIO, TX VORTAC	4000
SAN ANTONIO, TX VORTAC	SEEDS, TX FIX	2900
SEEDS, TX FIX	WEMAR, TX FIX	*2500
*1800 - MOCA		
WEMAR, TX FIX	EAGLE LAKE, TX VOR/DME	2000
EAGLE LAKE, TX VOR/DME	BLUMS, TX FIX	2000
BLUMS, TX FIX	HOBBY, TX VOR/DME	2400
HOBBY, TX VOR/DME	SABINE PASS, TX VOR/DME	3000
SABINE PASS, TX VOR/DME	WHITE LAKE, LA VOR/DME	*4000
*1700 - MOCA		
*2000 - GNSS MEA		
WHITE LAKE, LA VOR/DME	TIBBY, LA VORTAC	2000
TIBBY, LA VORTAC	HARVEY, LA VORTAC	2000
HARVEY, LA VORTAC	PEARL, LA FIX	2000
PEARL, LA FIX	DOGMA, MS FIX	*2300
*1300 - MOCA		
DOGMA, MS FIX	*ROMMY, MS FIX	**2800
*4000 - MRA		
**1300 - MOCA		
ROMMY, MS FIX	BROOKLEY, AL VORTAC	2000
BROOKLEY, AL VORTAC	CRESTVIEW, FL VORTAC	3000
CRESTVIEW, FL VORTAC	DEFUN, FL FIX	2000
DEFUN, FL FIX	CHEWS, FL FIX	*3000
*1600 - MOCA		
CHEWS, FL FIX	MARIANNA, FL VORTAC	2000
MARIANNA, FL VORTAC	*SNEAD, FL FIX	2000
*3000 - MRA		
SNEAD, FL FIX	SEMINOLE, FL VORTAC	2000
SEMINOLE, FL VORTAC	*LLOYD, FL FIX	2000
*5000 - MRA		
LLOYD, FL FIX	GREENVILLE, FL VORTAC	2000
GREENVILLE, FL VORTAC	TAYLOR, FL VORTAC	2000
TAYLOR, FL VORTAC	CRAIG, FL VORTAC	*3000
*2100 - MOCA		

95.6199 VOR FEDERAL AIRWAY V199

FROM	TO	MEA
SAN FRANCISCO, CA VOR/DME	SUTRO, CA FIX	3500
SUTRO, CA FIX	GOBBS, CA FIX	3000
GOBBS, CA FIX	STINS, CA FIX	3500
STINS, CA FIX	DUBRY, CA FIX	4500
DUBRY, CA FIX	MENDOCINO, CA VORTAC	6000
MENDOCINO, CA VORTAC	*HENLE, CA FIX	**9000
*5000 - MCA HENLE, CA FIX , S BND		
**8300 - MOCA		
HENLE, CA FIX	RED BLUFF, CA VORTAC	3000

FROM	TO	MEA

95.6200 VOR FEDERAL AIRWAY V200

MENDOCINO, CA VORTAC	*LAPED, CA FIX	6000
*9000 - MRA		
LAPED, CA FIX	WILLIAMS, CA VORTAC	6000
WILLIAMS, CA VORTAC	YUBBA, CA FIX	4000
YUBBA, CA FIX	*RANGO, CA FIX	5000
*8500 - MCA RANGO, CA FIX , E BND		
RANGO, CA FIX	SIGNA, CA FIX	*11000
*10000 - MOCA		
SIGNA, CA FIX	MUSTANG, NV VORTAC	11500
BONNEVILLE, UT VORTAC	*STACO, UT FIX	9000
*11000 - MCA STACO, UT FIX , SE BND		
STACO, UT FIX	*FAIRFIELD, UT VORTAC	12000
*10500 - MCA FAIRFIELD, UT VORTAC , NW BND		
*12000 - MCA FAIRFIELD, UT VORTAC , E BND		
FAIRFIELD, UT VORTAC	PANEL, UT FIX	
	E BND	13000
	W BND	11000
PANEL, UT FIX	MYTON, UT VOR/DME	13000
MYTON, UT VOR/DME	RACER, CO FIX	*10000
*8600 - MOCA		
RACER, CO FIX	MEEKER, CO VOR/DME	10500
MEEKER, CO VOR/DME	KREMMLING, CO VOR/DME	14500

95.6201 VOR FEDERAL AIRWAY V201

LOS ANGELES, CA VORTAC	*BERRI, CA FIX	5000
*7600 - MCA BERRI, CA FIX , N BND		
BERRI, CA FIX	*SOLED, CA FIX	8800
*8400 - MCA SOLED, CA FIX , S BND		
SOLED, CA FIX	PALMDALE, CA VORTAC	7500

95.6202 VOR FEDERAL AIRWAY V202

TUCSON, AZ VORTAC	SULLI, AZ FIX	8000
SULLI, AZ FIX	MESCA, AZ FIX	
	SE BND	9500
	NW BND	8000
MESCA, AZ FIX	COCHISE, AZ VORTAC	9500
COCHISE, AZ VORTAC	SAN SIMON, AZ VORTAC	10000
SAN SIMON, AZ VORTAC	SILVER CITY, NM VORTAC	10000
SILVER CITY, NM VORTAC	*KEAPS, NM FIX	10000
*11600 - MCA KEAPS, NM FIX , NE BND		
KEAPS, NM FIX	TRUTH OR CONSEQUENCES, NM VORTAC	12000

95.6203 VOR FEDERAL AIRWAY V203

ALBANY, NY VORTAC	OTOLE, NY FIX	*6000
*2200 - MOCA		
*3000 - GNSS MEA		
OTOLE, NY FIX	DINNY, NY FIX	*10000
*6900 - MOCA		
*7000 - GNSS MEA		
DINNY, NY FIX	SARANAC LAKE, NY VOR/DME	6700

95.6203 VOR FEDERAL AIRWAY V203 - CONTINUED

SARANAC LAKE, NY VOR/DME	#MASSENA, NY VORTAC	*10000
*4500 - MOCA		
*5000 - GNSS MEA		
#MASSENA R-159 UNUSABLE. USE SARANAC R-339		
MASSENA, NY VORTAC	U.S. CANADIAN BORDER	*14000
*1500 - MOCA		
*2000 - GNSS MEA		

95.6204 VOR FEDERAL AIRWAY V204

HOQUIAM, WA VORTAC	*OLYMPIA, WA VORTAC	4500
*3200 - MCA OLYMPIA, WA VORTAC , W BND		
OLYMPIA, WA VORTAC	*MCKEN, WA FIX	4000
*5000 - MCA MCKEN, WA FIX , E BND		
MCKEN, WA FIX	*ALDER, WA FIX	5800
*5800 - MCA ALDER, WA FIX , E BND		
ALDER, WA FIX	TAMPO, WA FIX	10000
TAMPO, WA FIX	*YAKIMA, WA VORTAC	
	W BND	8000
	E BND	6000
*5300 - MCA YAKIMA, WA VORTAC , W BND		
YAKIMA, WA VORTAC	*PAIDS, WA FIX	6000
*5200 - MCA PAIDS, WA FIX , W BND		
PAIDS, WA FIX	PASCO, WA VOR/DME	4000
PASCO, WA VOR/DME	WATSY, WA FIX	3500
WATSY, WA FIX	*GRAPH, WA FIX	5000
*6000 - MRA		
GRAPH, WA FIX	SPOKANE, WA VORTAC	5000

95.6205 VOR FEDERAL AIRWAY V205

COATE, NJ FIX	HUGUENOT, NY VOR/DME	*4000
*3300 - MOCA		
HUGUENOT, NY VOR/DME	WEARD, NY FIX	*4000
*3500 - MOCA		
WEARD, NY FIX	*WEETS, NY FIX	6000
*6000 - MRA		
		MAA - 14500
WEETS, NY FIX	STUBY, CT FIX	*8500
*5000 - GNSS MEA		
STUBY, CT FIX	VEERS, CT FIX	3500
VEERS, CT FIX	RONGE, CT FIX	3500
BRADLEY, CT VORTAC	PUTNAM, CT VOR/DME	3000

95.6206 VOR FEDERAL AIRWAY V206

NAPOLEON, MO VORTAC	KIRKSVILLE, MO VORTAC	3000
KIRKSVILLE, MO VORTAC	OTTUMWA, IA VOR/DME	3000

95.6207 VOR FEDERAL AIRWAY V207

GILL, CO VOR/DME	SCOTTSBLUFF, NE VORTAC	7500

95.6208 VOR FEDERAL AIRWAY V208

FROM	TO	MEA
VENTURA, CA VOR/DME	WEEZL, CA FIX	5000
WEEZL, CA FIX	SANTA CATALINA, CA VORTAC	4000
SANTA CATALINA, CA VORTAC	AVOLS, CA FIX	4000
AVOLS, CA FIX	PACIF, CA FIX	*3000
*2000 - MOCA		
PACIF, CA FIX	OCEANSIDE, CA VORTAC	3000
OCEANSIDE, CA VORTAC	*VISTA, CA FIX	3000
*5000 - MCA VISTA, CA FIX , E BND		
VISTA, CA FIX	JULIAN, CA VORTAC	7700
JULIAN, CA VORTAC	WARNE, CA FIX	
	SW BND	8000
	NE BND	9000
WARNE, CA FIX	*THERMAL, CA VORTAC	9000
*5600 - MCA THERMAL, CA VORTAC , N BND		
*7000 - MCA THERMAL, CA VORTAC , S BND		
THERMAL, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	7000
TWENTYNINE PALMS, CA VORTAC	NEEDLES, CA VORTAC	7800
NEEDLES, CA VORTAC	PEACH SPRINGS, AZ VORTAC	9000
PEACH SPRINGS, AZ VORTAC	GRAND CANYON, AZ VOR/DME	10000
GRAND CANYON, AZ VOR/DME	TUBA CITY, AZ VORTAC	9500
TUBA CITY, AZ VORTAC	PAGE, AZ VOR/DME	9000
PAGE, AZ VOR/DME	*HANKSVILLE, UT VORTAC	14000
*11500 - MCA HANKSVILLE, UT VORTAC , S BND		
HANKSVILLE, UT VORTAC	CARBON, UT VOR/DME	10000
CARBON, UT VOR/DME	MYTON, UT VOR/DME	11300
MYTON, UT VOR/DME	VERNAL, UT VOR/DME	8400
VERNAL, UT VOR/DME	CHEROKEE, WY VOR/DME	11700

95.6209 VOR FEDERAL AIRWAY V209

FROM	TO	MEA
SEMMES, AL VORTAC	JANES, AL FIX	*2300
*1800 – MOCA		
*2000 - GNSS MEA		
JANES, AL FIX	KEWANEE, MS VORTAC	2300
KEWANEE, MS VORTAC	BROOKWOOD, AL VORTAC	2400
BROOKWOOD, AL VORTAC	VULCAN, AL VORTAC	2500
VULCAN, AL VORTAC	TRUST, AL FIX	3500
TRUST, AL FIX	GADSDEN, AL VOR/DME	3600
GADSDEN, AL VOR/DME	*MENLA, AL FIX	**5000
*5000 - MCA MENLA, AL FIX , SW BND		
**3700 - MOCA		
MENLA, AL FIX	CHOO CHOO, TN VORTAC	4000

95.6210 VOR FEDERAL AIRWAY V210

FROM	TO	MEA
LOS ANGELES, CA VORTAC	PIRRO, CA FIX	3500
PIRRO, CA FIX	*POMONA, CA VORTAC	4500
*10300 - MCA POMONA, CA VORTAC , NE BND		
POMONA, CA VORTAC	CALBE, CA FIX	
	NE BND	10800
	SW BND	5300
CALBE, CA FIX	MEANT, CA FIX	
	NE BND	11500
	SW BND	10700
MEANT, CA FIX	*APLES, CA FIX	11500
*9100 - MCA APLES, CA FIX , SW BND		
APLES, CA FIX	HECTOR, CA VORTAC	7500

95.6210 VOR FEDERAL AIRWAY V210 - CONTINUED

HECTOR, CA VORTAC	GOFFS, CA VORTAC	*9000
*8200 - MOCA		
GOFFS, CA VORTAC	UNPAS, NV FIX	8000
UNPAS, NV FIX	PEACH SPRINGS, AZ VORTAC	9000
PEACH SPRINGS, AZ VORTAC	*GRAND CANYON, AZ VOR/DME	10000
*14500 - MCA GRAND CANYON, AZ VOR/DME , E BND		
GRAND CANYON, AZ VOR/DME	*TUBA CITY, AZ VORTAC	**14500
*14500 - MCA TUBA CITY, AZ VORTAC , W BND		
**9600 - MOCA		
TUBA CITY, AZ VORTAC	*FULLY, NM FIX	12000
*10500 - MRA		
FULLY, NM FIX	RATTLESNAKE, NM VORTAC	8300
RATTLESNAKE, NM VORTAC	RESER, NM FIX	9000
RESER, NM FIX	MRKKO, CO FIX	15000
MRKKO, CO FIX	*ALAMOSA, CO VORTAC	
	W BND	14800
	E BND	10000
*11200 - MCA ALAMOSA, CO VORTAC , W BND		
ALAMOSA, CO VORTAC	GOSIP, CO FIX	
	NE BND	*14000
	SW BND	*10400
*10100 - MOCA		
GOSIP, CO FIX	*RADIO, CO FIX	**12000
*10900 - MCA RADIO, CO FIX , SW BND		
**8500 - MOCA		
RADIO, CO FIX	BLOOM, CO FIX	*9400
*8000 - MOCA		
BLOOM, CO FIX	LAMAR, CO VOR/DME	7000
LAMAR, CO VOR/DME	LIBERAL, KS VORTAC	*6000
*5300 - MOCA		
LIBERAL, KS VORTAC	ROLLS, OK FIX	*12000
*4400 - MOCA		
ROLLS, OK FIX	*WAXEY, OK FIX	**8400
*5000 - MRA		
**3500 - MOCA		
WAXEY, OK FIX	WILL ROGERS, OK VORTAC	*4000
*3200 - MOCA		
WILL ROGERS, OK VORTAC	MINGG, OK FIX	*4000
*3000 - MOCA		
MINGG, OK FIX	OKMULGEE, OK VOR/DME	*4000
*2500 - MOCA		
BRICKYARD, IN VORTAC	MUNCIE, IN VOR/DME	2900
MUNCIE, IN VOR/DME	ROSEWOOD, OH VORTAC	2800
ROSEWOOD, OH VORTAC	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	SEING, OH FIX	3000
SEING, OH FIX	CAPEL, OH FIX	3600
CAPEL, OH FIX	VOLAN, PA FIX	*3600
*2800 - MOCA		
VOLAN, PA FIX	TALLS, PA FIX	*5000
*3200 - MOCA		
*3300 - GNSS MEA		
TALLS, PA FIX	REVLOC, PA VOR/DME	4100
REVLOC, PA VOR/DME	BLINK, PA FIX	4500
BLINK, PA FIX	HARRISBURG, PA VORTAC	4000
HARRISBURG, PA VORTAC	LANCASTER, PA VORTAC	3000
LANCASTER, PA VORTAC	SPERY, PA FIX	2800
SPERY, PA FIX	YARDLEY, PA VOR/DME	*3000
*2200 - MOCA		

95.6211 VOR FEDERAL AIRWAY V211

FROM	TO	MEA
BRAZO, NM FIX	DURANGO, CO VOR/DME	
	W BND	11300
	E BND	13000
DURANGO, CO VOR/DME	CORTEZ, CO VOR/DME	11300

95.6212 VOR FEDERAL AIRWAY V212

FROM	TO	MEA
SAN ANTONIO, TX VORTAC	SEEDS, TX FIX	2900
SEEDS, TX FIX	WEMAR, TX FIX	*2500
*1800 - MOCA		
WEMAR, TX FIX	INDUSTRY, TX VORTAC	2000
INDUSTRY, TX VORTAC	NAVASOTA, TX VORTAC	2000
NAVASOTA, TX VORTAC	OSCER, TX FIX	3000
OSCER, TX FIX	LUFKIN, TX VORTAC	*4000
*2000 - MOCA		
LUFKIN, TX VORTAC	COSGO, LA FIX	*4000
*1900 - MOCA		
COSGO, LA FIX	COCOS, LA FIX	*3000
*1700 - MOCA		
COCOS, LA FIX	ALEXANDRIA, LA VORTAC	2000
ALEXANDRIA, LA VORTAC	JOHON, LA FIX	2000
JOHON, LA FIX	MC COMB, MS VORTAC	*3000
*2000 - MOCA		

95.6213 VOR FEDERAL AIRWAY V213

FROM	TO	MEA
GRAND STRAND, SC VORTAC	#WILMINGTON, NC VORTAC	*3100
*3100 - GNSS MEA		
#WILMINGTON R-240 UNUSABLE		
WILMINGTON, NC VORTAC	WALLO, NC FIX	*8000
*5000 - GNSS MEA		
WALLO, NC FIX	*JOSCH, NC FIX	**5000
*5000 – MRA		
**1700 - MOCA		
JOSCH, NC FIX	ESTER, NC FIX	*5000
*1700 - MOCA		
ESTER, NC FIX	TAR RIVER, NC VORTAC	2000
TAR RIVER, NC VORTAC	GUMBE, NC FIX	2000
GUMBE, NC FIX	HOPEWELL, VA VORTAC	*2000
*1500 - MOCA		
HOPEWELL, VA VORTAC	*TAPPA, VA FIX	2000
*5000 - MCA TAPPA, VA FIX , NE BND		
TAPPA, VA FIX	PATUXENT, MD VORTAC	*5000
*1500 - MOCA		
*2000 - GNSS MEA		
PATUXENT, MD VORTAC	*GARED, MD FIX	**4500
*8000 - MRA		
**1500 - MOCA		
**4000 - GNSS MEA		
GARED, MD FIX	CHOPS, MD FIX	*4500
*1500 - MOCA		
*4000 - GNSS MEA		
CHOPS, MD FIX	SMYRNA, DE VORTAC	*2000
*1500 - MOCA		
SMYRNA, DE VORTAC	HOLEY, NJ FIX	*3000
*1600 - MOCA		
HOLEY, NJ FIX	ROBBINSVILLE, NJ VORTAC	*3000
*2000 - MOCA		
ROBBINSVILLE, NJ VORTAC	WARRD, NJ FIX	*3000
*1900 - MOCA		MAA – 10000

95.6213 VOR FEDERAL AIRWAY V213 - CONTINUED

WARRD, NJ FIX	SHOTT, NJ FIX	*3000
*2500 - MOCA		MAA – 10000
SHOTT, NJ FIX	SPARTA, NJ VORTAC	*3500
*2600 - MOCA		MAA - 10000
SPARTA, NJ VORTAC	FLOSI, NY FIX	*4000
*3200 – MOCA		
FLOSI, NY FIX	*WEETS, NY FIX	**5500
*6000 - MRA		
**4000 - MOCA		
WEETS, NY FIX	ALBANY, NY VORTAC	*10000
*6100 - MOCA		
*8000 - GNSS MEA		

95.6214 VOR FEDERAL AIRWAY V214

KOKOMO, IN VORTAC	MARION, IN VOR/DME	2600
MARION, IN VOR/DME	MUNCIE, IN VOR/DME	2800
MUNCIE, IN VOR/DME	RICHMOND, IN VORTAC	2900
GLOOM, OH FIX	ZANESVILLE, OH VOR/DME	*4000
*2600 - MOCA		
*3000 - GNSS MEA		
ZANESVILLE, OH VOR/DME	BELLAIRE, OH VOR/DME	3000
BELLAIRE, OH VOR/DME	GALLS, PA FIX	*3600
*3100 - MOCA		
GALLS, PA FIX	GRANTSVILLE, MD VOR/DME	5000
GRANTSVILLE, MD VOR/DME	MARTINSBURG, WV VORTAC	*5000
*4500 - MOCA		
MARTINSBURG, WV VORTAC	WOOLY, MD FIX	3200
WOOLY, MD FIX	BALTIMORE, MD VORTAC	2600
BALTIMORE, MD VORTAC	SWANN, MD FIX	2000
SWANN, MD FIX	KERNO, MD FIX	*2500
*1500 - MOCA		
*2500 - GNSS MEA		
KERNO, MD FIX	#DUPONT, DE VORTAC	*2000
*2000 - GNSS MEA		
#DUPONT R-233 UNUSABLE BEYOND 22NM.		
DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	*6000
*3000 - GNSS MEA		
YARDLEY, PA VOR/DME	TETERBORO, NJ VOR/DME	*3000
*2000 - MOCA		MAA - 10000

95.6215 VOR FEDERAL AIRWAY V215

*JYBEE, MI FIX	SALES, MI FIX	**3500
*4000 - MRA		
**1700 - MOCA		
SALES, MI FIX	MUSKEGON, MI VORTAC	*3000
*2300 - MOCA		
MUSKEGON, MI VORTAC	WHITE CLOUD, MI VOR/DME	2800
WHITE CLOUD, MI VOR/DME	*LADIN, MI FIX	4000
*5000 - MRA		
LADIN, MI FIX	*CARGA, MI FIX	**4000
*5000 - MRA		
**2600 - MOCA		
CARGA, MI FIX	GAYLORD, MI VOR/DME	*3000
*2900 - MOCA		

FROM	TO	MEA

95.6216 VOR FEDERAL AIRWAY V216

FROM	TO	MEA
LAMAR, CO VOR/DME	ORION, KS FIX	*6300
*5200 - MOCA		
ORION, KS FIX	HILL CITY, KS VORTAC	*5000
*4100 – MOCA		
HILL CITY, KS VORTAC	MANKATO, KS VORTAC	*4500
*3900 - MOCA		
MANKATO, KS VORTAC	PAWNEE CITY, NE VORTAC	3600
PAWNEE CITY, NE VORTAC	LAMONI, IA VORTAC	3400
LAMONI, IA VORTAC	OTTUMWA, IA VOR/DME	2900
OTTUMWA, IA VOR/DME	IOWA CITY, IA VORTAC	3000
IOWA CITY, IA VORTAC	LOTTE, IA FIX	*3500
*2500 - MOCA		
LOTTE, IA FIX	WACKS, IL FIX	*4000
*2200 - MOCA		
WACKS, IL FIX	JANESVILLE, WI VOR/DME	2800
#JANESVILLE, WI VOR/DME	WIPED, WI FIX	#3000
#GNSS MEA, GNSS REQUIRED.		
#JANESVILLE R-073 UNUSABLE		
WIPED, WI FIX	PETTY, WI FIX	#4000
#GNSS MEA, GNSS REQUIRED.		
PETTY, WI FIX	SQUIB, MI FIX	#7000
#GNSS MEA, GNSS REQUIRED.		
SQUIB, MI FIX	MUSKEGON, MI VORTAC	*4000
*3000 - GNSS MEA		
MUSKEGON, MI VORTAC	SAGINAW, MI VOR/DME	3000
SAGINAW, MI VOR/DME	PECK, MI VORTAC	3000
PECK, MI VORTAC	U.S. CANADIAN BORDER	*5000
*2200 - MOCA		

95.6217 VOR FEDERAL AIRWAY V217

FROM	TO	MEA
FARMM, IL FIX	BESIE, IL FIX	2500
BESIE, IL FIX	BADGER, WI VORTAC	2700
BADGER, WI VORTAC	CHING, WI FIX	3000
CHING, WI FIX	SHOOD, WI FIX	2700
SHOOD, WI FIX	GREEN BAY, WI VORTAC	2500
GREEN BAY, WI VORTAC	CECIL, WI FIX	*2700
*2200 - MOCA		
CECIL, WI FIX	RHINELANDER, WI VORTAC	3600
RHINELANDER, WI VORTAC	DULUTH, MN VORTAC	*6000
*4000 - MOCA		
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	BAUDETTE, MN VOR/DME	*5000
*3100 - MOCA		
BAUDETTE, MN VOR/DME	U.S. CANADIAN BORDER	2800

95.6218 VOR FEDERAL AIRWAY V218

FROM	TO	MEA
GRAND RAPIDS, MN VOR/DME	GOPHER, MN VORTAC	*5500
*3000 - MOCA		
GOPHER, MN VORTAC	DLANY, MN FIX	*4800
*3200 - MOCA		
DLANY, MN FIX	WAUKON, IA VORTAC	*3000
*2500 - MOCA		
WAUKON, IA VORTAC	*BAULK, WI FIX	**4000
*4000 - MRA		
**3000 - MOCA		
BAULK, WI FIX	ROCKFORD, IL VOR/DME	*4000
*2500 – MOCA		

95.6218 VOR FEDERAL AIRWAY V218 - CONTINUED

FROM	TO	MEA
KEELER, MI VOR/DME	HEBEL, MI FIX	4000
HEBEL, MI FIX	LANSING, MI VORTAC	*3000
*2400 - MOCA		

95.6219 VOR FEDERAL AIRWAY V219

FROM	TO	MEA
HAYES CENTER, NE VORTAC	WOLBACH, NE VORTAC	*5000
*4500 - MOCA		
WOLBACH, NE VORTAC	NORFOLK, NE VOR/DME	4000
NORFOLK, NE VOR/DME	SIOUX CITY, IA VORTAC	3600
SIOUX CITY, IA VORTAC	RITTA, IA FIX	*4500
*3200 - MOCA		
RITTA, IA FIX	MILSS, IA FIX	9000
MILSS, IA FIX	*GRUVE, IA FIX	8000
*8000 - MRA		
GRUVE, IA FIX	FAIRMONT, MN VOR/DME	8000
FAIRMONT, MN VOR/DME	MANKATO, MN VOR/DME	*3000
*2500 – MOCA		

95.6220 VOR FEDERAL AIRWAY V220

FROM	TO	MEA
GRAND JUNCTION, CO VOR/DME	*PACES, CO FIX	11500
*13000 - MRA		
PACES, CO FIX	#SLOLM, CO FIX	13000
#MTA V220 NE TO V220 NW 12900		
SLOLM, CO FIX	RIFLE, CO VOR/DME	12400
RIFLE, CO VOR/DME	MEEKER, CO VOR/DME	12400
MEEKER, CO VOR/DME	AXIAL, CO FIX	11000
AXIAL, CO FIX	HAYDEN, CO VOR/DME	
	SW BND	11000
	NE BND	10000
HAYDEN, CO VOR/DME	HABRO, CO FIX	10000
HABRO, CO FIX	KREMMLING, CO VOR/DME	13000
KREMMLING, CO VOR/DME	*HYGEN, CO FIX	**17000
*17000 - MCA HYGEN, CO FIX , SW BND		
**15600 - MOCA		
HYGEN, CO FIX	NIWOT, CO FIX	
	NE BND	9000
	SW BND	12500
NIWOT, CO FIX	GILL, CO VOR/DME	
	NE BND	7400
	SW BND	10000
GILL, CO VOR/DME	AKRON, CO VOR/DME	7000
AKRON, CO VOR/DME	MCJEF, NE FIX	*7000
*6000 - MOCA		
MCJEF, NE FIX	MC COOK, NE VOR/DME	*7500
*5000 - MOCA		
MC COOK, NE VOR/DME	SPRIT, NE FIX	*5000
*4100 - MOCA		
SPRIT, NE FIX	KEARNEY, NE VOR	*5000
*3700 - MOCA		
KEARNEY, NE VOR	HASTINGS, NE VOR/DME	4300
HASTINGS, NE VOR/DME	COLUMBUS, NE VOR/DME	4000

FROM	TO	MEA

95.6221 VOR FEDERAL AIRWAY V221

FROM	TO	MEA
BIBLE GROVE, IL VORTAC	HOOSIER, IN VORTAC	3000
#HOOSIER, IN VORTAC	SHELBYVILLE, IN VORTAC	*6000
*3100 – MOCA		
*4000 - GNSS MEA		
#HOOSIER R-053 UNUSABLE.		
SHELBYVILLE, IN VORTAC	MUNCIE, IN VOR/DME	2800
MUNCIE, IN VOR/DME	FORT WAYNE, IN VORTAC	2700
FORT WAYNE, IN VORTAC	GAREN, IN FIX	2600
GAREN, IN FIX	LITCHFIELD, MI VOR/DME	3000
LITCHFIELD, MI VOR/DME	JACKSON, MI VOR/DME	*3000
*2500 - MOCA		
JACKSON, MI VOR/DME	SALEM, MI VORTAC	3000
SALEM, MI VORTAC	DELOW, MI FIX	3000
DELOW, MI FIX	U.S. CANADIAN BORDER	*4000
*2800 - MOCA		

95.6222 VOR FEDERAL AIRWAY V222

FROM	TO	MEA
EL PASO, TX VORTAC	SALT FLAT, TX VORTAC	*8000
*7400 - MOCA		
SALT FLAT, TX VORTAC	HOBAN, TX FIX	8000
HOBAN, TX FIX	FORT STOCKTON, TX VORTAC	5000
FORT STOCKTON, TX VORTAC	KEMPL, TX FIX	*8000
*5500 - MOCA		
JUNCTION, TX VORTAC	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	MARCS, TX FIX	*4500
*4000 - MOCA		
MARCS, TX FIX	CRAYS, TX FIX	*2900
*2000 – MOCA		
CRAYS, TX FIX	INDUSTRY, TX VORTAC	2500
INDUSTRY, TX VORTAC	SEALY, TX FIX	2100
SEALY, TX FIX	HUMBLE, TX VORTAC	2000
HUMBLE, TX VORTAC	BEAUMONT, TX VOR/DME	3100
BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000
LAKE CHARLES, LA VORTAC	MAXON, LA FIX	2000
MAXON, LA FIX	*WRACK, LA FIX	**6000
*4000 - MRA		
**1800 - MOCA		
**2000 - GNSS MEA		
WRACK, LA FIX	MC COMB, MS VORTAC	*4000
*2000 - MOCA		
*2000 - GNSS MEA		
MC COMB, MS VORTAC	EATON, MS VORTAC	2000
EATON, MS VORTAC	PICAN, MS FIX	2300
PICAN, MS FIX	MONROEVILLE, AL VORTAC	2000
MONROEVILLE, AL VORTAC	MONTGOMERY, AL VORTAC	2300
MONTGOMERY, AL VORTAC	*MARST, AL FIX	2300
*3500 - MRA		
MARST, AL FIX	KENTT, AL FIX	2100
KENTT, AL FIX	LAGRANGE, GA VORTAC	2500
LAGRANGE, GA VORTAC	*TIROE, GA FIX	2600
*4000 - MRA		
LOGEN, GA FIX	CORCE, GA FIX	*4600
*3700 - MOCA		
CORCE, GA FIX	FOOTHILLS, GA VORTAC	3400
FOOTHILLS, GA VORTAC	SUNET, SC FIX	6100
SUNET, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6100
SUGARLOAF MOUNTAIN, NC VORTAC	VAESE, NC FIX	6000
VAESE, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	*5000
*3600 – MOCA		

FROM	TO	MEA

95.6222 VOR FEDERAL AIRWAY V222 - CONTINUED

FROM	TO	MEA
BARRETTS MOUNTAIN, NC VOR/DME	HENBY, VA FIX	5000
HENBY, VA FIX	LYNCHBURG, VA VORTAC	4000

95.6223 VOR FEDERAL AIRWAY V223

FROM	TO	MEA
FLAT ROCK, VA VORTAC	*HANEY, VA FIX	2800
*7000 - MRA		
HANEY, VA FIX	FLUKY, VA FIX	2600

95.6224 VOR FEDERAL AIRWAY V224

FROM	TO	MEA
SAWYER, MI VOR/DME	SCHOOLCRAFT COUNTY, MI VOR/DME	*3500
*2600 - MOCA		

95.6225 VOR FEDERAL AIRWAY V225

FROM	TO	MEA
KEY WEST, FL VORTAC	RIGOR, FL FIX	1700
RIGOR, FL FIX	MARCI, FL FIX	*4000
*1400 - MOCA		
*1700 - GNSS MEA		
MARCI, FL FIX	LEE COUNTY, FL VORTAC	2100
LEE COUNTY, FL VORTAC	LA BELLE, FL VORTAC	*2000
*1500 - MOCA		
LA BELLE, FL VORTAC	DIDDY, FL FIX	*2000
*1500 - MOCA		
DIDDY, FL FIX	VERO BEACH, FL VORTAC	2000

95.6226 VOR FEDERAL AIRWAY V226

FROM	TO	MEA
GRACE, PA FIX	*EARED, PA FIX	3400
*4000 - MRA		
EARED, PA FIX	CLARION, PA VOR/DME	3400
CLARION, PA VOR/DME	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	WILLIAMSPORT, PA VOR/DME	*4500
*3900 - MOCA		
WILLIAMSPORT, PA VOR/DME	SWANK, PA FIX	4500
SWANK, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	STILLWATER, NJ VOR/DME	4000

95.6227 VOR FEDERAL AIRWAY V227

FROM	TO	MEA
BOILER, IN VORTAC	ROBERTS, IL VOR/DME	2600
ROBERTS, IL VOR/DME	PONTIAC, IL VOR/DME	3000
PONTIAC, IL VOR/DME	PLANO, IL FIX	3000

95.6228 VOR FEDERAL AIRWAY V228

FROM	TO	MEA
STEVENS POINT, WI VORTAC	DELLS, WI VORTAC	3000
DELLS, WI VORTAC	MADISON, WI VORTAC	3300
MADISON, WI VORTAC	*DEBOW, WI FIX	10000
*10000 - MRA		
DEBOW, WI FIX	BESIE, IL FIX	10000
BESIE, IL FIX	FARMM, IL FIX	2500
FARMM, IL FIX	NORTHBROOK, IL VOR/DME	2700
NORTHBROOK, IL VOR/DME	*NEPTS, MI FIX	2500
*3000 - MRA		
NEPTS, MI FIX	GIPPER, MI VORTAC	2600

95.6229 VOR FEDERAL AIRWAY V229

FROM	TO	MEA
PATUXENT, MD VORTAC	*GARED, MD FIX	**4500
*8000 - MRA		
**1500 - MOCA		
**4000 - GNSS MEA		
GARED, MD FIX	DONIL, DE FIX	*8000
*1600 – MOCA		
*4000 - GNSS MEA		
DONIL, DE FIX	ATLANTIC CITY, NJ VORTAC	*2000
*1500 - MOCA		
ATLANTIC CITY, NJ VORTAC	PANZE, NJ FIX	*2000
*1500 - MOCA		
PANZE, NJ FIX	DIXIE, NJ FIX	2500
DIXIE, NJ FIX	KENNEDY, NY VOR/DME	*2500
*1600 - MOCA		
KENNEDY, NY VOR/DME	KEEPM, NY FIX	2000
KEEPM, NY FIX	TRANZ, NY FIX	2000
TRANZ, NY FIX	PUGGS, NY FIX	*2500
*2000 - GNSS MEA		
PUGGS, NY FIX	BRIDGEPORT, CT VOR/DME	*2500
*2000 - GNSS MEA		
BRIDGEPORT, CT VOR/DME	HARTFORD, CT VOR/DME	2000
HARTFORD, CT VOR/DME	GARDNER, MA VOR/DME	*3000
*2500 - MOCA		
GARDNER, MA VOR/DME	KEENE, NH VORTAC	3600
KEENE, NH VORTAC	JAMMA, VT FIX	4000
JAMMA, VT FIX	EBERT, VT FIX	5500
EBERT, VT FIX	MUDDI, VT FIX	5900
MUDDI, VT FIX	BURLINGTON, VT VOR/DME	*5800
*5300 – MOCA		

95.6230 VOR FEDERAL AIRWAY V230

FROM	TO	MEA
SHOEY, CA FIX	*SALINAS, CA VORTAC	**5000
*6000 - MCA SALINAS, CA VORTAC , E BND		
**4100 - MOCA		
SALINAS, CA VORTAC	*PANOS, CA FIX	**6500
*8000 - MCA PANOS, CA FIX , E BND		
**5500 - MOCA		
PANOS, CA FIX	*FIDDO, CA FIX	**9000
*9000 - MCA FIDDO, CA FIX , W BND		
**5700 - MOCA		
FIDDO, CA FIX	PANOCHE, CA VORTAC	*7000
*5700 - MOCA		
PANOCHE, CA VORTAC	*MENDO, CA FIX	4500
*3000 - MCA MENDO, CA FIX , SW BND		
MENDO, CA FIX	*CLOVIS, CA VORTAC	2000
*4000 - MCA CLOVIS, CA VORTAC , NE BND		
CLOVIS, CA VORTAC	*FRIANT, CA VORTAC	5000
*9000 - MCA FRIANT, CA VORTAC , NE BND		
FRIANT, CA VORTAC	*CAINS, CA FIX	11000
*13000 - MCA CAINS, CA FIX , NE BND		
CAINS, CA FIX	NIKOL, CA FIX	14300
NIKOL, CA FIX	MINA, NV VORTAC	11000

95.6231 VOR FEDERAL AIRWAY V231

FROM	TO	MEA
BURLEY, ID VOR/DME	*MENIN, ID FIX	
	S BND	**7000
	N BND	**9500
*10600 - MCA MENIN, ID FIX , N BND		
**7000 – MOCA		

FROM	TO	MEA

95.6231 VOR FEDERAL AIRWAY V231 - CONTINUED

MENIN, ID FIX	SALMON, ID VOR/DME	14000
SALMON, ID VOR/DME	TUFFY, MT FIX	*12000
*11300 – MOCA		
TUFFY, MT FIX	*MISSOULA, MT VOR/DME	
	S BND	12000
	N BND	9000
*10000 - MCA MISSOULA, MT VOR/DME , S BND		
MISSOULA, MT VOR/DME	ARLEE, MT FIX	9200
ARLEE, MT FIX	*JESSY, MT FIX	**11000
*13000 - MCA JESSY, MT FIX , N BND		
**9200 - MOCA		
JESSY, MT FIX	*SKOTT, MT FIX	**13000
*12000 - MRA		
**8700 - MOCA		
SKOTT, MT FIX	KALISPELL, MT VOR/DME	
	N BND	*8500
	S BND	*10000
*6900 - MOCA		

95.6232 VOR FEDERAL AIRWAY V232

CHARDON, OH VOR/DME	FRANKLIN, PA VOR	3300 MAA – 15000
FRANKLIN, PA VOR	COOBE, PA FIX	3500
COOBE, PA FIX	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	WATSO, PA FIX	4000
WATSO, PA FIX	MILTON, PA VORTAC	*4000
*2900 - MOCA		
MILTON, PA VORTAC	SOLBERG, NJ VOR/DME	*4000
*3500 - MOCA		
SOLBERG, NJ VOR/DME	COLTS NECK, NJ VOR/DME	2000

95.6233 VOR FEDERAL AIRWAY V233

SPINNER, IL VORTAC	ROBERTS, IL VOR/DME	2600
ROBERTS, IL VOR/DME	KNOX, IN VOR/DME	*3000
*2200 - MOCA		
KNOX, IN VOR/DME	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	LITCHFIELD, MI VOR/DME	3000
LITCHFIELD, MI VOR/DME	LANSING, MI VORTAC	3000
LANSING, MI VORTAC	MOUNT PLEASANT, MI VOR/DME	3000
MOUNT PLEASANT, MI VOR/DME	*CARGA, MI FIX	5500
*5000 - MRA		
CARGA, MI FIX	GAYLORD, MI VOR/DME	3000
GAYLORD, MI VOR/DME	PELLSTON, MI VORTAC	3200

95.6234 VOR FEDERAL AIRWAY V234

ST JOHNS, AZ VORTAC	*STONY, NM FIX	**12000
*9500 - MCA STONY, NM FIX , SW BND		
**10500 – MOCA		
STONY, NM FIX	ALBUQUERQUE, NM VORTAC	9000
ALBUQUERQUE, NM VORTAC	ANTON CHICO, NM VORTAC	10000
ANTON CHICO, NM VORTAC	DALHART, TX VORTAC	*8500
*7500 - MOCA		
DALHART, TX VORTAC	BRAKR, OK FIX	5700
BRAKR, OK FIX	LIBERAL, KS VORTAC	*5700
*4700 - MOCA		

FROM	TO	MEA

95.6234 VOR FEDERAL AIRWAY V234 - CONTINUED

LIBERAL, KS VORTAC	FLACK, KS FIX	4600
FLACK, KS FIX	KRIER, KS FIX	*5000
*3900 – MOCA		
KRIER, KS FIX	BYWAY, KS FIX	*7100
*3700 - MOCA		
BYWAY, KS FIX	GABIE, KS FIX	4300
GABIE, KS FIX	HUTCHINSON, KS VOR/DME	3700
HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000
WAIVE, KS FIX	*FLOSS, KS FIX	3300
*5000 - MRA		
FLOSS, KS FIX	EMPORIA, KS VORTAC	3300
EMPORIA, KS VORTAC	BUTLER, MO VORTAC	3000
BUTLER, MO VORTAC	AUGIE, MO FIX	2700
AUGIE, MO FIX	VICHY, MO VOR/DME	*3200
*2400 - MOCA		
VICHY, MO VOR/DME	DELMA, MO FIX	3000
DELMA, MO FIX	*GLASS, MO FIX	**3500
*4500 - MRA		
**2800 - MOCA		
GLASS, MO FIX	CENTRALIA, IL VORTAC	*3000
*2200 - MOCA		

95.6235 VOR FEDERAL AIRWAY V235

PEACH SPRINGS, AZ VORTAC	MORMON MESA, NV VORTAC	10000
MORMON MESA, NV VORTAC	MATZO, UT FIX	
	NE BND	12000
	SW BND	9000
MATZO, UT FIX	*CEDAR CITY, UT VOR/DME	12400
*11400 - MCA CEDAR CITY, UT VOR/DME , S BND		
CEDAR CITY, UT VOR/DME	MILFORD, UT VORTAC	10000
MILFORD, UT VORTAC	DELTA, UT VORTAC	9600
DELTA, UT VORTAC	FAIRFIELD, UT VORTAC	10300
*FAIRFIELD, UT VORTAC	GRODI, WY FIX	14000
*12500 - MCA FAIRFIELD, UT VORTAC , NE BND		
GRODI, WY FIX	FORT BRIDGER, WY VOR/DME	11000
ROCK SPRINGS, WY VOR/DME	BORGG, WY FIX	9500
BORGG, WY FIX	OILLY, WY FIX	11200
OILLY, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	9000
MUDDY MOUNTAIN, WY VOR/DME	NEWCASTLE, WY VOR	8300

95.6236 VOR FEDERAL AIRWAY V236

CEVAR, UT FIX	EMONT, UT FIX	9000
EMONT, UT FIX	#OGDEN, UT VORTAC	*8000
*7000 - MOCA		

#MTA V236 NE TO V21-101 SE 12000

95.6237 VOR FEDERAL AIRWAY V237

NEEDLES, CA VORTAC	BOULDER CITY, NV VORTAC	7600
BOULDER CITY, NV VORTAC	LAS VEGAS, NV VORTAC	6000

FROM | TO | MEA

95.6238 VOR FEDERAL AIRWAY V238

FROM	TO	MEA
MAPLES, MO VORTAC	IMPER, MO FIX	3000
IMPER, MO FIX	TROY, IL VORTAC	2600

95.6239 VOR FEDERAL AIRWAY V239

FROM	TO	MEA
FORNEY, MO VOR	BNTON, MO FIX	2900
BNTON, MO FIX	HALLSVILLE, MO VORTAC	2800

95.6240 VOR FEDERAL AIRWAY V240

FROM	TO	MEA
HARVEY, LA VORTAC	PEARL, LA FIX	2000
PEARL, LA FIX *1300 - MOCA	DOGMA, MS FIX	*2300
DOGMA, MS FIX *4000 - MRA **1300 - MOCA	*ROMMY, MS FIX	**2800
ROMMY, MS FIX	SEMMES, AL VORTAC	2000

95.6241 VOR FEDERAL AIRWAY V241

FROM	TO	MEA
SEMMES, AL VORTAC	CRESTVIEW, FL VORTAC	3000
CRESTVIEW, FL VORTAC	WIREGRASS, AL VORTAC	2000
WIREGRASS, AL VORTAC *2500 - MRA	*HAVSO, AL FIX	2000
HAVSO, AL FIX	EUFAULA, AL VORTAC	2000
EUFAULA, AL VORTAC	COLUMBUS, GA VORTAC	2400
COLUMBUS, GA VORTAC *4000 - MRA	*TIROE, GA FIX	3000

95.6242 VOR FEDERAL AIRWAY V242

FROM	TO	MEA
INTERNATIONAL FALLS, MN VORTAC	YUPNU, MN FIX	3000

95.6243 VOR FEDERAL AIRWAY V243

FROM	TO	MEA
CRAIG, FL VORTAC *2300 - MOCA	WAYCROSS, GA VORTAC	*3000
WAYCROSS, GA VORTAC	VIENNA, GA VORTAC	2300
VIENNA, GA VORTAC *3000 - MRA **2000 – MOCA	*PRATZ, GA FIX	**3000
PRATZ, GA FIX	LAGRANGE, GA VORTAC	3500
LAGRANGE, GA VORTAC *3400 - MOCA	HEFIN, AL FIX	*4000
HEFIN, AL FIX *3400 - MOCA	FELTO, GA FIX	*6000
FELTO, GA FIX *4000 - MOCA	GORGO, GA FIX	*5000
GORGO, GA FIX	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	MCMIN, TN FIX	4000
MCMIN, TN FIX *3700 - MOCA	HARME, TN FIX	*6000

95.6243 VOR FEDERAL AIRWAY V243 - CONTINUED

FROM	TO	MEA
HARME, TN FIX	BOWLING GREEN, KY VORTAC	*2800
*2300 - MOCA		
BOWLING GREEN, KY VORTAC	RENRO, KY FIX	*3000
*2400 - MOCA		
RENRO, KY FIX	*APALO, IN FIX	**4500
*4500 - MRA		
**2100 - MOCA		
APALO, IN FIX	HUNTINGBURG, IN VOR/DME	*4500
*2100 - MOCA		
HUNTINGBURG, IN VOR/DME	TERRE HAUTE, IN VORTAC	*2400
*2000 - MOCA		

95.6244 VOR FEDERAL AIRWAY V244

FROM	TO	MEA
OAKLAND, CA VORTAC	*SALAD, CA FIX	4000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	ALTAM, CA FIX	5000
ALTAM, CA FIX	BYRON, CA FIX	
	W BND	4500
	E BND	3500
BYRON, CA FIX	MANTECA, CA VOR/DME	2000
MANTECA, CA VOR/DME	WRAPS, CA FIX	
	E BND	3000
	W BND	2000
WRAPS, CA FIX	*DUCKE, CA FIX	8000
*12000 - MCA DUCKE, CA FIX , E BND		
DUCKE, CA FIX	*NIKOL, CA FIX	15100
*13000 - MCA NIKOL, CA FIX , W BND		
NIKOL, CA FIX	COALDALE, NV VORTAC	12500
COALDALE, NV VORTAC	TONOPAH, NV VORTAC	11000
TONOPAH, NV VORTAC	WILSON CREEK, NV VORTAC	12200
WILSON CREEK, NV VORTAC	*MILFORD, UT VORTAC	12000
*12000 - MCA MILFORD, UT VORTAC , E BND		
MILFORD, UT VORTAC	DETAN, UT FIX	14000
DETAN, UT FIX	HANKSVILLE, UT VORTAC	*16000
*14200 - MOCA		
HANKSVILLE, UT VORTAC	*ANIUM, UT FIX	**10500
*12300 - MCA ANIUM, UT FIX , E BND		
**8500 - MOCA		
ANIUM, UT FIX	*PAROX, CO FIX	**15500
*13300 - MCA PAROX, CO FIX , W BND		
**14800 - MOCA		
PAROX, CO FIX	*NADIN, CO FIX	**13000
*12000 - MCA NADIN, CO FIX , W BND		
**12000 - MOCA		
NADIN, CO FIX	MONTROSE, CO VOR/DME	11000
MONTROSE, CO VOR/DME	BLUE MESA, CO VOR/DME	12500
BLUE MESA, CO VOR/DME	DUFEL, CO FIX	
	E BND	16000
	W BND	12000
DUFEL, CO FIX	*FLOOD, CO FIX	16000
*10000 - MRA		
FLOOD, CO FIX	STANO, CO FIX	
	W BND	12000
	E BND	9000
STANO, CO FIX	PUEBLO, CO VORTAC	7800
PUEBLO, CO VORTAC	LAMAR, CO VOR/DME	7000
LAMAR, CO VOR/DME	*COFFE, KS FIX	**9000
*9000 - MRA		
**5400 - MOCA		

95.6244 VOR FEDERAL AIRWAY V244 - CONTINUED

FROM	TO	MEA
COFFE, KS FIX	*RANSO, KS FIX	**10000
*10000 - MRA		
**4400 – MOCA		
RANSO, KS FIX	HAYS, KS VORTAC	*5000
*3900 - MOCA		
HAYS, KS VORTAC	*GLIDE, KS FIX	3900
*4000 - MRA		
GLIDE, KS FIX	SALINA, KS VORTAC	*3600
*2900 - MOCA		

95.6245 VOR FEDERAL AIRWAY V245

FROM	TO	MEA
ALEXANDRIA, LA VORTAC	NATCHEZ, MS VOR/DME	2000
NATCHEZ, MS VOR/DME	JACKSON, MS VORTAC	3000
JACKSON, MS VORTAC	#BIGBEE, MS VORTAC	*5000
		MAA - 7000
*3000 - GNSS MEA		
#BIGBEE R-231 UNUSABLE BELOW 5000		
BIGBEE, MS VORTAC	MINIM, AL FIX	2000
MINIM, AL FIX	CRIMSON, AL VORTAC	2400

95.6246 VOR FEDERAL AIRWAY V246

FROM	TO	MEA
JANESVILLE, WI VOR/DME	DUBUQUE, IA VORTAC	3000
DUBUQUE, IA VORTAC	WAUKON, IA VORTAC	3000
WAUKON, IA VORTAC	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	MILTO, WI FIX	3000
MILTO, WI FIX	STEVENS POINT, WI VORTAC	2900

95.6247 VOR FEDERAL AIRWAY V247

FROM	TO	MEA
SCOTTSBLUFF, NE VORTAC	HIPSHER, WY VOR/DME	8100
HIPSHER, WY VOR/DME	CRAZY WOMAN, WY VOR/DME	8000
CRAZY WOMAN, WY VOR/DME	SHERIDAN, WY VOR/DME	7000
SHERIDAN, WY VOR/DME	ARDMO, MT FIX	8000
ARDMO, MT FIX	BILLINGS, MT VORTAC	
	E BND	8000
	W BND	6000
BILLINGS, MT VORTAC	PELJE, MT FIX	
	W BND	7000
	E BND	6000
PELJE, MT FIX	BAXTA, MT FIX	
	E BND	7000
	W BND	10500
BAXTA, MT FIX	**WAUTS, MT FIX	*13000
*10900 – MOCA		
**10700 - MCA WAUTS, MT FIX , E BND		
WAUTS, MT FIX	HELENA, MT VORTAC	9400

95.6248 VOR FEDERAL AIRWAY V248

FROM	TO	MEA
SALINAS, CA VORTAC	*SARDO, CA FIX	5500
*5500 - MRA		
*5500 - MCA SARDO, CA FIX , N BND		
SARDO, CA FIX	PASO ROBLES, CA VORTAC	5000
PASO ROBLES, CA VORTAC	AVENAL, CA VORTAC	4500
AVENAL, CA VORTAC	SCRAP, CA FIX	4000
SCRAP, CA FIX	SHAFTER, CA VORTAC	
	W BND	4000
	E BND	2500

FROM	TO	MEA

95.6249 VOR FEDERAL AIRWAY V249

ROBBINSVILLE, NJ VORTAC	JERYY, NJ FIX	4000
JERYY, NJ FIX	SOLBERG, NJ VOR/DME	*3000
*2000 - MOCA		
SOLBERG, NJ VOR/DME	SPARTA, NJ VORTAC	3000
SPARTA, NJ VORTAC	FLOSI, NY FIX	*4000
*3200 - MOCA		
FLOSI, NY FIX	*WEETS, NY FIX	**5500
*6000 - MRA		
**4000 - MOCA		
WEETS, NY FIX	RIMBA, NY FIX	6000
RIMBA, NY FIX	DELANCEY, NY VOR/DME	5500
DELANCEY, NY VOR/DME	MILID, NY FIX	4300
MILID, NY FIX	UTICA, NY VORTAC	3700

95.6250 VOR FEDERAL AIRWAY V250

O'NEILL, NE VORTAC	HIVNO, SD FIX	3700
YANKTON, SD VOR/DME	WORTHINGTON, MN VOR/DME	3400
WORTHINGTON, MN VOR/DME	MANKATO, MN VOR/DME	3400

95.6251 VOR FEDERAL AIRWAY V251

ADDERS, IL VORTAC	CHAMPAIGN, IL VORTAC	2500
CHAMPAIGN, IL VORTAC	DANVILLE, IL VORTAC	2500
DANVILLE, IL VORTAC	BOILER, IN VORTAC	2500

95.6252 VOR FEDERAL AIRWAY V252

U.S. CANADIAN BORDER	BULGE, NY FIX	*3100
*2500 - MOCA		
BULGE, NY FIX	GENESEO, NY VOR/DME	*4000
*2400 - MOCA		
GENESEO, NY VOR/DME	GIBBE, NY FIX	4000
GIBBE, NY FIX	BINGHAMTON, NY VORTAC	3800
BINGHAMTON, NY VORTAC	HUGIE, PA FIX	4000
HUGIE, PA FIX	RAGER, NY FIX	4400
RAGER, NY FIX	HUGUENOT, NY VOR/DME	4000
HUGUENOT, NY VOR/DME	COATE, NJ FIX	*4000
*3300 - MOCA		
COATE, NJ FIX	SLYNG, NJ FIX	*5000
*2700 - MOCA		
SLYNG, NJ FIX	ROBBINSVILLE, NJ VORTAC	2600
ROBBINSVILLE, NJ VORTAC	DUPONT, DE VORTAC	2000

95.6253 VOR FEDERAL AIRWAY V253

LUCIN, UT VORTAC	ROGET, ID FIX	11000
ROGET, ID FIX	*TWIN FALLS, ID VORTAC	
	NW BND	9000
	SE BND	11000
*9000 - MCA TWIN FALLS, ID VORTAC , SE BND		
TWIN FALLS, ID VORTAC	LITKE, ID FIX	6000

FROM	TO	MEA

95.6253 VOR FEDERAL AIRWAY V253 - CONTINUED

LITKE, ID FIX	ALKAL, ID FIX	
	SE BND	*6000
	NW BND	*9500
*5700 - MOCA		
ALKAL, ID FIX	CANEK, ID FIX	*9500
*8500 - MOCA		
CANEK, ID FIX	*BOISE, ID VORTAC	7000
*7400 - MCA BOISE, ID VORTAC , N BND		
BOISE, ID VORTAC	BANGS, ID FIX	9000
BANGS, ID FIX	DONNELLY, ID VOR/DME	10400
DONNELLY, ID VOR/DME	OXLEY, ID FIX	12000
OXLEY, ID FIX	*NEZ PERCE, ID VOR/DME	
	SE BND	12000
	NW BND	7400
*6400 - MCA NEZ PERCE, ID VOR/DME , SE BND		
NEZ PERCE, ID VOR/DME	PULLMAN, WA VOR/DME	6000
PULLMAN, WA VOR/DME	SPOKANE, WA VORTAC	*6000
*5600 - MOCA		

95.6254 VOR FEDERAL AIRWAY V254

HIPSHER, WY VOR/DME	TOOKE, WY FIX	*10000
*7500 - MOCA		
TOOKE, WY FIX	GILLETTE, WY VOR/DME	7000
GILLETTE, WY VOR/DME	MILES CITY, MT VOR/DME	*9000
*6900 - MOCA		
MILES CITY, MT VOR/DME	GLASGOW, MT VOR/DME	6000

95.6255 VOR FEDERAL AIRWAY V255

GARDEN CITY, KS VORTAC	HAYS, KS VORTAC	4600

95.6256 VOR FEDERAL AIRWAY V256

TULSA, OK VORTAC	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	HUTCHINSON, KS VOR/DME	3300

95.6257 VOR FEDERAL AIRWAY V257

PHOENIX, AZ VORTAC	*AVENT, AZ FIX	
	NW BND	7000
	SE BND	5000
*8000 - MRA		
AVENT, AZ FIX	*BANYO, AZ FIX	
	NW BND	7000
	SE BND	5000
*6000 - MRA		
BANYO, AZ FIX	COYOT, AZ FIX	*9000
*8100 - MOCA		
COYOT, AZ FIX	MAIER, AZ FIX	*10000
*9000 - GNSS MEA		
MAIER, AZ FIX	DRAKE, AZ VORTAC	10000
DRAKE, AZ VORTAC	*BISOP, AZ FIX	**10000
*11000 - MRA		
**8400 - MOCA		
**9000 - GNSS MEA		

95.6257 VOR FEDERAL AIRWAY V257 - CONTINUED

BISOP, AZ FIX	*GRAND CANYON, AZ VOR/DME	10000
*14500 - MCA GRAND CANYON, AZ VOR/DME , N BND		
GRAND CANYON, AZ VOR/DME	*DOZIT, AZ FIX	**14500
*14500 - MCA DOZIT, AZ FIX , S BND		
**11200 – MOCA		
DOZIT, AZ FIX	JALMA, AZ FIX	*14500
*11200 - MOCA		
JALMA, AZ FIX	KACIR, AZ FIX	*13000
*11000 - MOCA		
KACIR, AZ FIX	BRYCE CANYON, UT VORTAC	11600
BRYCE CANYON, UT VORTAC	DELTA, UT VORTAC	12000
DELTA, UT VORTAC	*VERNE, UT FIX	11500
*12200 - MCA VERNE, UT FIX , N BND		
VERNE, UT FIX	*STACO, UT FIX	13000
*10500 - MCA STACO, UT FIX , S BND		
STACO, UT FIX	MOINT, UT FIX	*13000
*8900 - MOCA		
MOINT, UT FIX	*KREBS, UT FIX	**13000
*13000 - MRA		
**9600 – MOCA		
KREBS, UT FIX	MALAD CITY, ID VOR/DME	*11000
*10000 - MOCA		
MALAD CITY, ID VOR/DME	BANNO, ID FIX	10000
BANNO, ID FIX	*POCATELLO, ID VOR/DME	9000
*8000 - MCA POCATELLO, ID VOR/DME , SE BND		
POCATELLO, ID VOR/DME	ROCCA, ID FIX	7000
ROCCA, ID FIX	*DUBOIS, ID VORTAC	7500
*8600 - MCA DUBOIS, ID VORTAC , N BND		
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	*12000
*11200 - MOCA		
DILLON, MT VOR/DME	DIVID, MT FIX	11000
DIVID, MT FIX	*COPPERTOWN, MT VOR/DME	10000
*10000 - MCA COPPERTOWN, MT VOR/DME , SE BND		
COPPERTOWN, MT VOR/DME	GLUES, MT FIX	9200
GLUES, MT FIX	SCAAT, MT FIX	*16000
*9200 - MOCA		
SCAAT, MT FIX	SIEBE, MT FIX	*13000
*9800 - MOCA		
*9800 - GNSS MEA		
SIEBE, MT FIX	WOKEN, MT FIX	9000
WOKEN, MT FIX	GREAT FALLS, MT VORTAC	8800
GREAT FALLS, MT VORTAC	SHONK, MT FIX	6200
SHONK, MT FIX	HAVRE, MT VOR/DME	6000

95.6258 VOR FEDERAL AIRWAY V258

CHARLESTON, WV VORTAC	*SCRIB, WV FIX	4000
*4100 - MCA SCRIB, WV FIX , SE BND		
SCRIB, WV FIX	BECKLEY, WV VORTAC	5000
BECKLEY, WV VORTAC	ZOOMS, WV FIX	*10000
*6300 - MOCA		
*6300 - GNSS MEA		
ZOOMS, WV FIX	ROANOKE, VA VORTAC	6400
ROANOKE, VA VORTAC	PIGGS, VA FIX	5000
PIGGS, VA FIX	ENTUK, VA FIX	*4000
*3400 - MOCA		
ENTUK, VA FIX	DANVILLE, VA VOR	3000

95.6259 VOR FEDERAL AIRWAY V259

FROM	TO	MEA
GRAND STRAND, SC VORTAC	*CLETA, SC FIX	2000
*3000 - MRA		
CLETA, SC FIX	FLORENCE, SC VORTAC	2000
FLORENCE, SC VORTAC	CHESTERFIELD, SC VOR/DME	2000
CHESTERFIELD, SC VOR/DME	HUSTN, NC FIX	2500
MOPED, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	4000
BARRETTS MOUNTAIN, NC VOR/DME	*GOWBE, NC FIX	5000
*6000 - MCA GOWBE, NC FIX , N BND		
GOWBE, NC FIX	HOLSTON MOUNTAIN, TN VORTAC	7500

95.6260 VOR FEDERAL AIRWAY V260

FROM	TO	MEA
CHARLESTON, WV VORTAC	MONTS, WV FIX	3400
MONTS, WV FIX	RAINELLE, WV VOR	5100
RAINELLE, WV VOR	ROANOKE, VA VORTAC	*6000
*5400 - MOCA		
ROANOKE, VA VORTAC	GOOZE, VA FIX	5000
GOOZE, VA FIX	OTINE, VA FIX	
	W BND	*5000
	E BND	*3000
*2900 - MOCA		
LYNCHBURG, VA VORTAC	FLAT ROCK, VA VORTAC	3000
FLAT ROCK, VA VORTAC	RICHMOND, VA VORTAC	2600
RICHMOND, VA VORTAC	HOPEWELL, VA VORTAC	1900
HOPEWELL, VA VORTAC	FRANKLIN, VA VORTAC	3000
FRANKLIN, VA VORTAC	COFIELD, NC VORTAC	1800

95.6261 VOR FEDERAL AIRWAY V261

FROM	TO	MEA
WICHITA, KS VORTAC	CEKIS, KS FIX	3600
CEKIS, KS FIX	MANHATTAN, KS VOR/DME	3000

95.6262 VOR FEDERAL AIRWAY V262

FROM	TO	MEA
PEORIA, IL VORTAC	*DULAP, IL FIX	2700
*3000 - MRA		
DULAP, IL FIX	BRADFORD, IL VORTAC	2700
BRADFORD, IL VORTAC	MOTIF, IL FIX	2700

95.6263 VOR FEDERAL AIRWAY V263

FROM	TO	MEA
CORONA, NM VORTAC	ENCIA, NM FIX	9700
ENCIA, NM FIX	ALBUQUERQUE, NM VORTAC	8000
ALBUQUERQUE, NM VORTAC	*ZIASE, NM FIX	9000
*11600 - MCA ZIASE, NM FIX , E BND		
ZIASE, NM FIX	SANTA FE, NM VORTAC	9000
SANTA FE, NM VORTAC	*FORT UNION, NM VORTAC	12500
*10900 - MCA FORT UNION, NM VORTAC , N BND		
*11300 - MCA FORT UNION, NM VORTAC , W BND		
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	*12000
*11100 - MOCA		
CIMARRON, NM VORTAC	TOBE, CO VOR/DME	*11600
*10700 - MOCA		
TOBE, CO VOR/DME	LAMAR, CO VOR/DME	*7400
*6700 - MOCA		

FROM	TO	MEA

95.6263 VOR FEDERAL AIRWAY V263 - CONTINUED

LAMAR, CO VOR/DME	HUGO, CO VOR/DME	*6900
*6200 - MOCA		
HUGO, CO VOR/DME	*LIMEX, CO FIX	9000
*9000 – MRA		
LIMEX, CO FIX	AKRON, CO VOR/DME	7000
PIERRE, SD VORTAC	ABERDEEN, SD VOR/DME	4000

95.6264 VOR FEDERAL AIRWAY V264

LOS ANGELES, CA VORTAC	STABO, CA FIX	2500
STABO, CA FIX	AMTRA, CA FIX	3000
AMTRA, CA FIX	*POMONA, CA VORTAC	4500
*5600 - MCA POMONA, CA VORTAC , E BND		
POMONA, CA VORTAC	*RAVON, CA FIX	6000
*11400 - MCA RAVON, CA FIX , E BND		
RAVON, CA FIX	REANS, CA FIX	
	E BND	12800
	W BND	9000
REANS, CA FIX	*YUCCA, CA FIX	13500
*12000 - MCA YUCCA, CA FIX , W BND		
YUCCA, CA FIX	TWENTYNINE PALMS, CA VORTAC	*8500
*7700 - MOCA		
TWENTYNINE PALMS, CA VORTAC	PARKER, CA VORTAC	6000
DRAKE, AZ VORTAC	OATES, AZ FIX	10100
OATES, AZ FIX	WINSLOW, AZ VORTAC	10800
WINSLOW, AZ VORTAC	ST JOHNS, AZ VORTAC	8900
ST JOHNS, AZ VORTAC	*SOCORRO, NM VORTAC	**12000
*10000 - MCA SOCORRO, NM VORTAC , W BND		
**11100 - MOCA		
SOCORRO, NM VORTAC	CORONA, NM VORTAC	9500
CORONA, NM VORTAC	TUCUMCARI, NM VORTAC	*11000
*9000 - MOCA		

95.6265 VOR FEDERAL AIRWAY V265

KRANT, MD FIX	WESTMINSTER, MD VORTAC	2600
WESTMINSTER, MD VORTAC	HARRISBURG, PA VORTAC	3400
HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	4000
BRADFORD, PA VOR/DME	JAMESTOWN, NY VOR/DME	4000
JAMESTOWN, NY VOR/DME	DUNKIRK, NY VORTAC	4000
DUNKIRK, NY VORTAC	U.S. CANADIAN BORDER	2400

95.6266 VOR FEDERAL AIRWAY V266

ELECTRIC CITY, SC VORTAC	PELZE, SC FIX	2800
PELZE, SC FIX	SPARTANBURG, SC VORTAC	2900
GREENSBORO, NC VORTAC	SOUTH BOSTON, VA VORTAC	2500
SOUTH BOSTON, VA VORTAC	LAWRENCEVILLE, VA VORTAC	*3000
*2000 - MOCA		
*2300 - GNSS MEA		
LAWRENCEVILLE, VA VORTAC	FRANKLIN, VA VORTAC	2000
FRANKLIN, VA VORTAC	SUNNS, NC FIX	*2000
*1500 - MOCA		
SUNNS, NC FIX	ELIZABETH CITY, NC VOR/DME	*5000
*4000 - MOCA		
ELIZABETH CITY, NC VOR/DME	WRIGHT BROTHERS, NC VOR/DME	4000

95.6267 VOR FEDERAL AIRWAY V267

FROM	TO	MEA
DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	*2000
*1500 - MOCA		
PAHOKEE, FL VORTAC	DIDDY, FL FIX	*2000
*1400 - MOCA		
DIDDY, FL FIX	BAIRN, FL FIX	2600
BAIRN, FL FIX	ORLANDO, FL VORTAC	2000
ORLANDO, FL VORTAC	PAOLA, FL FIX	1700
PAOLA, FL FIX	WORMS, FL FIX	2700
WORMS, FL FIX	CRAIG, FL VORTAC	*3000
*2100 - MOCA		
CRAIG, FL VORTAC	BAXLY, GA FIX	3000
BAXLY, GA FIX	DUBLIN, GA VORTAC	*3000
*2300 – MOCA		
DUBLIN, GA VORTAC	ATHENS, GA VORTAC	*3000
*2200 - MOCA		
ATHENS, GA VORTAC	IRMOS, GA FIX	3000
IRMOS, GA FIX	CORCE, GA FIX	3800
CORCE, GA FIX	TALLE, GA FIX	5300
TALLE, GA FIX	HARRIS, GA VORTAC	7000
HARRIS, GA VORTAC	FORMS, NC FIX	7800
FORMS, NC FIX	*KNITS, TN FIX	7000
*6000 - MCA KNITS, TN FIX , S BND		
KNITS, TN FIX	VOLUNTEER, TN VORTAC	4200

95.6268 VOR FEDERAL AIRWAY V268

FROM	TO	MEA
NESTO, PA FIX	PLEEZ, PA FIX	*4000
*3100 - MOCA		
PLEEZ, PA FIX	INDIAN HEAD, PA VORTAC	*5000
*4500 - MOCA		
INDIAN HEAD, PA VORTAC	HAGERSTOWN, MD VOR	*12000
*4600 - MOCA		
*4700 - GNSS MEA		
HAGERSTOWN, MD VOR	KEMAR, MD FIX	5000
KEMAR, MD FIX	WESTMINSTER, MD VORTAC	*4000
*2600 - MOCA		
*2700 - GNSS MEA		
WESTMINSTER, MD VORTAC	BALTIMORE, MD VORTAC	2500
BALTIMORE, MD VORTAC	SMYRNA, DE VORTAC	2000
SMYRNA, DE VORTAC	LEEAH, NJ FIX	*1800
*1300 - MOCA		
LEEAH, NJ FIX	AVALO, NJ FIX	2000
AVALO, NJ FIX	HARBO, NJ FIX	*6000
*4000 - GNSS MEA		
HARBO, NJ FIX	*DRIFT, NJ FIX	**7500
*6000 - MRA		
**3000 - GNSS MEA		
DRIFT, NJ FIX	MANTA, NJ FIX	*12000
*3000 - GNSS MEA		
MANTA, NJ FIX	PLUME, NJ FIX	*7000
*2000 - MOCA		
*3000 - GNSS MEA		
PLUME, NJ FIX	*KOPPY, NY FIX	**4000
*5000 - MRA		
**3000 - MOCA		
**3000 - GNSS MEA		
KOPPY, NY FIX	BEADS, NY FIX	*4000
*3000 - MOCA		
*3000 - GNSS MEA		

95.6268 VOR FEDERAL AIRWAY V268 – CONTINUED

BEADS, NY FIX	HAMPTON, NY VORTAC	*2500
*1600 - MOCA		
HAMPTON, NY VORTAC	SANDY POINT, RI VOR/DME	2000
SANDY POINT, RI VOR/DME	INNDY, MA FIX	2000
INNDY, MA FIX	*TONNI, MA FIX	6000
*6000 - MRA		
TONNI, MA FIX	*MESHL, ME FIX	**5000
*5000 - MRA		
**4000 - GNSS MEA		
MESHL, ME FIX	SAPPE, ME FIX	3000
SAPPE, ME FIX	AUGUSTA, ME VOR/DME	*3000
*1800 – MOCA		

95.6269 VOR FEDERAL AIRWAY V269

ELY, NV VOR/DME	*SPATS, NV FIX	**13000
*13000 - MCA SPATS, NV FIX , S BND		
**12200 - MOCA		
SPATS, NV FIX	WELLS, NV VOR	11000
WELLS, NV VOR	*TWIN FALLS, ID VORTAC	**13000
*7500 - MCA TWIN FALLS, ID VORTAC , S BND		
**11000 - MOCA		
**11000 - GNSS MEA		
TWIN FALLS, ID VORTAC	BURLEY, ID VOR/DME	7000
BURLEY, ID VOR/DME	POCATELLO, ID VOR/DME	7000
POCATELLO, ID VOR/DME	*JATTS, ID FIX	8000
*9700 - MCA JATTS, ID FIX , NW BND		
JATTS, ID FIX	YOYYU, ID FIX	*16000
*13300 - MOCA		
*13300 - GNSS MEA		
YOYYU, ID FIX	SALMON, ID VOR/DME	*14000
*13500 - MOCA		
*13500 - GNSS MEA		
SALMON, ID VOR/DME	DONNELLY, ID VOR/DME	12000
DONNELLY, ID VOR/DME	HOVEL, ID FIX	12000
HOVEL, ID FIX	FONNA, OR FIX	*12000
*8700 - MOCA		
*9000 - GNSS MEA		
FONNA, OR FIX	WILDHORSE, OR VOR/DME	9000
WILDHORSE, OR VOR/DME	DESCHUTES, OR VORTAC	9500
DESCHUTES, OR VORTAC	MANTE, OR FIX	10000
MANTE, OR FIX	MOBIL, OR FIX	*10000
*7600 - MOCA		
*8000 - GNSS MEA		
MOBIL, OR FIX	COBUR, OR FIX	
	NE BND	7000
	SW BND	5200
COBUR, OR FIX	*EUGENE, OR VORTAC	
	NE BND	5000
	SW BND	4400
*3800 - MCA EUGENE, OR VORTAC , NE BND		

95.6270 VOR FEDERAL AIRWAY V270

ERIE, PA VORTAC	JAMESTOWN, NY VOR/DME	4000
JAMESTOWN, NY VOR/DME	*VAIRS, NY FIX	4000
*11000 - MRA		
VAIRS, NY FIX	WELLSVILLE, NY VORTAC	*4500
*4000 - MOCA		

FROM	TO	MEA

95.6270 VOR FEDERAL AIRWAY V270 – CONTINUED

WELLSVILLE, NY VORTAC	WOMAN, NY FIX	*4500
*4000 – MOCA		
WOMAN, NY FIX	ELMIRA, NY VOR/DME	*4000
*3400 - MOCA		
ELMIRA, NY VOR/DME	BINGHAMTON, NY VORTAC	3500
BINGHAMTON, NY VORTAC	ARMON, NY FIX	3600
ARMON, NY FIX	DELANCEY, NY VOR/DME	4500
DELANCEY, NY VOR/DME	ATHOS, NY FIX	6300
ATHOS, NY FIX	CHESTER, MA VOR/DME	*4500
*4000 - MOCA		
CHESTER, MA VOR/DME	GLYDE, MA FIX	4000
GLYDE, MA FIX	BOSTON, MA VOR/DME	*4000
*3000 - MOCA		

95.6271 VOR FEDERAL AIRWAY V271

MUSKEGON, MI VORTAC	WELKO, MI FIX	*3000
*2500 - MOCA		
WELKO, MI FIX	MANISTEE, MI VOR/DME	*4000
*2400 - MOCA		
MANISTEE, MI VOR/DME	ESCANABA, MI VOR/DME	*3000
*2100 - MOCA		

95.6272 VOR FEDERAL AIRWAY V272

DALHART, TX VORTAC	BORGER, TX VORTAC	5700
BORGER, TX VORTAC	*BRISC, TX FIX	4800
*7000 - MRA		
BRISC, TX FIX	SAYRE, OK VORTAC	4700
SAYRE, OK VORTAC	SERTS, OK FIX	3900
SERTS, OK FIX	LIONS, OK FIX	*3700
*3100 - MOCA		
LIONS, OK FIX	WILL ROGERS, OK VORTAC	3100
WILL ROGERS, OK VORTAC	MINGG, OK FIX	*4000
*3000 - MOCA		
MINGG, OK FIX	HOLLE, OK FIX	*4000
*2600 - MOCA		
HOLLE, OK FIX	MC ALESTER, OK VORTAC	*3000
*2500 - MOCA		
MC ALESTER, OK VORTAC	FORT SMITH, AR VORTAC	*3500
*2900 - MOCA		

95.6273 VOR FEDERAL AIRWAY V273

FALLZ, NJ FIX	HUGUENOT, NY VOR/DME	3000
HUGUENOT, NY VOR/DME	HANCOCK, NY VOR/DME	4000
HANCOCK, NY VOR/DME	GEORGETOWN, NY VORTAC	4000
GEORGETOWN, NY VORTAC	SYRACUSE, NY VORTAC	4000

95.6274 VOR FEDERAL AIRWAY V274

PULLMAN, MI VOR/DME	GRAND RAPIDS, MI VOR/DME	3000
GRAND RAPIDS, MI VOR/DME	SAGINAW, MI VOR/DME	2600

95.6275 VOR FEDERAL AIRWAY V275

CINCINNATI, KY VORTAC	DAYTON, OH VOR/DME	2900
DAYTON, OH VOR/DME	KLINE, OH FIX	*6000
*3000 - MOCA		

FROM	TO	MEA

95.6276 VOR FEDERAL AIRWAY V276

ERIE, PA VORTAC	FRANKLIN, PA VOR	3600
FRANKLIN, PA VOR	CLARION, PA VOR/DME	*3700
*3200 - MOCA		
CLARION, PA VOR/DME	TYRONE, PA VORTAC	4600
TYRONE, PA VORTAC	RASHE, PA FIX	4500
RASHE, PA FIX	*MORTO, PA FIX	4000
*5000 - MRA		
MORTO, PA FIX	RAVINE, PA VORTAC	4000
RAVINE, PA VORTAC	*HIKES, PA FIX	**4000
*4000 - MRA		
**3500 - MOCA		
HIKES, PA FIX	YARDLEY, PA VOR/DME	*4000
*2300 - MOCA		
YARDLEY, PA VOR/DME	ROBBINSVILLE, NJ VORTAC	2100
ROBBINSVILLE, NJ VORTAC	CASVI, NJ FIX	1900
CASVI, NJ FIX	*GAMBY, NJ FIX	**3000
*6000 - MRA		
**1400 - MOCA		
GAMBY, NJ FIX	MANTA, NJ FIX	*6000
*2000 - MOCA		
*2000 - GNSS MEA		
MANTA, NJ FIX	*PREPI, OA FIX	**6000
*8000 - MRA		
**2000 - MOCA		
**3000 - GNSS MEA		

95.6277 VOR FEDERAL AIRWAY V277

ROSEWOOD, OH VORTAC	FORT WAYNE, IN VORTAC	3000
FORT WAYNE, IN VORTAC	BAGEL, IN FIX	2800
BAGEL, IN FIX	KEELER, MI VOR/DME	4000

95.6278 VOR FEDERAL AIRWAY V278

TEXICO, TX VORTAC	PLAINVIEW, TX VOR/DME	5800
PLAINVIEW, TX VOR/DME	GUTHRIE, TX VORTAC	*5100
*4600 - MOCA		
GUTHRIE, TX VORTAC	*NIFDE, TX FIX	**4500
*6500 - MRA		
**3300 - MOCA		
NIFDE, TX FIX	BOWIE, TX VORTAC	*4500
*2600 - MOCA		
*3300 - GNSS MEA		
BOWIE, TX VORTAC	BONHAM, TX VORTAC	4000
BONHAM, TX VORTAC	PARIS, TX VOR/DME	2400
PARIS, TX VOR/DME	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	WARLO, AR FIX	2200
WARLO, AR FIX	LOCUS, AR FIX	*3000
*1700 - MOCA		
LOCUS, AR FIX	MONTICELLO, AR VOR/DME	*2500
*1600 - MOCA		
MONTICELLO, AR VOR/DME	GREENVILLE, MS VOR/DME	*2000
*1500 - MOCA		
GREENVILLE, MS VOR/DME	SIDON, MS VORTAC	2000
SIDON, MS VORTAC	BIGBEE, MS VORTAC	2400
BIGBEE, MS VORTAC	MINIM, AL FIX	2000
MINIM, AL FIX	VULCAN, AL VORTAC	2600

95.6279 VOR FEDERAL AIRWAY V279

FROM	TO	MEA
GUNNE, OH FIX	FLAG CITY, OH VORTAC	3000

95.6280 VOR FEDERAL AIRWAY V280

FROM	TO	MEA
U.S. MEXICAN BORDER	EL PASO, TX VORTAC	*8000
*6300 - MOCA		
EL PASO, TX VORTAC	PINON, NM VOR/DME	8800
PINON, NM VOR/DME	*HOPET, NM FIX	8800
*7400 - MCA HOPET, NM FIX , SW BND		
HOPET, NM FIX	CHISUM, NM VORTAC	7000
CHISUM, NM VORTAC	*FRAIZ, NM FIX	**6500
*6700 - MRA		
**5700 - MOCA		
FRAIZ, NM FIX	*DEBRA, NM FIX	**7500
*7500 - MRA		
**5700 - MOCA		
DEBRA, NM FIX	TEXICO, TX VORTAC	*6500
*5600 - MOCA		
TEXICO, TX VORTAC	PANHANDLE, TX VORTAC	*5900
*5600 - MOCA		
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	*5500
*5000 - MOCA		
MITBEE, OK VORTAC	CARKO, KS FIX	4000
CARKO, KS FIX	WIPET, KS FIX	*8000
*3500 - MOCA		
WIPET, KS FIX	HUTCHINSON, KS VOR/DME	3300
HUTCHINSON, KS VOR/DME	BUHLS, KS FIX	4000
BUHLS, KS FIX	*WILSY, KS FIX	**4500
*5000 - MRA		
**2800 - MOCA		
WILSY, KS FIX	HEYDN, KS FIX	*4500
*2900 - MOCA		
HEYDN, KS FIX	TOPEKA, KS VORTAC	3700

95.6281 VOR FEDERAL AIRWAY V281

FROM	TO	MEA
MOSES LAKE, WA VOR/DME	PASCO, WA VOR/DME	4000

95.6282 VOR FEDERAL AIRWAY V282

FROM	TO	MEA
SARANAC LAKE, NY VOR/DME	*FAWNS, NY FIX	5000
*5000 - MCA FAWNS, NY FIX , S BND		
#FAWNS, NY FIX	U.S. CANADIAN BORDER	5000
#FIX OVERLIES U.S. CANADIAN BORDER.		

95.6283 VOR FEDERAL AIRWAY V283

FROM	TO	MEA
SEAL BEACH, CA VORTAC	*JOGIT, CA FIX	4000
*6000 - MCA JOGIT, CA FIX , E BND		
JOGIT, CA FIX	*KAYOH, CA FIX	6000
*7400 - MCA KAYOH, CA FIX , E BND		
KAYOH, CA FIX	HOMELAND, CA VOR	8000
HOMELAND, CA VOR	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 - MOCA		
BULGY, CA FIX	HECTOR, CA VORTAC	*9000
*7000 – MOCA		

FROM	TO	MEA

95.6284 VOR FEDERAL AIRWAY V284

HECTOR, CA VORTAC	*WHIGG, CA FIX	10000
*12000 – MRA		
WHIGG, CA FIX	BOULDER CITY, NV VORTAC	10000
SEA ISLE, NJ VORTAC	CEDAR LAKE, NJ VORTAC	*2500
*1800 - MOCA		

95.6285 VOR FEDERAL AIRWAY V285

BRICKYARD, IN VORTAC	KOKOMO, IN VORTAC	2700
KOKOMO, IN VORTAC	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	KALAMAZOO, MI VOR/DME	2600
KALAMAZOO, MI VOR/DME	GRAND RAPIDS, MI VOR/DME	3000
GRAND RAPIDS, MI VOR/DME	CLOCK, MI FIX	2600
CLOCK, MI FIX	WHITE CLOUD, MI VOR/DME	2800
WHITE CLOUD, MI VOR/DME	MANISTEE, MI VOR/DME	*4000
*2400 - MOCA		
MANISTEE, MI VOR/DME	TRAVERSE CITY, MI VORTAC	2800

95.6286 VOR FEDERAL AIRWAY V286

#ELKINS, WV VORTAC	DERIN, WV FIX	5700
#ELKINS R-105 UNUSABLE BYD 32 BLW 9000		
DERIN, WV FIX	TEAKK, VA FIX	*9000
*6900 - MOCA		
*6900 - GNSS MEA		
TEAKK, VA FIX	CASANOVA, VA VORTAC	*6500
*5800 - MOCA		
*5800 - GNSS MEA		
CASANOVA, VA VORTAC	FLUKY, VA FIX	*3000
*2300 - MOCA		
FLUKY, VA FIX	BROOKE, VA VORTAC	2000
BROOKE, VA VORTAC	*ZUNAR, VA FIX	**3000
*5000 - MCA ZUNAR, VA FIX , SE BND		
**2000 - GNSS MEA		
ZUNAR, VA FIX	FAGED, VA FIX	*5000
*2000 - GNSS MEA		
FAGED, VA FIX	GWYNN, VA FIX	2000
GWYNN, VA FIX	CAPE CHARLES, VA VORTAC	*2000
*1500 - MOCA		

95.6287 VOR FEDERAL AIRWAY V287

FORT JONES, CA VOR/DME	KLAMA, OR FIX	*12000
*9800 - MOCA		
KLAMA, OR FIX	*ROGUE VALLEY, OR VORTAC	
	SE BND	12000
	NW BND	8000
*7000 - MCA ROGUE VALLEY, OR VORTAC , SE BND		
ROGUE VALLEY, OR VORTAC	KOLER, OR FIX	*8000
*7400 - MOCA		
KOLER, OR FIX	CAMAS, OR FIX	*8500
*6000 - MOCA		
CAMAS, OR FIX	DEROY, OR FIX	
	NW BND	5500
	SE BND	8000
DEROY, OR FIX	NORTH BEND, OR VORTAC	
	NW BND	4000
	SE BND	8000
NORTH BEND, OR VORTAC	ZUBOR, OR FIX	
	N BND	6000
	S BND	3700
RARES, OR FIX	CRAAF, OR FIX	6000

FROM	TO	MEA

95.6287 VOR FEDERAL AIRWAY V287 - CONTINUED

CRAAF, OR FIX	MCCOY, OR FIX	*4000
*3400 - MOCA		
MCCOY, OR FIX	NEWBERG, OR VOR/DME	3600
NEWBERG, OR VOR/DME	BATTLE GROUND, WA VORTAC	4000
BATTLE GROUND, WA VORTAC	*MALAY, WA FIX	
	NW BND	6000
	SE BND	5000
*9500 - MRA		
MALAY, WA FIX	*TONNO, WA FIX	6000
*5000 - MRA		
TONNO, WA FIX	OLYMPIA, WA VORTAC	4000
OLYMPIA, WA VORTAC	*CARRO, WA FIX	**4000
*4000 - MRA		
**1900 - MOCA		
CARRO, WA FIX	*ARPEE, WA FIX	**6000
*4700 - MCA ARPEE, WA FIX , S BND		
**5200 - MOCA		
ARPEE, WA FIX	LOFAL, WA FIX	4000
LOFAL, WA FIX	PAINE, WA VOR/DME	*3000
*1800 - MOCA		
PAINE, WA VOR/DME	PENN COVE, WA VOR/DME	*3000
*1800 - MOCA		

95.6288 VOR FEDERAL AIRWAY V288

LUCIN, UT VORTAC	*CORIN, UT FIX	**13000
*13000 - MRA		
*16000 - MCA CORIN, UT FIX , E BND		
**9400 - MOCA		
CORIN, UT FIX	FORT BRIDGER, WY VOR/DME	*16000
*11600 - MOCA		
*12000 - GNSS MEA		

95.6289 VOR FEDERAL AIRWAY V289

BEAUMONT, TX VOR/DME	HONEE, TX FIX	2000
HONEE, TX FIX	LUFKIN, TX VORTAC	*3000
*1900 - MOCA		
LUFKIN, TX VORTAC	*PIPES, TX FIX	2400
*2400 - MRA		
PIPES, TX FIX	GREGG COUNTY, TX VORTAC	2000
GREGG COUNTY, TX VORTAC	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	*PROVO, AR FIX	**2200
*4500 - MRA		
**1700 - MOCA		
PROVO, AR FIX	UMPIR, AR FIX	*3900
*3400 - MOCA		
UMPIR, AR FIX	BATEZ, AR FIX	*4300
*3800 - MOCA		
BATEZ, AR FIX	FORT SMITH, AR VORTAC	*4100
*3600 - MOCA		
FORT SMITH, AR VORTAC	MULBY, AR FIX	
	SW BND	*3000
	NE BND	*4000
*1800 - MOCA		
MULBY, AR FIX	HARRISON, AR VOR/DME	4000
HARRISON, AR VOR/DME	DOGWOOD, MO VORTAC	3400
DOGWOOD, MO VORTAC	GOBEY, MO FIX	3400
GOBEY, MO FIX	PEKLE, MO FIX	3400
PEKLE, MO FIX	VICHY, MO VOR/DME	3000

FROM	TO	MEA

95.6290 VOR FEDERAL AIRWAY V290

RAINELLE, WV VOR	*NATTS, WV FIX	6000
*6000 - MRA		
NATTS, WV FIX	*MONTEBELLO, VA VOR/DME	6000
*6000 - MCA MONTEBELLO, VA VOR/DME , SE BND		
MONTEBELLO, VA VOR/DME	ROMAN, VA FIX	6300
ROMAN, VA FIX	ARVON, VA FIX	4000
ARVON, VA FIX	#FLAT ROCK, VA VORTAC	#*5000
*2200 - GNSS MEA		
#FLAT ROCK R-297 UNUSABLE.		
TAR RIVER, NC VORTAC	KENIR, NC FIX	*4000
*1500 - MOCA		
KENIR, NC FIX	PUNGO, NC FIX	*5000
*1500 - MOCA		

95.6291 VOR FEDERAL AIRWAY V291

HOBBS, NM VORTAC	CHISUM, NM VORTAC	*6000
*5500 - MOCA		
CHISUM, NM VORTAC	DUPAL, NM FIX	
	NW BND	9000
	SE BND	6000
DUPAL, NM FIX	CORONA, NM VORTAC	9000
CORONA, NM VORTAC	ALBUQUERQUE, NM VORTAC	10000
ALBUQUERQUE, NM VORTAC	AROYO, NM FIX	8300
AROYO, NM FIX	*LORAT, NM FIX	9500
*12400 - MCA LORAT, NM FIX , W BND		
LORAT, NM FIX	BLINI, NM FIX	13300
BLINI, NM FIX	GALLUP, NM VORTAC	11000
GALLUP, NM VORTAC	FORAN, AZ FIX	9400
FORAN, AZ FIX	WINSLOW, AZ VORTAC	9000
WINSLOW, AZ VORTAC	FLAGSTAFF, AZ VOR/DME	*10100
*10100 - MOCA		
FLAGSTAFF, AZ VOR/DME	KACEE, AZ FIX	11000
KACEE, AZ FIX	PEACH SPRINGS, AZ VORTAC	10000

95.6292 VOR FEDERAL AIRWAY V292

HANCOCK, NY VOR/DME	SAGES, NY FIX	6000
SAGES, NY FIX	*WIGAN, NY FIX	**10000
*4500 - MRA		
**6400 - MOCA		
**7000 - GNSS MEA		
WIGAN, NY FIX	#BARNES, MA VORTAC	*10000
*4900 - MOCA		
*5000 - GNSS MEA		
#BARNES R-279 UNUSABLE BYD 50 NM		
BARNES, MA VORTAC	GLYDE, MA FIX	*7000
*2700 – MOCA		
*4000 - GNSS MEA		
GLYDE, MA FIX	BOSTON, MA VOR/DME	*4000
*3000 - MOCA		

95.6293 VOR FEDERAL AIRWAY V293

*GRAND CANYON, AZ VOR/DME	KLIFF, AZ FIX	**14500
*14500 - MCA GRAND CANYON, AZ VOR/DME , N BND		
**10900 - MOCA		
*KLIFF, AZ FIX	PAGE, AZ VOR/DME	8700
*14500 - MCA KLIFF, AZ FIX , S BND		
PAGE, AZ VOR/DME	CABER, UT FIX	8500

95.6293 VOR FEDERAL AIRWAY V293 - CONTINUED

CABER, UT FIX	BRYCE CANYON, UT VORTAC	11000
BRYCE CANYON, UT VORTAC	*CEDAR CITY, UT VOR/DME	13000
*12000 - MCA CEDAR CITY, UT VOR/DME , E BND		
CEDAR CITY, UT VOR/DME	BERYL, UT FIX	*9000
*8400 - MOCA		
BERYL, UT FIX	WILSON CREEK, NV VORTAC	11300
WILSON CREEK, NV VORTAC	ELY, NV VOR/DME	12000
ELY, NV VOR/DME	*BULLION, NV VOR/DME	#**14000
*12000 - MCA BULLION, NV VOR/DME , S BND		
**13100 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
BULLION, NV VOR/DME	SAMAN, ID FIX	10600
SAMAN, ID FIX	*TWIN FALLS, ID VORTAC	
	N BND	7500
	S BND	8600
*6500 - MCA TWIN FALLS, ID VORTAC , S BND		
TWIN FALLS, ID VORTAC	GOODE, ID FIX	6000
GOODE, ID FIX	*TORIN, ID FIX	6600
*8700 - MCA TORIN, ID FIX , NW BND		
TORIN, ID FIX	DERSO, ID FIX	
	NW BND	11500
	SE BND	9200
DERSO, ID FIX	DONNELLY, ID VOR/DME	11700

95.6294 VOR FEDERAL AIRWAY V294

DES MOINES, IA VORTAC	CEDAR RAPIDS, IA VOR/DME	2700
CEDAR RAPIDS, IA VOR/DME	DAVENPORT, IA VORTAC	2600

95.6295 VOR FEDERAL AIRWAY V295

VIRGINIA KEY, FL VOR/DME	STOOP, FL FIX	*5000
*1800 - MOCA		
STOOP, FL FIX	VERO BEACH, FL VORTAC	*2000
*1500 - MOCA		
VERO BEACH, FL VORTAC	ORLANDO, FL VORTAC	2600
ORLANDO, FL VORTAC	*SHIMM, FL FIX	2000
*3000 - MRA		
SHIMM, FL FIX	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	CROSS CITY, FL VORTAC	2000
CROSS CITY, FL VORTAC	SEMINOLE, FL VORTAC	2000

95.6296 VOR FEDERAL AIRWAY V296

HUSTN, NC FIX	*RAEFO, NC FIX	**5000
*6000 - MRA		
**2300 – MOCA		
**2400 - GNSS MEA		
RAEFO, NC FIX	FAYETTEVILLE, NC VOR/DME	*2800
*1900 - MOCA		
FAYETTEVILLE, NC VOR/DME	RAPVY, NC FIX	*3000
*2100 - MOCA		
RAPVY, NC FIX	WILMINGTON, NC VORTAC	*8000
*5000 - GNSS MEA		

FROM	TO	MEA

95.6297 VOR FEDERAL AIRWAY V297

JOHNSTOWN, PA VORTAC	TALLS, PA FIX	4200
TALLS, PA FIX	VOLAN, PA FIX	*5000
*3200 - MOCA		
*3300 - GNSS MEA		
VOLAN, PA FIX	CAPEL, OH FIX	*3600
*2800 - MOCA		
CAPEL, OH FIX	AKRON, OH VOR/DME	3600
AKRON, OH VOR/DME	U.S. CANADIAN BORDER	*6000
*3000 – MOCA		

95.6298 VOR FEDERAL AIRWAY V298

*SEATTLE, WA VORTAC	VAMPS, WA FIX	
	W BND	**4000
	E BND	**8000
*4300 - MCA SEATTLE, WA VORTAC , E BND		
**3100 - MOCA		
VAMPS, WA FIX	*BEEZR, WA FIX	8000
*9000 - MRA		
BEEZR, WA FIX	PERTT, WA FIX	*9000
*7500 - MOCA		
PERTT, WA FIX	YAKIMA, WA VORTAC	6500
YAKIMA, WA VORTAC	BENTY, WA FIX	5000
BENTY, WA FIX	PASCO, WA VOR/DME	4000
PASCO, WA VOR/DME	PENDLETON, OR VORTAC	4400
PENDLETON, OR VORTAC	CABAN, OR FIX	6000
CABAN, OR FIX	IBEAM, OR FIX	8300
IBEAM, OR FIX	DONNELLY, ID VOR/DME	12000
DONNELLY, ID VOR/DME	*DUBOIS, ID VORTAC	**16000
*9800 - MCA DUBOIS, ID VORTAC , W BND		
**13600 - MOCA		
DUBOIS, ID VORTAC	*SABAT, ID FIX	
	W BND	**9000
	E BND	**13000
*10000 - MRA		
*11100 - MCA SABAT, ID FIX , E BND		
**8100 - MOCA		
SABAT, ID FIX	LAMON, ID FIX	
	W BND	*10000
	E BND	*13000
*8100 - MOCA		
LAMON, ID FIX	*QUIRT, WY FIX	15000
*14100 - MCA QUIRT, WY FIX , W BND		
QUIRT, WY FIX	DUNOIR, WY VOR/DME	*12000
*10800 - MOCA		
DUNOIR, WY VOR/DME	*BOYSEN RESERVOIR, WY VOR/DME	14000
*11000 - MCA BOYSEN RESERVOIR, WY VOR/DME , W BND		
BOYSEN RESERVOIR, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	*11000
*10300 - MOCA		
MUDDY MOUNTAIN, WY VOR/DME	CHANG, WY FIX	8500
CHANG, WY FIX	GILLETTE, WY VOR/DME	7200

95.6299 VOR FEDERAL AIRWAY V299

*LOS ANGELES, CA VORTAC	VENTURA, CA VOR/DME	5000
*3200 - MCA LOS ANGELES, CA VORTAC , W BND		
VENTURA, CA VOR/DME	FILLMORE, CA VORTAC	5000
FILLMORE, CA VORTAC	GORMAN, CA VORTAC	9500

95.6300 VOR FEDERAL AIRWAY V300

U.S. CANADIAN BORDER	AVALE, MI FIX	#*9000
*2400 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
AVALE, MI FIX	SAULT STE MARIE, MI VOR/DME	#*3000
*2400 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
SAULT STE MARIE, MI VOR/DME	ALVUS, MI FIX	*3000
*2500 - MOCA		
ALVUS, MI FIX	U.S. CANADIAN BORDER	*3000
*2500 - MOCA		
U.S. CANADIAN BORDER	NAASH, MI FIX	*3000
*2500 - MOCA		
NAASH, MI FIX	U.S. CANADIAN BORDER	*6000
*2500 - MOCA		
U.S. CANADIAN BORDER	CAMPO, ME FIX	*9000
*5900 - MOCA		
*5900 - GNSS MEA		
CAMPO, ME FIX	WRAPT, ME FIX	*9000
*6000 - MOCA		
*6000 - GNSS MEA		
WRAPT, ME FIX	MILLINOCKET, ME VOR/DME	*7000
*5900 - MOCA		
*5900 - GNSS MEA		
MILLINOCKET, ME VOR/DME	U.S. CANADIAN BORDER	*3000
*2200 - MOCA		

95.6301 VOR FEDERAL AIRWAY V301

PANOCHE, CA VORTAC	*SUNOL, CA FIX	6500
*6500 - MCA SUNOL, CA FIX , SE BND		
SUNOL, CA FIX	OAKLAND, CA VORTAC	4000
OAKLAND, CA VORTAC	COMMO, CA FIX	*5000
*4000 - MOCA		
COMMO, CA FIX	POINT REYES, CA VORTAC	5000
POINT REYES, CA VORTAC	SANTA ROSA, CA VOR/DME	3500
SANTA ROSA, CA VOR/DME	*KLOGE, CA FIX	5000
*6000 - MCA KLOGE, CA FIX , NE BND		
KLOGE, CA FIX	RUMSY, CA FIX	7000
RUMSY, CA FIX	WILLIAMS, CA VORTAC	5000

95.6302 VOR FEDERAL AIRWAY V302

AUGUSTA, ME VOR/DME	ANCOR, ME FIX	*5000
*3000 - GNSS MEA		

95.6303 VOR FEDERAL AIRWAY V303

HOT SPRINGS, AR VOR/DME	BLURB, AR FIX	*3500
*3000 - MOCA		
BLURB, AR FIX	BLIMP, AR FIX	*4100
*3600 - MOCA		
BLIMP, AR FIX	FORT SMITH, AR VORTAC	*2900
*2400 - MOCA		

95.6304 VOR FEDERAL AIRWAY V304

PANHANDLE, TX VORTAC	BORGER, TX VORTAC	5000
BORGER, TX VORTAC	LIBERAL, KS VORTAC	4800
LIBERAL, KS VORTAC	LAMAR, CO VOR/DME	*6000
*5300 - MOCA		

95.6305 VOR FEDERAL AIRWAY V305

FROM	TO	MEA
EL DORADO, AR VORTAC	BUNNS, AR FIX	2200
BUNNS, AR FIX	HERID, AR FIX	2000
HERID, AR FIX	LITTLE ROCK, AR VORTAC	3300
LITTLE ROCK, AR VORTAC	DUMPI, AR FIX	
	S BND	2000
	N BND	4000
DUMPI, AR FIX	WALNUT RIDGE, AR VORTAC	*4000
*2200 - MOCA		
WALNUT RIDGE, AR VORTAC	MALDEN, MO VORTAC	2300
MALDEN, MO VORTAC	CUNNINGHAM, KY VORTAC	2500
CUNNINGHAM, KY VORTAC	WESON, KY FIX	2600
WESON, KY FIX	POCKET CITY, IN VORTAC	2200
POCKET CITY, IN VORTAC	*AUGUS, IN FIX	2400
*2600 - MRA		
AUGUS, IN FIX	*WEGEE, IN FIX	**3500
*3500 - MRA		
**1900 - MOCA		
WEGEE, IN FIX	HOOSIER, IN VORTAC	2700
#HOOSIER, IN VORTAC	BRICKYARD, IN VORTAC	*2700
*2700 - GNSS MEA		
#HOOSIER R-027 UNUSABLE.		
BRICKYARD, IN VORTAC	WELDO, IN FIX	2900
WELDO, IN FIX	KOKOMO, IN VORTAC	2700

95.6306 VOR FEDERAL AIRWAY V306

FROM	TO	MEA
JUNCTION, TX VORTAC	AMUSE, TX FIX	3800
AMUSE, TX FIX	CENTEX, TX VORTAC	3100
CENTEX, TX VORTAC	NAVASOTA, TX VORTAC	2300
NAVASOTA, TX VORTAC	ZMSKL, TX FIX	2000
ZMSKL, TX FIX	CLEEP, TX FIX	*5000
*2300 - MOCA		
CLEEP, TX FIX	DAISETTA, TX VORTAC	3000
DAISETTA, TX VORTAC	SILBE, TX FIX	2000
SILBE, TX FIX	OFERS, LA FIX	2200
OFERS, LA FIX	LAKE CHARLES, LA VORTAC	2000

95.6307 VOR FEDERAL AIRWAY V307

FROM	TO	MEA
HARRISON, AR VOR/DME	NEOSHO, MO VOR/DME	*3400
*2800 - MOCA		
NEOSHO, MO VOR/DME	OSWEGO, KS VORTAC	3000
OSWEGO, KS VORTAC	CHANUTE, KS VOR/DME	*3000
*2400 - MOCA		
CHANUTE, KS VOR/DME	EMPORIA, KS VORTAC	3000
EMPORIA, KS VORTAC	ALMAS, KS FIX	3000
ALMAS, KS FIX	PAWNEE CITY, NE VORTAC	*5000
*2800 - MOCA		
PAWNEE CITY, NE VORTAC	OMAHA, IA VORTAC	3000
OMAHA, IA VORTAC	*DECKA, NE FIX	3000
*3500 - MRA		
DECKA, NE FIX	SIOUX CITY, IA VORTAC	3000

95.6308 VOR FEDERAL AIRWAY V308

FROM	TO	MEA
NOTTINGHAM, MD VORTAC	*BILIT, MD FIX	**6000
*6000 - MCA BILIT, MD FIX , W BND		
**1600 - MOCA		
**2000 - GNSS MEA		
BILIT, MD FIX	WATERLOO, DE VOR/DME	*2000
*1500 – MOCA		

95.6308 VOR FEDERAL AIRWAY V308 - CONTINUED

FROM	TO	MEA
WATERLOO, DE VOR/DME	SEA ISLE, NJ VORTAC	*2000
*1500 - MOCA		
SEA ISLE, NJ VORTAC	AVALO, NJ FIX	*4500
*4000 - GNSS MEA		
AVALO, NJ FIX	HARBO, NJ FIX	*6000
*4000 - GNSS MEA		
HARBO, NJ FIX	*DRIFT, NJ FIX	**7500
*6000 - MRA		
**3000 - GNSS MEA		
DRIFT, NJ FIX	MANTA, NJ FIX	*12000
*3000 - GNSS MEA		
MANTA, NJ FIX	PLUME, NJ FIX	*7000
*2000 - MOCA		
*3000 - GNSS MEA		
PLUME, NJ FIX	*KOPPY, NY FIX	**4000
*5000 - MRA		
**3000 - MOCA		
**3000 - GNSS MEA		
KOPPY, NY FIX	BEADS, NY FIX	*4000
*3000 - MOCA		
*3000 - GNSS MEA		
BEADS, NY FIX	HAMPTON, NY VORTAC	*2500
*1600 - MOCA		
HAMPTON, NY VORTAC	GROTON, CT VOR/DME	2000

95.6309 VOR FEDERAL AIRWAY V309

FROM	TO	MEA
CHARLESTON, WV VORTAC	RANDE, WV FIX	*5000
*3200 - MOCA		
*3200 - GNSS MEA		
RANDE, WV FIX	BURGS, WV FIX	*7000
*3300 - MOCA		
*3400 - GNSS MEA		
BURGS, WV FIX	BELLAIRE, OH VOR/DME	3400

95.6310 VOR FEDERAL AIRWAY V310

FROM	TO	MEA
LOUISVILLE, KY VORTAC	LONDON, KY VORTAC	3300
LONDON, KY VORTAC	ROSAR, KY FIX	5500
ROSAR, KY FIX	HOLSTON MOUNTAIN, TN VORTAC	6400
HOLSTON MOUNTAIN, TN VORTAC	*STAIN, TN FIX	6000
*7100 - MCA STAIN, TN FIX , E BND		
STAIN, TN FIX	*MULBE, NC FIX	7500
*7100 - MCA MULBE, NC FIX , W BND		
MULBE, NC FIX	BURCH, NC FIX	6000
BURCH, NC FIX	GREENSBORO, NC VORTAC	3500
GREENSBORO, NC VORTAC	CHAPL, NC FIX	3000
CHAPL, NC FIX	RALEIGH/DURHAM, NC VORTAC	2000
RALEIGH/DURHAM, NC VORTAC	TAR RIVER, NC VORTAC	2500
TAR RIVER, NC VORTAC	ELIZABETH CITY, NC VOR/DME	4000

95.6311 VOR FEDERAL AIRWAY V311

FROM	TO	MEA
HINCH MOUNTAIN, TN VORTAC	DUBBS, TN FIX	5000
DUBBS, TN FIX	NELLO, GA FIX	*7000
*5600 – MOCA		

95.6311 VOR FEDERAL AIRWAY V311 - CONTINUED

FROM	TO	MEA
NELLO, GA FIX *5000 - MRA **5500 - MOCA	*AWSON, GA FIX	**7000
AWSON, GA FIX	CORCE, GA FIX	4600
CORCE, GA FIX	ELECTRIC CITY, SC VORTAC	3800
ELECTRIC CITY, SC VORTAC	GREENWOOD, SC VORTAC	2500
GREENWOOD, SC VORTAC	COLUMBIA, SC VORTAC	2300
COLUMBIA, SC VORTAC *2500 - MRA	*ERNIE, SC FIX	2000
ERNIE, SC FIX	SACKS, SC FIX	2000
SACKS, SC FIX	CHARLESTON, SC VORTAC	2100

95.6312 VOR FEDERAL AIRWAY V312

FROM	TO	MEA
POLLA, MD FIX	TACKS, MD FIX	2200 MAA - 13000
TACKS, MD FIX *1500 - MOCA	WOODSTOWN, NJ VORTAC	*2000
WOODSTOWN, NJ VORTAC	COYLE, NJ VORTAC	2000 MAA - 8000
COYLE, NJ VORTAC *6000 - MRA	*DRIFT, NJ FIX	2000
DRIFT, NJ FIX *8000 - MRA **2000 - GNSS MEA	*PREPI, OA FIX	**4800

95.6313 VOR FEDERAL AIRWAY V313

FROM	TO	MEA
MALDEN, MO VORTAC	CAPE GIRARDEAU, MO VOR/DME	2300
CAPE GIRARDEAU, MO VOR/DME	GENTS, IL FIX	3500
GENTS, IL FIX *2400 - MOCA	CENTRALIA, IL VORTAC	*3000
CENTRALIA, IL VORTAC	ADDERS, IL VORTAC	2500
ADDERS, IL VORTAC	PONTIAC, IL VOR/DME	3000

95.6314 VOR FEDERAL AIRWAY V314

FROM	TO	MEA
U.S. CANADIAN BORDER *8000 - MRA **3900 - MOCA	*PATTA, ME FIX	**6000
PATTA, ME FIX *3900 – MOCA	MILLINOCKET, ME VOR/DME	*6000
MILLINOCKET, ME VOR/DME	PRINCETON, ME VOR/DME	2900
PRINCETON, ME VOR/DME *1800 - MOCA	U.S. CANADIAN BORDER	*2500

95.6315 VOR FEDERAL AIRWAY V315

FROM	TO	MEA
PARIS, TX VOR/DME	RICH MOUNTAIN, OK VORTAC	4200

95.6316 VOR FEDERAL AIRWAY V316

FROM	TO	MEA
IRONWOOD, MI VORTAC *3600 – MOCA	SAWYER, MI VOR/DME	*6000

FROM	TO	MEA

95.6316 VOR FEDERAL AIRWAY V316 - CONTINUED

SAWYER, MI VOR/DME	UZMEF, MI FIX	*3500
*2600 – MOCA		
UZMEF, MI FIX	NEWBERRY, MI VOR/DME	*6000
*2500 - MOCA		
NEWBERRY, MI VOR/DME	SAULT STE MARIE, MI VOR/DME	*3000
*2300 - MOCA		
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*5000
*2300 - MOCA		

95.6317 VOR FEDERAL AIRWAY V317

MISSION BAY, CA VORTAC	POGGI, CA VORTAC	4500
POGGI, CA VORTAC	IMPERIAL, CA VORTAC	7000

95.6318 VOR FEDERAL AIRWAY V318

U.S. CANADIAN BORDER	HOULTON, ME VOR/DME	*9000
*3900 - MOCA		

95.6319 VOR FEDERAL AIRWAY V319

BOYSEN RESERVOIR, WY VOR/DME	WORLAND, WY VOR/DME	9600
WORLAND, WY VOR/DME	ALVIL, WY FIX	7000
ALVIL, WY FIX	CODY, WY VOR/DME	8500

95.6320 VOR FEDERAL AIRWAY V320

PELLSTON, MI VORTAC	TRAVERSE CITY, MI VORTAC	3000
TRAVERSE CITY, MI VORTAC	MOUNT PLEASANT, MI VOR/DME	*5000
*3000 - MOCA		
MOUNT PLEASANT, MI VOR/DME	SAGINAW, MI VOR/DME	2600
SAGINAW, MI VOR/DME	PECK, MI VORTAC	3000
PECK, MI VORTAC	U.S. CANADIAN BORDER	*6000
*2000 - MOCA		

95.6321 VOR FEDERAL AIRWAY V321

PECAN, GA VORTAC	KUTVE, GA FIX	2000
KUTVE, GA FIX	PREST, GA FIX	2600
PREST, GA FIX	*COLUMBUS, GA VORTAC	**5000
*5000 - MCA COLUMBUS, GA VORTAC , SE BND		
*5000 - MCA COLUMBUS, GA VORTAC , NW BND		
**3300 – MOCA		

95.6322 VOR FEDERAL AIRWAY V322

CONCORD, NH VORTAC	GRUMP, NH FIX	4000
GRUMP, NH FIX	*NOTTY, NH FIX	5000
*6000 - MCA NOTTY, NH FIX , N BND		
NOTTY, NH FIX	WYLIE, NH FIX	*7000
*5600 - MOCA		
WYLIE, NH FIX	BUKER, NH FIX	*7000
*6000 - MOCA		
BUKER, NH FIX	BERLIN, NH VOR/DME	*6000
*5100 - MOCA		
BERLIN, NH VOR/DME	U.S. CANADIAN BORDER	#6500
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

FROM	TO	MEA

95.6323 VOR FEDERAL AIRWAY V323

MONTGOMERY, AL VORTAC	PEECH, AL FIX	2400
PEECH, AL FIX	EUFAULA, AL VORTAC	2000
EUFAULA, AL VORTAC	BYROE, GA FIX	*3000
*2100 - MOCA		
BYROE, GA FIX	MACON, GA VORTAC	2300
MACON, GA VORTAC	NALIZ, GA FIX	*3000
*2500 - MOCA		
NALIZ, GA FIX	HUSKY, GA FIX	*3000
*2100 - MOCA		

95.6324 VOR FEDERAL AIRWAY V324

GILLETTE, WY VOR/DME	*CRAZY WOMAN, WY VOR/DME	7500
*9500 - MCA CRAZY WOMAN, WY VOR/DME , W BND		
CRAZY WOMAN, WY VOR/DME	CHAPY, WY FIX	12000
CHAPY, WY FIX	WORLAND, WY VOR/DME	
	E BND	12000
	W BND	8000

95.6325 VOR FEDERAL AIRWAY V325

COLUMBIA, SC VORTAC	VESTO, GA FIX	2400
VESTO, GA FIX	ATHENS, GA VORTAC	2500
ATHENS, GA VORTAC	WOMAC, GA FIX	3700
WOMAC, GA FIX	LOGEN, GA FIX	*4600
*3700 - MOCA		
DALAS, GA FIX	CARAN, GA FIX	#*5000
*3700 - MOCA		
#GNSS MEA		
CARAN, GA FIX	#GADSDEN, AL VOR/DME	*5000
*4200 - MOCA		
#GADSDEN R-089 UNUSABLE BYD 47NM EXCEPT FOR ACFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS.		
GADSDEN, AL VOR/DME	MASHA, AL FIX	3500
MASHA, AL FIX	MUSCLE SHOALS, AL VORTAC	2500

95.6326 VOR FEDERAL AIRWAY V326

FILLMORE, CA VORTAC	VAN NUYS, CA VOR/DME	5000

95.6327 VOR FEDERAL AIRWAY V327

PHOENIX, AZ VORTAC	KNOBB, AZ FIX	8000
KNOBB, AZ FIX	RADOM, AZ FIX	
	S BND	8000
	N BND	11000
RADOM, AZ FIX	*FERER, AZ FIX	
	N BND	**12000
	S BND	**11000
*12000 - MRA		
*11000 - MCA FERER, AZ FIX , S BND		
**8400 - MOCA		
**9000 - GNSS MEA		
FERER, AZ FIX	OATES, AZ FIX	**12000
**9400 - MOCA		
**10000 - GNSS MEA		
OATES, AZ FIX	FLAGSTAFF, AZ VOR/DME	
	N BND	10500
	S BND	10000

95.6328 VOR FEDERAL AIRWAY V328

FROM	TO	MEA
JACKSON, WY VOR/DME	#BIG PINEY, WY VOR/DME	13500
#MTA V328 NW TO V465 SW 15100		
BIG PINEY, WY VOR/DME	ROCK SPRINGS, WY VOR/DME	*10000
*9700 - MOCA		
ROCK SPRINGS, WY VOR/DME	SNAKY, WY FIX	11000
SNAKY, WY FIX	CELIA, CO FIX	*12000
*10000 - GNSS MEA		
CELIA, CO FIX	HAYDEN, CO VOR/DME	10000
HAYDEN, CO VOR/DME	HABRO, CO FIX	10000
HABRO, CO FIX	KREMMLING, CO VOR/DME	13000
KREMMLING, CO VOR/DME	*SKEED, CO FIX	**16500
*16500 - MRA		
**15800 - MOCA		
SKEED, CO FIX	*POWDR, CO FIX	14500
*15600 - MRA		
POWDR, CO FIX	MILE HIGH, CO VORTAC	14000

95.6330 VOR FEDERAL AIRWAY V330

FROM	TO	MEA
WILDHORSE, OR VOR/DME	BOISE, ID VORTAC	8000
BOISE, ID VORTAC	CANEK, ID FIX	7000
CANEK, ID FIX	ALKAL, ID FIX	*9500
*8500 - MOCA		
ALKAL, ID FIX	TORIN, ID FIX	
	E BND	*8000
	W BND	*9500
*6700 - MOCA		
TORIN, ID FIX	*KINZE, ID FIX	8000
*8000 - MCA KINZE, ID FIX , W BND		
IDAHO FALLS, ID VOR/DME	*OSITY, ID FIX	8000
*9500 - MCA OSITY, ID FIX , E BND		
OSITY, ID FIX	*JACKSON, WY VOR/DME	14000
*13400 - MCA JACKSON, WY VOR/DME , W BND		
*MTA V330 E TO V520 W 16000		
JACKSON, WY VOR/DME	DUNOIR, WY VOR/DME	13000
DUNOIR, WY VOR/DME	*ROWEY, WY FIX	**14000
*11000 - MCA ROWEY, WY FIX , W BND		
**13500 - MOCA		
ROWEY, WY FIX	RIVERTON, WY VOR/DME	8800
RIVERTON, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	8500

95.6331 VOR FEDERAL AIRWAY V331

FROM	TO	MEA
HAZARD, KY VOR/DME	NEWCOMBE, KY VORTAC	*4000
*3500 - MOCA		

95.6332 VOR FEDERAL AIRWAY V332

FROM	TO	MEA
FRIANT, CA VORTAC	HANGTOWN, CA VOR/DME	8500
HANGTOWN, CA VOR/DME	RED BLUFF, CA VORTAC	6000

95.6333 VOR FEDERAL AIRWAY V333

FROM	TO	MEA
DALAS, GA FIX	ROME, GA VORTAC	*4000
*3200 - MOCA		
ROME, GA VORTAC	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	*BOOPS, TN FIX	3500
*4500 - MRA		

95.6333 VOR FEDERAL AIRWAY V333 - CONTINUED

FROM	TO	MEA
BOOPS, TN FIX	HINCH MOUNTAIN, TN VORTAC	5000
HINCH MOUNTAIN, TN VORTAC	JELLO, TN FIX	5000
JELLO, TN FIX	DOLLY, KY FIX	4000
DOLLY, KY FIX	LEXINGTON, KY VORTAC	3800

95.6334 VOR FEDERAL AIRWAY V334

FROM	TO	MEA
SAN JOSE, CA VOR/DME	*OAKEY, CA FIX	5000
*3000 - MCA OAKEY, CA FIX , S BND		
OAKEY, CA FIX	SACRAMENTO, CA VORTAC	2500

95.6335 VOR FEDERAL AIRWAY V335

FROM	TO	MEA
ST LOUIS, MO VORTAC	IMPER, MO FIX	2600
IMPER, MO FIX	ARNOL, IL FIX	2800
ARNOL, IL FIX	*GLASS, MO FIX	**3000
*4500 - MRA		
**2100 - MOCA		
GLASS, MO FIX	NIKEL, IL FIX	*4500
*2200 - MOCA		
*3500 - GNSS MEA		
NIKEL, IL FIX	MARION, IL VOR/DME	2400

95.6336 VOR FEDERAL AIRWAY V336

FROM	TO	MEA
ELLENSBURG, WA VORTAC	*QUINT, WA FIX	7000
*6500 - MCA QUINT, WA FIX , SW BND		
QUINT, WA FIX	EPHRATA, WA VORTAC	5000

95.6337 VOR FEDERAL AIRWAY V337

FROM	TO	MEA
CUTTA, OH FIX	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	U.S. CANADIAN BORDER	5000
U.S. CANADIAN BORDER	PECK, MI VORTAC	*7000
*2700 - MOCA		
PECK, MI VORTAC	SAGINAW, MI VOR/DME	3000
SAGINAW, MI VOR/DME	MOUNT PLEASANT, MI VOR/DME	2600
MOUNT PLEASANT, MI VOR/DME	WHITE CLOUD, MI VOR/DME	*3000
*2400 – MOCA		

95.6338 VOR FEDERAL AIRWAY V338

FROM	TO	MEA
LINDEN, CA VORTAC	*HANGTOWN, CA VOR/DME	5000
*7000 - MCA HANGTOWN, CA VOR/DME , NE BND		
HANGTOWN, CA VOR/DME	SQUAW VALLEY, CA VOR/DME	11000

95.6339 VOR FEDERAL AIRWAY V339

FROM	TO	MEA
HAZARD, KY VOR/DME	TRENT, KY FIX	4000
TRENT, KY FIX	FALMOUTH, KY VOR/DME	3500

95.6340 VOR FEDERAL AIRWAY V340

FROM	TO	MEA
BEARZ, IN FIX	KNOX, IN VOR/DME	3000

95.6340 VOR FEDERAL AIRWAY V340 - CONTINUED

FROM	TO	MEA
KNOX, IN VOR/DME	FORT WAYNE, IN VORTAC	3000
FORT WAYNE, IN VORTAC	RICHMOND, IN VORTAC	3000

95.6341 VOR FEDERAL AIRWAY V341

FROM	TO	MEA
CEDAR RAPIDS, IA VOR/DME	DUBUQUE, IA VORTAC	2900
DUBUQUE, IA VORTAC	*BAULK, WI FIX	3600
*4000 - MRA		
BAULK, WI FIX	MADISON, WI VORTAC	3600
MADISON, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	GREEN BAY, WI VORTAC	*3000
*2300 - MOCA		
GREEN BAY, WI VORTAC	MENOMINEE, MI VOR/DME	2600
MENOMINEE, MI VOR/DME	HAVEL, MI FIX	2500
HAVEL, MI FIX	IRON MOUNTAIN, MI VOR/DME	3300
IRON MOUNTAIN, MI VOR/DME	SAWYER, MI VOR/DME	3100
SAWYER, MI VOR/DME	HOUGHTON, MI VOR/DME	*4500
*3400 - MOCA		

95.6343 VOR FEDERAL AIRWAY V343

FROM	TO	MEA
*DUBOIS, ID VORTAC	RANEY, MT FIX	**15000
*8500 - MCA DUBOIS, ID VORTAC , N BND		
**13200 - MOCA		
RANEY, MT FIX	*GATEY, MT FIX	
	S BND	14000
	N BND	10200
*11500 - MCA GATEY, MT FIX , S BND		
GATEY, MT FIX	*BOZEMAN, MT VOR/DME	
	S BND	11500
	N BND	8000
*10500 - MCA BOZEMAN, MT VOR/DME , S BND		
BOZEMAN, MT VOR/DME	THESE, MT FIX	8000
THESE, MT FIX	SUZZY, MT FIX	
	E BND	8300
	W BND	10800
SUZZY, MT FIX	EVVER, MT FIX	11000

95.6344 VOR FEDERAL AIRWAY V344

FROM	TO	MEA
DUPREE, SD VORTAC	ABERDEEN, SD VOR/DME	*6500
*4100 - MOCA		
ABERDEEN, SD VOR/DME	FARGO, ND VORTAC	*3900
*3000 - MOCA		

95.6345 VOR FEDERAL AIRWAY V345

FROM	TO	MEA
DELLS, WI VORTAC	MILTO, WI FIX	*3500
*2800 - MOCA		
MILTO, WI FIX	EAU CLAIRE, WI VORTAC	3500
EAU CLAIRE, WI VORTAC	*HOMLO, WI FIX	**5200
*10000 - MRA		
**3100 - MOCA		
**4000 - GNSS MEA		
HOMLO, WI FIX	HAYWARD, WI VOR/DME	*10000
*3100 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6345 VOR FEDERAL AIRWAY V345 - CONTINUED

FROM	TO	MEA
#HAYWARD, WI VOR/DME *6000 - MRA *10000 - MCA GRASS, WI FIX , SW BND **3000 – MOCA **4000 - GNSS MEA #HAYWARD UNUSABLE BELOW 10000	*GRASS, WI FIX	**10000
GRASS, WI FIX *2900 - MOCA *3000 - GNSS MEA	ASHLAND, WI VOR/DME	*4000

95.6346 VOR FEDERAL AIRWAY V346

FROM	TO	MEA
U.S. CANADIAN BORDER *5100 - MOCA	MILLINOCKET, ME VOR/DME	*6000

95.6347 VOR FEDERAL AIRWAY V347

FROM	TO	MEA
LONDON, KY VORTAC	HINCH MOUNTAIN, TN VORTAC	4700

95.6348 VOR FEDERAL AIRWAY V348

FROM	TO	MEA
THUNDER BAY, CANADA VORTAC *2800 - MOCA #FOR THAT AIRSPACE OVER U.S. TERRITORY.	SAULT STE MARIE, MI VOR/DME	#*15000

95.6349 VOR FEDERAL AIRWAY V349

FROM	TO	MEA
WHATCOM, WA VORTAC *2600 - MOCA	U.S. CANADIAN BORDER	*3000

95.6350 VOR FEDERAL AIRWAY V350

FROM	TO	MEA
LIBERAL, KS VORTAC *4500 - MOCA	WICHITA, KS VORTAC	*8000
WICHITA, KS VORTAC	CHANUTE, KS VOR/DME	3600

95.6352 VOR FEDERAL AIRWAY V352

FROM	TO	MEA
U.S. CANADIAN BORDER *8000 - MRA	*PATTA, ME FIX	6300
PATTA, ME FIX	HOULTON, ME VOR/DME	6300
HOULTON, ME VOR/DME	U.S. CANADIAN BORDER	2000

95.6353 VOR FEDERAL AIRWAY V353

FROM	TO	MEA
JACKSON, MI VOR/DME	FLINT, MI VORTAC	2800

95.6354 VOR FEDERAL AIRWAY V354

FROM	TO	MEA
WILL ROGERS, OK VORTAC	PIONEER, OK VORTAC	4000
PIONEER, OK VORTAC	EMPORIA, KS VORTAC	3500

95.6355 VOR FEDERAL AIRWAY V355

FROM	TO	MEA
BOWIE, TX VORTAC	WICHITA FALLS, TX VORTAC	3100

95.6356 VOR FEDERAL AIRWAY V356

FROM	TO	MEA
RED TABLE, CO VOR/DME	FISTR, CO FIX	
	NE BND	15200
	SW BND	14000
FISTR, CO FIX	FIDLE, CO FIX	15200
FIDLE, CO FIX	**ELORE, CO FIX	*16500
*15600 – MOCA		
**12400 - MCA ELORE, CO FIX , W BND		
*ELORE, CO FIX	MILE HIGH, CO VORTAC	7800

95.6357 VOR FEDERAL AIRWAY V357

FROM	TO	MEA
LAKEVIEW, OR VORTAC	WILDHORSE, OR VOR/DME	*10000
*9500 - MOCA		
WILDHORSE, OR VOR/DME	POTSY, OR FIX	10000
POTSY, OR FIX	BAKER CITY, OR VOR/DME	12000
BAKER CITY, OR VOR/DME	TOLGA, OR FIX	9000
TOLGA, OR FIX	*WALLA WALLA, WA VOR/DME	6000
*5000 - MCA WALLA WALLA, WA VOR/DME , SE BND		
WALLA WALLA, WA VOR/DME	MOSES LAKE, WA VOR/DME	4000
MOSES LAKE, WA VOR/DME	QUINT, WA FIX	4000
QUINT, WA FIX	WENATCHEE, WA VOR/DME	5500

95.6358 VOR FEDERAL AIRWAY V358

FROM	TO	MEA
SAN ANTONIO, TX VORTAC	GUADA, TX FIX	*4000
*2800 - MOCA		
GUADA, TX FIX	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	GOOCH SPRINGS, TX VORTAC	*3800
*3200 - MOCA		
GOOCH SPRINGS, TX VORTAC	SONET, TX FIX	3000
SONET, TX FIX	WACO, TX VORTAC	2700

95.6359 VOR FEDERAL AIRWAY V359

FROM	TO	MEA
U.S. MEXICAN BORDER	LAREDO, TX VORTAC	*3000
*2500 - MOCA		

95.6360 VOR FEDERAL AIRWAY V360

FROM	TO	MEA
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*6000
*2600 – MOCA		

95.6361 VOR FEDERAL AIRWAY V361

FROM	TO	MEA
RATTLESNAKE, NM VORTAC	MARKE, CO FIX	
	NE BND	16300
	SW BND	9500
MARKE, CO FIX	UNLAP, CO FIX	
	NE BND	*16300
	SW BND	*11000
*10400 - MOCA		
UNLAP, CO FIX	SCRUB, CO FIX	16300
SCRUB, CO FIX	LYZZA, CO FIX	
	SW BND	16300
	NE BND	12400
LYZZA, CO FIX	MONTROSE, CO VOR/DME	
	SW BND	16300
	NE BND	9600
MONTROSE, CO VOR/DME	ICIES, CO FIX	
	SW BND	10000
	NE BND	15000

FROM	TO	MEA

95.6361 VOR FEDERAL AIRWAY V361 - CONTINUED

ICIES, CO FIX	RED TABLE, CO VOR/DME	15000
RED TABLE, CO VOR/DME	KREMMLING, CO VOR/DME	14000
KREMMLING, CO VOR/DME	*ALLAN, CO FIX	15200
*16000 - MRA		
ALLAN, CO FIX	*BARGR, CO FIX	15000
*11700 - MCA BARGR, CO FIX , SW BND		
BARGR, CO FIX	CHEYENNE, WY VORTAC	9000

95.6362 VOR FEDERAL AIRWAY V362

BRUNSWICK, GA VORTAC	*HABLE, GA FIX	**3000
*10000 - MCA HABLE, GA FIX , NW BND		
**1700 - MOCA		
HABLE, GA FIX	ALMA, GA VORTAC	*10000
*1700 - MOCA		
*3000 - GNSS MEA		
ALMA, GA VORTAC	SEYBO, GA FIX	#*5000
*1800 - MOCA		
*2000 - GNSS MEA		
#ALMA R-309 UNUSABLE, USE VIENNA R-127.		
SEYBO, GA FIX	VIENNA, GA VORTAC	2000
VIENNA, GA VORTAC	MACON, GA VORTAC	2000

95.6363 VOR FEDERAL AIRWAY V363

MISSION BAY, CA VORTAC	HURSI, CA FIX	3000
HURSI, CA FIX	OORAH, CA FIX	*4000
*2600 – MOCA		
OORAH, CA FIX	OFREE, CA FIX	*4000
*2300 - MOCA		
OFREE, CA FIX	EL TORO, CA VOR/DME	4000
EL TORO, CA VOR/DME	POMONA, CA VORTAC	4000

95.6364 VOR FEDERAL AIRWAY V364

LINCO, NC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000
SUGARLOAF MOUNTAIN, NC VORTAC	WEAKS, NC FIX	8000
WEAKS, NC FIX	UNICO, TN FIX	*9000
*7700 - MOCA		
*7700 - GNSS MEA		
UNICO, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	7000

95.6365 VOR FEDERAL AIRWAY V365

BURLEY, ID VOR/DME	IDAHO FALLS, ID VOR/DME	8000
IDAHO FALLS, ID VOR/DME	RIGBY, ID FIX	7600
RIGBY, ID FIX	*SABAT, ID FIX	8000
*10000 - MRA		
LIVINGSTON, MT VOR/DME	*BOZEMAN, MT VOR/DME	10400
*9300 - MCA BOZEMAN, MT VOR/DME , SE BND		
BOZEMAN, MT VOR/DME	*MENAR, MT FIX	8700
*9200 - MCA MENAR, MT FIX , NW BND		
MENAR, MT FIX	SWEDD, MT FIX	*10000
*9400 - MOCA		
SWEDD, MT FIX	HELENA, MT VORTAC	10000
HELENA, MT VORTAC	WOKEN, MT FIX	9000
WOKEN, MT FIX	*SHIMY, MT FIX	**9500
*7000 - MRA		

**7500 - MOCA

95.6365 VOR FEDERAL AIRWAY V365 – CONTINUED

FROM	TO	MEA
SHIMY, MT FIX	CHOTE, MT FIX	*9500
*7000 - MOCA		
CHOTE, MT FIX	CUT BANK, MT VORTAC	*7000
*6400 - MOCA		

95.6366 VOR FEDERAL AIRWAY V366

FROM	TO	MEA
HUGO, CO VOR/DME	*QUAIL, CO FIX	8500
*9500 - MRA		
QUAIL, CO FIX	*JEFEL, CO FIX	8500
*10500 - MRA		
JEFEL, CO FIX	FALCON, CO VORTAC	8500

95.6367 VOR FEDERAL AIRWAY V367

FROM	TO	MEA
INTERNATIONAL FALLS, MN VORTAC	U.S. CANADIAN BORDER	3000

95.6368 VOR FEDERAL AIRWAY V368

FROM	TO	MEA
ALAMOSA, CO VORTAC	RODDS, CO FIX	
	W BND	13000
	E BND	10000
RODDS, CO FIX	*WAPRE, CO FIX	13000
*14000 - MRA		
WAPRE, CO FIX	MANUL, NM FIX	13000
MANUL, NM FIX	TURLY, NM FIX	
	E BND	11000
	W BND	9700
TURLY, NM FIX	RATTLESNAKE, NM VORTAC	9000

95.6369 VOR FEDERAL AIRWAY V369

FROM	TO	MEA
NAVASOTA, TX VORTAC	GROESBECK, TX VOR/DME	2300
GROESBECK, TX VOR/DME	MAVERICK, TX VOR/DME	3600

95.6370 VOR FEDERAL AIRWAY V370

FROM	TO	MEA
LOS ANGELES, CA VORTAC	PRADO, CA FIX	4000
PRADO, CA FIX	PARADISE, CA VORTAC	4000
PARADISE, CA VORTAC	*SETER, CA FIX	5500
*12000 - MCA SETER, CA FIX , E BND		
SETER, CA FIX	*BANDS, CA FIX	
	E BND	13000
	W BND	9000
*13000 - MRA		
BANDS, CA FIX	GARNE, CA FIX	13000
GARNE, CA FIX	*PALM SPRINGS, CA VORTAC	
	W BND	12000
	E BND	8000
*11600 - MCA PALM SPRINGS, CA VORTAC , W BND		
*6200 - MCA PALM SPRINGS, CA VORTAC , NE BND		
PALM SPRINGS, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	7600

95.6371 VOR FEDERAL AIRWAY V371

FROM	TO	MEA
BOILER, IN VORTAC	KNOX, IN VOR/DME	2500

95.6372 VOR FEDERAL AIRWAY V372

FROM	TO	MEA
SEAL BEACH, CA VORTAC	*JOGIT, CA FIX	4000
*6000 - MCA JOGIT, CA FIX , E BND		
JOGIT, CA FIX	*KAYOH, CA FIX	6000
*7400 - MCA KAYOH, CA FIX , E BND		
KAYOH, CA FIX	*HOMELAND, CA VOR	8000
*11200 - MCA HOMELAND, CA VOR , NE BND		
HOMELAND, CA VOR	*BANDS, CA FIX	
	E BND	13000
	W BND	8000
*13000 - MRA		
BANDS, CA FIX	GARNE, CA FIX	13000
GARNE, CA FIX	*PALM SPRINGS, CA VORTAC	
	W BND	12000
	E BND	8000
*11600 - MCA PALM SPRINGS, CA VORTAC , W BND		
PALM SPRINGS, CA VORTAC	BLYTHE, CA VORTAC	*8000
*7500 - MOCA		

95.6373 VOR FEDERAL AIRWAY V373

FROM	TO	MEA
GREENSBORO, NC VORTAC	SANDHILLS, NC VORTAC	3600

95.6374 VOR FEDERAL AIRWAY V374

FROM	TO	MEA
MARTHAS VINEYARD, MA VOR/DME	FALMA, RI FIX	3000
FALMA, RI FIX	MINNK, RI FIX	3000
MINNK, RI FIX	GROTON, CT VOR/DME	3000
GROTON, CT VOR/DME	KURTY, CT FIX	3000
KURTY, CT FIX	CREAM, NY FIX	2500
CREAM, NY FIX	*BETHA, CT FIX	2500
*8000 - MRA		
BETHA, CT FIX	CARMEL, NY VOR/DME	2500
CARMEL, NY VOR/DME	VOLLU, NY FIX	2600
VOLLU, NY FIX	*GAYEL, NY FIX	**5000
*5500 - MRA		
**3200 - MOCA		
GAYEL, NY FIX	#BINGHAMTON, NY VORTAC	*6000
*4300 - MOCA		
#GNSS MEA, GNSS REQUIRED		
BINGHAMTON R-129 UNUSABLE. GNSS REQUIRED		

95.6375 VOR FEDERAL AIRWAY V375

FROM	TO	MEA
ROANOKE, VA VORTAC	PROSE, VA FIX	5000
PROSE, VA FIX	ROMAN, VA FIX	6500
ROMAN, VA FIX	GORDONSVILLE, VA VORTAC	4000
GORDONSVILLE, VA VORTAC	*HANEY, VA FIX	2800
*7000 - MRA		
HANEY, VA FIX	FLUKY, VA FIX	2600

95.6376 VOR FEDERAL AIRWAY V376

FROM	TO	MEA
RICHMOND, VA VORTAC	GRUBY, VA FIX	2000
GRUBY, VA FIX	IRONS, MD FIX	*2500
*1700 - MOCA		

95.6377 VOR FEDERAL AIRWAY V377

FROM	TO	MEA
MONTEBELLO, VA VOR/DME	KESSEL, WV VOR/DME	*6000
*5500 - MOCA		

95.6377 VOR FEDERAL AIRWAY V377 – CONTINUED

KESSEL, WV VOR/DME	TOMAC, WV FIX	4300
TOMAC, WV FIX	HAGERSTOWN, MD VOR	4000
HAGERSTOWN, MD VOR	HARRISBURG, PA VORTAC	*5000
*3800 – MOCA		
*4000 - GNSS MEA		

95.6378 VOR FEDERAL AIRWAY V378

BALTIMORE, MD VORTAC	BELAY, MD FIX	2300
BELAY, MD FIX	TROYZ, MD FIX	*9500
*4000 - GNSS MEA		
TROYZ, MD FIX	NUGGY, PA FIX	*7500
*4000 - GNSS MEA		
NUGGY, PA FIX	MODENA, PA VORTAC	*6000
*2000 - MOCA		
*4000 - GNSS MEA		

95.6379 VOR FEDERAL AIRWAY V379

NOTTINGHAM, MD VORTAC	JETTA, MD FIX	1900
		MAA - 17500
JETTA, MD FIX	*GRACO, MD FIX	**3000
*10000 - MRA		
**1600 - MOCA		MAA - 17500
GRACO, MD FIX	SMYRNA, DE VORTAC	1800
		MAA - 17500

95.6380 VOR FEDERAL AIRWAY V380

O'NEILL, NE VORTAC	WOLBACH, NE VORTAC	*4000
*3500 - MOCA		
WOLBACH, NE VORTAC	GRAND ISLAND, NE VORTAC	*4000
*3200 - MOCA		
GRAND ISLAND, NE VORTAC	HASTINGS, NE VOR/DME	4000
HASTINGS, NE VOR/DME	MANKATO, KS VORTAC	3900

95.6381 VOR FEDERAL AIRWAY V381

BISHOP, CA VOR/DME	*NIKOL, CA FIX	**13000
*13000 - MCA NIKOL, CA FIX , SE BND		
**12300 - MOCA		

95.6382 VOR FEDERAL AIRWAY V382

GRAND JUNCTION, CO VOR/DME	*CONES, CO VOR/DME	12000
*14000 - MCA CONES, CO VOR/DME , SE BND		
CONES, CO VOR/DME	*DURANGO, CO VOR/DME	15300
*12000 - MCA DURANGO, CO VOR/DME , NW BND		

95.6383 VOR FEDERAL AIRWAY V383

ROSEWOOD, OH VORTAC	DETROIT, MI VOR/DME	3100

95.6384 VOR FEDERAL AIRWAY V384

FROM	TO	MEA
LIVINGSTON, TN VORTAC	VOLUNTEER, TN VORTAC	5500

95.6385 VOR FEDERAL AIRWAY V385

FROM	TO	MEA
LUBBOCK, TX VORTAC	*WAGUN, TX FIX	**8000
*8000 - MRA		
**4600 - MOCA		
WAGUN, TX FIX	ABILENE, TX VORTAC	*8000
*3800 - MOCA		

95.6386 VOR FEDERAL AIRWAY V386

FROM	TO	MEA
SAN MARCUS, CA VORTAC	*OHIGH, CA FIX	8000
*9000 - MRA		
OHIGH, CA FIX	*FILLMORE, CA VORTAC	8000
*6100 - MCA FILLMORE, CA VORTAC , W BND		
FILLMORE, CA VORTAC	*SAUGS, CA FIX	6000
*6300 - MCA SAUGS, CA FIX , NE BND		
SAUGS, CA FIX	PALMDALE, CA VORTAC	7000
PALMDALE, CA VORTAC	APLES, CA FIX	7000
APLES, CA FIX	SOGGI, CA FIX	
	E BND	11000
	W BND	9000
SOGGI, CA FIX	YUCCA, CA FIX	*11000
*9400 - MOCA		
YUCCA, CA FIX	*PALM SPRINGS, CA VORTAC	**9000
*7600 - MCA PALM SPRINGS, CA VORTAC , NW BND		
**8200 - MOCA		

95.6387 VOR FEDERAL AIRWAY V387

FROM	TO	MEA
MC ALLEN, TX VOR/DME	U.S. MEXICAN BORDER	2000

95.6388 VOR FEDERAL AIRWAY V388

FROM	TO	MEA
PARADISE, CA VORTAC	ACINS, CA FIX	
	E BND	7000
	W BND	5000
ACINS, CA FIX	DEWAY, CA FIX	9500
DEWAY, CA FIX	*PALM SPRINGS, CA VORTAC	9500
*6300 - MCA PALM SPRINGS, CA VORTAC , W BND		

95.6389 VOR FEDERAL AIRWAY V389

FROM	TO	MEA
CIMARRON, NM VORTAC	*FOGLE, NM FIX	**11600
*15600 – MRA		
**10700 - MOCA		
FOGLE, NM FIX	*EARLS, CO FIX	**15600
*11600 - MRA		
**12000 - MOCA		
EARLS, CO FIX	RADIO, CO FIX	*11600
*8500 - MOCA		
RADIO, CO FIX	PUEBLO, CO VORTAC	8200
PUEBLO, CO VORTAC	DRAKE, CO FIX	7600
DRAKE, CO FIX	FALCON, CO VORTAC	9000

95.6390 VOR FEDERAL AIRWAY V390

FROM	TO	MEA
TUCUMCARI, NM VORTAC	BORGER, TX VORTAC	6500
BORGER, TX VORTAC	MITBEE, OK VORTAC	4800

95.6391 VOR FEDERAL AIRWAY V391

FROM	TO	MEA
RATTLESNAKE, NM VORTAC	PLATA, NM FIX	10000
PLATA, NM FIX	CORTEZ, CO VOR/DME	10600
CORTEZ, CO VOR/DME	DOVE CREEK, CO VORTAC	9800
DOVE CREEK, CO VORTAC	PAROX, CO FIX	*12000
*10500 - MOCA		
PAROX, CO FIX	*GRAND JUNCTION, CO VOR/DME	12000
*10700 - MCA GRAND JUNCTION, CO VOR/DME , S BND		
GRAND JUNCTION, CO VOR/DME	BONGO, UT FIX	10800
BONGO, UT FIX	*VERNAL, UT VOR/DME	8400
*9500 - MCA VERNAL, UT VOR/DME , N BND		
VERNAL, UT VOR/DME	ROCK SPRINGS, WY VOR/DME	11800

95.6392 VOR FEDERAL AIRWAY V392

FROM	TO	MEA
OAKLAND, CA VORTAC	*SALAD, CA FIX	4000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	*OAKEY, CA FIX	5000
*3000 - MCA OAKEY, CA FIX , S BND		
OAKEY, CA FIX	SACRAMENTO, CA VORTAC	2500
SACRAMENTO, CA VORTAC	ROZZY, CA FIX	*3000
*1600 - MOCA		
ROZZY, CA FIX	HAGAN, CA FIX	4000
HAGAN, CA FIX	*AUDIO, CA FIX	**6000
*9000 - MCA AUDIO, CA FIX , NE BND		
**4500 - MOCA		
AUDIO, CA FIX	CONYO, CA FIX	
	N BND	10000
	S BND	8000
CONYO, CA FIX	SIGNA, CA FIX	11000
SIGNA, CA FIX	MUSTANG, NV VORTAC	11500

95.6393 VOR FEDERAL AIRWAY V393

FROM	TO	MEA
*TUCSON, AZ VORTAC	NOGALES, AZ VOR/DME	11500
*9000 - MCA TUCSON, AZ VORTAC , S BND		
NOGALES, AZ VOR/DME	U.S. MEXICAN BORDER	*13000
*8800 - MOCA		

95.6394 VOR FEDERAL AIRWAY V394

FROM	TO	MEA
SEAL BEACH, CA VORTAC	AHEIM, CA FIX	*3000
*2200 - MOCA		
AHEIM, CA FIX	*POMONA, CA VORTAC	4000
*10300 - MCA POMONA, CA VORTAC , NE BND		
POMONA, CA VORTAC	CALBE, CA FIX	
	SW BND	5300
	NE BND	10800
CALBE, CA FIX	MEANT, CA FIX	
	SW BND	10700
	NE BND	11500

95.6394 VOR FEDERAL AIRWAY V394 - CONTINUED

FROM	TO	MEA
MEANT, CA FIX	*APLES, CA FIX	11500
*9100 - MCA APLES, CA FIX , SW BND		
APLES, CA FIX	DAGGETT, CA VORTAC	7500
DAGGETT, CA VORTAC	OASYS, NV FIX	*12000
*9500 - MOCA		
*10000 - GNSS MEA		
OASYS, NV FIX	LAS VEGAS, NV VORTAC	7500
LAS VEGAS, NV VORTAC	MORMON MESA, NV VORTAC	*7500
*6500 - MOCA		

95.6395 VOR FEDERAL AIRWAY V395

FROM	TO	MEA
*TUCSON, AZ VORTAC	NOGALES, AZ VOR/DME	10000
*9000 - MCA TUCSON, AZ VORTAC , S BND		
NOGALES, AZ VOR/DME	U.S. MEXICAN BORDER	*10000
*6500 - MOCA		

95.6396 VOR FEDERAL AIRWAY V396

FROM	TO	MEA
U.S. CANADIAN BORDER	CHARDON, OH VOR/DME	*8000
*2700 - MOCA		

95.6397 VOR FEDERAL AIRWAY V397

FROM	TO	MEA
MONROE, LA VORTAC	RUTTS, AR FIX	*6000
*1600 - MOCA		
RUTTS, AR FIX	GREENVILLE, MS VOR/DME	2000
GREENVILLE, MS VOR/DME	MARVELL, AR VOR/DME	1900

95.6398 VOR FEDERAL AIRWAY V398

FROM	TO	MEA
ABERDEEN, SD VOR/DME	WATERTOWN, SD VORTAC	3600
WATERTOWN, SD VORTAC	REDWOOD FALLS, MN VOR/DME	3800
REDWOOD FALLS, MN VOR/DME	*ALMAY, MN FIX	**3400
*5000 - MRA		
**2700 - MOCA		
ALMAY, MN FIX	KASPR, MN FIX	*3400
*2700 - MOCA		
KASPR, MN FIX	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	WAUKON, IA VORTAC	3000
WAUKON, IA VORTAC	LONE ROCK, WI VOR/DME	3000

95.6399 VOR FEDERAL AIRWAY V399

FROM	TO	MEA
BRICKYARD, IN VORTAC	JAKKS, IN FIX	2700
JAKKS, IN FIX	BOILER, IN VORTAC	2500
BOILER, IN VORTAC	KENLA, IN FIX	2600
KENLA, IN FIX	PEOTONE, IL VORTAC	2400

95.6400 VOR FEDERAL AIRWAY V400

FROM	TO	MEA
PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	*6000
*4000 - MOCA		

95.6401 VOR FEDERAL AIRWAY V401

WORLAND, WY VOR/DME	RANKK, WY FIX	
	SE BND	11000
	NW BND	7000
RANKK, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	11000

95.6402 VOR FEDERAL AIRWAY V402

TUCUMCARI, NM VORTAC	MOSER, TX FIX	*6000
*5400 - MOCA		
MOSER, TX FIX	PANHANDLE, TX VORTAC	*6000
*5200 - MOCA		
PANHANDLE, TX VORTAC	*BRISC, TX FIX	**7000
*7000 - MRA		
**4800 - MOCA		
BRISC, TX FIX	MITBEE, OK VORTAC	*5000
*4400 - MOCA		

95.6403 VOR FEDERAL AIRWAY V403

SOLBERG, NJ VOR/DME	POTTSTOWN, PA VORTAC	5000
POTTSTOWN, PA VORTAC	SPERY, PA FIX	*3000
*2100 - MOCA		
SPERY, PA FIX	BELAY, MD FIX	*10000
*2100 - MOCA		
*3000 - GNSS MEA		

95.6404 VOR FEDERAL AIRWAY V404

CHILDRESS, TX VORTAC	*SNEED, TX FIX	4000
*4000 - MRA		
SNEED, TX FIX	*ELECT, TX FIX	2700
*3500 - MRA		
ELECT, TX FIX	WICHITA FALLS, TX VORTAC	2700

95.6405 VOR FEDERAL AIRWAY V405

BELAY, MD FIX	SPERY, PA FIX	*10000
*2100 - MOCA		
*3000 - GNSS MEA		
SPERY, PA FIX	POTTSTOWN, PA VORTAC	*3000
*2100 - MOCA		
POTTSTOWN, PA VORTAC	LANNA, NJ FIX	5000
LANNA, NJ FIX	SOLBERG, NJ VOR/DME	2000
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	2500
CARMEL, NY VOR/DME	PAWLING, NY VOR/DME	3000
PAWLING, NY VOR/DME	VEERS, CT FIX	*4000
*3500 – MOCA		
VEERS, CT FIX	BRADLEY, CT VORTAC	3500
BRADLEY, CT VORTAC	PROVIDENCE, RI VORTAC	*3000
*2200 - MOCA		
PROVIDENCE, RI VORTAC	FALMA, RI FIX	*3000
*1400 - MOCA		
FALMA, RI FIX	MARTHAS VINEYARD, MA VOR/DME	3000

95.6406 VOR FEDERAL AIRWAY V406

SALEM, MI VORTAC	U.S. CANADIAN BORDER	*4000
*2700 - MOCA		
U.S. CANADIAN BORDER	FINGL, CANADA FIX	4000

95.6407 VOR FEDERAL AIRWAY V407

FROM	TO	MEA
BROWNSVILLE, TX VORTAC	HARLINGEN, TX VOR/DME	1600
HARLINGEN, TX VOR/DME	JIMIE, TX FIX	1700
JIMIE, TX FIX	JETTY, TX FIX	*4000
*1800 - MOCA		
JETTY, TX FIX	CORPUS CHRISTI, TX VORTAC	2000
CORPUS CHRISTI, TX VORTAC	*WORRY, TX FIX	1700
*2100 - MRA		
WORRY, TX FIX	*AUSTS, TX FIX	1700
*2300 - MRA		
AUSTS, TX FIX	PALACIOS, TX VORTAC	1700
PALACIOS, TX VORTAC	GLAND, TX FIX	*4000
*1600 - MOCA		
GLAND, TX FIX	HUMBLE, TX VORTAC	*2500
*1900 - MOCA		
HUMBLE, TX VORTAC	DAISETTA, TX VORTAC	2000
DAISETTA, TX VORTAC	LUFKIN, TX VORTAC	2000
LUFKIN, TX VORTAC	ELM GROVE, LA VORTAC	*4000
*2000 - MOCA		
ELM GROVE, LA VORTAC	EL DORADO, AR VORTAC	2000

95.6408 VOR FEDERAL AIRWAY V408

FROM	TO	MEA
ROBRT, MD FIX	VINNY, PA FIX	5000
VINNY, PA FIX	MODENA, PA VORTAC	3500
MODENA, PA VORTAC	POTTSTOWN, PA VORTAC	2400
POTTSTOWN, PA VORTAC	*HIKES, PA FIX	2900
*4000 - MRA		
HIKES, PA FIX	EAST TEXAS, PA VOR/DME	2900
EAST TEXAS, PA VOR/DME	ALLENTOWN, PA VORTAC	#3000
#ALLENTOWN R-240 UNUSABLE BELOW 9000 USE EAST TEXAS R-059		
ALLENTOWN, PA VORTAC	LAKE HENRY, PA VORTAC	4000
LAKE HENRY, PA VORTAC	PRNCE, NY FIX	6000
		MAA - 15000
PRNCE, NY FIX	SAGES, NY FIX	6400
		MAA - 15000

95.6409 VOR FEDERAL AIRWAY V409

FROM	TO	MEA
CHARLOTTE, NC VOR/DME	LOCAS, NC FIX	3000
LOCAS, NC FIX	LIBERTY, NC VORTAC	2500
LIBERTY, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	3000

95.6410 VOR FEDERAL AIRWAY V410

FROM	TO	MEA
PONTIAC, MI VORTAC	U.S. CANADIAN BORDER	*4000
*2500 - MOCA		

95.6411 VOR FEDERAL AIRWAY V411

FROM	TO	MEA
LONE ROCK, WI VOR/DME	WAUKON, IA VORTAC	3000
WAUKON, IA VORTAC	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	FARMINGTON, MN VORTAC	3000

95.6412 VOR FEDERAL AIRWAY V412

FROM	TO	MEA
REDWOOD FALLS, MN VOR/DME	FLYING CLOUD, MN VOR/DME	2800

FROM	TO	MEA

95.6413 VOR FEDERAL AIRWAY V413

IRONWOOD, MI VORTAC	*RUSSH, WI FIX	8000
*10000 - MRA		
RUSSH, WI FIX	EAU CLAIRE, WI VORTAC	*6000
*2900 - MOCA		
EAU CLAIRE, WI VORTAC	BITLR, WI FIX	*3500
*2800 - MOCA		
BITLR, WI FIX	GOPHER, MN VORTAC	3400
GOPHER, MN VORTAC	BRAINERD, MN VORTAC	4000

95.6415 VOR FEDERAL AIRWAY V415

MONTGOMERY, AL VORTAC	SEMAN, AL FIX	2300
SEMAN, AL FIX	GIFFY, AL FIX	*4000
*3300 - MOCA		
GIFFY, AL FIX	FELTO, GA FIX	*6000
*3400 - MOCA		
FELTO, GA FIX	GORGO, GA FIX	*5000
*4000 - MOCA		
GORGO, GA FIX	ROME, GA VORTAC	4000
ROME, GA VORTAC	NELLO, GA FIX	5600
NELLO, GA FIX	ANNYE, GA FIX	6000
ANNYE, GA FIX	FOOTHILLS, GA VORTAC	5000
FOOTHILLS, GA VORTAC	PELAM, SC FIX	4000
PELAM, SC FIX	SPARTANBURG, SC VORTAC	*3000
*2400 - MOCA		
SPARTANBURG, SC VORTAC	LOCKS, SC FIX	2300

95.6416 VOR FEDERAL AIRWAY V416

ROSEWOOD, OH VORTAC	*LAWTO, OH FIX	**4000
*4000 - MRA		
**2500 - MOCA		
LAWTO, OH FIX	MANSFIELD, OH VORTAC	*4000
*2500 - MOCA		
MANSFIELD, OH VORTAC	JAKEE, OH FIX	3000

95.6417 VOR FEDERAL AIRWAY V417

MONROE, LA VORTAC	*BOLTS, MS FIX	**5000
*3400 - MRA		
**1900 - MOCA		
BOLTS, MS FIX	JACKSON, MS VORTAC	2000
JACKSON, MS VORTAC	*FANEN, MS FIX	**3000
*3300 - MRA		
**2000 - MOCA		
FANEN, MS FIX	MERIDIAN, MS VORTAC	3000
MERIDIAN, MS VORTAC	CRIMSON, AL VORTAC	2000
CRIMSON, AL VORTAC	VULCAN, AL VORTAC	2400
VULCAN, AL VORTAC	ROME, GA VORTAC	4000
ROME, GA VORTAC	NELLO, GA FIX	5600
NELLO, GA FIX	*AWSON, GA FIX	**7000
*5000 - MRA		
**5500 - MOCA		
AWSON, GA FIX	CORCE, GA FIX	4600
CORCE, GA FIX	IRMOS, GA FIX	3800
IRMOS, GA FIX	ATHENS, GA VORTAC	3000
ATHENS, GA VORTAC	COLLIERS, SC VORTAC	2500
COLLIERS, SC VORTAC	ALLENDALE, SC VOR	3000
ALLENDALE, SC VOR	*STOAS, SC FIX	**6000
*6000 - MCA STOAS, SC FIX , W BND		
**2000 - GNSS MEA		
STOAS, SC FIX	CHARLESTON, SC VORTAC	2000

FROM	TO	MEA

95.6418 VOR FEDERAL AIRWAY V418

SALEM, MI VORTAC	U.S. CANADIAN BORDER	*4000
*2700 - MOCA		
U.S. CANADIAN BORDER	BEWEL, OH FIX	*4000
*2700 - MOCA		
BEWEL, OH FIX	JAMESTOWN, NY VOR/DME	*4000
*3300 - MOCA		

95.6419 VOR FEDERAL AIRWAY V419

BOSTON, MA VOR/DME	BRADLEY, CT VORTAC	*4000
*2500 – MOCA		
*3000 - GNSS MEA		
BRADLEY, CT VORTAC	CARMEL, NY VOR/DME	3000
CARMEL, NY VOR/DME	SOLBERG, NJ VOR/DME	*3000
*2500 - MOCA		
SOLBERG, NJ VOR/DME	BIGGY, NJ FIX	2000
BIGGY, NJ FIX	#MODENA, PA VORTAC	*2500
*2500 - GNSS MEA		
#MODENA R-056 UNUSABLE.		
MODENA, PA VORTAC	WESTMINSTER, MD VORTAC	*3000
*2400 - MOCA		

95.6420 VOR FEDERAL AIRWAY V420

GREEN BAY, WI VORTAC	TRAVERSE CITY, MI VORTAC	*3500
*2600 - MOCA		
TRAVERSE CITY, MI VORTAC	GAYLORD, MI VOR/DME	3000
GAYLORD, MI VOR/DME	ALPENA, MI VORTAC	3000

95.6421 VOR FEDERAL AIRWAY V421

ZUNI, NM VORTAC	GALLUP, NM VORTAC	9000
GALLUP, NM VORTAC	RATTLESNAKE, NM VORTAC	10000
RATTLESNAKE, NM VORTAC	*DURANGO, CO VOR/DME	9700
*13200 - MCA DURANGO, CO VOR/DME , N BND		
DURANGO, CO VOR/DME	ZEANS, CO FIX	
	S BND	12000
	N BND	16100
ZEANS, CO FIX	LAZON, CO FIX	16100
LAZON, CO FIX	POWES, CO FIX	
	S BND	16100
	N BND	15000
POWES, CO FIX	*BLUE MESA, CO VOR/DME	
	SW BND	16100
	NE BND	12800
*12600 - MCA BLUE MESA, CO VOR/DME , S BND		
*12900 - MCA BLUE MESA, CO VOR/DME , N BND		
BLUE MESA, CO VOR/DME	WENDT, CO FIX	
	N BND	16300
	S BND	13000
WENDT, CO FIX	CAZUU, CO FIX	*16300
*14600 - MOCA		
CAZUU, CO FIX	SKIER, CO FIX	16300
SKIER, CO FIX	RED TABLE, CO VOR/DME	*16300
*14900 - MOCA		
RED TABLE, CO VOR/DME	KREMMLING, CO VOR/DME	14000
KREMMLING, CO VOR/DME	ROBERT, CO VOR/DME	12900
ROBERT, CO VOR/DME	HAHNS, CO FIX	12600

FROM	TO	MEA

95.6422 VOR FEDERAL AIRWAY V422

BEBEE, IL FIX	*NILES, IL FIX	3400
*3500 - MRA		
*3000 - MCA NILES, IL FIX , N BND		
NILES, IL FIX	CHICAGO HEIGHTS, IL VORTAC	2500
CHICAGO HEIGHTS, IL VORTAC	KNOX, IN VOR/DME	2800
KNOX, IN VOR/DME	WEBSTER LAKE, IN VOR	2700
WEBSTER LAKE, IN VOR	TWERP, OH FIX	2700
TWERP, OH FIX	FLAG CITY, OH VORTAC	2600

95.6423 VOR FEDERAL AIRWAY V423

WILLIAMSPORT, PA VOR/DME	BINGHAMTON, NY VORTAC	*4300
*3800 - MOCA		
BINGHAMTON, NY VORTAC	ITHACA, NY VOR/DME	3700
ITHACA, NY VOR/DME	SYRACUSE, NY VORTAC	*4000
*3100 - MOCA		
SYRACUSE, NY VORTAC	PAGER, NY FIX	*2400
*1800 - MOCA		
PAGER, NY FIX	WATERTOWN, NY VORTAC	*2600
*2000 - MOCA		
WATERTOWN, NY VORTAC	U.S. CANADIAN BORDER	*3000
*1800 - MOCA		

95.6424 VOR FEDERAL AIRWAY V424

NAPOLEON, MO VORTAC	MACON, MO VOR/DME	2900

95.6425 VOR FEDERAL AIRWAY V425

BROOKLEY, AL VORTAC	AXSIS, AL FIX	2000

95.6426 VOR FEDERAL AIRWAY V426

CARLETON, MI VORTAC	*AMRST, OH FIX	**4000
*4000 - MRA		
**3000 - GNSS MEA		
AMRST, OH FIX	DRYER, OH VOR/DME	*3000
*2200 - MOCA		

95.6427 VOR FEDERAL AIRWAY V427

MONROE, LA VORTAC	*PECKS, MS FIX	**5000
*2800 - MRA		
**1900 – MOCA		
**2000 - GNSS MEA		
PECKS, MS FIX	#JACKSON, MS VORTAC	2000
#JACKSON R-281 UNUSABLE BEYOND 40 NM		

95.6428 VOR FEDERAL AIRWAY V428

ELMIRA, NY VOR/DME	ITHACA, NY VOR/DME	3800
ITHACA, NY VOR/DME	CORTA, NY FIX	3600
CORTA, NY FIX	GEORGETOWN, NY VORTAC	*5000
*3600 - MOCA		
GEORGETOWN, NY VORTAC	EATEN, NY FIX	4000
EATEN, NY FIX	UTICA, NY VORTAC	3500

95.6429 VOR FEDERAL AIRWAY V429

FROM	TO	MEA
CAPE GIRARDEAU, MO VOR/DME	MARION, IL VOR/DME	3000
MARION, IL VOR/DME	BIBLE GROVE, IL VORTAC	2300
BIBLE GROVE, IL VORTAC	MATTOON, IL VOR/DME	2500
MATTOON, IL VOR/DME	CHAMPAIGN, IL VORTAC	2400
CHAMPAIGN, IL VORTAC	ROBERTS, IL VOR/DME	2600
ROBERTS, IL VOR/DME	MEDAN, IL FIX	2500
MEDAN, IL FIX	JOLIET, IL VORTAC	2400

95.6430 VOR FEDERAL AIRWAY V430

FROM	TO	MEA
CUT BANK, MT VORTAC	HAVRE, MT VOR/DME	6200
HAVRE, MT VOR/DME	GLASGOW, MT VOR/DME	*6500
*5500 - MOCA		
GLASGOW, MT VOR/DME	WILLISTON, ND VORTAC	*6000
*5000 - MOCA		
WILLISTON, ND VORTAC	MINOT, ND VORTAC	*4500
*3900 - MOCA		
MINOT, ND VORTAC	DEVILS LAKE, ND VOR/DME	3600
DEVILS LAKE, ND VOR/DME	GRAND FORKS, ND VOR/DME	3300
GRAND FORKS, ND VOR/DME	THIEF RIVER FALLS, MN VOR/DME	2900
THIEF RIVER FALLS, MN VOR/DME	GRAND RAPIDS, MN VOR/DME	*7000
*3400 - GNSS MEA		
GRAND RAPIDS, MN VOR/DME	DULUTH, MN VORTAC	3000
DULUTH, MN VORTAC	IRONWOOD, MI VORTAC	3500
IRONWOOD, MI VORTAC	DINER, MI FIX	*3500
*3400 - MOCA		
DINER, MI FIX	IRON MOUNTAIN, MI VOR/DME	*5000
*3500 - MOCA		
*4000 - GNSS MEA		
IRON MOUNTAIN, MI VOR/DME	VUKFI, MI FIX	3100
VUKFI, MI FIX	ESCANABA, MI VOR/DME	*3000
*2200 - MOCA		

95.6431 VOR FEDERAL AIRWAY V431

FROM	TO	MEA
REVER, MA FIX	LOBBY, MA FIX	2000
LOBBY, MA FIX	GARDNER, MA VOR/DME	3500
GARDNER, MA VOR/DME	KEENE, NH VORTAC	3600
KEENE, NH VORTAC	BRATS, VT FIX	*4400
*3600 - MOCA		
BRATS, VT FIX	GLENS FALLS, NY VORTAC	7000
GLENS FALLS, NY VORTAC	*GASSY, NY FIX	**10000
*10000 - MRA		
**6000 - GNSS MEA		

95.6432 VOR FEDERAL AIRWAY V432

FROM	TO	MEA
*THERMAL, CA VORTAC	PARKER, CA VORTAC	**9000
*4500 - MCA THERMAL, CA VORTAC , NE BND		
**7300 - MOCA		

95.6433 VOR FEDERAL AIRWAY V433

FROM	TO	MEA
NOTTINGHAM, MD VORTAC	SWANN, MD FIX	2500
SWANN, MD FIX	KERNO, MD FIX	*2500
*2500 - GNSS MEA		
KERNO, MD FIX	#DUPONT, DE VORTAC	*2000
*2000 - GNSS MEA		
#DUPONT R-233 UNUSABLE BEYOND 22 NM.		

95.6433 VOR FEDERAL AIRWAY V433 – CONTINUED

DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	*6000
*3000 - GNSS MEA		
YARDLEY, PA VOR/DME	METRO, NJ FIX	*3000
*2000 - MOCA		MAA - 10000
METRO, NJ FIX	GRITY, NJ FIX	*4000
*1700 - MOCA		
GRITY, NJ FIX	TICKL, NY FIX	4000
TICKL, NY FIX	LA GUARDIA, NY VOR/DME	2600
LA GUARDIA, NY VOR/DME	DUNBO, NY FIX	2000
DUNBO, NY FIX	BRIDGEPORT, CT VOR/DME	*2000
*1500 - MOCA		
BRIDGEPORT, CT VOR/DME	PAWLING, NY VOR/DME	3000
PAWLING, NY VOR/DME	*CYPER, NY FIX	6100
*10000 – MRA		
CYPER, NY FIX	#ROCKDALE, NY VOR/DME	*10000
*6100 - GNSS MEA		
#ROCKDALE R-127 UNUSABLE BELOW 10000'.		
ROCKDALE, NY VOR/DME	STODA, NY FIX	4000
STODA, NY FIX	SYRACUSE, NY VORTAC	2400

95.6434 VOR FEDERAL AIRWAY V434

OTTUMWA, IA VOR/DME	MOLINE, IL VORTAC	*3000
*2500 - MOCA		
MOLINE, IL VORTAC	PEORIA, IL VORTAC	2600
PEORIA, IL VORTAC	CHAMPAIGN, IL VORTAC	2800
CHAMPAIGN, IL VORTAC	BRICKYARD, IN VORTAC	2700

95.6435 VOR FEDERAL AIRWAY V435

ROSEWOOD, OH VORTAC	OBRLN, OH FIX	*5000
*2700 - MOCA		
OBRLN, OH FIX	DRYER, OH VOR/DME	*3000
*2400 - MOCA		

95.6436 VOR FEDERAL AIRWAY V436

HOBART, OK VORTAC	*NEADS, OK FIX	**5400
*5400 - MRA		
**3500 - MOCA		
NEADS, OK FIX	WILL ROGERS, OK VORTAC	3000
WILL ROGERS, OK VORTAC	BARNS, OK FIX	*4500
*3000 - MOCA		
BARNS, OK FIX	SAPPA, OK FIX	*4000
*2400 - MOCA		
SAPPA, OK FIX	TULSA, OK VORTAC	2500

95.6437 VOR FEDERAL AIRWAY V437

DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	*2000
*1500 - MOCA		
PAHOKEE, FL VORTAC	MELBOURNE, FL VOR/DME	2100
MELBOURNE, FL VOR/DME	KIZER, FL FIX	3000
KIZER, FL FIX	ORMOND BEACH, FL VORTAC	2700
ORMOND BEACH, FL VORTAC	JETSO, FL FIX	*3000
*1300 - MOCA		
JETSO, FL FIX	HOTAR, FL FIX	*5000
*1200 – MOCA		

95.6437 VOR FEDERAL AIRWAY V437 – CONTINUED

FROM	TO	MEA
HOTAR, FL FIX	STARY, GA FIX	*8000
*1200 - MOCA		
STARY, GA FIX	SAVANNAH, GA VORTAC	*3000
*1900 - MOCA		
SAVANNAH, GA VORTAC	*JACKE, SC FIX	2000
*6000 - MRA		
JACKE, SC FIX	CHARLESTON, SC VORTAC	2000
CHARLESTON, SC VORTAC	WESEL, SC FIX	1800
WESEL, SC FIX	FLORENCE, SC VORTAC	*4000
*1900 – MOCA		

95.6438 VOR FEDERAL AIRWAY V438

FROM	TO	MEA
GRANTSVILLE, MD VOR/DME	*FLINT, MD FIX	#5300
*4300 - MCA FLINT, MD FIX , W BND		
#GRANTSVILLE DME UNUSABLE BEYOND 20NM, BELOW 6000		
FLINT, MD FIX	HAGERSTOWN, MD VOR	4000
HAGERSTOWN, MD VOR	LUCKE, VA FIX	*3800
*3300 - MOCA		

95.6439 VOR FEDERAL AIRWAY V439

FROM	TO	MEA
DICKINSON, ND VORTAC	WILLISTON, ND VORTAC	4500

95.6440 VOR FEDERAL AIRWAY V440

FROM	TO	MEA
PANHANDLE, TX VORTAC	*BRISC, TX FIX	**7000
*7000 - MRA		
**4800 - MOCA		
BRISC, TX FIX	SAYRE, OK VORTAC	*4700
*4400 - MOCA		
SAYRE, OK VORTAC	CARFF, OK FIX	4000
CARFF, OK FIX	WILL ROGERS, OK VORTAC	3000

95.6441 VOR FEDERAL AIRWAY V441

FROM	TO	MEA
MELBOURNE, FL VOR/DME	LAKELAND, FL VORTAC	2600
LAKELAND, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	BAYPO, FL FIX	2000
BAYPO, FL FIX	*NITTS, FL FIX	**4000
*3000 - MRA		
**1700 - MOCA		
NITTS, FL FIX	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	*LEJKO, FL FIX	2000
*3000 - MRA		
LEJKO, FL FIX	GATORS, FL VORTAC	2000
GATORS, FL VORTAC	BRUNSWICK, GA VORTAC	3000
BRUNSWICK, GA VORTAC	STARY, GA FIX	*3000
*1500 - MOCA		
STARY, GA FIX	SAVANNAH, GA VORTAC	*3000
*1900 - MOCA		

95.6442 VOR FEDERAL AIRWAY V442

FROM	TO	MEA
PARADISE, CA VORTAC	APLES, CA FIX	*9000
*8000 - MOCA		
APLES, CA FIX	HECTOR, CA VORTAC	*10000
*8300 - MOCA		
HECTOR, CA VORTAC	CLIPP, CA FIX	9000
CLIPP, CA FIX	PARKER, CA VORTAC	8000

FROM	TO	MEA

95.6443 VOR FEDERAL AIRWAY V443

WISKE, WV FIX	NEWCOMERSTOWN, OH VOR/DME	3300
NEWCOMERSTOWN, OH VOR/DME	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	FAILS, OH FIX	2500
FAILS, OH FIX	U.S. CANADIAN BORDER	*3000
*1700 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6444 VOR FEDERAL AIRWAY V444

BURLEY, ID VOR/DME	*KINZE, ID FIX	**8000
*11200 - MCA KINZE, ID FIX , NW BND		
**7000 - MOCA		
KINZE, ID FIX	*SOLDE, ID FIX	
	NW BND	12500
	SE BND	8000
*12500 - MCA SOLDE, ID FIX , W BND		
SOLDE, ID FIX	*DERSO, ID FIX	**17000
*12500 - MCA DERSO, ID FIX , W BND		
**9200 - MOCA		
DERSO, ID FIX	AROWS, ID FIX	*12500
*9700 - MOCA		
AROWS, ID FIX	*BOISE, ID VORTAC	
	E BND	9000
	W BND	8000
*7000 - MCA BOISE, ID VORTAC , E BND		
BOISE, ID VORTAC	*EMETT, ID FIX	5600
*9400 - MRA		
EMETT, ID FIX	PAYET, ID FIX	
	SE BND	5600
	NW BND	9000
PAYET, ID FIX	BAKER CITY, OR VOR/DME	9000
WALLA WALLA, WA VOR/DME	DATES, WA FIX	4000
DATES, WA FIX	SPOKANE, WA VORTAC	5000

95.6445 VOR FEDERAL AIRWAY V445

MITCH, MD FIX	SWANN, MD FIX	*5500
*3000 - GNSS MEA		
SWANN, MD FIX	KERNO, MD FIX	*2500
*1500 - MOCA		
*2500 - GNSS MEA		
KERNO, MD FIX	#DUPONT, DE VORTAC	*2000
*2000 - GNSS MEA		
#DUPONT R-233 UNUSABLE BEYOND 22 NM.		
DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	*6000
*3000 - GNSS MEA		
YARDLEY, PA VOR/DME	EMPYR, NY FIX	2100
EMPYR, NY FIX	NANCI, NY FIX	2700
NANCI, NY FIX	LA GUARDIA, NY VOR/DME	2600

95.6446 VOR FEDERAL AIRWAY V446

TROY, IL VORTAC	SAMSVILLE, IL VOR/DME	2600

FROM	TO	MEA

95.6447 VOR FEDERAL AIRWAY V447

FROM	TO	MEA
CAMBRIDGE, NY VOR/DME	KERST, VT FIX	*5900
*5400 - MOCA		
KERST, VT FIX	MUDDI, VT FIX	*6000
*5500 – MOCA		
MUDDI, VT FIX	*RUCKY, VT FIX	5200
*5500 - MRA		
RUCKY, VT FIX	MONTPELIER, VT VOR/DME	*4500
*3900 - MOCA		
MONTPELIER, VT VOR/DME	*PLOTT, VT FIX	4800
*8000 - MRA		
PLOTT, VT FIX	*HURDS, VT FIX	5000
*6500 - MRA		
HURDS, VT FIX	U.S. CANADIAN BORDER	5000

95.6448 VOR FEDERAL AIRWAY V448

FROM	TO	MEA
ROGUE VALLEY, OR VORTAC	ROSEBURG, OR VOR/DME	7000
ROSEBURG, OR VOR/DME	*DRAIN, OR FIX	5000
*6000 - MRA		
DRAIN, OR FIX	EUGENE, OR VORTAC	
	N BND	*4000
	S BND	*5000
*3900 - MOCA		
EUGENE, OR VORTAC	GLORR, OR FIX	4000
GLORR, OR FIX	MAVER, OR FIX	6000
MAVER, OR FIX	*BATTLE GROUND, WA VORTAC	5000
*9400 - MCA BATTLE GROUND, WA VORTAC , NE BND		
BATTLE GROUND, WA VORTAC	LEARN, WA FIX	
	SW BND	*10500
	NE BND	*14500
*8000 - MOCA		
LEARN, WA FIX	ANGOO, WA FIX	14500
ANGOO, WA FIX	OXNAS, WA FIX	
	SW BND	*14500
	NE BND	*8500
*7500 - MOCA		
SIMCO, WA FIX	*YAKIMA, WA VORTAC	
	SW BND	12000
	NE BND	6300
*9500 - MCA YAKIMA, WA VORTAC , SW BND		
YAKIMA, WA VORTAC	RUBEL, WA FIX	6000
RUBEL, WA FIX	MOSES LAKE, WA VOR/DME	
	SW BND	6000
	NE BND	4000
MOSES LAKE, WA VOR/DME	BATUM, WA FIX	4000
BATUM, WA FIX	*SPOKANE, WA VORTAC	5000
*5200 - MCA SPOKANE, WA VORTAC , NE BND		
SPOKANE, WA VORTAC	CLASS, ID FIX	
	NE BND	*9000
	SW BND	*8000
*7200 - MOCA		
CLASS, ID FIX	*OLIBY, MT FIX	**12000
*13000 - MCA OLIBY, MT FIX , NE BND		
**9900 - MOCA		
**10000 - GNSS MEA		
OLIBY, MT FIX	KILLY, MT FIX	*13000
*9000 - GNSS MEA		
KILLY, MT FIX	KALISPELL, MT VOR/DME	*12000
*7600 - MOCA		
*8000 - GNSS MEA		

FROM	TO	MEA

95.6449 VOR FEDERAL AIRWAY V449

MILTON, PA VORTAC	MEGSS, PA FIX	#3500
#GNSS MEA		
MEGSS, PA FIX	LAKE HENRY, PA VORTAC	#4000
#GNSS MEA		
LAKE HENRY, PA VORTAC	DELANCEY, NY VOR/DME	4300
DELANCEY, NY VOR/DME	ALBANY, NY VORTAC	5000

95.6450 VOR FEDERAL AIRWAY V450

ESCANABA, MI VOR/DME	MENOMINEE, MI VOR/DME	2500
MENOMINEE, MI VOR/DME	GREEN BAY, WI VORTAC	2600
GREEN BAY, WI VORTAC	MUSKEGON, MI VORTAC	3000
MUSKEGON, MI VORTAC	FLINT, MI VORTAC	*3000
*2400 - MOCA		
FLINT, MI VORTAC	KATTY, MI FIX	3000
KATTY, MI FIX	U.S. CANADIAN BORDER	*4000
*2800 - MOCA		

95.6451 VOR FEDERAL AIRWAY V451

LA GUARDIA, NY VOR/DME	*NESSI, CT FIX	**4000
*4000 - MRA		
**1700 - MOCA		
**2000 - GNSS MEA		
NESSI, CT FIX	KEYED, NY FIX	2500
KEYED, NY FIX	CREAM, NY FIX	2000
CREAM, NY FIX	GROTON, CT VOR/DME	*6000
*4000 - GNSS MEA		

95.6452 VOR FEDERAL AIRWAY V452

NEWPORT, OR VORTAC	*HORTE, OR FIX	6000
*4300 - MCA HORTE, OR FIX , W BND		
HORTE, OR FIX	EUGENE, OR VORTAC	4000
EUGENE, OR VORTAC	CHEEZ, OR FIX	
	SE BND	7000
	NW BND	5200
CHEEZ, OR FIX	MANSN, OR FIX	
	SE BND	#*11000
	NW BND	#*8000
*7400 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
MANSN, OR FIX	MIXUP, OR FIX	*11000
*9800 - MOCA		
MIXUP, OR FIX	KLAMATH FALLS, OR VORTAC	
	NW BND	11000
	SE BND	9100
KLAMATH FALLS, OR VORTAC	TULIP, CA FIX	9000
TULIP, CA FIX	BACHS, CA FIX	
	S BND	*14000
	N BND	*9000
*11000 - GNSS MEA		
BACHS, CA FIX	HALLE, NV FIX	*14000
*10200 - MOCA		
*11000 - GNSS MEA		
HALLE, NV FIX	MUSTANG, NV VORTAC	*11000
*9600 - MOCA		

95.6453 VOR FEDERAL AIRWAY V453

FROM	TO	MEA
GORDONSVILLE, VA VORTAC	CASANOVA, VA VORTAC	4500
CASANOVA, VA VORTAC	LINDEN, VA VORTAC	5000

95.6454 VOR FEDERAL AIRWAY V454

FROM	TO	MEA
BROOKLEY, AL VORTAC	MONROEVILLE, AL VORTAC	2000
MONROEVILLE, AL VORTAC	CHAFF, AL FIX	2000
CHAFF, AL FIX	RUTEL, AL FIX	*2500
*1800 - MOCA		
RUTEL, AL FIX	CRENS, AL FIX	*4500
*1800 - MOCA		
CRENS, AL FIX	BANBI, AL FIX	2400
BANBI, AL FIX	COLUMBUS, GA VORTAC	*2400
*2000 - MOCA		
COLUMBUS, GA VORTAC	GRANT, GA FIX	2800
GRANT, GA FIX	SMARR, GA FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
SMARR, GA FIX	SINCA, GA FIX	*4500
*2500 - MOCA		
*2500 - GNSS MEA		
SINCA, GA FIX	*GLOSS, GA FIX	**3000
*3500 - MRA		
**2000 - MOCA		
GLOSS, GA FIX	MADDI, GA FIX	*3000
*2200 - MOCA		
MADDI, GA FIX	VESTO, GA FIX	*4000
*2100 - MOCA		
VESTO, GA FIX	GREENWOOD, SC VORTAC	2500
GREENWOOD, SC VORTAC	LOCKS, SC FIX	2300
GIZMO, NC FIX	LIBERTY, NC VORTAC	3000
LIBERTY, NC VORTAC	*NOKIY, VA FIX	**6000
*9000 - MCA NOKIY, VA FIX , NE BND		
**3000 - GNSS MEA		
NOKIY, VA FIX	LAWRENCEVILLE, VA VORTAC	*9000
*3000 - GNSS MEA		
LAWRENCEVILLE, VA VORTAC	JUNKI, VA FIX	#*6000
*1900 - MOCA		
*2000 - GNSS MEA		
#LAWRENCEVILLE R-059 UNUSABLE, USE HOPEWELL R-237.		
JUNKI, VA FIX	HOPEWELL, VA VORTAC	2000

95.6455 VOR FEDERAL AIRWAY V455

FROM	TO	MEA
RESERVE, LA VOR/DME	PICAYUNE, MS VOR/DME	2000
PICAYUNE, MS VOR/DME	*PLUGG, MS FIX	2000
*5000 - MRA		
PLUGG, MS FIX	EATON, MS VORTAC	2000
EATON, MS VORTAC	MERIDIAN, MS VORTAC	2300

95.6456 VOR FEDERAL AIRWAY V456

FROM	TO	MEA
FORT DODGE, IA VORTAC	MANKATO, MN VOR/DME	3000
MANKATO, MN VOR/DME	FLYING CLOUD, MN VOR/DME	*2900
*2400 - MOCA		

95.6457 VOR FEDERAL AIRWAY V457

FROM	TO	MEA
BROADWAY, NJ VOR/DME	LANCASTER, PA VORTAC	*3000
*2600 – MOCA		
LANCASTER, PA VORTAC	*ROAST, PA FIX	**4500
*10000 - MRA		
**2600 - MOCA		
ROAST, PA FIX	VINNY, PA FIX	*4500
*2600 - MOCA		
VINNY, PA FIX	WESTMINSTER, MD VORTAC	3000
WESTMINSTER, MD VORTAC	MARTINSBURG, WV VORTAC	*4000
*3300 - MOCA		

95.6458 VOR FEDERAL AIRWAY V458

FROM	TO	MEA
SANTA CATALINA, CA VORTAC	AVOLS, CA FIX	4000
AVOLS, CA FIX	PACIF, CA FIX	*3000
*2000 - MOCA		
PACIF, CA FIX	OCEANSIDE, CA VORTAC	3000
OCEANSIDE, CA VORTAC	*VISTA, CA FIX	3000
*5000 - MCA VISTA, CA FIX , E BND		
VISTA, CA FIX	JULIAN, CA VORTAC	7700
JULIAN, CA VORTAC	*KUMBA, CA FIX	7700
*5600 - MCA KUMBA, CA FIX , NW BND		
KUMBA, CA FIX	IMPERIAL, CA VORTAC	4100
IMPERIAL, CA VORTAC	BARD, AZ VORTAC	3600

95.6459 VOR FEDERAL AIRWAY V459

FROM	TO	MEA
SEAL BEACH, CA VORTAC	DARTS, CA FIX	
	SE BND	4000
	NW BND	6000
DARTS, CA FIX	*SAUGS, CA FIX	7000
*6600 - MCA SAUGS, CA FIX , NW BND		
SAUGS, CA FIX	LAKE HUGHES, CA VORTAC	8000
LAKE HUGHES, CA VORTAC	JEFFY, CA FIX	8000
JEFFY, CA FIX	*LOPES, CA FIX	9000
*8400 - MCA LOPES, CA FIX , S BND		
LOPES, CA FIX	*WRING, CA FIX	7800
*5400 - MCA WRING, CA FIX , SE BND		
WRING, CA FIX	TULE, CA VOR/DME	5000
TULE, CA VOR/DME	EXTRA, CA FIX	3500
EXTRA, CA FIX	FRIANT, CA VORTAC	5000
FRIANT, CA VORTAC	LINDEN, CA VORTAC	*7000
*6200 - MOCA		

95.6460 VOR FEDERAL AIRWAY V460

FROM	TO	MEA
MISSION BAY, CA VORTAC	*RYAHH, CA FIX	4000
*6200 - MCA RYAHH, CA FIX , E BND		
*RYAHH, CA FIX	BARET, CA FIX	
	E BND	8000
	W BND	5500
BARET, CA FIX	CANNO, CA FIX	8000
CANNO, CA FIX	JULIAN, CA VORTAC	8500
JULIAN, CA VORTAC	*HENOM, CA FIX	8500
*7300 - MCA HENOM, CA FIX , SW BND		
HENOM, CA FIX	MOMAR, CA FIX	3900
MOMAR, CA FIX	SHADI, CA FIX	7000
SHADI, CA FIX	BLYTHE, CA VORTAC	7000

95.6461 VOR FEDERAL AIRWAY V461

FROM	TO	MEA
GILA BEND, AZ VORTAC	BUCKEYE, AZ VORTAC	4000

95.6462 VOR FEDERAL AIRWAY V462

FROM	TO	MEA
FORT DODGE, IA VORTAC	SIOUX FALLS, SD VORTAC	4400

95.6463 VOR FEDERAL AIRWAY V463

FROM	TO	MEA
WOMAC, GA FIX	*ANNYE, GA FIX	**5000
*5900 - MCA ANNYE, GA FIX , N BND		
**4100 - MOCA		
ANNYE, GA FIX	HARRIS, GA VORTAC	7000

95.6464 VOR FEDERAL AIRWAY V464

FROM	TO	MEA
SALEM, MI VORTAC	DELOW, MI FIX	3000
U.S. CANADIAN BORDER	DUNKIRK, NY VORTAC	3300
DUNKIRK, NY VORTAC	LANGS, NY FIX	3300
LANGS, NY FIX	GENESEO, NY VOR/DME	4000

95.6465 VOR FEDERAL AIRWAY V465

FROM	TO	MEA
BULLION, NV VOR/DME	*WELLS, NV VOR	13000
*11800 - MCA WELLS, NV VOR , SW BND		
WELLS, NV VOR	SHEAR, UT FIX	12000
SHEAR, UT FIX	*MALAD CITY, ID VOR/DME	
	SW BND	11000
	NE BND	10000
*10700 - MCA MALAD CITY, ID VOR/DME , NE BND		
#MALAD CITY, ID VOR/DME	LUNDI, ID FIX	11500
#MTA V465 SW TO V21-257 NW 11000		
LUNDI, ID FIX	#JACKSON, WY VOR/DME	*15000
*13300 - MOCA		
*13300 - GNSS MEA		
*MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
#MTA V465 NE TO V330 W OR V520 W 16000		
JACKSON, WY VOR/DME	DUNOIR, WY VOR/DME	13000
DUNOIR, WY VOR/DME	REDLO, MT FIX	*17000
*14200 - MOCA		
REDLO, MT FIX	LAREI, MT FIX	
	N BND	7200
	S BND	16000
LAREI, MT FIX	BILLINGS, MT VORTAC	
	S BND	16000
	N BND	6000
BILLINGS, MT VORTAC	MILES CITY, MT VOR/DME	6000
MILES CITY, MT VOR/DME	WILLISTON, ND VORTAC	*7000
*5200 – MOCA		
*6000 - GNSS MEA		

95.6466 VOR FEDERAL AIRWAY V466

FROM	TO	MEA
VOLUNTEER, TN VORTAC	TAMPI, TN FIX	3500
TAMPI, TN FIX	YUMMY, VA FIX	4500
YUMMY, VA FIX	GLADE SPRING, VA VOR/DME	6000
GLADE SPRING, VA VOR/DME	*DORFF, VA FIX	6600
*7000 - MRA		
DORFF, VA FIX	PULASKI, VA VORTAC	6000

95.6467 VOR FEDERAL AIRWAY V467

RICHMOND, IN VORTAC	WATERVILLE, OH VOR/DME	*10000
*3000 - MOCA		
WATERVILLE, OH VOR/DME	DETROIT, MI VOR/DME	*3000
*2100 - MOCA		

95.6468 VOR FEDERAL AIRWAY V468

*BATTLE GROUND, WA VORTAC	TROTS, WA FIX	**10000
*5000 - MCA BATTLE GROUND, WA VORTAC , NE BND		
**7200 - MOCA		
**8000 - GNSS MEA		
*TROTS, WA FIX	SWANY, WA FIX	**11500
*11500 - MCA TROTS, WA FIX , NE BND		
**6800 - MOCA		
**7000 - GNSS MEA		
SWANY, WA FIX	HITCH, WA FIX	*8500
*6800 - MOCA		
*7000 - GNSS MEA		
HITCH, WA FIX	YAKIMA, WA VORTAC	
	SE BND	*8500
NW BND	*5000	
YAKIMA, WA VORTAC	GLEED, WA FIX	
	W BND	5500
	E BND	5000
GLEED, WA FIX	ELLENSBURG, WA VORTAC	5500

95.6469 VOR FEDERAL AIRWAY V469

DANVILLE, VA VOR	LYNCHBURG, VA VORTAC	3000
LYNCHBURG, VA VORTAC	RADIA, VA FIX	4600
RADIA, VA FIX	RELEE, VA FIX	6000
RELEE, VA FIX	EXRAS, VA FIX	*8000
*5100 - MOCA		
*5200 - GNSS MEA		
EXRAS, VA FIX	BOIER, WV FIX	*10000
*6900 - MOCA		
*6900 - GNSS MEA		
BOIER, WV FIX	ELKINS, WV VORTAC	6800
ELKINS, WV VORTAC	TYGAR, WV FIX	*5000
*4400 - MOCA		
TYGAR, WV FIX	MORGANTOWN, WV VORTAC	4000
MORGANTOWN, WV VORTAC	OTOWN, PA FIX	*5000
*4100 - MOCA		
OTOWN, PA FIX	NESTO, PA FIX	*4000
*3100 - MOCA		
NESTO, PA FIX	QUARY, PA FIX	4000
QUARY, PA FIX	JOHNSTOWN, PA VORTAC	*5000
*4400 - MOCA		
JOHNSTOWN, PA VORTAC	ST THOMAS, PA VORTAC	#*5000
*4500 - MOCA		
#JOHNSTOWN R-125 UNUSABLE, USE ST THOMAS R-307		
ST THOMAS, PA VORTAC	BADDI, PA FIX	*5000
*4000 - MOCA		
BADDI, PA FIX	HARRISBURG, PA VORTAC	4000
HARRISBURG, PA VORTAC	JOANE, PA FIX	4000
JOANE, PA FIX	DUPONT, DE VORTAC	3000
DUPONT, DE VORTAC	WOODSTOWN, NJ VORTAC	2000
		MAA – 8000

95.6470 VOR FEDERAL AIRWAY V470

FROM	TO	MEA
PULASKI, VA VORTAC	TABER, VA FIX	5500
TABER, VA FIX	*MONAT, VA FIX	**5600
*4000 - MRA		
**5100 - MOCA		
MONAT, VA FIX	LYNCHBURG, VA VORTAC	
	W BND	*4000
	E BND	*3000
*2900 - MOCA		

95.6471 VOR FEDERAL AIRWAY V471

FROM	TO	MEA
BARHA, ME FIX	BANGOR, ME VORTAC	*3000
*2500 - MOCA		
BANGOR, ME VORTAC	MILLINOCKET, ME VOR/DME	*2500
*2100 – MOCA		
MILLINOCKET, ME VOR/DME	HOULTON, ME VOR/DME	*2600
*2000 - MOCA		
HOULTON, ME VOR/DME	U.S. CANADIAN BORDER	*2600
*2100 - MOCA		

95.6472 VOR FEDERAL AIRWAY V472

FROM	TO	MEA
ELIZABETH CITY, NC VOR/DME	BERTI, NC FIX	*4000
*1600 - MOCA		
BERTI, NC FIX	*ZAGGY, NC FIX	**7000
*7000 - MRA		
**2100 - MOCA		
**2100 - GNSS MEA		
ZAGGY, NC FIX	KINSTON, NC VORTAC	*2000
*1600 - MOCA		

95.6473 VOR FEDERAL AIRWAY V473

FROM	TO	MEA
ROANOKE, VA VORTAC	HOBOS, VA FIX	*6000
*5100 - MOCA		
HOBOS, VA FIX	MONTEBELLO, VA VOR/DME	6000
MONTEBELLO, VA VOR/DME	GORDONSVILLE, VA VORTAC	*6000
*5500 - MOCA		

95.6474 VOR FEDERAL AIRWAY V474

FROM	TO	MEA
NESTO, PA FIX	PLEEZ, PA FIX	*4000
*3100 - MOCA		
PLEEZ, PA FIX	INDIAN HEAD, PA VORTAC	*5000
*4500 - MOCA		
INDIAN HEAD, PA VORTAC	ST THOMAS, PA VORTAC	*5000
*4500 - MOCA		
ST THOMAS, PA VORTAC	NOENO, PA FIX	*5000
*4000 - MOCA		
NOENO, PA FIX	DELRO, PA FIX	3000
DELRO, PA FIX	MODENA, PA VORTAC	*10000
*3900 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6475 VOR FEDERAL AIRWAY V475

LA GUARDIA, NY VOR/DME	DUNBO, NY FIX	2000
DUNBO, NY FIX	BRIDGEPORT, CT VOR/DME	*2000
*1500 – MOCA		
BRIDGEPORT, CT VOR/DME	MADISON, CT VOR/DME	*2000
*1500 - MOCA		
MADISON, CT VOR/DME	NORWICH, CT VOR/DME	2300
NORWICH, CT VOR/DME	PROVIDENCE, RI VORTAC	*2400
*1900 – MOCA		

95.6476 VOR FEDERAL AIRWAY V476

LYNCHBURG, VA VORTAC	GORDONSVILLE, VA VORTAC	3300

95.6477 VOR FEDERAL AIRWAY V477

HUMBLE, TX VORTAC	LEONA, TX VORTAC	*3000
*2000 - MOCA		
LEONA, TX VORTAC	CEDAR CREEK, TX VORTAC	2100

95.6478 VOR FEDERAL AIRWAY V478

FALMOUTH, KY VOR/DME	NEWCOMBE, KY VORTAC	3100
NEWCOMBE, KY VORTAC	BECKLEY, WV VORTAC	5900

95.6479 VOR FEDERAL AIRWAY V479

DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	2000

95.6481 VOR FEDERAL AIRWAY V481

EUGENE, OR VORTAC	CORVALLIS, OR VOR/DME	3500
CORVALLIS, OR VOR/DME	CRAAF, OR FIX	4000

95.6483 VOR FEDERAL AIRWAY V483

DEER PARK, NY VOR/DME	*RYMES, CT FIX	**2500
*5000 - MRA		
**2000 - MOCA		
RYMES, CT FIX	CARMEL, NY VOR/DME	2500
CARMEL, NY VOR/DME	KINGSTON, NY VOR/DME	3000
KINGSTON, NY VOR/DME	*WEETS, NY FIX	**4000
*6000 - MRA		
**3000 - GNSS MEA		
WEETS, NY FIX	RIMBA, NY FIX	6000
RIMBA, NY FIX	DELANCEY, NY VOR/DME	5500
DELANCEY, NY VOR/DME	ROCKDALE, NY VOR/DME	4200
ROCKDALE, NY VOR/DME	STODA, NY FIX	4000
STODA, NY FIX	SYRACUSE, NY VORTAC	2400
SYRACUSE, NY VORTAC	*LYSAN, NY FIX	2300
*3000 - MRA		
LYSAN, NY FIX	ROCHESTER, NY VOR/DME	2300

95.6484 VOR FEDERAL AIRWAY V484

HAILEY, ID NDB/DME	KINZE, ID FIX	8600
KINZE, ID FIX	*TWIN FALLS, ID VORTAC	7000
*8000 - MCA TWIN FALLS, ID VORTAC , E BND		
TWIN FALLS, ID VORTAC	WODEN, ID FIX	8800

95.6484 VOR FEDERAL AIRWAY V484 - CONTINUED

FROM	TO	MEA
WODEN, ID FIX	*DRYAD, ID FIX	**12000
*13000 - MCA DRYAD, ID FIX , SE BND		
**9500 – MOCA		
DRYAD, ID FIX	SWITZ, UT FIX	#*16000
*11900 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
SWITZ, UT FIX	CAUSE, UT FIX	*11500
*8600 - MOCA		
CAUSE, UT FIX	*WASATCH, UT VORTAC	8600
*11000 - MCA WASATCH, UT VORTAC , E BND		
WASATCH, UT VORTAC	PARLE, UT FIX	11500
PARLE, UT FIX	MYTON, UT VOR/DME	13000
MYTON, UT VOR/DME	*WINDO, UT FIX	**10500
*13000 - MRA		
**9000 - MOCA		
WINDO, UT FIX	GRAND JUNCTION, CO VOR/DME	10500
GRAND JUNCTION, CO VOR/DME	BATTZ, CO FIX	12300
BATTZ, CO FIX	BLUE MESA, CO VOR/DME	14000
BLUE MESA, CO VOR/DME	HOMME, CO FIX	14600
HOMME, CO FIX	ALAMOSA, CO VORTAC	
	S BND	10000
	N BND	14600

95.6485 VOR FEDERAL AIRWAY V485

FROM	TO	MEA
VENTURA, CA VOR/DME	*HENER, CA FIX	5000
*6200 - MCA HENER, CA FIX , NW BND		
HENER, CA FIX	FELLOWS, CA VORTAC	9000
FELLOWS, CA VORTAC	*REDDE, CA FIX	**7000
*7000 - MCA REDDE, CA FIX , SE BND		
**6000 - MOCA		
REDDE, CA FIX	PRIEST, CA VOR	6000
PRIEST, CA VOR	PANOS, CA FIX	6500
PANOS, CA FIX	HENCE, CA FIX	*6500
*5600 - MOCA		
HENCE, CA FIX	SAN JOSE, CA VOR/DME	4600

95.6486 VOR FEDERAL AIRWAY V486

FROM	TO	MEA
LEBRN, OH FIX	CHARDON, OH VOR/DME	3000
CHARDON, OH VOR/DME	ALLCO, PA FIX	3300
ALLCO, PA FIX	JAMESTOWN, NY VOR/DME	*3700
*3200 - MOCA		

95.6487 VOR FEDERAL AIRWAY V487

FROM	TO	MEA
LA GUARDIA, NY VOR/DME	DUNBO, NY FIX	2000
DUNBO, NY FIX	BRIDGEPORT, CT VOR/DME	*2000
*1500 - MOCA		
BRIDGEPORT, CT VOR/DME	BOWAN, NY FIX	*6000
*4100 - MOCA		
BOWAN, NY FIX	CAMBRIDGE, NY VOR/DME	*5000
*4300 – MOCA		
CAMBRIDGE, NY VOR/DME	*GRISS, NY FIX	4000
*10000 - MRA		
GRISS, NY FIX	ENSON, VT FIX	*4000
*2700 - MOCA		

95.6487 VOR FEDERAL AIRWAY V487 - CONTINUED

FROM	TO	MEA
ENSON, VT FIX *2800 - MOCA	WEIGH, VT FIX	*4000
WEIGH, VT FIX	BURLINGTON, VT VOR/DME	3000
BURLINGTON, VT VOR/DME	U.S. CANADIAN BORDER	2800

95.6489 VOR FEDERAL AIRWAY V489

FROM	TO	MEA
COATE, NJ FIX *3300 - MOCA	HUGUENOT, NY VOR/DME	*4000
HUGUENOT, NY VOR/DME *3500 - MOCA	WEARD, NY FIX	*4000
WEARD, NY FIX *5700 - MOCA	SAGES, NY FIX	*7000
SAGES, NY FIX	ALBANY, NY VORTAC	6000
ALBANY, NY VORTAC *5000 - GNSS MEA	GLENS FALLS, NY VORTAC	*7000
GLENS FALLS, NY VORTAC *8000 - MRA	*FAIRB, NY FIX	6000
FAIRB, NY FIX *6000 - GNSS MEA	LEAFY, NY FIX	*8000
LEAFY, NY FIX	KEESE, NY FIX	4000
KEESE, NY FIX	PLATTSBURGH, NY VORTAC	3300

95.6490 VOR FEDERAL AIRWAY V490

FROM	TO	MEA
UTICA, NY VORTAC *6000 - MRA **3300 - MOCA	*GALWA, NY FIX	**4000
GALWA, NY FIX *3300 - MOCA	CAMBRIDGE, NY VOR/DME	*4000
CAMBRIDGE, NY VOR/DME *5300 - MOCA	STRUM, NH FIX	*6000
STRUM, NH FIX	DUBIN, NH FIX	5000
DUBIN, NH FIX	LURCH, NH FIX	4000
LURCH, NH FIX *4000 - MCA MUGGY, NH FIX , W BND	*MUGGY, NH FIX	4000
MUGGY, NH FIX	MANCHESTER, NH VOR/DME	3000

95.6491 VOR FEDERAL AIRWAY V491

FROM	TO	MEA
RAPID CITY, SD VORTAC	UNION, SD FIX	5000
UNION, SD FIX *5000 - MOCA	HAYNI, ND FIX	*9000
HAYNI, ND FIX *4500 - MOCA	DICKINSON, ND VORTAC	*5000
DICKINSON, ND VORTAC *4300 - MOCA	MINOT, ND VORTAC	*6000

95.6492 VOR FEDERAL AIRWAY V492

FROM	TO	MEA
ST PETERSBURG, FL VORTAC	LA BELLE, FL VORTAC	2000
LA BELLE, FL VORTAC *1500 - MOCA	PAHOKEE, FL VORTAC	*2000
PAHOKEE, FL VORTAC *1500 - MOCA	PALM BEACH, FL VORTAC	*2000
PALM BEACH, FL VORTAC *2000 – MOCA	STOOP, FL FIX	*3000
STOOP, FL FIX	MELBOURNE, FL VOR/DME	3000

FROM	TO	MEA

95.6493 VOR FEDERAL AIRWAY V493

FROM	TO	MEA
LIVINGSTON, TN VORTAC	LEXINGTON, KY VORTAC	3500
LEXINGTON, KY VORTAC	BEAER, KY FIX	3000
BEAER, KY FIX	YORK, KY VORTAC	3300
YORK, KY VORTAC	TARTO, OH FIX	3300
TARTO, OH FIX	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	DUSKY, OH FIX	3000
DUSKY, OH FIX	WATERVILLE, OH VOR/DME	2600
WATERVILLE, OH VOR/DME	CARLETON, MI VORTAC	*3000
*2100 - MOCA		
MENOMINEE, MI VOR/DME	RHINELANDER, WI VORTAC	3500

95.6494 VOR FEDERAL AIRWAY V494

FROM	TO	MEA
CRESCENT CITY, CA VORTAC	FORTUNA, CA VORTAC	*6000
*3500 - MOCA		
FORTUNA, CA VORTAC	MENDOCINO, CA VORTAC	*13000
*6100 - MOCA		
MENDOCINO, CA VORTAC	SANTA ROSA, CA VOR/DME	6000
SANTA ROSA, CA VOR/DME	*RAGGS, CA FIX	5000
*8500 - MRA		
RAGGS, CA FIX	SACRAMENTO, CA VORTAC	5000
SACRAMENTO, CA VORTAC	ROZZY, CA FIX	*3000
*1600 - MOCA		
ROZZY, CA FIX	HAGAN, CA FIX	4000
HAGAN, CA FIX	*AUDIO, CA FIX	**6000
*9000 - MCA AUDIO, CA FIX , NE BND		
**4500 - MOCA		
AUDIO, CA FIX	SQUAW VALLEY, CA VOR/DME	11000
SQUAW VALLEY, CA VOR/DME	*VIKES, NV FIX	12000
*11000 - MCA VIKES, NV FIX , SW BND		
VIKES, NV FIX	*HAZEN, NV VORTAC	**10000
*9000 - MCA HAZEN, NV VORTAC , SW BND		
**9300 - MOCA		

95.6495 VOR FEDERAL AIRWAY V495

FROM	TO	MEA
U.S. CANADIAN BORDER	WHATCOM, WA VORTAC	*3000
*1900 - MOCA		
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	3000
U.S. CANADIAN BORDER	LOFAL, WA FIX	*5400
*4300 – MOCA		
LOFAL, WA FIX	SEATTLE, WA VORTAC	*4000
*2800 - MOCA		
SEATTLE, WA VORTAC	CIDUG, WA FIX	*5000
*3000 - MOCA		
*3000 - GNSS MEA		
CIDUG, WA FIX	ALDER, WA FIX	
	S BND	*9000
	N BND	*5000
*4000 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6495 VOR FEDERAL AIRWAY V495 – CONTINUED

ALDER, WA FIX	*TOUTL, WA FIX	**9000
*8500 - MRA		
*5900 - MCA TOUTL, WA FIX , N BND		
**6800 - MOCA		
**7000 - GNSS MEA		
TOUTL, WA FIX	BATTLE GROUND, WA VORTAC	
	N BND	*9000
	S BND	*5000
*5000 - MOCA		
*5000 - GNSS MEA, N BND		
BATTLE GROUND, WA VORTAC	NEWBERG, OR VOR/DME	4000
NEWBERG, OR VOR/DME	CORVALLIS, OR VOR/DME	*4000
*3400 - MOCA		
CORVALLIS, OR VOR/DME	HORTE, OR FIX	4000
HORTE, OR FIX	*VAUGN, OR FIX	
	S BND	7000
	N BND	4000
*7000 - MRA		
VAUGN, OR FIX	ROSEBURG, OR VOR/DME	*7000
*4400 - MOCA		
ROSEBURG, OR VOR/DME	MERLI, OR FIX	*8000
*7500 - MOCA		
MERLI, OR FIX	*PAPLE, OR FIX	**9000
*10100 - MRA		
**6500 - MOCA		
PAPLE, OR FIX	*BAYTS, OR FIX	**10100
*10000 - MRA		
**7300 - MOCA		
BAYTS, OR FIX	FORT JONES, CA VOR/DME	*10000
*9400 - MOCA		

95.6496 VOR FEDERAL AIRWAY V496

UTICA, NY VORTAC	MALLO, NY FIX	4500
MALLO, NY FIX	GLENS FALLS, NY VORTAC	*7000
*6000 - GNSS MEA		
GLENS FALLS, NY VORTAC	KERST, VT FIX	*10000
*6000 - GNSS MEA		
KERST, VT FIX	LEBANON, NH VOR/DME	5900
LEBANON, NH VOR/DME	GRUMP, NH FIX	5000
GRUMP, NH FIX	NEETS, NH FIX	4000
NEETS, NH FIX	KENNEBUNK, ME VORTAC	3600

95.6497 VOR FEDERAL AIRWAY V497

ROME, OR VOR/DME	WILDHORSE, OR VOR/DME	9000
WILDHORSE, OR VOR/DME	KIMBERLY, OR VORTAC	9000
KIMBERLY, OR VORTAC	KLICKITAT, OR VOR/DME	7300
KLICKITAT, OR VOR/DME	SUNED, WA FIX	7000
SUNED, WA FIX	MOSES LAKE, WA VOR/DME	6000
MOSES LAKE, WA VOR/DME	EPHRATA, WA VORTAC	4000

95.6499 VOR FEDERAL AIRWAY V499

BALTIMORE, MD VORTAC	BELAY, MD FIX	2300
BELAY, MD FIX	LANCASTER, PA VORTAC	2500
LANCASTER, PA VORTAC	BINGHAMTON, NY VORTAC	*4500
*3900 - MOCA		

FROM	TO	MEA

95.6500 VOR FEDERAL AIRWAY V500

BATTLE GROUND, WA VORTAC	NEWBERG, OR VOR/DME	4000
NEWBERG, OR VOR/DME	GLARA, OR FIX	4000
GLARA, OR FIX	*HARZL, OR FIX	
	W BND	**7200
	E BND	**10000
*7200 - MRA		
**6600 - MOCA		
**7000 - GNSS MEA		
HARZL, OR FIX	RATZZ, OR FIX	
	E BND	*10000
	W BND	*8000
*7400 - MOCA		
*8000 - GNSS MEA		
RATZZ, OR FIX	*GASHE, OR FIX	**10000
*10000 - MRA		
**8000 - MOCA		
**8000 - GNSS MEA		
GASHE, OR FIX	KIMBERLY, OR VORTAC	*9200
*8200 - MOCA		
KIMBERLY, OR VORTAC	*HOSTS, OR FIX	11000
*11700 - MRA		
HOSTS, OR FIX	PARMO, ID FIX	
	E BND	6000
	W BND	11000
PARMO, ID FIX	*BOISE, ID VORTAC	5000
*7000 - MCA BOISE, ID VORTAC , E BND		
BOISE, ID VORTAC	AROWS, ID FIX	
	E BND	9000
	W BND	8000
AROWS, ID FIX	*DERSO, ID FIX	**12500
*12500 - MCA DERSO, ID FIX , E BND		
**9700 - MOCA		
DERSO, ID FIX	*SOLDE, ID FIX	**17000
*16600 - MCA SOLDE, ID FIX , W BND		
**9200 - MOCA		
SOLDE, ID FIX	*REAPS, ID FIX	**14000
*12900 - MCA REAPS, ID FIX , W BND		
**8000 - MOCA		
REAPS, ID FIX	BETRE, ID FIX	*9500
*7000 - MOCA		
BETRE, ID FIX	POCATELLO, ID VOR/DME	7500

95.6501 VOR FEDERAL AIRWAY V501

MARTINSBURG, WV VORTAC	HAGERSTOWN, MD VOR	3500
HAGERSTOWN, MD VOR	ST THOMAS, PA VORTAC	4000
ST THOMAS, PA VORTAC	PHILIPSBURG, PA VORTAC	*4500
*4000 - MOCA		
WELLSVILLE, NY VORTAC	BEEPS, NY FIX	*4500
*4000 - MOCA		

95.6502 VOR FEDERAL AIRWAY V502

DODGE CITY, KS VORTAC	DISKS, KS FIX	*4500
*4000 - MOCA		
DISKS, KS FIX	*SPELT, KS FIX	**5000
*5000 - MRA		
**3300 - MOCA		
SPELT, KS FIX	HUTCHINSON, KS VOR/DME	3200
HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000

95.6502 VOR FEDERAL AIRWAY V502 - CONTINUED

FROM	TO	MEA
WAIVE, KS FIX	*FLOSS, KS FIX	3300
*5000 - MRA		
FLOSS, KS FIX	EMPORIA, KS VORTAC	3300
EMPORIA, KS VORTAC	KANSAS CITY, MO VORTAC	3100
KANSAS CITY, MO VORTAC	BRAYMER, MO VOR/DME	2600
BRAYMER, MO VOR/DME	KIRKSVILLE, MO VORTAC	2900

95.6503 VOR FEDERAL AIRWAY V503

FROM	TO	MEA
ROCHESTER, MN VOR/DME	CEDAR RAPIDS, IA VOR/DME	*4500
*3600 - MOCA		

95.6505 VOR FEDERAL AIRWAY V505

FROM	TO	MEA
DES MOINES, IA VORTAC	GUMBO, IA FIX	2700
GUMBO, IA FIX	FORT DODGE, IA VORTAC	3000
FORT DODGE, IA VORTAC	MASON CITY, IA VORTAC	3000
MASON CITY, IA VORTAC	FREED, MN FIX	3000
FREED, MN FIX	*ALMAY, MN FIX	**4600
*5000 - MRA		
**2800 - MOCA		
ALMAY, MN FIX	PRAGS, MN FIX	*5000
*2500 - MOCA		
PRAGS, MN FIX	GOPHER, MN VORTAC	3000
GOPHER, MN VORTAC	SIREN, WI VOR/DME	3000
SIREN, WI VOR/DME	DULUTH, MN VORTAC	4000
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	SQEAK, MN FIX	*5000
*3100 - MOCA		
SQEAK, MN FIX	*BEBEL, MN FIX	5000
*4000 - MRA		
BEBEL, MN FIX	INTERNATIONAL FALLS, MN VORTAC	3000

95.6506 VOR FEDERAL AIRWAY V506

FROM	TO	MEA
TULSA, OK VORTAC	VINTA, OK FIX	2600
VINTA, OK FIX	NEOSHO, MO VOR/DME	3000
NEOSHO, MO VOR/DME	BILIE, MO FIX	3000
BILIE, MO FIX	SPRINGFIELD, MO VORTAC	3000

95.6507 VOR FEDERAL AIRWAY V507

FROM	TO	MEA
ARDMORE, OK VORTAC	WILL ROGERS, OK VORTAC	3100
WILL ROGERS, OK VORTAC	*WAXEY, OK FIX	**4000
*5000 - MRA		
**3200 - MOCA		
WAXEY, OK FIX	ROLLS, OK FIX	*8400
*3500 - MOCA		
ROLLS, OK FIX	MITBEE, OK VORTAC	4000
MITBEE, OK VORTAC	LIBERAL, KS VORTAC	4700
LIBERAL, KS VORTAC	GARDEN CITY, KS VORTAC	4700

95.6508 VOR FEDERAL AIRWAY V508

FROM	TO	MEA
HILL CITY, KS VORTAC	HAYS, KS VORTAC	*4500
*3900 - MOCA		
HAYS, KS VORTAC	*GLIDE, KS FIX	3900
*4000 - MRA		
GLIDE, KS FIX	SALINA, KS VORTAC	*3600
*2900 - MOCA		
SALINA, KS VORTAC	*VASCO, KS FIX	3000
*5000 – MRA		

95.6508 VOR FEDERAL AIRWAY V508 - CONTINUED

FROM	TO	MEA
VASCO, KS FIX	MANHATTAN, KS VOR/DME	3000
MANHATTAN, KS VOR/DME	TOPEKA, KS VORTAC	3000
TOPEKA, KS VORTAC	RUGBB, KS FIX	2800
RUGBB, KS FIX	JOHNSON COUNTY, KS VOR/DME	2600

95.6509 VOR FEDERAL AIRWAY V509

FROM	TO	MEA
ST PETERSBURG, FL VORTAC	*CROWD, FL FIX	**5000
*5000 - MRA		
**2600 - MOCA		
CROWD, FL FIX	HALLR, FL FIX	*6000
*1800 - MOCA		

95.6510 VOR FEDERAL AIRWAY V510

FROM	TO	MEA
DICKINSON, ND VORTAC	BISMARCK, ND VOR/DME	4600
BISMARCK, ND VOR/DME	*BEHQY, ND FIX	3900
*12000 - MRA		
BEHQY, ND FIX	JAMESTOWN, ND VOR/DME	3900
JAMESTOWN, ND VOR/DME	*CHAFE, ND FIX	3300
*6000 - MRA		
CHAFE, ND FIX	FARGO, ND VORTAC	
	W BND	3300
	E BND	2700
FARGO, ND VORTAC	STARR, MN FIX	3500
STARR, MN FIX	ALEXANDRIA, MN VOR/DME	*3500
*3000 - MOCA		
ALEXANDRIA, MN VOR/DME	*DAYLE, MN FIX	5000
*5000 - MCA DAYLE, MN FIX , NW BND		
DAYLE, MN FIX	GOPHER, MN VORTAC	4000
GOPHER, MN VORTAC	*BITLR, WI FIX	3400
*5500 - MCA BITLR, WI FIX , SE BND		
BITLR, WI FIX	NODINE, MN VORTAC	5500
NODINE, MN VORTAC	DELLS, WI VORTAC	3000
OSHKOSH, WI VORTAC	FALLS, WI VOR/DME	3000
FALLS, WI VOR/DME	*GAYLE, MI FIX	3500
*3500 - MRA		
GAYLE, MI FIX	MUSKEGON, MI VORTAC	3500
MUSKEGON, MI VORTAC	GRAND RAPIDS, MI VOR/DME	2700
GRAND RAPIDS, MI VOR/DME	LANSING, MI VORTAC	2700
#BUFFALO, NY VOR/DME	*EHMAN, NY FIX	**11000
*11000 - MCA EHMAN, NY FIX , SW BND		
**3000 - GNSS MEA		
#BUFFALO R-053 UNUSABLE BELOW 11000.		
EHMAN, NY FIX	ROCHESTER, NY VOR/DME	2400

95.6511 VOR FEDERAL AIRWAY V511

FROM	TO	MEA
LAKELAND, FL VORTAC	HALLR, FL FIX	*4000
*2200 - MOCA		
HALLR, FL FIX	THNDR, FL FIX	*7000
*1700 - MOCA		
*5000 - GNSS MEA		
THNDR, FL FIX	DOLPHIN, FL VORTAC	*3000
*1500 - MOCA		

95.6512 VOR FEDERAL AIRWAY V512

FROM	TO	MEA
POCKET CITY, IN VORTAC	HOLAN, IN FIX	2600
HOLAN, IN FIX	SACKO, IN FIX	*3500
*2100 - MOCA		
*3000 - GNSS MEA		
SACKO, IN FIX	LOUISVILLE, KY VORTAC	2700
LOUISVILLE, KY VORTAC	CLEGG, KY FIX	*10000
*2700 - MOCA		
CLEGG, KY FIX	LEXINGTON, KY VORTAC	2800

95.6513 VOR FEDERAL AIRWAY V513

FROM	TO	MEA
LIVINGSTON, TN VORTAC	NEW HOPE, KY VOR/DME	3000
NEW HOPE, KY VOR/DME	LOUISVILLE, KY VORTAC	2700

95.6514 VOR FEDERAL AIRWAY V514

FROM	TO	MEA
MISSION BAY, CA VORTAC	*RYAHH, CA FIX	4000
*6200 - MCA RYAHH, CA FIX , E BND		
*RYAHH, CA FIX	BARET, CA FIX	
	E BND	8000
	W BND	5500
BARET, CA FIX	CANNO, CA FIX	8000
CANNO, CA FIX	JULIAN, CA VORTAC	8500
JULIAN, CA VORTAC	WARNE, CA FIX	
	SW BND	8000
	NE BND	9000
WARNE, CA FIX	*THERMAL, CA VORTAC	9000
*5600 - MCA THERMAL, CA VORTAC , N BND		
THERMAL, CA VORTAC	*TWENTYNINE PALMS, CA VORTAC	7000
*10200 - MCA TWENTYNINE PALMS, CA VORTAC , NE BND		
TWENTYNINE PALMS, CA VORTAC	GOFFS, CA VORTAC	*12000
*7900 - MOCA		
*8000 - GNSS MEA		
GOFFS, CA VORTAC	BOULDER CITY, NV VORTAC	7600

95.6516 VOR FEDERAL AIRWAY V516

FROM	TO	MEA
LIBERAL, KS VORTAC	ANTHONY, KS VORTAC	*6000
*4500 - MOCA		
ANTHONY, KS VORTAC	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	TYROE, KS FIX	*3100
*2600 - MOCA		
TYROE, KS FIX	OSWEGO, KS VORTAC	2700

95.6517 VOR FEDERAL AIRWAY V517

FROM	TO	MEA
SNOWBIRD, TN VORTAC	MIAMI, TN FIX	6900
MIAMI, TN FIX	LONDON, KY VORTAC	*5500
*4700 - MOCA		
LONDON, KY VORTAC	LOGIC, KY FIX	3300
LOGIC, KY FIX	FALMOUTH, KY VOR/DME	2800
FALMOUTH, KY VOR/DME	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	RICHMOND, IN VORTAC	2800
RICHMOND, IN VORTAC	DAYTON, OH VOR/DME	2900

95.6518 VOR FEDERAL AIRWAY V518

FROM	TO	MEA
FILLMORE, CA VORTAC	TWINE, CA FIX	5500
TWINE, CA FIX	*LANGE, CA FIX	7000
*7000 - MCA LANGE, CA FIX , NE BND		
LANGE, CA FIX	*PALMDALE, CA VORTAC	7000
*6300 - MCA PALMDALE, CA VORTAC , SW BND		

95.6519 VOR FEDERAL AIRWAY V519

FROM	TO	MEA
VOLUNTEER, TN VORTAC	TAMPI, TN FIX	3500
TAMPI, TN FIX	YUMMY, VA FIX	4500
YUMMY, VA FIX	GLADE SPRING, VA VOR/DME	6000
GLADE SPRING, VA VOR/DME	*TELOC, VA FIX	6900
*13000 - MRA		
TELOC, VA FIX	BLUEFIELD, WV VORTAC	6100
BLUEFIELD, WV VORTAC	#BECKLEY, WV VORTAC	*9000
*5900 - MOCA		
*5900 - GNSS MEA		
#BECKLEY R-193 UNUSABLE BELOW 9000.		

95.6520 VOR FEDERAL AIRWAY V520

FROM	TO	MEA
*BATTLE GROUND, WA VORTAC	KLICKITAT, OR VOR/DME	7000
*4700 - MCA BATTLE GROUND, WA VORTAC , E BND		
KLICKITAT, OR VOR/DME	AMPLE, WA FIX	6000
AMPLE, WA FIX	VIRTU, WA FIX	
	NE BND	4000
	SW BND	5000
VIRTU, WA FIX	PASCO, WA VOR/DME	4000
PASCO, WA VOR/DME	*WALLA WALLA, WA VOR/DME	3200
*5500 - MCA WALLA WALLA, WA VOR/DME , NE BND		
WALLA WALLA, WA VOR/DME	CLOVA, WA FIX	8000
CLOVA, WA FIX	NEZ PERCE, ID VOR/DME	
	NE BND	5500
	SW BND	8000
NEZ PERCE, ID VOR/DME	FERDI, ID FIX	
	W BND	6700
	E BND	12000
FERDI, ID FIX	SALMON, ID VOR/DME	12000
SALMON, ID VOR/DME	*DUBOIS, ID VORTAC	13600
*9000 - MCA DUBOIS, ID VORTAC , E BND		
*10600 - MCA DUBOIS, ID VORTAC , W BND		
DUBOIS, ID VORTAC	*JACKSON, WY VOR/DME	15300
*15200 - MCA JACKSON, WY VOR/DME , W BND		
*MTA V520 E TO V330 W 14200		

95.6521 VOR FEDERAL AIRWAY V521

FROM	TO	MEA
DOLPHIN, FL VORTAC	RUTHY, FL FIX	*3000
*1500 - MOCA		
RUTHY, FL FIX	LEE COUNTY, FL VORTAC	2000
LEE COUNTY, FL VORTAC	QUNCY, FL FIX	2500
QUNCY, FL FIX	RINSE, FL FIX	2200
RINSE, FL FIX	LAKELAND, FL VORTAC	2200
LAKELAND, FL VORTAC	*DADES, FL FIX	1800
*5000 - MRA		
DADES, FL FIX	*NITTS, FL FIX	2300
*3000 - MRA		
NITTS, FL FIX	*ORATE, FL FIX	**3000
*3000 - MRA		
**1600 - MOCA		
ORATE, FL FIX	*CROSS CITY, FL VORTAC	**2000
*5000 - MCA CROSS CITY, FL VORTAC , W BND		

**1500 - MOCA

95.6521 VOR FEDERAL AIRWAY V521 - CONTINUED

#CROSS CITY, FL VORTAC	HEVVN, FL FIX	*5000
*1400 - MOCA		
*2000 - GNSS MEA		
#CROSS CITY R-289 UNUSABLE BEYOND 60 NM.		
HEVVN, FL FIX	*TERES, FL FIX	#**2000
*7000 - MRA		
**1300 - MOCA		
#*GNSS MEA		
*GNSS REQUIRED		
TERES, FL FIX	CRESS, FL FIX	*4000
*1400 - MOCA		
*2000 - GNSS MEA		
CRESS, FL FIX	MARIANNA, FL VORTAC	2000
MARIANNA, FL VORTAC	*MALON, FL FIX	2000
*3000 - MRA		
MALON, FL FIX	WIREGRASS, AL VORTAC	2000
#WIREGRASS, AL VORTAC	CLIOS, AL FIX	2200
#WIREGRASS R-331 NA BEYOND CLIOS		
CLIOS, AL FIX	BANBI, AL FIX	*2400
*2400 - GNSS MEA		
BANBI, AL FIX	MONTGOMERY, AL VORTAC	2400
MONTGOMERY, AL VORTAC	KYLEE, AL FIX	3000
KYLEE, AL FIX	VULCAN, AL VORTAC	3800

95.6522 VOR FEDERAL AIRWAY V522

DRYER, OH VOR/DME	FAILS, OH FIX	2500
FAILS, OH FIX	ERIE, PA VORTAC	2700
ERIE, PA VORTAC	HAMIT, PA FIX	3200
HAMIT, PA FIX	DUNKIRK, NY VORTAC	3300
DUNKIRK, NY VORTAC	U.S. CANADIAN BORDER	3000

95.6523 VOR FEDERAL AIRWAY V523

APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	#3000
#APPLETON R-055 UNUSABLE.		
TIVERTON, OH VOR/DME	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	YOUNGSTOWN, OH VORTAC	3000
YOUNGSTOWN, OH VORTAC	ERIE, PA VORTAC	*5000
*3000 - GNSS MEA		

95.6524 VOR FEDERAL AIRWAY V524

HAYDEN, CO VOR/DME	LARAMIE, WY VOR/DME	14200
LARAMIE, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	*12000
*10900 - MOCA		
*11000 - GNSS MEA		
SCOTTSBLUFF, NE VORTAC	NORTH PLATTE, NE VORTAC	7000

95.6525 VOR FEDERAL AIRWAY V525

APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	#3000
#APPLETON R-055 UNUSABLE.		
TIVERTON, OH VOR/DME	DRYER, OH VOR/DME	3000

95.6526 VOR FEDERAL AIRWAY V526

NORTHBROOK, IL VOR/DME	*MINCE, MI FIX	2500
*3500 - MRA		
MINCE, MI FIX	MUSKY, MI FIX	2500
MUSKY, MI FIX	MAPER, MI FIX	*3500
*1700 - MOCA		
*2600 - GNSS MEA		
MAPER, MI FIX	GIPPER, MI VORTAC	2600

95.6527 VOR FEDERAL AIRWAY V527

HOT SPRINGS, AR VOR/DME	HIDER, AR FIX	3000
HIDER, AR FIX	ROVER, AR FIX	*5500
*3100 – MOCA		
ROVER, AR FIX	DANIL, AR FIX	*9500
*2500 - MOCA		
DANIL, AR FIX	*SCRAN, AR FIX	**9500
*3300 - MRA		
**3100 - MOCA		
SCRAN, AR FIX	CASKS, AR FIX	*6500
*3500 – MOCA		
CASKS, AR FIX	RAZORBACK, AR VORTAC	4000
RAZORBACK, AR VORTAC	GAMPS, AR FIX	3500
GAMPS, AR FIX	JENKY, MO FIX	*4000
*3100 - MOCA		
JENKY, MO FIX	BILIE, MO FIX	3300
BILIE, MO FIX	SPRINGFIELD, MO VORTAC	3000

95.6528 VOR FEDERAL AIRWAY V528

*PHOENIX, AZ VORTAC	EAGUL, AZ FIX	**14500
*8000 - MCA PHOENIX, AZ VORTAC , NE BND		
**9400 - MOCA		
**10000 - GNSS MEA		
EAGUL, AZ FIX	*PAYSO, AZ FIX	**16000
*16000 - MRA		
**9800 - MOCA		
PAYSO, AZ FIX	ST JOHNS, AZ VORTAC	*13000
*9800 - MOCA		

95.6529 VOR FEDERAL AIRWAY V529

*FAMIN, FL FIX	SWAGS, FL FIX	**5700
*5700 - MRA		
**1500 - MOCA		
SWAGS, FL FIX	LA BELLE, FL VORTAC	*2000
*1400 - MOCA		

95.6530 VOR FEDERAL AIRWAY V530

TEXICO, TX VORTAC	CHILDRESS, TX VORTAC	6000

95.6531 VOR FEDERAL AIRWAY V531

PALM BEACH, FL VORTAC	*SHEDS, FL FIX	**3000
*3000 - MRA		
**2500 – MOCA		

95.6531 VOR FEDERAL AIRWAY V531 – CONTINUED

FROM	TO	MEA
SHEDS, FL FIX	BAIRN, FL FIX	*6000
*2000 - MOCA		
BAIRN, FL FIX	ORLANDO, FL VORTAC	2600

95.6532 VOR FEDERAL AIRWAY V532

FROM	TO	MEA
LITTLE ROCK, AR VORTAC	*PARON, AR FIX	2600
*3500 - MRA		
PARON, AR FIX	GATZY, AR FIX	*3700
*3100 – MOCA		
GATZY, AR FIX	BLURB, AR FIX	*5500
*3200 - MOCA		
BLURB, AR FIX	BLIMP, AR FIX	*4100
*3600 – MOCA		
BLIMP, AR FIX	FORT SMITH, AR VORTAC	*2900
*2400 - MOCA		
FORT SMITH, AR VORTAC	*AKINS, OK FIX	2500
*3000 - MRA		
AKINS, OK FIX	OKMULGEE, OK VOR/DME	*3000
*2200 - MOCA		
OKMULGEE, OK VOR/DME	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	WICHITA, KS VORTAC	3600
WICHITA, KS VORTAC	SALINA, KS VORTAC	3600
SALINA, KS VORTAC	LINCOLN, NE VORTAC	*5000
*3000 - MOCA		

95.6533 VOR FEDERAL AIRWAY V533

FROM	TO	MEA
ST PETERSBURG, FL VORTAC	LAKELAND, FL VORTAC	2000
LAKELAND, FL VORTAC	*CAMBE, FL FIX	2000
*4000 - MRA		
CAMBE, FL FIX	ORLANDO, FL VORTAC	2000
ORLANDO, FL VORTAC	OAKIE, FL FIX	2000
OAKIE, FL FIX	ORMOND BEACH, FL VORTAC	*4000
*1600 - MOCA		

95.6534 VOR FEDERAL AIRWAY V534

FROM	TO	MEA
LITTLE ROCK, AR VORTAC	BIBBS, AR FIX	3500
BIBBS, AR FIX	HAAWK, AR FIX	*4500
*2500 - MOCA		
HAAWK, AR FIX	*SCRAN, AR FIX	**4500
*3300 - MRA		
**3100 - MOCA		
SCRAN, AR FIX	*DRANO, AR FIX	**3500
*3000 - MRA		
**3000 - MOCA		
DRANO, AR FIX	FORT SMITH, AR VORTAC	*2600
*2100 - MOCA		

95.6535 VOR FEDERAL AIRWAY V535

FROM	TO	MEA
SIDON, MS VORTAC	HOLLY SPRINGS, MS VORTAC	*3000
*2100 - MOCA		

95.6536 VOR FEDERAL AIRWAY V536

FROM	TO	MEA
NORTH BEND, OR VORTAC	*RARES, OR FIX	
	N BND	6000
	S BND	3700
*5500 - MRA		
RARES, OR FIX	CORVALLIS, OR VOR/DME	6000
CORVALLIS, OR VOR/DME	SHEDD, OR FIX	3000
SHEDD, OR FIX	LATHE, OR FIX	4000
LATHE, OR FIX	*JAIME, OR FIX	6000
*8300 - MCA JAIME, OR FIX , E BND		
JAIME, OR FIX	MANTE, OR FIX	*10000
*7800 - MOCA		
MANTE, OR FIX	DESCHUTES, OR VORTAC	10000
DESCHUTES, OR VORTAC	ZORNS, OR FIX	
	NE BND	10000
	SW BND	7000
ZORNS, OR FIX	*RENCE, OR FIX	**10000
*10000 - MRA		
**7700 – MOCA		
RENCE, OR FIX	HEPPE, OR FIX	*10000
*7700 - MOCA		
HEPPE, OR FIX	PENDLETON, OR VORTAC	
	NE BND	6000
	SW BND	10000
PENDLETON, OR VORTAC	WALLA WALLA, WA VOR/DME	4000
WALLA WALLA, WA VOR/DME	PULLMAN, WA VOR/DME	*6000
*5700 – MOCA		
PULLMAN, WA VOR/DME	MULLAN PASS, ID VOR/DME	9100
MULLAN PASS, ID VOR/DME	KALISPELL, MT VOR/DME	*11500
*9700 - MOCA		
*10000 - GNSS MEA		
KALISPELL, MT VOR/DME	GAPAR, MT FIX	*13000
*10900 - MOCA		
GAPAR, MT FIX	*PIKUN, MT FIX	**12000
*10600 - MCA PIKUN, MT FIX , W BND		
**11400 - MOCA		
PIKUN, MT FIX	*CHOTE, MT FIX	
	W BND	**10000
	E BND	**9000
*9200 - MCA CHOTE, MT FIX , W BND		
**6900 - MOCA		
CHOTE, MT FIX	GREAT FALLS, MT VORTAC	7000
GREAT FALLS, MT VORTAC	SWEDD, MT FIX	*12000
*9700 - MOCA		
SWEDD, MT FIX	*MENAR, MT FIX	**10000
*9200 - MCA MENAR, MT FIX , NW BND		
**9400 - MOCA		
MENAR, MT FIX	*BOZEMAN, MT VOR/DME	8700
*9300 - MCA BOZEMAN, MT VOR/DME , SE BND		
SHERIDAN, WY VOR/DME	GILLETTE, WY VOR/DME	7000
GILLETTE, WY VOR/DME	NEWCASTLE, WY VOR	7500
NEWCASTLE, WY VOR	*ZAMBI, SD FIX	9300
*9300 - MRA		
ZAMBI, SD FIX	*RAPID CITY, SD VORTAC	
	E BND	8000
	W BND	9300
*6500 - MCA RAPID CITY, SD VORTAC , W BND		

FROM	TO	MEA

95.6537 VOR FEDERAL AIRWAY V537

PALM BEACH, FL VORTAC	STOOP, FL FIX	*3000
*2000 - MOCA		
STOOP, FL FIX	VERO BEACH, FL VORTAC	*2000
*1500 - MOCA		
VERO BEACH, FL VORTAC	*PRESK, FL FIX	3000
*2500 - MRA		
PRESK, FL FIX	CERMO, FL FIX	*8000
*2000 – MOCA		
CERMO, FL FIX	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	*LEJKO, FL FIX	2000
*3000 - MRA		
LEJKO, FL FIX	GATORS, FL VORTAC	2000
GATORS, FL VORTAC	ALVIN, FL FIX	*3000
*2000 - MOCA		
ALVIN, FL FIX	GREENVILLE, FL VORTAC	2000
GREENVILLE, FL VORTAC	MOULTRIE, GA VOR/DME	*5000
*1600 - MOCA		
*2000 - GNSS MEA		
MOULTRIE, GA VOR/DME	MACON, GA VORTAC	*3000
*2400 – MOCA		

95.6538 VOR FEDERAL AIRWAY V538

*TWENTYNINE PALMS, CA VORTAC	GOFFS, CA VORTAC	**12000
*10200 - MCA TWENTYNINE PALMS, CA VORTAC , NE BND		
**7900 – MOCA		
**8000 - GNSS MEA		
GOFFS, CA VORTAC	LAS VEGAS, NV VORTAC	9000

95.6539 VOR FEDERAL AIRWAY V539

KEY WEST, FL VORTAC	CORGI, FL FIX	1500
CORGI, FL FIX	GOODY, FL FIX	*4000
*1200 - MOCA		
GOODY, FL FIX	LEE COUNTY, FL VORTAC	2000

95.6540 VOR FEDERAL AIRWAY V540

CUNNINGHAM, KY VORTAC	TAMMS, IL FIX	2800
TAMMS, IL FIX	FARMINGTON, MO VORTAC	3500

95.6541 VOR FEDERAL AIRWAY V541

GADSDEN, AL VOR/DME	HOBBI, AL FIX	*3600
*2800 - MOCA		
HOBBI, AL FIX	DECATUR, AL VOR/DME	3000
DECATUR, AL VOR/DME	MUSCLE SHOALS, AL VORTAC	2500

95.6542 VOR FEDERAL AIRWAY V542

ROSEWOOD, OH VORTAC	*LAWTO, OH FIX	4000
*4000 - MRA		
LAWTO, OH FIX	MANSFIELD, OH VORTAC	*4000
*2500 - MOCA		
MANSFIELD, OH VORTAC	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	YOUNGSTOWN, OH VORTAC	*3000
*2600 - MOCA		
YOUNGSTOWN, OH VORTAC	HAGAR, PA FIX	3000

95.6542 VOR FEDERAL AIRWAY V542 - CONTINUED

FROM	TO	MEA
HAGAR, PA FIX	TIDIOUTE, PA VORTAC	3600
TIDIOUTE, PA VORTAC	BRADFORD, PA VOR/DME	*4000
*3500 - MOCA		
BRADFORD, PA VOR/DME	EXALL, PA FIX	4500
EXALL, PA FIX	ELMIRA, NY VOR/DME	4000
ELMIRA, NY VOR/DME	BINGHAMTON, NY VORTAC	3500
BINGHAMTON, NY VORTAC	OXFOR, NY FIX	3500
OXFOR, NY FIX	ROCKDALE, NY VOR/DME	4000
ROCKDALE, NY VOR/DME	ALBANY, NY VORTAC	4000
ALBANY, NY VORTAC	CAMBRIDGE, NY VOR/DME	#*4000
*3000 - MOCA		
#ALB R-067 UNUSABLE.		
CAMBRIDGE, NY VOR/DME	*JAMMA, VT FIX	6200
*5000 - MCA JAMMA, VT FIX , W BND		
JAMMA, VT FIX	LEBANON, NH VOR/DME	5000

95.6543 VOR FEDERAL AIRWAY V543

FROM	TO	MEA
LEEVILLE, LA VORTAC	SAFES, LA FIX	*2000
*1400 - MOCA		
SAFES, LA FIX	WAVEZ, LA FIX	*4000
*1600 - MOCA		
WAVEZ, LA FIX	OYSTY, LA FIX	*3000
*1800 - MOCA		
OYSTY, LA FIX	RYTHM, LA FIX	2000
RYTHM, LA FIX	EATON, MS VORTAC	*4200
*2000 – MOCA		
EATON, MS VORTAC	BAING, MS FIX	*3000
*2000 - MOCA		
BAING, MS FIX	*PAULD, MS FIX	3000
*5000 - MRA		
*3000 - MCA PAULD, MS FIX , SW BND		
PAULD, MS FIX	MERIDIAN, MS VORTAC	2100

95.6545 VOR FEDERAL AIRWAY V545

FROM	TO	MEA
MILES CITY, MT VOR/DME	WILLISTON, ND VORTAC	*7000
*5300 - MOCA		
*6000 - GNSS MEA		

95.6546 VOR FEDERAL AIRWAY V546

FROM	TO	MEA
WINK, TX VORTAC	NOTES, TX FIX	5500
NOTES, TX FIX	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC	BIG SPRING, TX VORTAC	4400

95.6547 VOR FEDERAL AIRWAY V547

FROM	TO	MEA
CHEYENNE, WY VORTAC	HIPSHER, WY VOR/DME	9000
HIPSHER, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	7900

95.6548 VOR FEDERAL AIRWAY V548

FROM	TO	MEA
HOBBY, TX VOR/DME	SEALY, TX FIX	2000
SEALY, TX FIX	PRARI, TX FIX	3500
PRARI, TX FIX	COLLEGE STATION, TX VORTAC	2000
COLLEGE STATION, TX VORTAC	BARBA, TX FIX	2500

FROM	TO	MEA

95.6548 VOR FEDERAL AIRWAY V548 - CONTINUED

BARBA, TX FIX	BOSEL, TX FIX	3600
BOSEL, TX FIX	WACO, TX VORTAC	2800

95.6549 VOR FEDERAL AIRWAY V549

HAYS, KS VORTAC	MANKATO, KS VORTAC	4100

95.6550 VOR FEDERAL AIRWAY V550

COTULLA, TX VORTAC	LEMIG, TX FIX	2500
LEMIG, TX FIX	SAN ANTONIO, TX VORTAC	3000
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	3300

95.6551 VOR FEDERAL AIRWAY V551

SALINA, KS VORTAC	MANKATO, KS VORTAC	*4500
*3100 - MOCA		

95.6552 VOR FEDERAL AIRWAY V552

BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000
LAKE CHARLES, LA VORTAC	HATHA, LA FIX	2000
HATHA, LA FIX	LAFAYETTE, LA VORTAC	2800
LAFAYETTE, LA VORTAC	*GRICE, LA FIX	**2000
*4000 - MRA		
**1500 – MOCA		
GRICE, LA FIX	TIBBY, LA VORTAC	*2000
*1500 - MOCA		
TIBBY, LA VORTAC	HARVEY, LA VORTAC	2000
HARVEY, LA VORTAC	PICAYUNE, MS VOR/DME	2000
PICAYUNE, MS VOR/DME	*MINDO, MS FIX	2000
*6000 - MRA		
MINDO, MS FIX	SEMMES, AL VORTAC	2000
SEMMES, AL VORTAC	MONROEVILLE, AL VORTAC	2000

95.6553 VOR FEDERAL AIRWAY V553

SALINA, KS VORTAC	PAWNEE CITY, NE VORTAC	3400

95.6554 VOR FEDERAL AIRWAY V554

NATCHEZ, MS VOR/DME	*TULLO, LA FIX	**6000
*6000 - MCA TULLO, LA FIX , SE BND		
**1800 - MOCA		
TULLO, LA FIX	MONROE, LA VORTAC	2000

95.6555 VOR FEDERAL AIRWAY V555

PICAYUNE, MS VOR/DME	MC COMB, MS VORTAC	2000
MC COMB, MS VORTAC	*BANDO, MS FIX	2100
*3400 - MRA		
BANDO, MS FIX	JACKSON, MS VORTAC	2000
JACKSON, MS VORTAC	*VAHNS, MS FIX	2000
*3500 - MRA		
VAHNS, MS FIX	SIDON, MS VORTAC	2000

FROM	TO	MEA

95.6556 VOR FEDERAL AIRWAY V556

SAN ANGELO, TX VORTAC	JUNCTION, TX VORTAC	4000
JUNCTION, TX VORTAC	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	MARCS, TX FIX	*4500
*4000 - MOCA		
MARCS, TX FIX	SEEDS, TX FIX	*7500
*1900 - MOCA		
SEEDS, TX FIX	WEMAR, TX FIX	*2500
*1800 - MOCA		
WEMAR, TX FIX	EAGLE LAKE, TX VOR/DME	2000
EAGLE LAKE, TX VOR/DME	KEEDS, TX FIX	2500
KEEDS, TX FIX	SCHOLES, TX VORTAC	3100
SCHOLES, TX VORTAC	SABINE PASS, TX VOR/DME	2000

95.6557 VOR FEDERAL AIRWAY V557

MC COMB, MS VORTAC	*BYRAM, MS FIX	2900
*4200 - MRA		
BYRAM, MS FIX	JACKSON, MS VORTAC	2900
JACKSON, MS VORTAC	SIDON, MS VORTAC	2000

95.6558 VOR FEDERAL AIRWAY V558

LLANO, TX VORTAC	SLIMM, TX FIX	3100
SLIMM, TX FIX	CENTEX, TX VORTAC	4100
CENTEX, TX VORTAC	MOUZE, TX FIX	2200
MOUZE, TX FIX	INDUSTRY, TX VORTAC	2100
INDUSTRY, TX VORTAC	EAGLE LAKE, TX VOR/DME	2000
EAGLE LAKE, TX VOR/DME	BLUMS, TX FIX	2000
BLUMS, TX FIX	HOBBY, TX VOR/DME	2400

95.6559 VOR FEDERAL AIRWAY V559

LAFAYETTE, LA VORTAC	BATON ROUGE, LA VORTAC	2000

95.6560 VOR FEDERAL AIRWAY V560

NEWMAN, TX VORTAC	MAYFY, TX FIX	9000
MAYFY, TX FIX	*CONNE, TX FIX	**10500
*10500 - MRA		
**9000 - MOCA		
CONNE, TX FIX	SALT FLAT, TX VORTAC	9000
SALT FLAT, TX VORTAC	CARLSBAD, NM VORTAC	8000

95.6561 VOR FEDERAL AIRWAY V561

GRAND FORKS, ND VOR/DME	JAMESTOWN, ND VOR/DME	*4000
*3000 - MOCA		
JAMESTOWN, ND VOR/DME	PIERRE, SD VORTAC	*10000
*3400 - MOCA		

95.6562 VOR FEDERAL AIRWAY V562

PHOENIX, AZ VORTAC	KNOBB, AZ FIX	8000
KNOBB, AZ FIX	RADOM, AZ FIX	
	S BND	8000
	N BND	11000

FROM	TO	MEA

95.6562 VOR FEDERAL AIRWAY V562 - CONTINUED

RADOM, AZ FIX	*FERER, AZ FIX	
	N BND	**12000
	S BND	**11000
*12000 - MRA		
*11000 - MCA FERER, AZ FIX , S BND		
**8400 - MOCA		
**9000 - GNSS MEA		
FERER, AZ FIX	DRAKE, AZ VORTAC	**10000
**9200 - MOCA		
DRAKE, AZ VORTAC	PEACH SPRINGS, AZ VORTAC	*9000
*8900 - MOCA		
PEACH SPRINGS, AZ VORTAC	*MEADS, NV FIX	9000
*9000 - MCA MEADS, NV FIX , SE BND		
MEADS, NV FIX	LAS VEGAS, NV VORTAC	6000

95.6563 VOR FEDERAL AIRWAY V563

LUBBOCK, TX VORTAC	BIG SPRING, TX VORTAC	5200

95.6564 VOR FEDERAL AIRWAY V564

COALDALE, NV VORTAC	MINA, NV VORTAC	11500
MINA, NV VORTAC	YERIN, NV FIX	11500
YERIN, NV FIX	CHIME, NV FIX	
	NW BND	10000
	SE BND	11500
CHIME, NV FIX	MUSTANG, NV VORTAC	10000

95.6565 VOR FEDERAL AIRWAY V565

LLANO, TX VORTAC	AMUSE, TX FIX	3300
AMUSE, TX FIX	CENTEX, TX VORTAC	3100
CENTEX, TX VORTAC	COLLEGE STATION, TX VORTAC	2200
COLLEGE STATION, TX VORTAC	LUFKIN, TX VORTAC	*4000
*2000 – MOCA		

95.6566 VOR FEDERAL AIRWAY V566

GREGG COUNTY, TX VORTAC	*WORKS, TX FIX	2300
*3000 - MRA		
WORKS, TX FIX	BELCHER, LA VORTAC	3100
BELCHER, LA VORTAC	KNELT, LA FIX	2300
KNELT, LA FIX	COVEX, LA FIX	*3500
*1800 - MOCA		
COVEX, LA FIX	*NUBOY, LA FIX	**4500
*6000 - MRA		
**1700 - MOCA		
NUBOY, LA FIX	BOYCE, LA FIX	
	SE BND	2000
	NW BND	4500
BOYCE, LA FIX	ALEXANDRIA, LA VORTAC	2000
ALEXANDRIA, LA VORTAC	MUSHE, LA FIX	*3000
*1700 - MOCA		
MUSHE, LA FIX	*WRACK, LA FIX	**4000
*4000 - MRA		
**1700 – MOCA		

FROM	TO	MEA

95.6566 VOR FEDERAL AIRWAY V566 - CONTINUED

FROM	TO	MEA
WRACK, LA FIX	VEILS, LA FIX	*3000
*2100 - MOCA		
VEILS, LA FIX	RESERVE, LA VOR/DME	*2000
*1500 - MOCA		

95.6567 VOR FEDERAL AIRWAY V567

FROM	TO	MEA
PHOENIX, AZ VORTAC	KNOBB, AZ FIX	8000
KNOBB, AZ FIX	RADOM, AZ FIX	
	S BND	8000
	N BND	11000
RADOM, AZ FIX	*FERER, AZ FIX	
	N BND	**12000
	S BND	**11000
*12000 - MRA		
*14000 - MCA FERER, AZ FIX , NE BND		
*11000 - MCA FERER, AZ FIX , S BND		
**8400 - MOCA		
**9000 - GNSS MEA		
FERER, AZ FIX	WINSLOW, AZ VORTAC	*14000
*10000 - GNSS MEA		

95.6568 VOR FEDERAL AIRWAY V568

FROM	TO	MEA
CORPUS CHRISTI, TX VORTAC	THREE RIVERS, TX VORTAC	1800
THREE RIVERS, TX VORTAC	LEMIG, TX FIX	2000
LEMIG, TX FIX	SAN ANTONIO, TX VORTAC	3000
SAN ANTONIO, TX VORTAC	GUADA, TX FIX	*4000
*2800 - MOCA		
GUADA, TX FIX	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	LLANO, TX VORTAC	3700
LLANO, TX VORTAC	*BUILT, TX FIX	**6000
*6000 – MRA		
**2800 - MOCA		
BUILT, TX FIX	GLEN ROSE, TX VORTAC	*3500
*3000 – MOCA		
GLEN ROSE, TX VORTAC	MILLSAP, TX VORTAC	3000
MILLSAP, TX VORTAC	KARYN, TX FIX	3000
KARYN, TX FIX	WICHITA FALLS, TX VORTAC	3100

95.6569 VOR FEDERAL AIRWAY V569

FROM	TO	MEA
BEAUMONT, TX VOR/DME	SILBE, TX FIX	2000
SILBE, TX FIX	LUFKIN, TX VORTAC	2500
LUFKIN, TX VORTAC	FRANKSTON, TX VOR/DME	2300
FRANKSTON, TX VOR/DME	CEDAR CREEK, TX VORTAC	2000

95.6570 VOR FEDERAL AIRWAY V570

FROM	TO	MEA
ALEXANDRIA, LA VORTAC	NATCHEZ, MS VOR/DME	2000
NATCHEZ, MS VOR/DME	MC COMB, MS VORTAC	2000

95.6571 VOR FEDERAL AIRWAY V571

FROM	TO	MEA
HUMBLE, TX VORTAC	NAVASOTA, TX VORTAC	2000
NAVASOTA, TX VORTAC	LEONA, TX VORTAC	3000
LEONA, TX VORTAC	ALLMO, TX FIX	2100
ALLMO, TX FIX	CEDAR CREEK, TX VORTAC	*2300
*1700 - MOCA		

FROM	TO	MEA

95.6572 VOR FEDERAL AIRWAY V572

WINSLOW, AZ VORTAC	*FRISY, AZ FIX	10000
*10500 - MCA FRISY, AZ FIX , W BND		
FRISY, AZ FIX	FLAGSTAFF, AZ VOR/DME	11500

95.6573 VOR FEDERAL AIRWAY V573

WILL ROGERS, OK VORTAC	*ALEXX, OK FIX	3100
*7000 - MRA		
ALEXX, OK FIX	ARDMORE, OK VORTAC	*4000
*2900 - MOCA		
ARDMORE, OK VORTAC	BONHAM, TX VORTAC	3600
BONHAM, TX VORTAC	SULPHUR SPRINGS, TX VOR/DME	2500
SULPHUR SPRINGS, TX VOR/DME	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	PIKES, AR FIX	*3500
*1800 - MOCA		
PIKES, AR FIX	MARKI, AR FIX	*3500
*2100 - MOCA		
MARKI, AR FIX	HOT SPRINGS, AR VOR/DME	*3500
*2500 - MOCA		
HOT SPRINGS, AR VOR/DME	LONNS, AR FIX	3000
LONNS, AR FIX	LITTLE ROCK, AR VORTAC	*2500
*1900 - MOCA		

95.6574 VOR FEDERAL AIRWAY V574

CENTEX, TX VORTAC	MOUZE, TX FIX	2200
MOUZE, TX FIX	NAVASOTA, TX VORTAC	2100
NAVASOTA, TX VORTAC	HUMBLE, TX VORTAC	2000
HUMBLE, TX VORTAC	DAISETTA, TX VORTAC	2000
DAISETTA, TX VORTAC	BEAUMONT, TX VOR/DME	2300
BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000

95.6575 VOR FEDERAL AIRWAY V575

LARAMIE, WY VOR/DME	*NIWOT, CO FIX	11300
*9500 - MCA NIWOT, CO FIX , NW BND		
NIWOT, CO FIX	MILE HIGH, CO VORTAC	8000

95.6576 VOR FEDERAL AIRWAY V576

PHILIPSBURG, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	HANCOCK, NY VOR/DME	4000
HANCOCK, NY VOR/DME	DELANCEY, NY VOR/DME	4000

95.6577 VOR FEDERAL AIRWAY V577

CEDAR LAKE, NJ VORTAC	BRIGS, NJ FIX	1700

95.6578 VOR FEDERAL AIRWAY V578

PECAN, GA VORTAC	TIFT MYERS, GA VOR	2500
TIFT MYERS, GA VOR	#ALMA, GA VORTAC	*3000
*2100 - MOCA		
*2100 - GNSS MEA		
#ALMA R-263 UNUSABLE USE TIFT MYERS R-083.		
ALMA, GA VORTAC	SAVANNAH, GA VORTAC	*10000
*2600 – MOCA		
*3000 - GNSS MEA		

FROM	TO	MEA

95.6579 VOR FEDERAL AIRWAY V579

LEE COUNTY, FL VORTAC	VIOLA, FL FIX	2000
VIOLA, FL FIX	SARASOTA, FL VORTAC	3000
SARASOTA, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	BAYPO, FL FIX	2000
BAYPO, FL FIX	*NITTS, FL FIX	**4000
*3000 - MRA		
**1700 - MOCA		
NITTS, FL FIX	GATORS, FL VORTAC	*3000
*2000 - MOCA		
GATORS, FL VORTAC	CROSS CITY, FL VORTAC	2000
CROSS CITY, FL VORTAC	VALDOSTA, GA VOR/DME	2000
VALDOSTA, GA VOR/DME	TIFT MYERS, GA VOR	2200
TIFT MYERS, GA VOR	VIENNA, GA VORTAC	2100

95.6580 VOR FEDERAL AIRWAY V580

ST LOUIS, MO VORTAC	LEBOY, IL FIX	*3000
*2200 - MOCA		
LEBOY, IL FIX	SEXTN, IL FIX	4500
SEXTN, IL FIX	BURLINGTON, IA VORTAC	3000

95.6581 VOR FEDERAL AIRWAY V581

ST PETERSBURG, FL VORTAC	TUMPY, FL FIX	2000
TUMPY, FL FIX	*DADES, FL FIX	**5000
*5000 – MRA		
**2000 - GNSS MEA		
DADES, FL FIX	OCALA, FL VORTAC	2000

95.6582 VOR FEDERAL AIRWAY V582

ST LOUIS, MO VORTAC	LEBOY, IL FIX	*3000
*2200 - MOCA		
LEBOY, IL FIX	QUINCY, IL VORTAC	3000

95.6583 VOR FEDERAL AIRWAY V583

CENTEX, TX VORTAC	COLLEGE STATION, TX VORTAC	2200
COLLEGE STATION, TX VORTAC	LEONA, TX VORTAC	2000
LEONA, TX VORTAC	FRANKSTON, TX VOR/DME	2300
FRANKSTON, TX VOR/DME	QUITMAN, TX VOR/DME	2300
QUITMAN, TX VOR/DME	PARIS, TX VOR/DME	2100
PARIS, TX VOR/DME	MC ALESTER, OK VORTAC	*3000
*2500 - MOCA		

95.6584 VOR FEDERAL AIRWAY V584

WATERVILLE, OH VOR/DME	DRYER, OH VOR/DME	*3000
*2200 - MOCA		

95.6585 VOR FEDERAL AIRWAY V585

CLOVIS, CA VORTAC	*MENDO, CA FIX	2000
*3000 - MCA MENDO, CA FIX , SW BND		
MENDO, CA FIX	PANOCHE, CA VORTAC	4500
PANOCHE, CA VORTAC	VOLTA, CA FIX	5000

95.6585 VOR FEDERAL AIRWAY V585 - CONTINUED

FROM	TO	MEA
VOLTA, CA FIX	#MANTECA, CA VOR/DME	*3000
*3000 - GNSS MEA		
#MANETCA R-147 UNUSABLE		
MANTECA, CA VOR/DME	LODDI, CA FIX	2000
LODDI, CA FIX	SACRAMENTO, CA VORTAC	3000

95.6586 VOR FEDERAL AIRWAY V586

FROM	TO	MEA
EXCEL, MO FIX	MACON, MO VOR/DME	*3000
*2300 - MOCA		
MACON, MO VOR/DME	QUINCY, IL VORTAC	*2700
*2100 - MOCA		
QUINCY, IL VORTAC	PEORIA, IL VORTAC	*2500
*2000 - MOCA		
PEORIA, IL VORTAC	MAROC, IL FIX	*3000
*2300 – MOCA		
MAROC, IL FIX	PONTIAC, IL VOR/DME	2400
PONTIAC, IL VOR/DME	JOLIET, IL VORTAC	*3000
*2200 - MOCA		

95.6587 VOR FEDERAL AIRWAY V587

FROM	TO	MEA
HOMELAND, CA VOR	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 – MOCA		
BULGY, CA FIX	DAGGETT, CA VORTAC	8000
DAGGETT, CA VORTAC	*WHIGG, CA FIX	10000
*12000 - MRA		
WHIGG, CA FIX	BOULDER CITY, NV VORTAC	10000

95.6589 VOR FEDERAL AIRWAY V589

FROM	TO	MEA
MEDICINE BOW, WY VOR/DME	*ALCOS, WY FIX	9900
*9900 - MRA		
ALCOS, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	
	NE BND	*8400
	SW BND	*9700
*7900 - MOCA		

95.6591 VOR FEDERAL AIRWAY V591

FROM	TO	MEA
GRAND JUNCTION, CO VOR/DME	*PACES, CO FIX	11500
*13000 - MRA		
PACES, CO FIX	#SLOLM, CO FIX	13000
#MTA V591 NE V220 NW 12900		
SLOLM, CO FIX	*GLENO, CO FIX	14000
*16000 - MRA		
GLENO, CO FIX	SNOW, CO VOR/DME	14000
SNOW, CO VOR/DME	KREMMLING, CO VOR/DME	14500

95.6595 VOR FEDERAL AIRWAY V595

FROM	TO	MEA
*ROGUE VALLEY, OR VORTAC	CUTTR, OR FIX	
	NE BND	10500
	SW BND	6100
*5100 - MCA ROGUE VALLEY, OR VORTAC , NE BND		
CUTTR, OR FIX	COPPR, OR FIX	10500

FROM	TO	MEA

95.6595 VOR FEDERAL AIRWAY V595 - CONTINUED

FROM	TO	MEA
COPPR, OR FIX	DRACK, OR FIX	
	NE BND	9900
	SW BND	10500
DRACK, OR FIX	*DESCHUTES, OR VORTAC	
	NE BND	6200
	SW BND	10500
*7900 - MCA DESCHUTES, OR VORTAC , SW BND		
*9300 - MCA DESCHUTES, OR VORTAC , NW BND		
DESCHUTES, OR VORTAC	JAYTE, OR FIX	
	NW BND	12600
	SE BND	9000
JAYTE, OR FIX	JEFSN, OR FIX	12600
JEFSN, OR FIX	*HARZL, OR FIX	
	NW BND	8000
	SE BND	12600
*7200 - MRA		
*9300 - MCA HARZL, OR FIX , SE BND		
HARZL, OR FIX	*PORTLAND, OR VOR/DME	7000
*5500 - MCA PORTLAND, OR VOR/DME , SE BND		

95.6597 VOR FEDERAL AIRWAY V597

FROM	TO	MEA
SAN MARCUS, CA VORTAC	*OHIGH, CA FIX	8000
*9000 - MRA		
OHIGH, CA FIX	*FILLMORE, CA VORTAC	8000
*6100 - MCA FILLMORE, CA VORTAC , W BND		
FILLMORE, CA VORTAC	VAN NUYS, CA VOR/DME	5500
VAN NUYS, CA VOR/DME	DARTS, CA FIX	5000
DARTS, CA FIX	SEAL BEACH, CA VORTAC	
	NW BND	6000
	SE BND	4000
SEAL BEACH, CA VORTAC	BALBO, CA FIX	
	NW BND	3000
	SE BND	4000
BALBO, CA FIX	OCEANSIDE, CA VORTAC	4000
OCEANSIDE, CA VORTAC	MISSION BAY, CA VORTAC	3000

95.6599 VOR FEDERAL AIRWAY V599

FROM	TO	MEA
LEE COUNTY, FL VORTAC	THNDR, FL FIX	*3000
*1500 - MOCA		
THNDR, FL FIX	DOLPHIN, FL VORTAC	*3000
*1500 - MOCA		

95.6601 VOR FEDERAL AIRWAY V601

FROM	TO	MEA
PAHOKEE, FL VORTAC	*DEEDS, FL FIX	**3000
*4000 - MRA		
**1600 - MOCA		
**2000 - GNSS MEA		
DEEDS, FL FIX	KEY WEST, FL VORTAC	*7000
*1400 - MOCA		
*2000 - GNSS MEA		

95.6605 VOR FEDERAL AIRWAY V605

FROM	TO	MEA
HOLSTON MOUNTAIN, TN VORTAC	*GENOD, NC FIX	8500
*15000 – MRA		

FROM	TO	MEA

95.6605 VOR FEDERAL AIRWAY V605 - CONTINUED

GENOD, NC FIX	SPARTANBURG, SC VORTAC	*15000
*4200 - MOCA		
*5000 - GNSS MEA		

95.6607 VOR FEDERAL AIRWAY V607

MENDOCINO, CA VORTAC	YAGER, CA FIX	9000
YAGER, CA FIX	ARCATA, CA VOR/DME	8000

95.6609 VOR FEDERAL AIRWAY V609

SAGINAW, MI VOR/DME	BENNY, MI FIX	2200
BENNY, MI FIX	BANJO, MI FIX	*3000
*2200 - MOCA		
BANJO, MI FIX	ZABLE, MI FIX	*5000
*2900 - MOCA		
ZABLE, MI FIX	*RONDO, MI FIX	3000
*5000 - MRA		
RONDO, MI FIX	OTREE, MI FIX	*3000
*2400 - MOCA		
OTREE, MI FIX	PELLSTON, MI VORTAC	*3000
*2400 - MOCA		

95.6611 VOR FEDERAL AIRWAY V611

NEWMAN, TX VORTAC	*MOLLY, NM FIX	9000
*10000 – MRA		
MOLLY, NM FIX	TRUTH OR CONSEQUENCES, NM VORTAC	10000
TRUTH OR CONSEQUENCES, NM VORTAC	SOCORRO, NM VORTAC	9000
SOCORRO, NM VORTAC	ALBUQUERQUE, NM VORTAC	8000
ALBUQUERQUE, NM VORTAC	*SANTA FE, NM VORTAC	9000
*11600 - MCA SANTA FE, NM VORTAC , E BND		
SANTA FE, NM VORTAC	*FORT UNION, NM VORTAC	12500
*10900 - MCA FORT UNION, NM VORTAC , N BND		
*11300 - MCA FORT UNION, NM VORTAC , W BND		
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	*12000
*11100 - MOCA		
CIMARRON, NM VORTAC	GOSIP, CO FIX	*11000
*10200 - MOCA		
GOSIP, CO FIX	PUEBLO, CO VORTAC	8300
PUEBLO, CO VORTAC	*BLACK FOREST, CO VOR/DME	9500
*10000 - MCA BLACK FOREST, CO VOR/DME , NE BND		
BLACK FOREST, CO VOR/DME	LUFSE, CO FIX	#10000
#GNSS MEA		
#BLACK FOREST R-023 UNUSABLE		
LUFSE, CO FIX	*JEFEL, CO FIX	#10500
*10500 - MRA		
#GNSS MEA		
JEFEL, CO FIX	*LIMEX, CO FIX	#8500
*16000 - MCA LIMEX, CO FIX , SW BND		
*9000 - MRA		
#GNSS MEA		
*LIMEX, CO FIX	GILL, CO VOR/DME	7600
GILL, CO VOR/DME	CHEYENNE, WY VORTAC	8500
CHEYENNE, WY VORTAC	MOIST, WY FIX	9000
MOIST, WY FIX	DEALT, WY FIX	11500
DEALT, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	
	NW BND	9000
	SE BND	10000

95.6611 VOR FEDERAL AIRWAY V611 - CONTINUED

MUDDY MOUNTAIN, WY VOR/DME	CRAZY WOMAN, WY VOR/DME	7600
CRAZY WOMAN, WY VOR/DME	SHERIDAN, WY VOR/DME	9000
SHERIDAN, WY VOR/DME	KRONA, MT FIX	8000
KRONA, MT FIX	BILLINGS, MT VORTAC	
	SE BND	8000
	NW BND	6200
BILLINGS, MT VORTAC	*SHELA, MT FIX	
	SE BND	6100
	NW BND	7700
*9700 - MRA		
SHELA, MT FIX	LEWISTOWN, MT VOR/DME	7700
LEWISTOWN, MT VOR/DME	SHONK, MT FIX	7700
SHONK, MT FIX	HAVRE, MT VOR/DME	6000

95.6613 VOR FEDERAL AIRWAY V613

ALLENTOWN, PA VORTAC	WILKES-BARRE, PA VORTAC	4000

95.6615 VOR FEDERAL AIRWAY V615

RALEIGH/DURHAM, NC VORTAC	DUFFI, NC FIX	2500
DUFFI, NC FIX	HOPEWELL, VA VORTAC	*5000
*2500 - MOCA		
*2500 - GNSS MEA		

95.6623 VOR FEDERAL AIRWAY V623

SPARTA, NJ VORTAC	CARMEL, NY VOR/DME	3000

95.6625 VOR FEDERAL AIRWAY V625

U.S. MEXICAN BORDER	NOGALES, AZ VOR/DME	*10000
*9500 - MOCA		

95.6626 VOR FEDERAL AIRWAY V626

MYTON, UT VOR/DME	YMONT, UT FIX	*15000
*12600 - MOCA		
*12600 - GNSS MEA		

&95.6301 ALASKA VOR FEDERAL AIRWAYS

95.6301 ALASKA VOR FEDERAL AIRWAY V301

FAIRBANKS, AK VORTAC	DIFER, AK FIX	*8000
*7300 - MOCA		
DIFER, AK FIX	FORT YUKON, AK VORTAC	
	SE BND	8000
	NW BND	2300

FROM	TO	MEA

95.6302 ALASKA VOR FEDERAL AIRWAY V302

FROM	TO	MEA
FAIRBANKS, AK VORTAC	MAYPO, AK FIX	7000
MAYPO, AK FIX	FORT YUKON, AK VORTAC	
	SW BND	7000
	NE BND	2300

95.6308 ALASKA VOR FEDERAL AIRWAY V308

FROM	TO	MEA
BETHEL, AK VORTAC	FISHH, AK FIX	
	E BND	*8000
	W BND	*2000
*1400 - MOCA		
FISHH, AK FIX	SPARREVOHN, AK VOR/DME	*8000
*6000 - MOCA		
*6000 - GNSS MEA		

95.6309 ALASKA VOR FEDERAL AIRWAY V309

FROM	TO	MEA
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	*5000
*4900 - MOCA		

95.6311 ALASKA VOR FEDERAL AIRWAY V311

FROM	TO	MEA
ANNETTE ISLAND, AK VOR/DME	TOKEE, AK FIX	6000
TOKEE, AK FIX	FLIPS, AK FIX	#*7500
*6300 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
FLIPS, AK FIX	BIORKA ISLAND, AK VORTAC	6000

95.6317 ALASKA VOR FEDERAL AIRWAY V317

FROM	TO	MEA
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	5000
ANNETTE ISLAND, AK VOR/DME	GESTI, AK FIX	5000
GESTI, AK FIX	LEVEL ISLAND, AK VOR/DME	*7000
*5000 - MOCA		
*5000 - GNSS MEA		
LEVEL ISLAND, AK VOR/DME	HOODS, AK FIX	*9000
*5900 - MOCA		
*7000 - GNSS MEA		
HOODS, AK FIX	SISTERS ISLAND, AK VORTAC	*7000
*5500 - MOCA		
*6000 - GNSS MEA		
SISTERS ISLAND, AK VORTAC	CSPER, AK FIX	
	NE BND	*7000
	SW BND	*15000
*5300 - MOCA		
CSPER, AK FIX	*HAPIT, AK FIX	**15000
*15000 - MRA		
**4000 - MOCA		

95.6318 ALASKA VOR FEDERAL AIRWAY V318

ANNETTE ISLAND, AK VOR/DME	LEVEL ISLAND, AK VOR/DME	6000

95.6319 ALASKA VOR FEDERAL AIRWAY V319

YAKUTAT, AK VOR/DME	MALAS, AK FIX	
	E BND	2400
	W BND	10000
MALAS, AK FIX	KATAT, AK FIX	#*10000
*5600 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
KATAT, AK FIX	CASEL, AK FIX	*7000
*3400 - MOCA		
CASEL, AK FIX	*JOHNSTONE POINT, AK VOR/DME	4800
*4800 - MCA JOHNSTONE POINT, AK VOR/DME , E BND		
JOHNSTONE POINT, AK VOR/DME	*EDELE, AK FIX	
	E BND	4400
	W BND	10000
*6800 - MCA EDELE, AK FIX , W BND		
EDELE, AK FIX	*SNRIS, AK FIX	10000
*10000 - MRA		
SNRIS, AK FIX	*ANCHORAGE, AK VOR/DME	8200
*6100 - MCA ANCHORAGE, AK VOR/DME , E BND		
ANCHORAGE, AK VOR/DME	YONEK, AK FIX	3000
YONEK, AK FIX	*TORTE, AK FIX	
	W BND	12000
	E BND	7000
*11400 - MCA TORTE, AK FIX , W BND		
TORTE, AK FIX	*VEILL, AK FIX	12000
*8000 - MCA VEILL, AK FIX , E BND		
VEILL, AK FIX	SPARREVOHN, AK VOR/DME	
	E BND	12000
	W BND	6600
SPARREVOHN, AK VOR/DME	ACRAN, AK FIX	
	W BND	*6000
	E BND	*5200
*5200 - MOCA		
ACRAN, AK FIX	VIDDA, AK FIX	6000
VIDDA, AK FIX	WEEKE, AK FIX	
	SW BND	*3000
	NE BND	*6000
*2100 - MOCA		
WEEKE, AK FIX	BETHEL, AK VORTAC	2000
BETHEL, AK VORTAC	ARSEN, AK FIX	2000
ARSEN, AK FIX	FANCI, AK FIX	*4000
*2000 - MOCA		
*2000 - GNSS MEA		
FANCI, AK FIX	HOOPER BAY, AK VOR/DME	2000
HOOPER BAY, AK VOR/DME	NANWAK, AK NDB/DME	2300

95.6320 ALASKA VOR FEDERAL AIRWAY V320

FROM	TO	MEA
MC GRATH, AK VORTAC	ERLAN, AK FIX	
	E BND	10000
	W BND	5000
ERLAN, AK FIX	WINOR, AK FIX	
	E BND	10000
	W BND	8000
WINOR, AK FIX	*FRIDA, AK FIX	10000
*9500 - MRA		
*7600 - MCA FRIDA, AK FIX , W BND		
FRIDA, AK FIX	RUNTL, AK FIX	8500
RUNTL, AK FIX	KAYTI, AK FIX	6400
KAYTI, AK FIX	*ANCHORAGE, AK VOR/DME	3700
*6000 - MCA ANCHORAGE, AK VOR/DME , SE BND		
ANCHORAGE, AK VOR/DME	HOPER, AK FIX	
	SE BND	10000
	NW BND	6500
HOPER, AK FIX	NELLI, AK FIX	10000
NELLI, AK FIX	KEBAB, AK FIX	
	NW BND	10000
	SE BND	5000
KEBAB, AK FIX	JOHNSTONE POINT, AK VOR/DME	5000

95.6321 ALASKA VOR FEDERAL AIRWAY V321

FROM	TO	MEA
CAPE NEWENHAM, AK NDB/DME	KING SALMON, AK VORTAC	*5000
*4300 - MOCA		
KING SALMON, AK VORTAC	BATTY, AK FIX	
	NE BND	7000
	SW BND	6000
BATTY, AK FIX	AUGEY, AK FIX	7000
AUGEY, AK FIX	HOMER, AK VOR/DME	*4000
*3000 - MOCA		

95.6322 ALASKA VOR FEDERAL AIRWAY V322

FROM	TO	MEA
KING SALMON, AK VORTAC	KONIC, AK FIX	*5000
*5000 - MOCA		
KONIC, AK FIX	WORRI, AK FIX	*9000
*7700 - MOCA		
*7700 - GNSS MEA		
WORRI, AK FIX	MALLT, AK FIX	*9000
*8500 – MOCA		
MALLT, AK FIX	HOMER, AK VOR/DME	
	SW BND	9000
	NE BND	4000

95.6333 ALASKA VOR FEDERAL AIRWAY V333

FROM	TO	MEA
HOOPER BAY, AK VOR/DME	HALEM, AK FIX	4500
HALEM, AK FIX	FAIRE, AK FIX	*8000
*2300 - MOCA		
FAIRE, AK FIX	NOME, AK VOR/DME	3000
NOME, AK VOR/DME	GAITS, AK FIX	
	N BND	10000
	S BND	4000
GAITS, AK FIX	SHISHMAREF, AK NDB	*10000
*6700 - MOCA		

95.6334 ALASKA VOR FEDERAL AIRWAY V334

FROM	TO	MEA
AUGEY, AK FIX	CLAMS, AK FIX	*7000
*2000 - MOCA		
*2000 - GNSS MEA		
CLAMS, AK FIX	KENAI, AK VOR/DME	2000
KENAI, AK VOR/DME	ANCHORAGE, AK VOR/DME	2000

95.6350 ALASKA VOR FEDERAL AIRWAY V350

FROM	TO	MEA
DILLINGHAM, AK VOR/DME	TOGIAK, AK NDB/DME	5000
TOGIAK, AK NDB/DME	BAFIN, AK FIX	5000
BAFIN, AK FIX	BETHEL, AK VORTAC	
	E BND	5000
	W BND	2000
BETHEL, AK VORTAC	DAHLS, AK FIX	
	W BND	3600
	E BND	2000
DAHLS, AK FIX	EMMONAK, AK VOR/DME	*3600
*3000 - MOCA		
*3000 - GNSS MEA		
EMMONAK, AK VOR/DME	NOME, AK VOR/DME	3000

95.6351 ALASKA VOR FEDERAL AIRWAY V351

FROM	TO	MEA
DILLINGHAM, AK VOR/DME	PORT HEIDEN, AK NDB/DME	3000

95.6357 ALASKA VOR FEDERAL AIRWAY V357

FROM	TO	MEA
KODIAK, AK VOR/DME	INNOL, AK FIX	3500
INNOL, AK FIX	MOCHO, AK FIX	*4000
*3000 - MOCA		
MOCHO, AK FIX	GERKS, AK FIX	*7500
*2300 - MOCA		
*7000 - GNSS MEA		
GERKS, AK FIX	SANER, AK FIX	*9000
*3700 - MOCA		
*7000 - GNSS MEA		
SANER, AK FIX	HOMER, AK VOR/DME	6000

95.6385 ALASKA VOR FEDERAL AIRWAY V385

FROM	TO	MEA
HOOPER BAY, AK VOR/DME	EMMONAK, AK VOR/DME	4500
EMMONAK, AK VOR/DME	UNALAKLEET, AK VOR/DME	*3500
*2800 - MOCA		
*3000 - GNSS MEA		

95.6388 ALASKA VOR FEDERAL AIRWAY V388

FROM	TO	MEA
ANCHORAGE, AK VOR/DME	NAPTO, AK FIX	2300
NAPTO, AK FIX	KENAI, AK VOR/DME	2400

95.6401 ALASKA VOR FEDERAL AIRWAY V401

AMBLER, AK NDB/DME	FARME, AK FIX	*5500
*4700 - MOCA		
FARME, AK FIX	KOTZEBUE, AK VOR/DME	2000
KOTZEBUE, AK VOR/DME	SHISHMAREF, AK NDB	*2500
*2000 - MOCA		

95.6414 ALASKA VOR FEDERAL AIRWAY V414

GAMBELL, AK NDB/DME	KUKULIAK, AK VOR/DME	3000

95.6427 ALASKA VOR FEDERAL AIRWAY V427

KING SALMON, AK VORTAC	TOMMY, AK FIX	3000
TOMMY, AK FIX	RINGO, AK FIX	*7000
*5300 - MOCA		
*6000 - GNSS MEA		
RINGO, AK FIX	NONDA, AK FIX	*14000
*9000 - MOCA		
*9000 - GNSS MEA		

95.6428 ALASKA VOR FEDERAL AIRWAY V428

BIORKA ISLAND, AK VORTAC	SISTERS ISLAND, AK VORTAC	*7000
*6000 - MOCA		
*6000 - GNSS MEA		
SISTERS ISLAND, AK VORTAC	HAINES, AK NDB	#*10000
*8500 - MOCA		
*8500 - GNSS MEA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
HAINES, AK NDB	U.S. CANADIAN BORDER	*10000
*9600 - MOCA		

95.6435 ALASKA VOR FEDERAL AIRWAY V435

HOMER, AK VOR/DME	KASSI, AK FIX	4400
KASSI, AK FIX	KENAI, AK VOR/DME	
	S BND	*4400
	N BND	*2000
*1700 - MOCA		
*2000 - GNSS MEA		

95.6436 ALASKA VOR FEDERAL AIRWAY V436

ANCHORAGE, AK VOR/DME	TAGER, AK FIX	2200
TAGER, AK FIX	*TALKEETNA, AK VOR/DME	3000
*3800 - MCA TALKEETNA, AK VOR/DME , N BND		
TALKEETNA, AK VOR/DME	*EGRAM, AK FIX	6000
*7600 - MCA EGRAM, AK FIX , N BND		
EGRAM, AK FIX	NENANA, AK VORTAC	10000
NENANA, AK VORTAC	GOLLY, AK FIX	4000
GOLLY, AK FIX	TOLLO, AK FIX	*4000
*3400 - MOCA		
TOLLO, AK FIX	LIVEN, AK FIX	5000
LIVEN, AK FIX	BEETE, AK FIX	*10000
*5500 – MOCA		

95.6436 ALASKA VOR FEDERAL AIRWAY V436 – CONTINUED

FROM	TO	MEA
BEETE, AK FIX	CHANDALAR LAKE, AK NDB	*10000
*6900 - MOCA		
CHANDALAR LAKE, AK NDB	*ARTIC, AK FIX	10000
*7000 - MCA ARTIC, AK FIX , S BND		
ARTIC, AK FIX	PIPET, AK FIX	**6000
**4500 - MOCA		
**5000 - GNSS MEA		
PIPET, AK FIX	BIXER, AK FIX	*5000
*3700 - MOCA		
*4000 - GNSS MEA		
BIXER, AK FIX	ARCON, AK FIX	3000
ARCON, AK FIX	DEADHORSE, AK VOR/DME	*2000
*1300 - MOCA		

95.6438 ALASKA VOR FEDERAL AIRWAY V438

FROM	TO	MEA
KODIAK, AK VOR/DME	SHUYA, AK FIX	4000
SHUYA, AK FIX	HOMER, AK VOR/DME	*6000
*5900 - MOCA		
HOMER, AK VOR/DME	SKILA, AK FIX	5000
SKILA, AK FIX	NAPTO, AK FIX	2400
NAPTO, AK FIX	ANCHORAGE, AK VOR/DME	2300
ANCHORAGE, AK VOR/DME	BIG LAKE, AK VORTAC	2000
BIG LAKE, AK VORTAC	*SURES, AK FIX	#7500
*10000 – MRA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
SURES, AK FIX	LIBER, AK FIX	*10000
*8900 - MOCA		
LIBER, AK FIX	*GLOWS, AK FIX	7500
*4800 - MCA GLOWS, AK FIX , S BND		
GLOWS, AK FIX	FAIRBANKS, AK VORTAC	3400
FAIRBANKS, AK VORTAC	*CHATA, AK FIX	**7000
*7000 - MRA		
**5000 - MOCA		
CHATA, AK FIX	BURMA, AK FIX	*8000
*7200 – MOCA		
BURMA, AK FIX	BIJOU, AK FIX	5000
BIJOU, AK FIX	FORT YUKON, AK VORTAC	2300
FORT YUKON, AK VORTAC	RIGGS, AK FIX	#*10000
*9500 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
RIGGS, AK FIX	*OILEE, AK FIX	**8000
*6500 - MCA OILEE, AK FIX , S BND		
**7500 - MOCA		
OILEE, AK FIX	WIMAN, AK FIX	**5000
**4400 - MOCA		
WIMAN, AK FIX	UVALL, AK FIX	*4000
*3200 - MOCA		
UVALL, AK FIX	DEADHORSE, AK VOR/DME	*2000
*1400 - MOCA		
DEADHORSE, AK VOR/DME	OOSIK, AK FIX	*2000
*1300 - MOCA		
OOSIK, AK FIX	TUNDA, AK FIX	*6000
*1300 - MOCA		
TUNDA, AK FIX	BARROW, AK VOR/DME	*3000
*1200 - MOCA		

95.6439 ALASKA VOR FEDERAL AIRWAY V439

FROM	TO	MEA
KODIAK, AK VOR/DME	BAREL, AK FIX	*6000
*4200 - MOCA		
BAREL, AK FIX	OTONY, AK FIX	*6000
*5300 - MOCA		
OTONY, AK FIX	HOMER, AK VOR/DME	*6000
*5300 - MOCA		

95.6440 ALASKA VOR FEDERAL AIRWAY V440

FROM	TO	MEA
NOME, AK VOR/DME	UNALAKLEET, AK VOR/DME	3000
UNALAKLEET, AK VOR/DME	YUCON, AK FIX	4500
YUCON, AK FIX	GANES, AK FIX	*8000
*5600 - MOCA		
*7000 - GNSS MEA		
GANES, AK FIX	MC GRATH, AK VORTAC	
	E BND	6000
	W BND	8000
MC GRATH, AK VORTAC	ERLAN, AK FIX	
	E BND	10000
	W BND	5000
ERLAN, AK FIX	WINOR, AK FIX	
	E BND	10000
	W BND	8000
WINOR, AK FIX	*FRIDA, AK FIX	10000
*9500 – MRA		
*7600 - MCA FRIDA, AK FIX , W BND		
FRIDA, AK FIX	*IVANN, AK FIX	6600
*5900 - MCA IVANN, AK FIX , W BND		
IVANN, AK FIX	*ANCHORAGE, AK VOR/DME	2200
*6000 - MCA ANCHORAGE, AK VOR/DME , SE BND		
ANCHORAGE, AK VOR/DME	HOPER, AK FIX	
	SE BND	10000
	NW BND	6500
HOPER, AK FIX	MODDS, AK FIX	10000
MODDS, AK FIX	MIDDLETON ISLAND, AK VOR/DME	
	SE BND	6000
	NW BND	10000
MIDDLETON ISLAND, AK VOR/DME	OCULT, AK FIX	*8000
*2000 - MOCA		
*7000 - GNSS MEA		
OCULT, AK FIX	YAKUTAT, AK VOR/DME	2000
YAKUTAT, AK VOR/DME	CENTA, AK FIX	
	SE BND	9000
	NW BND	2000
CENTA, AK FIX	SALIS, AK FIX	
	SE BND	9000
	NW BND	2000
SALIS, AK FIX	BIORKA ISLAND, AK VORTAC	
	NW BND	9000
	SE BND	5100
BIORKA ISLAND, AK VORTAC	LATCH, AK FIX	
	NW BND	4500
	SE BND	12000
LATCH, AK FIX	U.S. CANADIAN BORDER	*12000
*4200 - MOCA		

FROM	TO	MEA

95.6441 ALASKA VOR FEDERAL AIRWAY V441

MIDDLETON ISLAND, AK VOR/DME	DEALS, AK FIX	6000
DEALS, AK FIX	*SEWAR, AK FIX	**9000
*10000 - MRA		
**8400 - MOCA		
SEWAR, AK FIX	BROIL, AK FIX	*10000
*7700 - MOCA		
*7700 - GNSS MEA		
BROIL, AK FIX	*HATUL, AK FIX	7100
*5600 - MCA HATUL, AK FIX , SE BND		
HATUL, AK FIX	*ANCHORAGE, AK VOR/DME	4600
*4200 - MCA ANCHORAGE, AK VOR/DME , SE BND		

95.6444 ALASKA VOR FEDERAL AIRWAY V444

BARROW, AK VOR/DME	CHIPS, AK FIX	*2000
*1200 - MOCA		
CHIPS, AK FIX	BRONX, AK FIX	*5000
*1200 - MOCA		
BRONX, AK FIX	EVANSVILLE, AK NDB	*10000
*9100 - MOCA		
EVANSVILLE, AK NDB	BETTLES, AK VOR/DME	3500
BETTLES, AK VOR/DME	*CYCLE, AK FIX	3500
*4400 - MCA CYCLE, AK FIX , SE BND		
CYCLE, AK FIX	BRION, AK FIX	*6000
*5200 – MOCA		
BRION, AK FIX	LIVEN, AK FIX	*9000
*5200 - MOCA		
LIVEN, AK FIX	HESSE, AK FIX	*5000
*4400 - MOCA		
HESSE, AK FIX	FAIRBANKS, AK VORTAC	*5000
*4900 - MOCA		
FAIRBANKS, AK VORTAC	BIG DELTA, AK VORTAC	*5000
*4200 - MOCA		
BIG DELTA, AK VORTAC	NORTHWAY, AK VORTAC	*8000
*7800 - MOCA		
NORTHWAY, AK VORTAC	U.S. CANADIAN BORDER	#*9600
*8900 - MOCA		

95.6445 ALASKA VOR FEDERAL AIRWAY V445

BETTLES, AK VOR/DME	KANUT, AK FIX	
	NW BND	3500
	SE BND	7000
KANUT, AK FIX	RAMPA, AK FIX	7000
RAMPA, AK FIX	TOLLO, AK FIX	7000
TOLLO, AK FIX	WILTS, AK FIX	*5000
*4200 - MOCA		
WILTS, AK FIX	*FAIRBANKS, AK VORTAC	5000
*4000 - MCA FAIRBANKS, AK VORTAC , W BND		

FROM	TO	MEA

95.6447 ALASKA VOR FEDERAL AIRWAY V447

FROM	TO	MEA
FAIRBANKS, AK VORTAC	*DOMEY, AK FIX	**5000
*7000 - MRA		
**4400 - MOCA		
DOMEY, AK FIX	TATTA, AK FIX	*7000
*5200 - MOCA		
TATTA, AK FIX	CHANDALAR LAKE, AK NDB	#*11000
*8000 - MOCA		

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.6452 ALASKA VOR FEDERAL AIRWAY V452

FROM	TO	MEA
KUKULIAK, AK VOR/DME	NOME, AK VOR/DME	3000
NOME, AK VOR/DME	MOSES POINT, AK VOR/DME	*5000
*4200 - MOCA		
MOSES POINT, AK VOR/DME	JAYQE, AK FIX	*6000
*5200 - MOCA		
JAYQE, AK FIX	*DIBVY, AK FIX	
*6000 - MRA		
DIBVY, AK FIX	GALENA, AK VOR/DME	3000
GALENA, AK VOR/DME	ZOMBY, AK FIX	*4000
*3300 - MOCA		
*3300 - GNSS MEA		
ZOMBY, AK FIX	*HORSI, AK FIX	
	E BND	**8000
	W BND	**4000
*8000 - MRA		
**4000 – MOCA		
**4000 - GNSS MEA		
HORSI, AK FIX	BONET, AK FIX	*8000
*4000 - MOCA		
*4000 - GNSS MEA		
BONET, AK FIX	NENANA, AK VORTAC	*7000
*4400 - MOCA		
*4400 - GNSS MEA		

95.6453 ALASKA VOR FEDERAL AIRWAY V453

FROM	TO	MEA
KING SALMON, AK VORTAC	DILLINGHAM, AK VOR/DME	2100
DILLINGHAM, AK VOR/DME	EDUCE, AK FIX	*7000
*6500 - MOCA		
EDUCE, AK FIX	BETHEL, AK VORTAC	
	S BND	*7000
	N BND	*4000
*2500 - MOCA		
*3000 - GNSS MEA		
BETHEL, AK VORTAC	WAPRO, AK FIX	*9000
*4300 - MOCA		
WAPRO, AK FIX	UNALAKLEET, AK VOR/DME	*11000
*5100 - MOCA		

95.6454 ALASKA VOR FEDERAL AIRWAY V454

FROM	TO	MEA
KING SALMON, AK VORTAC	DILLINGHAM, AK VOR/DME	*5000
*4300 - MOCA		

95.6456 ALASKA VOR FEDERAL AIRWAY V456

FROM	TO	MEA
COLD BAY, AK VORTAC	BINAL, AK FIX	
	SW BND	*4000
	NE BND	*14000
*3400 - MOCA		
BINAL, AK FIX	TANIE, AK FIX	*14000
*3400 - MOCA		
TANIE, AK FIX	KING SALMON, AK VORTAC	#*3000
*1600 - MOCA		
#MEA 14000 SW WHEN DLG FSS SHUT DOWN		
KING SALMON, AK VORTAC	STREW, AK FIX	
	W BND	*3000
	E BND	*9000
*2300 - MOCA		
STREW, AK FIX	BITOP, AK FIX	
	E BND	*9000
	W BND	*5000
*5000 - MOCA		
*5000 - GNSS MEA		
BITOP, AK FIX	*NOSKY, AK FIX	**9000
*8200 - MCA NOSKY, AK FIX , NE BND		
**5200 - MOCA		
**6000 - GNSS MEA		
NOSKY, AK FIX	*TUCKS, AK FIX	**13000
*10300 - MCA TUCKS, AK FIX , SW BND		
**12300 - MOCA		
TUCKS, AK FIX	KENAI, AK VOR/DME	*5000
*3300 - MOCA		
KENAI, AK VOR/DME	ANCHORAGE, AK VOR/DME	2000
ANCHORAGE, AK VOR/DME	*BIG LAKE, AK VORTAC	2000
*5000 - MCA BIG LAKE, AK VORTAC , NE BND		
BIG LAKE, AK VORTAC	MATTA, AK FIX	7000
MATTA, AK FIX	*UREKA, AK FIX	**10000
*7200 - MCA UREKA, AK FIX , SW BND		
**9400 - MOCA		
UREKA, AK FIX	SMOKY, AK FIX	
	NE BND	*7000
	SW BND	*10000
*6300 - MOCA		
*7000 - GNSS MEA		
SMOKY, AK FIX	GULKANA, AK VOR/DME	
	NE BND	*5000
	SW BND	*10000
*5000 - GNSS MEA		
GULKANA, AK VOR/DME	*SANKA, AK FIX	6000
*7800 - MCA SANKA, AK FIX , NE BND		
SANKA, AK FIX	NORTHWAY, AK VORTAC	*11000
*10400 - MOCA		

95.6457 ALASKA VOR FEDERAL AIRWAY V457

FROM	TO	MEA
ILIAMNA, AK NDB/DME	*AWOMY, AK FIX	
	W BND	5700
	E BND	9000
*7000 - MCA AWOMY, AK FIX , E BND		

FROM	TO	MEA

95.6457 ALASKA VOR FEDERAL AIRWAY V457 – CONTINUED

AWOMY, AK FIX	*MOFOF, AK FIX	9000
*7000 - MCA MOFOF, AK FIX , W BND		
MOFOF, AK FIX	KENAI, AK VOR/DME	
	W BND	9000
	E BND	3000

95.6459 ALASKA VOR FEDERAL AIRWAY V459

EMMONAK, AK VOR/DME	ST MARYS, AK NDB	3000

95.6462 ALASKA VOR FEDERAL AIRWAY V462

CAPE NEWENHAM, AK NDB/DME	DILLINGHAM, AK VOR/DME	*5000
*4300 - MOCA		
DILLINGHAM, AK VOR/DME	KOWOK, AK FIX	*3000
*2500 - MOCA		
KOWOK, AK FIX	SAHOK, AK FIX	*5000
*3800 – MOCA		
SAHOK, AK FIX	NONDA, AK FIX	#*14000
*8800 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
NONDA, AK FIX	*BLUGA, AK FIX	**14000
*10000 - MCA BLUGA, AK FIX , SW BND		
**12400 - MOCA		
BLUGA, AK FIX	*AMOTT, AK FIX	7000
*7400 - MCA AMOTT, AK FIX , SW BND		
AMOTT, AK FIX	ANCHORAGE, AK VOR/DME	4000

95.6473 ALASKA VOR FEDERAL AIRWAY V473

LEVEL ISLAND, AK VOR/DME	FLIPS, AK FIX	*7000
*6300 - MOCA		
FLIPS, AK FIX	BIORKA ISLAND, AK VORTAC	6000

95.6477 ALASKA VOR FEDERAL AIRWAY V477

GALENA, AK VOR/DME	HUSLIA, AK VOR/DME	3000
HUSLIA, AK VOR/DME	ATAGO, AK FIX	
	W BND	*4000
	E BND	*3500
*2500 - MOCA		
ATAGO, AK FIX	DESOY, AK FIX	4000
DESOY, AK FIX	SELAWIK, AK VOR/DME	
	W BND	2500
	E BND	4000
SELAWIK, AK VOR/DME	JELLE, AK FIX	3500
JELLE, AK FIX	AMBLER, AK NDB/DME	
	NE BND	5000
	SW BND	4000

FROM	TO	MEA

95.6480 ALASKA VOR FEDERAL AIRWAY V480

MOUNT MOFFETT, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	6000
ST PAUL ISLAND, AK NDB/DME	ZESKA, AK FIX	*10000
*1800 - MOCA		
ZESKA, AK FIX	BETHEL, AK VORTAC	
	SW BND	*10000
	NE BND	*2000
*1400 - MOCA		
BETHEL, AK VORTAC	CABOT, AK FIX	
	W BND	*2000
	E BND	*4000
*1400 - MOCA		
CABOT, AK FIX	ANIAK, AK FIX	*4000
*2300 - MOCA		
ANIAK, AK FIX	JOANY, AK FIX	#*8000
*5600 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
#CONTINUOUS NAV SIGNAL COVERAGE DOES NOT EXIST BETWEEN BETHEL 110 NM & MCGRATH 60 NM		
JOANY, AK FIX	MC GRATH, AK VORTAC	
	W BND	*8000
	E BND	*6000
*5200 - MOCA		
MC GRATH, AK VORTAC	MEFRA, AK FIX	
	W BND	4000
	E BND	8000
MEFRA, AK FIX	NENANA, AK VORTAC	*8000
*5000 - MOCA		
NENANA, AK VORTAC	FAIRBANKS, AK VORTAC	*4000
*2700 - MOCA		

95.6481 ALASKA VOR FEDERAL AIRWAY V481

JOHNSTONE POINT, AK VOR/DME	FIDAL, AK FIX	
	S BND	5000
	N BND	10000
FIDAL, AK FIX	ROBES, AK FIX	
	S BND	8000
	N BND	10000
ROBES, AK FIX	KLUNG, AK FIX	10000
KLUNG, AK FIX	GULKANA, AK VOR/DME	
	N BND	6500
	S BND	10000
GULKANA, AK VOR/DME	DOZEY, AK FIX	
	N BND	12000
	S BND	4000
DOZEY, AK FIX	PAXON, AK FIX	
	S BND	7000
	N BND	12000
PAXON, AK FIX	*DONEL, AK FIX	**12000
*10500 - MCA DONEL, AK FIX , S BND		
**11500 - MOCA		
DONEL, AK FIX	BIG DELTA, AK VORTAC	
	N BND	7000
	S BND	12000
BIG DELTA, AK VORTAC	FORT YUKON, AK VORTAC	#7000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		

95.6482 ALASKA VOR FEDERAL AIRWAY V482

FROM	TO	MEA
JOHNSTONE POINT, AK VOR/DME	TOSIN, AK FIX	*10000
*9300 - MOCA		
TOSIN, AK FIX	RIVVA, AK FIX	6000
RIVVA, AK FIX	GULKANA, AK VOR/DME	*5000
*4500 - MOCA		

95.6488 ALASKA VOR FEDERAL AIRWAY V488

FROM	TO	MEA
HOOPER BAY, AK VOR/DME	AKELT, AK FIX	
	NE BND	10000
	SW BND	4000
AKELT, AK FIX	ALMOT, AK FIX	*10000
*4000 - MOCA		
ALMOT, AK FIX	UNALAKLEET, AK VOR/DME	
	SW BND	10000
	NE BND	3000
UNALAKLEET, AK VOR/DME	EDMON, AK FIX	
	NE BND	*5500
	SW BND	*4000
*4000 - MOCA		
EDMON, AK FIX	VENCE, AK FIX	*5500
*4900 - MOCA		
VENCE, AK FIX	GALENA, AK VOR/DME	
	SW BND	*5500
	NE BND	*3000
*2500 - MOCA		
GALENA, AK VOR/DME	KUHZE, AK FIX	*5000
*4400 - MOCA		
KUHZE, AK FIX	CHOKK, AK FIX	6000
CHOKK, AK FIX	TANANA, AK VOR/DME	
	SW BND	6000
	NE BND	3000
TANANA, AK VOR/DME	*REEBA, AK FIX	
	E BND	**7000
	W BND	**4000
*7000 - MRA		
**4000 - MOCA		
REEBA, AK FIX	GOLLY, AK FIX	*7000
*5000 - MOCA		
GOLLY, AK FIX	*FAIRBANKS, AK VORTAC	5000
*4700 - MCA FAIRBANKS, AK VORTAC , W BND		

95.6489 ALASKA VOR FEDERAL AIRWAY V489

FROM	TO	MEA
GALENA, AK VOR/DME	ZOMBY, AK FIX	*4000
*3300 - MOCA		
*3300 - GNSS MEA		

95.6489 ALASKA VOR FEDERAL AIRWAY V489 – CONTINUED

FROM	TO	MEA
ZOMBY, AK FIX	*HORSI, AK FIX	
	E BND	**8000
	W BND	**4000
*8000 - MRA		
**4000 - MOCA		
**4000 - GNSS MEA		
HORSI, AK FIX	ROSII, AK FIX	*6000
*4000 - MOCA		
ROSII, AK FIX	TANANA, AK VOR/DME	3400

95.6491 ALASKA VOR FEDERAL AIRWAY V491

FROM	TO	MEA
BIG LAKE, AK VORTAC	TALKEETNA, AK VOR/DME	3000

95.6496 ALASKA VOR FEDERAL AIRWAY V496

FROM	TO	MEA
HOOPER BAY, AK VOR/DME	ST MARYS, AK NDB	3500

95.6498 ALASKA VOR FEDERAL AIRWAY V498

FROM	TO	MEA
MC GRATH, AK VORTAC	NIXON, AK FIX	
	NW BND	*6000
	SE BND	*4500
*4500 - MOCA		
NIXON, AK FIX	AHVUH, AK FIX	*6000
*5500 - MOCA		
AHVUH, AK FIX	GALENA, AK VOR/DME	
	SE BND	*6000
	NW BND	*4000
*4000 - MOCA		
GALENA, AK VOR/DME	EBIKY, AK FIX	*3000
*2500 - MOCA		
EBIKY, AK FIX	*KATEL, AK FIX	
	NW BND	**8000
	SE BND	**4000
*8000 - MRA		
**4000 - MOCA		
KATEL, AK FIX	BALIN, AK FIX	*8000
*5300 - MOCA		
BALIN, AK FIX	KOTZEBUE, AK VOR/DME	
	SE BND	*8000
	NW BND	*2000
*2000 - MOCA		

95.6504 ALASKA VOR FEDERAL AIRWAY V504

FROM	TO	MEA
NENANA, AK VORTAC	KANUT, AK FIX	7000
KANUT, AK FIX	BETTLES, AK VOR/DME	
	NW BND	3500
	SE BND	7000
BETTLES, AK VOR/DME	EVANSVILLE, AK NDB	3500
EVANSVILLE, AK NDB	DERIK, AK FIX	*10000
*9500 - MOCA		
DERIK, AK FIX	MUKTU, AK FIX	*7000
*3700 – MOCA		

FROM	TO	MEA

95.6504 ALASKA VOR FEDERAL AIRWAY V504 – CONTINUED

MUKTU, AK FIX	SHELO, AK FIX	*5000
*3000 - MOCA		
SHELO, AK FIX	DEADHORSE, AK VOR/DME	*2000
*1300 - MOCA		

95.6506 ALASKA VOR FEDERAL AIRWAY V506

MARLO, AK FIX	KODIAK, AK VOR/DME	4000
*KODIAK, AK VOR/DME	BAILY, AK FIX	
	W BND	#**12000
	E BND	#**7000
**4900 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
BAILY, AK FIX	BREMI, AK FIX	*12000
*9700 - MOCA		
*10000 - GNSS MEA		
BREMI, AK FIX	*KING SALMON, AK VORTAC	
	E BND	**12000
	W BND	**5000
*2400 - MCA KING SALMON, AK VORTAC , E BND		
**4600 - MOCA		
KING SALMON, AK VORTAC	KOWOK, AK FIX	*3000
*2400 - MOCA		
KOWOK, AK FIX	CAYON, AK FIX	*8000
*7000 - MOCA		
*7000 - GNSS MEA		
CAYON, AK FIX	BETHEL, AK VORTAC	
	E BND	8000
	W BND	4000
BETHEL, AK VORTAC	MARSI, AK FIX	
	W BND	16000
	E BND	2000
MARSI, AK FIX	JOHNI, AK FIX	#*16000
*3200 - MOCA		
*4000 - GNSS MEA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
JOHNI, AK FIX	DACIA, AK FIX	*8000
*3200 - MOCA		
*4000 - GNSS MEA		
DACIA, AK FIX	NOME, AK VOR/DME	
	S BND	*8000
	N BND	*4000
*3200 - MOCA		
NOME, AK VOR/DME	BAIME, AK FIX	
	N BND	7000
	S BND	6000
BAIME, AK FIX	SETUP, AK FIX	*7000
*5700 - MOCA		
*6000 - GNSS MEA		
SETUP, AK FIX	KOTZEBUE, AK VOR/DME	
	S BND	7000
	N BND	2000
KOTZEBUE, AK VOR/DME	HOTHAM, AK NDB	2000
HOTHAM, AK NDB	SHOKK, AK FIX	*6000
*5000 - MOCA		
*5000 - GNSS MEA		

FROM	TO	MEA

95.6506 ALASKA VOR FEDERAL AIRWAY V506 – CONTINUED

FROM	TO	MEA
SHOKK, AK FIX	MEADE, AK FIX	*10000
*7000 - MOCA		
*8000 - GNSS MEA		
MEADE, AK FIX	BARROW, AK VOR/DME	
	S BND	*10000
	N BND	*2000
*1100 - MOCA		

95.6507 ALASKA VOR FEDERAL AIRWAY V507

FROM	TO	MEA
NOME, AK VOR/DME	PHOTO, AK FIX	
	NW BND	*13000
	SE BND	*6000
*5700 – MOCA		
PHOTO, AK FIX	ESKAR, AK FIX	*13000
*6000 - MOCA		
*6000 - GNSS MEA		
ESKAR, AK FIX	KOTZEBUE, AK VOR/DME	
	SW BND	*13000
	NE BND	*2100
*2100 - MOCA		

95.6508 ALASKA VOR FEDERAL AIRWAY V508

FROM	TO	MEA
MIDDLETON ISLAND, AK VOR/DME	DEALS, AK FIX	6000
DEALS, AK FIX	*SEWAR, AK FIX	**9000
*10000 - MRA		
**8400 - MOCA		
SEWAR, AK FIX	*SKILA, AK FIX	**9000
*5100 - MCA SKILA, AK FIX , E BND		
**7800 - MOCA		
**8000 - GNSS MEA		
SKILA, AK FIX	ROJAR, AK FIX	2400
ROJAR, AK FIX	KENAI, AK VOR/DME	2000
KENAI, AK VOR/DME	*NEARR, AK FIX	**3000
*7600 - MCA NEARR, AK FIX , W BND		
**2500 - MOCA		
NEARR, AK FIX	AKGAS, AK FIX	12000
AKGAS, AK FIX	SPARREVOHN, AK VOR/DME	6000
SPARREVOHN, AK VOR/DME	EBSIH, AK FIX	6000

95.6510 ALASKA VOR FEDERAL AIRWAY V510

FROM	TO	MEA
EMMONAK, AK VOR/DME	ANVIK, AK NDB/DME	3900
ANVIK, AK NDB/DME	SABOC, AK FIX	
	E BND	*10000
	W BND	*9000
*6200 - MOCA		
*7000 - GNSS MEA		
SABOC, AK FIX	MC GRATH, AK VORTAC	*10000
*6200 - MOCA		
*7000 - GNSS MEA		
MC GRATH, AK VORTAC	ERLAN, AK FIX	
	E BND	10000
	W BND	5000

95.6510 ALASKA VOR FEDERAL AIRWAY V510 - CONTINUED

FROM	TO	MEA
ERLAN, AK FIX	WINOR, AK FIX	
	E BND	10000
	W BND	8000
WINOR, AK FIX	FFITZ, AK FIX	10000
FFITZ, AK FIX	ROHHN, AK FIX	*10000
*8800 - MOCA		
*9000 - GNSS MEA		
ROHHN, AK FIX	BIG LAKE, AK VORTAC	*4000
*3400 - MOCA		

95.6515 ALASKA VOR FEDERAL AIRWAY V515

FROM	TO	MEA
GULKANA, AK VOR/DME	MERIE, AK FIX	5000
MERIE, AK FIX	*BIG DELTA, AK VORTAC	12000
*8100 - MCA BIG DELTA, AK VORTAC , S BND		

95.6531 ALASKA VOR FEDERAL AIRWAY V531

FROM	TO	MEA
*FAIRBANKS, AK VORTAC	GOLLY, AK FIX	5000
*4700 - MCA FAIRBANKS, AK VORTAC , W BND		
GOLLY, AK FIX	*REEBA, AK FIX	**7000
*7000 - MRA		
**5000 - MOCA		
REEBA, AK FIX	TANANA, AK VOR/DME	
	E BND	*7000
	W BND	*4000
*4000 - MOCA		
TANANA, AK VOR/DME	ELCON, AK FIX	
	W BND	*6500
	E BND	*5400
*5400 - MOCA		
ELCON, AK FIX	CENSE, AK FIX	*6500
*5700 - MOCA		
CENSE, AK FIX	HUSLIA, AK VOR/DME	
	W BND	*3500
	E BND	*6500
*3000 - MOCA		
HUSLIA, AK VOR/DME	ATAGO, AK FIX	
	W BND	*4000
	E BND	*3500
*2500 - MOCA		
ATAGO, AK FIX	DESOY, AK FIX	*4000
*3900 - MOCA		
DESOY, AK FIX	SELAWIK, AK VOR/DME	
	W BND	*2500
	E BND	*4000
*2500 - MOCA		
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	2500
KOTZEBUE, AK VOR/DME	BERJO, AK FIX	
	SE BND	*2500
	NW BND	*8000
*2500 - MOCA		
BERJO, AK FIX	POINT HOPE, AK NDB	*8000
*4000 - MOCA		

95.6593 ALASKA VOR FEDERAL AIRWAY V593

SISTERS ISLAND, AK VORTAC	*LYRIC, AK FIX	**8000
*8000 - MRA		
**5800 - MOCA		
**5800 - GNSS MEA		
LYRIC, AK FIX	BIORKA ISLAND, AK VORTAC	5000

95.6603 ALASKA VOR FEDERAL AIRWAY V603

ELFEE, AK NDB	DILLINGHAM, AK VOR/DME	2700

95.6617 ALASKA VOR FEDERAL AIRWAY V617

HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	*12000
*8600 - MOCA		
*9000 - GNSS MEA		

95.6619 ALASKA VOR FEDERAL AIRWAY V619

PORT HEIDEN, AK NDB/DME	CHINOOK, AK NDB	4000
CHINOOK, AK NDB	DILLINGHAM, AK VOR/DME	3000

95.6621 ALASKA VOR FEDERAL AIRWAY V621

BARROW, AK VOR/DME	ATQASUK, AK NDB	2000

&95.6401 HAWAII VOR FEDERAL AIRWAYS

95.6401 HAWAII VOR FEDERAL AIRWAY V1

KONA, HI VORTAC	*REEFS, HI FIX	5000
*4100 - MCA REEFS, HI FIX , SE BND		
REEFS, HI FIX	MOANA, HI FIX	*2000
*1300 - MOCA		
MOANA, HI FIX	ROWIN, HI FIX	*4000
*1300 - MOCA		
ROWIN, HI FIX	*LAVAS, HI FIX	**8000
*7000 - MRA		
**1300 – MOCA		
MAKEN, HI FIX	HARPO, HI FIX	5000
HARPO, HI FIX	MAUI, HI VORTAC	6000

95.6402 HAWAII VOR FEDERAL AIRWAY V2

HONOLULU, HI VORTAC	PALAY, HI FIX	3500
PALAY, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	KEIKI, HI FIX	5000
KEIKI, HI FIX	HARPO, HI FIX	*5000
*1200 - MOCA		

FROM	TO	MEA

95.6402 HAWAII VOR FEDERAL AIRWAY V2 - CONTINUED

HARPO, HI FIX	UPOLU POINT, HI VORTAC	5000
UPOLU POINT, HI VORTAC	WAPIO, HI FIX	*7000
*6000 - MOCA		
WAPIO, HI FIX	PARIS, HI FIX	
	E BND	*4500
	W BND	*6000
*4000 – MOCA		
PARIS, HI FIX	*ARBOR, HI FIX	**4000
*8000 - MRA		
**3000 - MOCA		
ARBOR, HI FIX	HILO, HI VORTAC	3000

95.6403 HAWAII VOR FEDERAL AIRWAY V3

MYNAH, HI FIX	*JASON, HI FIX	3500
*5400 - MCA JASON, HI FIX , NE BND		
JASON, HI FIX	KAMUELA, HI VOR/DME	6700
KAMUELA, HI VOR/DME	TIGAH, HI FIX	6500
TIGAH, HI FIX	PARIS, HI FIX	5000

95.6404 HAWAII VOR FEDERAL AIRWAY V4

HONOLULU, HI VORTAC	*GECKO, HI FIX	**4000
*10000 - MRA		
**2800 - MOCA		
GECKO, HI FIX	*ZUKEY, HI FIX	
	W BND	16000
	E BND	4000
*16000 - MRA		
ZUKEY, HI FIX	BINJO, HI FIX	
	W BND	29000
	E BND	16000

95.6405 HAWAII VOR FEDERAL AIRWAY V5

KONA, HI VORTAC	*MYNAH, HI FIX	5000
*4100 - MCA MYNAH, HI FIX , SE BND		
MYNAH, HI FIX	HEFTI, HI FIX	*2000
*1300 - MOCA		

HEFTI, HI FIX MAKEN, HI FIX 6000

95.6406 HAWAII VOR FEDERAL AIRWAY V6

BLUSH, HI FIX	PLUMB, HI FIX	*5000
*1200 - MOCA		
PLUMB, HI FIX	MAUI, HI VORTAC	5000

FROM	TO	MEA

95.6407 HAWAII VOR FEDERAL AIRWAY V7

KONA, HI VORTAC	*REEFS, HI FIX	5000
*4100 - MCA REEFS, HI FIX , SE BND		
REEFS, HI FIX	MOANA, HI FIX	*2000
*1300 - MOCA		
MOANA, HI FIX	ROWIN, HI FIX	*4000
*1300 – MOCA		
ROWIN, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	MOLOKAI, HI VORTAC	4000
ATINE, HI FIX	BERLE, HI FIX	7000
BERLE, HI FIX	ZIGIE, OP FIX	22000

95.6408 HAWAII VOR FEDERAL AIRWAY V8

HONOLULU, HI VORTAC	*ALANA, HI FIX	3000
*5000 - MRA		
ALANA, HI FIX	HAUNA, HI FIX	3000
HAUNA, HI FIX	LOKIE, HI FIX	2000
LOKIE, HI FIX	MOLOKAI, HI VORTAC	3500
MOLOKAI, HI VORTAC	BLUSH, HI FIX	5000
BLUSH, HI FIX	FISHE, HI FIX	*4000
*1200 - MOCA		

95.6411 HAWAII VOR FEDERAL AIRWAY V11

REEFS, HI FIX	*FLITT, HI FIX	**3000
*4600 - MCA FLITT, HI FIX , N BND		
**2000 - MOCA		
**2000 - GNSS MEA		
FLITT, HI FIX	UPOLU POINT, HI VORTAC	5700
UPOLU POINT, HI VORTAC	BARBY, HI FIX	5400
BARBY, HI FIX	OPANA, HI FIX	*5000
*3000 - MOCA		
OPANA, HI FIX	MAUI, HI VORTAC	5000

95.6412 HAWAII VOR FEDERAL AIRWAY V12

*KATHS, HI FIX	**NONNI, HI FIX	29000
*29000 - MRA		
**29000 - MRA		
NONNI, HI FIX	*LEANE, HI FIX	
	W BND	29000
	E BND	16000
*16000 - MRA		
LEANE, HI FIX	*KEOLA, HI FIX	
	W BND	16000
	E BND	5000
*10000 - MRA		
KEOLA, HI FIX	*SHIGI, HI FIX	4000
*5000 - MRA		
SHIGI, HI FIX	HONOLULU, HI VORTAC	4000
HONOLULU, HI VORTAC	*KOKO HEAD, HI VORTAC	5000
*4500 - MCA KOKO HEAD, HI VORTAC , W BND		
KOKO HEAD, HI VORTAC	BAMBO, OP FIX	4500

95.64012 HAWAII VOR FEDERAL AIRWAY V12 – CONTINUED

FROM	TO	MEA
BAMBO, OP FIX	MAGGI, HI FIX	5000
MAGGI, HI FIX	*SHARK, HI FIX	
	NE BND	**16000
	SW BND	**5000
*16000 - MRA		
**1200 - MOCA		

95.6413 HAWAII VOR FEDERAL AIRWAY V13

FROM	TO	MEA
KOKO HEAD, HI VORTAC	BAMBO, OP FIX	4500
BAMBO, OP FIX	TOADS, HI FIX	5000

95.6415 HAWAII VOR FEDERAL AIRWAY V15

FROM	TO	MEA
*CANON, HI FIX	LILIA, HI FIX	
	W BND	32000
	E BND	8000
*32000 - MRA		
LILIA, HI FIX	SOUTH KAUAI, HI VORTAC	*8000
*4800 - MOCA		
SOUTH KAUAI, HI VORTAC	LIHUE, HI VORTAC	5000
LIHUE, HI VORTAC	BOOKE, HI FIX	4000
BOOKE, HI FIX	*SHIGI, HI FIX	5000
*5000 - MRA		
SHIGI, HI FIX	HONOLULU, HI VORTAC	4000
HONOLULU, HI VORTAC	*KOKO HEAD, HI VORTAC	5000
*4500 - MCA KOKO HEAD, HI VORTAC , W BND		
KOKO HEAD, HI VORTAC	MABBL, HI FIX	
	E BND	3500
	W BND	4500
MABBL, HI FIX	*MOLOKAI, HI VORTAC	
	E BND	3500
	W BND	4500
*5000 - MCA MOLOKAI, HI VORTAC , E BND		
MOLOKAI, HI VORTAC	*LORET, HI FIX	7000
*7800 - MCA LORET, HI FIX , E BND		
LORET, HI FIX	*MAUI, HI VORTAC	8000
*6800 - MCA MAUI, HI VORTAC , W BND		
MAUI, HI VORTAC	BARBY, HI FIX	7000
BARBY, HI FIX	*RABAT, HI FIX	**10000
*10000 - MRA		
**1200 - MOCA		
RABAT, HI FIX	*PUMIC, HI FIX	6000
*10000 – MRA		
PUMIC, HI FIX	PARIS, HI FIX	4000
PARIS, HI FIX	*ARBOR, HI FIX	**4000
*8000 - MRA		
**3000 - MOCA		
ARBOR, HI FIX	HILO, HI VORTAC	3000
HILO, HI VORTAC	HODAY, HI FIX	2000
HODAY, HI FIX	EELIC, HI FIX	10000
EELIC, HI FIX	KUMME, HI FIX	
	W BND	10000
	E BND	31000
KUMME, HI FIX	MAITI, HI FIX	31000

95.6416 HAWAII VOR FEDERAL AIRWAY V16

FROM	TO	MEA
*SYVAD, HI FIX	**PUPPI, HI FIX	
	W BND	32000
	E BND	14000
*32000 - MRA		
**14000 - MRA		
PUPPI, HI FIX	*OHANA, HI FIX	
	W BND	14000
	E BND	5000
*5000 - MRA		
OHANA, HI FIX	SOUTH KAUAI, HI VORTAC	
	W BND	14000
	SE BND	5000
SOUTH KAUAI, HI VORTAC	MORKE, HI FIX	
	NW BND	5000
	SE BND	3000
MORKE, HI FIX	*NAPUA, HI FIX	3000
*6000 - MRA		
NAPUA, HI FIX	*GRAIL, HI FIX	6000
*9000 - MRA		
GRAIL, HI FIX	*KEOLA, HI FIX	9000
*10000 - MRA		
KEOLA, HI FIX	*GECKO, HI FIX	10000
*10000 - MRA		
GECKO, HI FIX	*ALANA, HI FIX	7000
*5000 - MRA		
ALANA, HI FIX	JULLE, HI FIX	5000
JULLE, HI FIX	GRAMY, HI FIX	2000
GRAMY, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	*LAVAS, HI FIX	4300
*7000 - MRA		
LAVAS, HI FIX	*UPOLU POINT, HI VORTAC	6000
*5800 - MCA UPOLU POINT, HI VORTAC , E BND		
UPOLU POINT, HI VORTAC	TIGAH, HI FIX	7000
TIGAH, HI FIX	*OKALA, HI FIX	**8000
*6500 - MCA OKALA, HI FIX , W BND		
**5500 - MOCA		
OKALA, HI FIX	*ARBOR, HI FIX	**8000
*8000 - MRA		
**5500 - MOCA		
ARBOR, HI FIX	HILO, HI VORTAC	3000

95.6417 HAWAII VOR FEDERAL AIRWAY V17

FROM	TO	MEA
HARPO, HI FIX	MAUI, HI VORTAC	6000
STAIT, HI FIX	FREDI, HI FIX	*17000
*1200 - MOCA		
FREDI, HI FIX	REXIE, HI FIX	*28000
*1200 - MOCA		

FROM	TO	MEA

95.6420 HAWAII VOR FEDERAL AIRWAY V20

HONOLULU, HI VORTAC	HAUNA, HI FIX	3000
HAUNA, HI FIX	JULLE, HI FIX	4000
JULLE, HI FIX	JORDA, HI FIX	5000
JORDA, HI FIX	*FIRES, HI FIX	
	NW BND	**10000
	SE BND	**13000
*13000 - MRA		
**1300 - MOCA		
FIRES, HI FIX	HOKLA, HI FIX	*13000
*1300 - MOCA		
HOKLA, HI FIX	TYPHO, HI FIX	*8000
*1300 - MOCA		
TYPHO, HI FIX	*ROBYN, HI FIX	
	SE BND	**3000
	NW BND	**8000
*3900 - MCA ROBYN, HI FIX , SE BND		
**1300 - MOCA		
ROBYN, HI FIX	KONA, HI VORTAC	5000

95.6421 HAWAII VOR FEDERAL AIRWAY V21

HONOLULU, HI VORTAC	*ALANA, HI FIX	3000
*5000 - MRA		
ALANA, HI FIX	JULLE, HI FIX	5000
JULLE, HI FIX	GRAMY, HI FIX	2000
GRAMY, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	KEIKI, HI FIX	5000
KEIKI, HI FIX	CAMPS, HI FIX	*5000
*1200 - MOCA		
CAMPS, HI FIX	*HARPO, HI FIX	**5000
*8100 - MCA HARPO, HI FIX , E BND		
**1200 - MOCA		
HARPO, HI FIX	FUNKI, HI FIX	*10000
*9000 - MOCA		
FUNKI, HI FIX	*PUMIC, HI FIX	10000
*10000 - MRA		
PUMIC, HI FIX	BISEN, HI FIX	14000
BISEN, HI FIX	CUTLE, HI FIX	21000
CUTLE, HI FIX	OSTAH, HI FIX	24000
OSTAH, HI FIX	SCOON, HI FIX	22000

95.6422 HAWAII VOR FEDERAL AIRWAY V22

*MOLOKAI, HI VORTAC	PLUMB, HI FIX	7000
*5000 - MCA MOLOKAI, HI VORTAC , E BND		
PLUMB, HI FIX	MAUI, HI VORTAC	5000
MAUI, HI VORTAC	*BARBY, HI FIX	7000
*10500 - MCA BARBY, HI FIX , SE BND		
BARBY, HI FIX	SARDS, HI FIX	12000
SARDS, HI FIX	BONUS, HI FIX	8000
BONUS, HI FIX	HILO, HI VORTAC	6000
HILO, HI VORTAC	SESAW, HI FIX	2000
SESAW, HI FIX	BATES, HI FIX	8000
BATES, HI FIX	OSTAH, HI FIX	10000
OSTAH, HI FIX	SCOON, HI FIX	22000

95.6423 HAWAII VOR FEDERAL AIRWAY V23

UPOLU POINT, HI VORTAC	JESSI, HI FIX	*6000
*5000 - MOCA		
JESSI, HI FIX	*FIRES, HI FIX	8000
*13000 - MRA		

95.6424 HAWAII VOR FEDERAL AIRWAY V24

*LANAI, HI VORTAC	MAUI, HI VORTAC	**9000
*5100 - MCA LANAI, HI VORTAC , NE BND		
**7800 - MOCA		

95.6425 HAWAII VOR FEDERAL AIRWAY V25

HILO, HI VORTAC	COOKE, HI FIX	3000
COOKE, HI FIX	BASSY, HI FIX	6000
BASSY, HI FIX	CODDY, HI FIX	9000
CODDY, HI FIX	ARROW, HI FIX	26000
ARROW, HI FIX	CLUTS, OP FIX	*26000
*1200 - MOCA		

&95.7001 JET ROUTES

95.7001 JET ROUTE J1

FROM	TO	MEA	MAA
U.S. MEXICAN BORDER	MISSION BAY, CA VORTAC	18000	45000
MISSION BAY, CA VORTAC	OCEANSIDE, CA VORTAC	18000	45000
OCEANSIDE, CA VORTAC	LOS ANGELES, CA VORTAC	18000	45000
LOS ANGELES, CA VORTAC	FILLMORE, CA VORTAC	18000	45000
FILLMORE, CA VORTAC	AVENAL, CA VORTAC	18000	45000
AVENAL, CA VORTAC	OAKLAND, CA VORTAC	18000	45000
OAKLAND, CA VORTAC	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	ROGUE VALLEY, OR VORTAC	18000	45000
ROGUE VALLEY, OR VORTAC	BATTLE GROUND, WA VORTAC	18000	45000
BATTLE GROUND, WA VORTAC	SEATTLE, WA VORTAC	18000	45000

95.7002 JET ROUTE J2

FROM	TO	MEA	MAA
MISSION BAY, CA VORTAC	IMPERIAL, CA VORTAC	18000	45000
IMPERIAL, CA VORTAC	BARD, AZ VORTAC	18000	45000
BARD, AZ VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	COCHISE, AZ VORTAC	18000	45000
COCHISE, AZ VORTAC	EL PASO, TX VORTAC	18000	45000
EL PASO, TX VORTAC	FORT STOCKTON, TX VORTAC	18000	45000
FORT STOCKTON, TX VORTAC	JUNCTION, TX VORTAC	18000	45000
JUNCTION, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	HUMBLE, TX VORTAC	18000	45000
HUMBLE, TX VORTAC	LAKE CHARLES, LA VORTAC	18000	45000
LAKE CHARLES, LA VORTAC	SEMMES, AL VORTAC	18000	45000
SEMMES, AL VORTAC	CRESTVIEW, FL VORTAC	18000	45000
CRESTVIEW, FL VORTAC	SEMINOLE, FL VORTAC	18000	45000
SEMINOLE, FL VORTAC	TAYLOR, FL VORTAC	18000	45000

95.7003 JET ROUTE J3

FROM	TO	MEA	MAA
OAKLAND, CA VORTAC	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	LAKEVIEW, OR VORTAC	18000	45000
LAKEVIEW, OR VORTAC	KIMBERLY, OR VORTAC	18000	45000
KIMBERLY, OR VORTAC	SPOKANE, WA VORTAC	18000	45000

95.7004 JET ROUTE J4

FROM	TO	MEA	MAA
LOS ANGELES, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	18000	45000
TWENTYNINE PALMS, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	BUCKEYE, AZ VORTAC	18000	45000
BUCKEYE, AZ VORTAC	SAN SIMON, AZ VORTAC	18000	45000
SAN SIMON, AZ VORTAC	NEWMAN, TX VORTAC	18000	45000
NEWMAN, TX VORTAC	WINK, TX VORTAC	18000	45000
WINK, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	BELCHER, LA VORTAC	18000	45000
BELCHER, LA VORTAC	JACKSON, MS VORTAC	18000	45000
JACKSON, MS VORTAC	MERIDIAN, MS VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7004 JET ROUTE J4 – CONTINUED

MERIDIAN, MS VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	FLORENCE, SC VORTAC	18000	45000
FLORENCE, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000

95.7005 JET ROUTE J5

LOS ANGELES, CA VORTAC	SHAFTER, CA VORTAC	18000	45000
SHAFTER, CA VORTAC	MUSTANG, NV VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MUSTANG, NV VORTAC	LAKEVIEW, OR VORTAC	18000	45000
LAKEVIEW, OR VORTAC	POWEL, OR FIX	18000	45000
POWEL, OR FIX	SUMMA, WA FIX	26000	45000
SUMMA, WA FIX	SEATTLE, WA VORTAC	18000	45000
SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7006 JET ROUTE J6

SALINAS, CA VORTAC	AVENAL, CA VORTAC	18000	45000
AVENAL, CA VORTAC	PALMDALE, CA VORTAC	18000	45000
PALMDALE, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	NEEDLES, CA VORTAC	18000	45000
NEEDLES, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	PYRIT, AZ FIX	22000	45000
PYRIT, AZ FIX	ZUNI, NM VORTAC	18000	45000
ZUNI, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	TUCUMCARI, NM VORTAC	18000	45000
TUCUMCARI, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	BOWLING GREEN, KY VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BOWLING GREEN, KY VORTAC	CHARLESTON, WV VORTAC	18000	45000
CHARLESTON, WV VORTAC	MARTINSBURG, WV VORTAC	18000	45000
MARTINSBURG, WV VORTAC	LANCASTER, PA VORTAC	18000	32000
LANCASTER, PA VORTAC	BROADWAY, NJ VOR/DME	18000	45000
BROADWAY, NJ VOR/DME	SPARTA, NJ VORTAC	18000	45000
SPARTA, NJ VORTAC	ALBANY, NY VORTAC	18000	45000
ALBANY, NY VORTAC	PLATTSBURGH, NY VORTAC	18000	45000

95.7007 JET ROUTE J7

LOS ANGELES, CA VORTAC	FILLMORE, CA VORTAC	18000	45000
FILLMORE, CA VORTAC	FRIANT, CA VORTAC	18000	45000
FRIANT, CA VORTAC	MUSTANG, NV VORTAC	18000	45000
MUSTANG, NV VORTAC	ROME, OR VOR/DME	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROME, OR VOR/DME	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	SALMON, ID VOR/DME	18000	45000
SALMON, ID VOR/DME	GREAT FALLS, MT VORTAC	18000	45000
GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7008 JET ROUTE J8

FROM	TO	MEA	MAA
NEEDLES, CA VORTAC	FLAGSTAFF, AZ VOR/DME	18000	45000
FLAGSTAFF, AZ VOR/DME	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	BORGER, TX VORTAC	18000	45000
BORGER, TX VORTAC	KINGFISHER, OK VORTAC	18000	45000
KINGFISHER, OK VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	CHARLESTON, WV VORTAC	18000	45000
CHARLESTON, WV VORTAC	CASANOVA, VA VORTAC	18000	45000

95.7009 JET ROUTE J9

FROM	TO	MEA	MAA
LOS ANGELES, CA VORTAC	DAGGETT, CA VORTAC	18000	45000
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC	18000	45000
LAS VEGAS, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	WASATCH, UT VORTAC	18000	45000
WASATCH, UT VORTAC	DUBOIS, ID VORTAC	18000	45000
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	18000	45000
DILLON, MT VOR/DME	GREAT FALLS, MT VORTAC	18000	45000

95.7010 JET ROUTE J10

FROM	TO	MEA	MAA
LOS ANGELES, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	18000	45000
TWENTYNINE PALMS, CA VORTAC	HIPPI, AZ FIX	23000	40000
HIPPI, AZ FIX	FLAGSTAFF, AZ VOR/DME	23000	40000
FLAGSTAFF, AZ VOR/DME	RATTLESNAKE, NM VORTAC	18000	40000
RATTLESNAKE, NM VORTAC	BLUE MESA, CO VOR/DME	18000	45000
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	NORTH PLATTE, NE VORTAC	18000	45000
NORTH PLATTE, NE VORTAC	WOLBACH, NE VORTAC	18000	41000
WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	18000	45000

95.7011 JET ROUTE J11

FROM	TO	MEA	MAA
TUCSON, AZ VORTAC	PHOENIX, AZ VORTAC	18000	45000
PHOENIX, AZ VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	BRYCE CANYON, UT VORTAC	18000	45000
BRYCE CANYON, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	WASATCH, UT VORTAC	18000	45000

95.7012 JET ROUTE J12

FROM	TO	MEA	MAA
SEATTLE, WA VORTAC	EPHRATA, WA VORTAC	18000	45000
EPHRATA, WA VORTAC	DONNELLY, ID VOR/DME	18000	45000
DONNELLY, ID VOR/DME	TWIN FALLS, ID VORTAC	18000	45000

FROM	TO	MEA	MAA

95.70012 JET ROUTE J12 – CONTINUED

TWIN FALLS, ID VORTAC	WASATCH, UT VORTAC	22000	45000
WASATCH, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	GRAND JUNCTION, CO VOR/DME	18000	45000

95.7013 JET ROUTE J13

U.S. MEXICAN BORDER	TRUTH OR CONSEQUENCES, NM VORTAC	18000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000
ALAMOSA, CO VORTAC	FALCON, CO VORTAC	23000	45000
FALCON, CO VORTAC	CHEYENNE, WY VORTAC	18000	45000
CHEYENNE, WY VORTAC	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	GREAT FALLS, MT VORTAC	18000	45000
GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

95.7014 JET ROUTE J14

PANHANDLE, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	GREENSBORO, NC VORTAC	18000	45000
GREENSBORO, NC VORTAC	RICHMOND, VA VORTAC	18000	45000
RICHMOND, VA VORTAC	PATUXENT, MD VORTAC	18000	45000

95.7015 JET ROUTE J15

HUMBLE, TX VORTAC	JUNCTION, TX VORTAC	18000	45000
JUNCTION, TX VORTAC	WINK, TX VORTAC	18000	45000
WINK, TX VORTAC	CHISUM, NM VORTAC	18000	45000
CHISUM, NM VORTAC	CORONA, NM VORTAC	18000	45000
CORONA, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	RATTLESNAKE, NM VORTAC	18000	45000
RATTLESNAKE, NM VORTAC	GRAND JUNCTION, CO VOR/DME	18000	45000
GRAND JUNCTION, CO VOR/DME	WASATCH, UT VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
WASATCH, UT VORTAC	TWIN FALLS, ID VORTAC	22000	45000
TWIN FALLS, ID VORTAC	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	KIMBERLY, OR VORTAC	18000	45000
KIMBERLY, OR VORTAC	BATTLE GROUND, WA VORTAC	18000	45000

95.7016 JET ROUTE J16

BATTLE GROUND, WA VORTAC	PENDLETON, OR VORTAC	18000	45000
PENDLETON, OR VORTAC	WHITEHALL, MT VOR/DME	#29000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

FROM	TO	MEA	MAA

95.7016 JET ROUTE J16 - CONTINUED

WHITEHALL, MT VOR/DME	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	DUPREE, SD VORTAC	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUPREE, SD VORTAC	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	MASON CITY, IA VORTAC	18000	45000
MASON CITY, IA VORTAC	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	PECK, MI VORTAC	18000	45000
PECK, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	18000	45000
BUFFALO, NY VOR/DME	ALBANY, NY VORTAC	18000	45000
ALBANY, NY VORTAC	BOSTON, MA VOR/DME	18000	45000

95.7017 JET ROUTE J17

SAN ANTONIO, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	TOBE, CO VOR/DME	18000	45000
TOBE, CO VOR/DME	PUEBLO, CO VORTAC	18000	45000
PUEBLO, CO VORTAC	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	CHEYENNE, WY VORTAC	18000	45000
CHEYENNE, WY VORTAC	RAPID CITY, SD VORTAC	18000	45000

95.7018 JET ROUTE J18

MISSION BAY, CA VORTAC	IMPERIAL, CA VORTAC	18000	45000
IMPERIAL, CA VORTAC	BARD, AZ VORTAC	18000	45000
BARD, AZ VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	PHOENIX, AZ VORTAC	18000	45000
PHOENIX, AZ VORTAC	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	GARDEN CITY, KS VORTAC	18000	45000
GARDEN CITY, KS VORTAC	SALINA, KS VORTAC	18000	45000
SALINA, KS VORTAC	ST JOSEPH, MO VORTAC	18000	45000
ST JOSEPH, MO VORTAC	MOLINE, IL VORTAC	18000	35000
MOLINE, IL VORTAC	JOLIET, IL VORTAC	18000	35000

95.7019 JET ROUTE J19

PHOENIX, AZ VORTAC	ZUNI, NM VORTAC	19000	45000
ZUNI, NM VORTAC	BUKKO, NM FIX	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
FORT UNION, NM VORTAC	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	BUTLER, MO VORTAC	18000	45000
BUTLER, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	ROBERTS, IL VOR/DME	18000	35000
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	18000	35000

FROM	TO	MEA	MAA

95.7020 JET ROUTE J20

SEATTLE, WA VORTAC	YAKIMA, WA VORTAC	18000	45000
YAKIMA, WA VORTAC	PENDLETON, OR VORTAC	18000	45000
PENDLETON, OR VORTAC	DONNELLY, ID VOR/DME	18000	45000
DONNELLY, ID VOR/DME	POCATELLO, ID VOR/DME	18000	45000
POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	21000	45000
ROCK SPRINGS, WY VOR/DME	FALCON, CO VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
FALCON, CO VORTAC	HUGO, CO VOR/DME	18000	45000
HUGO, CO VOR/DME	LAMAR, CO VOR/DME	18000	45000
LAMAR, CO VOR/DME	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	BELCHER, LA VORTAC	18000	45000
BELCHER, LA VORTAC	JACKSON, MS VORTAC	18000	45000
JACKSON, MS VORTAC	MERIDIAN, MS VORTAC	18000	45000
MERIDIAN, MS VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	SEMINOLE, FL VORTAC	18000	45000
SEMINOLE, FL VORTAC	ORLANDO, FL VORTAC	18000	45000

95.7021 JET ROUTE J21

U.S. MEXICAN BORDER	LAREDO, TX VORTAC	18000	45000
LAREDO, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	18000	45000
CENTEX, TX VORTAC	WACO, TX VORTAC	18000	45000
WACO, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	ARDMORE, OK VORTAC	18000	45000
ARDMORE, OK VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	OMAHA, IA VORTAC	18000	45000
OMAHA, IA VORTAC	GOPHER, MN VORTAC	18000	45000
GOPHER, MN VORTAC	DULUTH, MN VORTAC	18000	45000

95.7022 JET ROUTE J22

U.S. MEXICAN BORDER	LAREDO, TX VORTAC	18000	45000
LAREDO, TX VORTAC	CORPUS CHRISTI, TX VORTAC	18000	45000
CORPUS CHRISTI, TX VORTAC	PALACIOS, TX VORTAC	18000	45000
PALACIOS, TX VORTAC	LAKE CHARLES, LA VORTAC	18000	45000
LAKE CHARLES, LA VORTAC	MC COMB, MS VORTAC	18000	45000
MC COMB, MS VORTAC	MERIDIAN, MS VORTAC	18000	45000
MERIDIAN, MS VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	PULASKI, VA VORTAC	18000	45000
PULASKI, VA VORTAC	MONTEBELLO, VA VOR/DME	18000	45000

95.7023 JET ROUTE J23

SAN ANTONIO, TX VORTAC	MILLSAP, TX VORTAC	18000	45000
MILLSAP, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	PIONEER, OK VORTAC	18000	45000
PIONEER, OK VORTAC	WICHITA, KS VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7024 JET ROUTE J24

MYTON, UT VOR/DME	HAYDEN, CO VOR/DME	18000	45000
HUGO, CO VOR/DME	HAYS, KS VORTAC	18000	45000
HAYS, KS VORTAC	SALINA, KS VORTAC	18000	45000
SALINA, KS VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	BRICKYARD, IN VORTAC	18000	45000
BRICKYARD, IN VORTAC	FALMOUTH, KY VOR/DME	18000	45000
FALMOUTH, KY VOR/DME	CHARLESTON, WV VORTAC	18000	45000
CHARLESTON, WV VORTAC	MONTEBELLO, VA VOR/DME	18000	41000
MONTEBELLO, VA VOR/DME	FLAT ROCK, VA VORTAC	18000	41000
FLAT ROCK, VA VORTAC	HARCUM, VA VORTAC	18000	29000

95.7025 JET ROUTE J25

U.S. MEXICAN BORDER	BROWNSVILLE, TX VORTAC	18000	45000
BROWNSVILLE, TX VORTAC	CORPUS CHRISTI, TX VORTAC	18000	45000
CORPUS CHRISTI, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	18000	45000
CENTEX, TX VORTAC	WACO, TX VORTAC	18000	45000
WACO, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	TULSA, OK VORTAC	18000	45000
TULSA, OK VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	MASON CITY, IA VORTAC	18000	45000
MASON CITY, IA VORTAC	GOPHER, MN VORTAC	18000	45000
GOPHER, MN VORTAC	BRAINERD, MN VORTAC	18000	45000
BRAINERD, MN VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	WINNIPEG, CANADA VORTAC	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

95.7026 JET ROUTE J26

U.S. MEXICAN BORDER	EL PASO, TX VORTAC	18000	45000
EL PASO, TX VORTAC	CHISUM, NM VORTAC	18000	45000
CHISUM, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	18000	45000
MITBEE, OK VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	BRADFORD, IL VORTAC	18000	45000
BRADFORD, IL VORTAC	JOLIET, IL VORTAC	18000	45000

95.7027 JET ROUTE J27

SAN ANTONIO, TX VORTAC	LUFKIN, TX VORTAC	18000	45000

95.7028 JET ROUTE J28

MILFORD, UT VORTAC	HANKSVILLE, UT VORTAC	18000	45000
HANKSVILLE, UT VORTAC	BLUE MESA, CO VOR/DME	18000	45000

95.7028 JET ROUTE J28 – CONTINUED

FROM	TO	MEA	MAA
BLUE MESA, CO VOR/DME	PUEBLO, CO VORTAC	18000	45000
PUEBLO, CO VORTAC	GARDEN CITY, KS VORTAC	18000	45000
GARDEN CITY, KS VORTAC	WICHITA, KS VORTAC	18000	45000

95.7029 JET ROUTE J29

FROM	TO	MEA	MAA
U.S. MEXICAN BORDER	CORPUS CHRISTI, TX VORTAC	24000	45000
CORPUS CHRISTI, TX VORTAC	PALACIOS, TX VORTAC	18000	45000
PALACIOS, TX VORTAC	HUMBLE, TX VORTAC	18000	45000
HUMBLE, TX VORTAC	EL DORADO, AR VORTAC	18000	45000
EL DORADO, AR VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	POCKET CITY, IN VORTAC	18000	45000
POCKET CITY, IN VORTAC	ROSEWOOD, OH VORTAC	18000	45000
ROSEWOOD, OH VORTAC	DRYER, OH VOR/DME	18000	45000
DRYER, OH VOR/DME	JAMESTOWN, NY VOR/DME	18000	45000
JAMESTOWN, NY VOR/DME	SYRACUSE, NY VORTAC	18000	45000
SYRACUSE, NY VORTAC	PLATTSBURGH, NY VORTAC	18000	45000
PLATTSBURGH, NY VORTAC	BANGOR, ME VORTAC	18000	45000
BANGOR, ME VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7030 JET ROUTE J30

FROM	TO	MEA	MAA
NODINE, MN VORTAC	JOLIET, IL VORTAC	18000	45000
JOLIET, IL VORTAC	APPLETON, OH VORTAC	18000	45000
APPLETON, OH VORTAC	BUCKO, WV FIX	20000	39000
BUCKO, WV FIX	KESSEL, WV VOR/DME	18000	45000
KESSEL, WV VOR/DME	TRIXY, VA FIX	19000	29000

95.7031 JET ROUTE J31

FROM	TO	MEA	MAA
LEEVILLE, LA VORTAC	HARVEY, LA VORTAC	18000	45000
HARVEY, LA VORTAC	MERIDIAN, MS VORTAC	18000	45000
MERIDIAN, MS VORTAC	VULCAN, AL VORTAC	18000	45000

95.7032 JET ROUTE J32

FROM	TO	MEA	MAA
OAKLAND, CA VORTAC	SACRAMENTO, CA VORTAC	18000	45000
SACRAMENTO, CA VORTAC	MUSTANG, NV VORTAC	18000	45000
MUSTANG, NV VORTAC	LOVELOCK, NV VORTAC	18000	45000
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	18000	45000
BATTLE MOUNTAIN, NV VORTAC	MALAD CITY, ID VOR/DME	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MALAD CITY, ID VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	18000	45000
BOYSEN RESERVOIR, WY VOR/DME	CRAZY WOMAN, WY VOR/DME	18000	45000
CRAZY WOMAN, WY VOR/DME	DUPREE, SD VORTAC	18000	45000
DUPREE, SD VORTAC	ABERDEEN, SD VOR/DME	18000	45000
ABERDEEN, SD VOR/DME	DULUTH, MN VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7033 JET ROUTE J33

FROM	TO	MEA	MAA
HUMBLE, TX VORTAC	DONIE, TX FIX	18000	45000
DONIE, TX FIX	RANGER, TX VORTAC	18000	45000

95.7034 JET ROUTE J34

FROM	TO	MEA	MAA
HOQUIAM, WA VORTAC	OLYMPIA, WA VORTAC	18000	45000
OLYMPIA, WA VORTAC	MOSES LAKE, WA VOR/DME	18000	45000
MOSES LAKE, WA VOR/DME	HELENA, MT VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
HELENA, MT VORTAC	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	DUPREE, SD VORTAC	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUPREE, SD VORTAC	REDWOOD FALLS, MN VOR/DME	18000	45000
REDWOOD FALLS, MN VOR/DME	NODINE, MN VORTAC	18000	45000
NODINE, MN VORTAC	DELLS, WI VORTAC	18000	45000
DELLS, WI VORTAC	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	GRAND RAPIDS, MI VOR/DME	18000	45000
GRAND RAPIDS, MI VOR/DME	CARLETON, MI VORTAC	18000	45000
CARLETON, MI VORTAC	DRYER, OH VOR/DME	18000	45000
DRYER, OH VOR/DME	BELLAIRE, OH VOR/DME	18000	45000
BELLAIRE, OH VOR/DME	BUCKO, WV FIX	18000	45000
BUCKO, WV FIX	KESSEL, WV VOR/DME	18000	45000
KESSEL, WV VOR/DME	TRIXY, VA FIX	19000	29000

95.7035 JET ROUTE J35

FROM	TO	MEA	MAA
LEEVILLE, LA VORTAC	MC COMB, MS VORTAC	18000	45000
MC COMB, MS VORTAC	SIDON, MS VORTAC	18000	45000
SIDON, MS VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	SPINNER, IL VORTAC	18000	45000
SPINNER, IL VORTAC	PONTIAC, IL VOR/DME	18000	31000
PONTIAC, IL VOR/DME	JOLIET, IL VORTAC	18000	35000
JOLIET, IL VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

95.7036 JET ROUTE J36

FROM	TO	MEA	MAA
MULLAN PASS, ID VOR/DME	GREAT FALLS, MT VORTAC	18000	45000
GREAT FALLS, MT VORTAC	HILGR, MT FIX	18000	45000
HILGR, MT FIX	DICKINSON, ND VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DICKINSON, ND VORTAC	FARGO, ND VORTAC	18000	45000
FARGO, ND VORTAC	GOPHER, MN VORTAC	18000	45000
GOPHER, MN VORTAC	NODINE, MN VORTAC	18000	45000
NODINE, MN VORTAC	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	FLINT, MI VORTAC	18000	45000
FLINT, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	DUNKIRK, NY VORTAC	18000	45000
DUNKIRK, NY VORTAC	MTCAF, PA FIX	31000	45000
MTCAF, PA FIX	LAKE HENRY, PA VORTAC	18000	37000
LAKE HENRY, PA VORTAC	COATE, NJ FIX	18000	45000

FROM	TO	MEA	MAA

95.7037 JET ROUTE J37

HOBBY, TX VOR/DME	HARVEY, LA VORTAC	18000	45000
HARVEY, LA VORTAC	SEMMES, AL VORTAC	18000	45000
SEMMES, AL VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	*SANNY, VA FIX	22000	45000
*22000 - MRA			
SANNY, VA FIX	LYNCHBURG, VA VORTAC	18000	45000
LYNCHBURG, VA VORTAC	GORDONSVILLE, VA VORTAC	18000	45000
GORDONSVILLE, VA VORTAC	BROOKE, VA VORTAC	18000	45000
BROOKE, VA VORTAC	NALES, DE FIX	18000	31000
NALES, DE FIX	COYLE, NJ VORTAC	18000	45000
KENNEDY, NY VOR/DME	KINGSTON, NY VOR/DME	18000	45000
KINGSTON, NY VOR/DME	ALBANY, NY VORTAC	18000	45000
ALBANY, NY VORTAC	MASSENA, NY VORTAC	18000	45000

95.7038 JET ROUTE J38

GREEN BAY, WI VORTAC	PECK, MI VORTAC	18000	45000

95.7039 JET ROUTE J39

CRESTVIEW, FL VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	ROSEWOOD, OH VORTAC	18000	45000

95.7040 JET ROUTE J40

MONTGOMERY, AL VORTAC	MACON, GA VORTAC	18000	45000
#MACON R-258 UNUSABLE USE MONTGOMERY R-075			
MACON, GA VORTAC	CHARLESTON, SC VORTAC	18000	45000
CHARLESTON, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000
WILMINGTON, NC VORTAC	TAR RIVER, NC VORTAC	18000	45000
TAR RIVER, NC VORTAC	RICHMOND, VA VORTAC	18000	45000

95.7041 JET ROUTE J41

KEY WEST, FL VORTAC	LEE COUNTY, FL VORTAC	18000	45000
LEE COUNTY, FL VORTAC	ST PETERSBURG, FL VORTAC	18000	45000
ST PETERSBURG, FL VORTAC	SEMINOLE, FL VORTAC	#*25000	45000
*18000 - GNSS MEA			
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
SEMINOLE, FL VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	OMAHA, IA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7042 JET ROUTE J42

U.S. MEXICAN BORDER	FORT STOCKTON, TX VORTAC	18000	45000
FORT STOCKTON, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	TEXARKANA, AR VORTAC	18000	45000
TEXARKANA, AR VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	FOUNT, KY FIX	18000	45000
FOUNT, KY FIX	TONIO, KY FIX	#*20000	35000
*18000 - GNSS MEA			
TONIO, KY FIX	#BECKLEY, WV VORTAC	*18000	35000
*18000 - GNSS MEA			
#BECKLEY R-257 UNSUSABLE			
BECKLEY, WV VORTAC	MONTEBELLO, VA VOR/DME	18000	41000
MONTEBELLO, VA VOR/DME	GORDONSVILLE, VA VORTAC	18000	41000
GORDONSVILLE, VA VORTAC	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	*GRACO, MD FIX	18000	35000
*10000 - MRA			
GRACO, MD FIX	WOODSTOWN, NJ VORTAC	18000	45000
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	18000	45000
ROBBINSVILLE, NJ VORTAC	HARTFORD, CT VOR/DME	18000	45000
HARTFORD, CT VOR/DME	PUTNAM, CT VOR/DME	18000	45000
PUTNAM, CT VOR/DME	BOSTON, MA VOR/DME	18000	45000

95.7043 JET ROUTE J43

DOLPHIN, FL VORTAC	LA BELLE, FL VORTAC	18000	45000
LA BELLE, FL VORTAC	ST PETERSBURG, FL VORTAC	18000	45000
ST PETERSBURG, FL VORTAC	SEMINOLE, FL VORTAC	#*25000	45000
*18000 - GNSS MEA			
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
SEMINOLE, FL VORTAC	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	FALMOUTH, KY VOR/DME	18000	45000
FALMOUTH, KY VOR/DME	ROSEWOOD, OH VORTAC	18000	45000
ROSEWOOD, OH VORTAC	CARLETON, MI VORTAC	18000	45000
CARLETON, MI VORTAC	SAULT STE MARIE, MI VOR/DME	18000	45000

95.7044 JET ROUTE J44

PHOENIX, AZ VORTAC	WINSLOW, AZ VORTAC	18000	45000
WINSLOW, AZ VORTAC	RATTLESNAKE, NM VORTAC	18000	45000
RATTLESNAKE, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000
ALAMOSA, CO VORTAC	FALCON, CO VORTAC	23000	45000
FALCON, CO VORTAC	MC COOK, NE VOR/DME	18000	45000
MC COOK, NE VOR/DME	LINCOLN, NE VORTAC	18000	41000

95.7045 JET ROUTE J45

VIRGINIA KEY, FL VOR/DME	VERO BEACH, FL VORTAC	18000	45000
VERO BEACH, FL VORTAC	ORMOND BEACH, FL VORTAC	18000	45000
ORMOND BEACH, FL VORTAC	CRAIG, FL VORTAC	18000	45000
CRAIG, FL VORTAC	ALMA, GA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7045 JET ROUTE J45 – CONTINUED

#ALMA, GA VORTAC	MACON, GA VORTAC	18000	45000
#ALMA R-320 UNUSABLE USE MACON R-139			
MACON, GA VORTAC	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	ABERDEEN, SD VOR/DME	18000	45000

95.7046 JET ROUTE J46

TULSA, OK VORTAC	WALNUT RIDGE, AR VORTAC	18000	45000
WALNUT RIDGE, AR VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	ATHENS, GA VORTAC	18000	45000
ATHENS, GA VORTAC	ALMA, GA VORTAC	18000	45000

95.7047 JET ROUTE J47

CHARLESTON, SC VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000

95.7048 JET ROUTE J48

LANNA, NJ FIX	POTTSTOWN, PA VORTAC	18000	45000
POTTSTOWN, PA VORTAC	WESTMINSTER, MD VORTAC	18000	45000
WESTMINSTER, MD VORTAC	CASANOVA, VA VORTAC	18000	45000
CASANOVA, VA VORTAC	MONTEBELLO, VA VOR/DME	18000	41000
MONTEBELLO, VA VOR/DME	FOOTHILLS, GA VORTAC	18000	41000

95.7049 JET ROUTE J49

PHILIPSBURG, PA VORTAC	HANCOCK, NY VOR/DME	18000	45000
HANCOCK, NY VOR/DME	ALBANY, NY VORTAC	18000	45000
ALBANY, NY VORTAC	BANGOR, ME VORTAC	18000	45000
BANGOR, ME VORTAC	PRESQUE ISLE, ME VOR/DME	18000	45000

95.7050 JET ROUTE J50

SHAFTER, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	BLYTHE, CA VORTAC	18000	45000
BLYTHE, CA VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	STANFIELD, AZ VORTAC	18000	45000
STANFIELD, AZ VORTAC	SAN SIMON, AZ VORTAC	18000	45000
SAN SIMON, AZ VORTAC	EL PASO, TX VORTAC	18000	45000
EL PASO, TX VORTAC	WINK, TX VORTAC	18000	45000
WINK, TX VORTAC	ABILENE, TX VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7050 JET ROUTE J50 – CONTINUED

ABILENE, TX VORTAC	WACO, TX VORTAC	18000	45000
WACO, TX VORTAC	LUFKIN, TX VORTAC	18000	45000
LUFKIN, TX VORTAC	ALEXANDRIA, LA VORTAC	18000	45000
ALEXANDRIA, LA VORTAC	MC COMB, MS VORTAC	18000	45000
MC COMB, MS VORTAC	CRESTVIEW, FL VORTAC	18000	45000

95.7051 JET ROUTE J51

CRAIG, FL VORTAC	SAVANNAH, GA VORTAC	18000	45000
SAVANNAH, GA VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	TUBAS, NC FIX	18000	45000
TUBAS, NC FIX	#FLAT ROCK, VA VORTAC	#*26000	45000
*18000 - GNSS MEA			
#FLAT ROCK R-218 UNUSABLE			
FLAT ROCK, VA VORTAC	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	PALEO, MD FIX	18000	29000
PALEO, MD FIX	DUPONT, DE VORTAC	18000	45000
DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	18000	29000

95.7052 JET ROUTE J52

U.S. CANADIAN BORDER	SPOKANE, WA VORTAC	18000	45000
SPOKANE, WA VORTAC	SALMON, ID VOR/DME	18000	45000
SALMON, ID VOR/DME	DUBOIS, ID VORTAC	18000	45000
DUBOIS, ID VORTAC	ROCK SPRINGS, WY VOR/DME	18000	45000
ROCK SPRINGS, WY VOR/DME	FALCON, CO VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
FALCON, CO VORTAC	HUGO, CO VOR/DME	18000	45000
HUGO, CO VOR/DME	LAMAR, CO VOR/DME	18000	45000
LAMAR, CO VOR/DME	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	ARDMORE, OK VORTAC	18000	45000
ARDMORE, OK VORTAC	TEXARKANA, AR VORTAC	18000	45000
TEXARKANA, AR VORTAC	SIDON, MS VORTAC	18000	45000
SIDON, MS VORTAC	BIGBEE, MS VORTAC	18000	45000
BIGBEE, MS VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	TUBAS, NC FIX	18000	45000
TUBAS, NC FIX	RALEIGH/DURHAM, NC VORTAC	18000	45000
RALEIGH/DURHAM, NC VORTAC	RICHMOND, VA VORTAC	18000	45000

95.7053 JET ROUTE J53

DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	18000	45000
PAHOKEE, FL VORTAC	ORLANDO, FL VORTAC	18000	45000
ORLANDO, FL VORTAC	CRAIG, FL VORTAC	18000	45000
CRAIG, FL VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	PULASKI, VA VORTAC	18000	45000
PULASKI, VA VORTAC	RICCS, WV FIX	21000	45000
RICCS, WV FIX	ELLWOOD CITY, PA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7054 JET ROUTE J54

TATOOSH, WA VORTAC	OLYMPIA, WA VORTAC	18000	45000
OLYMPIA, WA VORTAC	BAKER CITY, OR VOR/DME	#29000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	18000	45000
POCATELLO, ID VOR/DME	CHEROKEE, WY VOR/DME	25000	45000
CHEROKEE, WY VOR/DME	LARAMIE, WY VOR/DME	18000	45000

95.7055 JET ROUTE J55

DOLPHIN, FL VORTAC	LLAKE, FL FIX	18000	45000
LLAKE, FL FIX	INPIN, FL FIX	23000	45000
INPIN, FL FIX	LOULO, FL FIX	18000	45000
LOULO, FL FIX	CRAIG, FL VORTAC	18000	45000
CRAIG, FL VORTAC	SAVANNAH, GA VORTAC	18000	45000
SAVANNAH, GA VORTAC	CHARLESTON, SC VORTAC	18000	45000
CHARLESTON, SC VORTAC	FLORENCE, SC VORTAC	18000	45000
FLORENCE, SC VORTAC	TUBAS, NC FIX	18000	45000
TUBAS, NC FIX	RALEIGH/DURHAM, NC VORTAC	18000	45000
RALEIGH/DURHAM, NC VORTAC	HOPEWELL, VA VORTAC	18000	45000
HOPEWELL, VA VORTAC	HUBBS, VA FIX	18000	20000
SEA ISLE, NJ VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	PROVIDENCE, RI VORTAC	18000	45000
PROVIDENCE, RI VORTAC	BOSTON, MA VOR/DME	18000	45000
BOSTON, MA VOR/DME	KENNEBUNK, ME VORTAC	18000	45000
KENNEBUNK, ME VORTAC	PRESQUE ISLE, ME VOR/DME	19000	45000

95.7056 JET ROUTE J56

MINA, NV VORTAC	WASATCH, UT VORTAC	#33000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
WASATCH, UT VORTAC	HAYDEN, CO VOR/DME	25000	45000
HAYDEN, CO VOR/DME	FALCON, CO VORTAC	18000	45000

95.7057 JET ROUTE J57

TRUTH OR CONSEQUENCES, NM VORTAC	SOCORRO, NM VORTAC	18000	45000
SOCORRO, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000

95.7058 JET ROUTE J58

OAKLAND, CA VORTAC	MANTECA, CA VOR/DME	18000	45000
MANTECA, CA VOR/DME	COALDALE, NV VORTAC	18000	45000
COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	18000	45000
WILSON CREEK, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	RATTLESNAKE, NM VORTAC	33000	45000
RATTLESNAKE, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	WICHITA FALLS, TX VORTAC	18000	45000
WICHITA FALLS, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	ALEXANDRIA, LA VORTAC	18000	45000
ALEXANDRIA, LA VORTAC	HARVEY, LA VORTAC	18000	45000 **95.7059**

FROM	TO	MEA	MAA

JET ROUTE J59

PHILIPSBURG, PA VORTAC	SYRACUSE, NY VORTAC	18000	45000

95.7060 JET ROUTE J60

LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC	18000	45000
BOULDER CITY, NV VORTAC	BRYCE CANYON, UT VORTAC	18000	45000
BRYCE CANYON, UT VORTAC	HANKSVILLE, UT VORTAC	18000	45000
HANKSVILLE, UT VORTAC	RED TABLE, CO VOR/DME	18000	45000
RED TABLE, CO VOR/DME	MILE HIGH, CO VORTAC	18000	45000
MILE HIGH, CO VORTAC	HAYES CENTER, NE VORTAC	18000	45000
HAYES CENTER, NE VORTAC	LINCOLN, NE VORTAC	18000	45000
LINCOLN, NE VORTAC	IOWA CITY, IA VORTAC	18000	45000
IOWA CITY, IA VORTAC	JOLIET, IL VORTAC	18000	45000
JOLIET, IL VORTAC	GOSHEN, IN VORTAC	18000	45000
GOSHEN, IN VORTAC	DRYER, OH VOR/DME	18000	45000
DRYER, OH VOR/DME	PHILIPSBURG, PA VORTAC	18000	45000
PHILIPSBURG, PA VORTAC	SPARTA, NJ VORTAC	18000	45000

95.7061 JET ROUTE J61

EDDYS, NC FIX	FORTS, VA FIX	31000	45000
FORTS, VA FIX	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	WESTMINSTER, MD VORTAC	18000	45000
WESTMINSTER, MD VORTAC	PHILIPSBURG, PA VORTAC	18000	45000
PHILIPSBURG, PA VORTAC	BUFFALO, NY VOR/DME	18000	45000

95.7062 JET ROUTE J62

ROBBINSVILLE, NJ VORTAC	NANTUCKET, MA VOR/DME	18000	45000

95.7063 JET ROUTE J63

KENNEDY, NY VOR/DME	HUGUENOT, NY VOR/DME	18000	45000
HUGUENOT, NY VOR/DME	SYRACUSE, NY VORTAC	18000	45000
SYRACUSE, NY VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	AU SABLE, MI VOR/DME	18000	45000
AU SABLE, MI VOR/DME	TRAVERSE CITY, MI VORTAC	18000	45000

95.7064 JET ROUTE J64

LOS ANGELES, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	PEACH SPRINGS, AZ VORTAC	18000	45000
PEACH SPRINGS, AZ VORTAC	TUBA CITY, AZ VORTAC	18000	45000
TUBA CITY, AZ VORTAC	RATTLESNAKE, NM VORTAC	18000	45000
RATTLESNAKE, NM VORTAC	PUEBLO, CO VORTAC	20000	45000
PUEBLO, CO VORTAC	HILL CITY, KS VORTAC	18000	45000
HILL CITY, KS VORTAC	PAWNEE CITY, NE VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7064 JET ROUTE J64 – CONTINUED

PAWNEE CITY, NE VORTAC	LAMONI, IA VORTAC	18000	45000
LAMONI, IA VORTAC	BRADFORD, IL VORTAC	18000	45000
BRADFORD, IL VORTAC	FORT WAYNE, IN VORTAC	18000	45000
FORT WAYNE, IN VORTAC	ELLWOOD CITY, PA VORTAC	18000	45000
ELLWOOD CITY, PA VORTAC	RAVINE, PA VORTAC	18000	45000
RAVINE, PA VORTAC	ROBBINSVILLE, NJ VORTAC	18000	45000

95.7065 JET ROUTE J65

SAN ANTONIO, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	CHISUM, NM VORTAC	25000	45000
CHISUM, NM VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	24000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	PHOENIX, AZ VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
PHOENIX, AZ VORTAC	BLYTHE, CA VORTAC	18000	45000
BLYTHE, CA VORTAC	PALMDALE, CA VORTAC	18000	45000
PALMDALE, CA VORTAC	SHAFTER, CA VORTAC	18000	45000
SHAFTER, CA VORTAC	CLOVIS, CA VORTAC	18000	45000
CLOVIS, CA VORTAC	SACRAMENTO, CA VORTAC	18000	45000
SACRAMENTO, CA VORTAC	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	KLAMATH FALLS, OR VORTAC	18000	45000
KLAMATH FALLS, OR VORTAC	SEATTLE, WA VORTAC	#31000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7066 JET ROUTE J66

NEWMAN, TX VORTAC	BIG SPRING, TX VORTAC	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BIG SPRING, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	BONHAM, TX VORTAC	18000	45000
BONHAM, TX VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	GEEYY, AR FIX	18000	45000
MEMPHIS, TN VORTAC	ROME, GA VORTAC	18000	45000

95.7067 JET ROUTE J67

LINDEN, CA VORTAC	LAKEVIEW, OR VORTAC	18000	45000
LAKEVIEW, OR VORTAC	BATTLE GROUND, WA VORTAC	18000	45000

95.7068 JET ROUTE J68

GOPHER, MN VORTAC	DELLS, WI VORTAC	18000	45000
DELLS, WI VORTAC	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	FLINT, MI VORTAC	18000	45000
FLINT, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	DUNKIRK, NY VORTAC	18000	45000
HANCOCK, NY VOR/DME	PUTNAM, CT VOR/DME	18000	45000
PUTNAM, CT VOR/DME	PROVIDENCE, RI VORTAC	18000	45000
PROVIDENCE, RI VORTAC	NANTUCKET, MA VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7069 JET ROUTE J69

SEMMES, AL VORTAC	DELBE, AL FIX	22000	45000
DELBE, AL FIX	VULCAN, AL VORTAC	18000	45000

95.7070 JET ROUTE J70

HOQUIAM, WA VORTAC	SEATTLE, WA VORTAC	18000	45000
SEATTLE, WA VORTAC	EPHRATA, WA VORTAC	18000	45000
EPHRATA, WA VORTAC	MULLAN PASS, ID VOR/DME	18000	45000
MULLAN PASS, ID VOR/DME	LEWISTOWN, MT VOR/DME	18000	45000
LEWISTOWN, MT VOR/DME	DICKINSON, ND VORTAC	18000	45000
DICKINSON, ND VORTAC	ABERDEEN, SD VOR/DME	24000	45000
ABERDEEN, SD VOR/DME	GOPHER, MN VORTAC	18000	45000
GOPHER, MN VORTAC	NICKL, WI FIX	18000	45000
NICKL, WI FIX	AUGER, WI FIX	25000	45000
*25000 - MCA AUGER, WI FIX , W BND			
AUGER, WI FIX	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	PULLMAN, MI VOR/DME	18000	45000
PULLMAN, MI VOR/DME	SALEM, MI VORTAC	18000	45000
SALEM, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	JAMESTOWN, NY VOR/DME	18000	45000
JAMESTOWN, NY VOR/DME	WILKES-BARRE, PA VORTAC	18000	45000
WILKES-BARRE, PA VORTAC	STILLWATER, NJ VOR/DME	18000	45000
STILLWATER, NJ VOR/DME	LA GUARDIA, NY VOR/DME	18000	24000
LA GUARDIA, NY VOR/DME	KENNEDY, NY VOR/DME	18000	45000

95.7071 JET ROUTE J71

MEMPHIS, TN VORTAC	CENTRALIA, IL VORTAC	18000	45000
CENTRALIA, IL VORTAC	ROBERTS, IL VOR/DME	18000	35000
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	18000	35000

95.7072 JET ROUTE J72

BOULDER CITY, NV VORTAC	PEACH SPRINGS, AZ VORTAC	18000	45000
PEACH SPRINGS, AZ VORTAC	GALLUP, NM VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
GALLUP, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	TEXICO, TX VORTAC	18000	45000
TEXICO, TX VORTAC	WICHITA FALLS, TX VORTAC	18000	45000

95.7073 JET ROUTE J73

DOLPHIN, FL VORTAC	LA BELLE, FL VORTAC	18000	45000
LA BELLE, FL VORTAC	LAKELAND, FL VORTAC	18000	45000
LAKELAND, FL VORTAC	SEMINOLE, FL VORTAC	18000	45000
SEMINOLE, FL VORTAC	LAGRANGE, GA VORTAC	18000	45000
LAGRANGE, GA VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	POCKET CITY, IN VORTAC	18000	45000
POCKET CITY, IN VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7074 JET ROUTE J74

LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	NABOB, AZ FIX	21000	45000
NABOB, AZ FIX	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	CORONA, NM VORTAC	18000	45000
CORONA, NM VORTAC	TEXICO, TX VORTAC	18000	45000
TEXICO, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000

95.7075 JET ROUTE J75

DOLPHIN, FL VORTAC	LEE COUNTY, FL VORTAC	18000	45000
LEE COUNTY, FL VORTAC	TAYLOR, FL VORTAC	18000	45000
TAYLOR, FL VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	GREENSBORO, NC VORTAC	18000	45000
GREENSBORO, NC VORTAC	GORDONSVILLE, VA VORTAC	18000	45000
GORDONSVILLE, VA VORTAC	MODENA, PA VORTAC	18000	45000
MODENA, PA VORTAC	SOLBERG, NJ VOR/DME	18000	32000
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	18000	32000
CARMEL, NY VOR/DME	BOSTON, MA VOR/DME	18000	45000

95.7076 JET ROUTE J76

LAS VEGAS, NV VORTAC	TUBA CITY, AZ VORTAC	18000	45000
TUBA CITY, AZ VORTAC	FORT UNION, NM VORTAC	#27000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE. #MEA GAP			
FORT UNION, NM VORTAC	TUCUMCARI, NM VORTAC	18000	45000
TUCUMCARI, NM VORTAC	WICHITA FALLS, TX VORTAC	18000	45000

95.7077 JET ROUTE J77

BOSTON, MA VOR/DME	BARNES, MA VORTAC	18000	45000
BARNES, MA VORTAC	SPARTA, NJ VORTAC	18000	31000
SPARTA, NJ VORTAC	BROADWAY, NJ VOR/DME	18000	45000
BROADWAY, NJ VOR/DME	POTTSTOWN, PA VORTAC	18000	45000
POTTSTOWN, PA VORTAC	WESTMINSTER, MD VORTAC	18000	45000

95.7078 JET ROUTE J78

LOS ANGELES, CA VORTAC	SEAL BEACH, CA VORTAC	18000	45000
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	18000	45000
THERMAL, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	PYRIT, AZ FIX	22000	45000
PYRIT, AZ FIX	ZUNI, NM VORTAC	18000	45000
ZUNI, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	TUCUMCARI, NM VORTAC	18000	45000
TUCUMCARI, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	TULSA, OK VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7078 JET ROUTE J78 – CONTINUED

TULSA, OK VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	POCKET CITY, IN VORTAC	18000	45000
POCKET CITY, IN VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	CHARLESTON, WV VORTAC	18000	45000
CHARLESTON, WV VORTAC	PHILIPSBURG, PA VORTAC	18000	45000
PHILIPSBURG, PA VORTAC	MILTON, PA VORTAC	18000	45000

95.7079 JET ROUTE J79

KEY WEST, FL VORTAC	DOLPHIN, FL VORTAC	18000	45000
#KEY WEST R-037 UNUSABLE			
DOLPHIN, FL VORTAC	PALM BEACH, FL VORTAC	18000	45000
PALM BEACH, FL VORTAC	VERO BEACH, FL VORTAC	18000	45000
VERO BEACH, FL VORTAC	ORMOND BEACH, FL VORTAC	18000	45000
ORMOND BEACH, FL VORTAC	CHARLESTON, SC VORTAC	18000	45000
CHARLESTON, SC VORTAC	TAR RIVER, NC VORTAC	18000	45000
TAR RIVER, NC VORTAC	FRANKLIN, VA VORTAC	18000	45000
FRANKLIN, VA VORTAC	SALISBURY, MD VORTAC	18000	45000
SALISBURY, MD VORTAC	KENNEDY, NY VOR/DME	18000	45000
KENNEDY, NY VOR/DME	MARCONI, MA VOR/DME	18000	45000
MARCONI, MA VOR/DME	BANGOR, ME VORTAC	18000	45000

95.7080 JET ROUTE J80

OAKLAND, CA VORTAC	MANTECA, CA VOR/DME	18000	45000
MANTECA, CA VOR/DME	COALDALE, NV VORTAC	18000	45000
COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	18000	45000
WILSON CREEK, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	GRAND JUNCTION, CO VOR/DME	18000	45000
GRAND JUNCTION, CO VOR/DME	RED TABLE, CO VOR/DME	18000	45000
RED TABLE, CO VOR/DME	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	GOODLAND, KS VORTAC	18000	45000
GOODLAND, KS VORTAC	HILL CITY, KS VORTAC	18000	45000
HILL CITY, KS VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	SPINNER, IL VORTAC	18000	45000
SPINNER, IL VORTAC	BRICKYARD, IN VORTAC	18000	45000
BRICKYARD, IN VORTAC	BELLAIRE, OH VOR/DME	18000	45000
BELLAIRE, OH VOR/DME	VINSE, PA FIX	18000	45000
VINSE, PA FIX	KIPPI, PA FIX	26000	45000
KIPPI, PA FIX	EAST TEXAS, PA VOR/DME	18000	38000
EAST TEXAS, PA VOR/DME	SPARTA, NJ VORTAC	18000	32000
SPARTA, NJ VORTAC	BARNES, MA VORTAC	18000	31000
BARNES, MA VORTAC	BANGOR, ME VORTAC	18000	45000

95.7081 JET ROUTE J81

DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	18000	45000
PAHOKEE, FL VORTAC	ORLANDO, FL VORTAC	18000	45000
ORLANDO, FL VORTAC	CECIL, FL VOR	18000	45000
CECIL, FL VOR	COLLIERS, SC VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7082 JET ROUTE J82

BATTLE GROUND, WA VORTAC	DONNELLY, ID VOR/DME	22000	45000
DONNELLY, ID VOR/DME	DUBOIS, ID VORTAC	18000	45000
DUBOIS, ID VORTAC	CRAZY WOMAN, WY VOR/DME	#25000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CRAZY WOMAN, WY VOR/DME	RAPID CITY, SD VORTAC	18000	45000
RAPID CITY, SD VORTAC	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	FORT DODGE, IA VORTAC	18000	45000
FORT DODGE, IA VORTAC	DUBUQUE, IA VORTAC	18000	45000
DUBUQUE, IA VORTAC	JOLIET, IL VORTAC	18000	45000
JOLIET, IL VORTAC	GOSHEN, IN VORTAC	18000	45000
GOSHEN, IN VORTAC	DRYER, OH VOR/DME	18000	45000
DRYER, OH VOR/DME	JAMESTOWN, NY VOR/DME	18000	45000
JAMESTOWN, NY VOR/DME	ALBANY, NY VORTAC	18000	40000

95.7083 JET ROUTE J83

SPARTANBURG, SC VORTAC	APPLETON, OH VORTAC	23000	45000
#APPLETON, OH VORTAC	DRYER, OH VOR/DME	18000	45000
#APPLETON R-021 UNUSABLE.			

95.7084 JET ROUTE J84

OAKLAND, CA VORTAC	LINDEN, CA VORTAC	18000	45000
LINDEN, CA VORTAC	MINA, NV VORTAC	18000	45000
MINA, NV VORTAC	DELTA, UT VORTAC	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DELTA, UT VORTAC	MEEKER, CO VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MEEKER, CO VOR/DME	SIDNEY, NE VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
SIDNEY, NE VORTAC	WOLBACH, NE VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
WOLBACH, NE VORTAC	DUBUQUE, IA VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	DANVILLE, IL VORTAC	18000	35000

95.7085 JET ROUTE J85

DOLPHIN, FL VORTAC	LLAKE, FL FIX	18000	45000
LLAKE, FL FIX	INPIN, FL FIX	23000	45000
INPIN, FL FIX	GATORS, FL VORTAC	18000	45000
GATORS, FL VORTAC	TAYLOR, FL VORTAC	18000	45000
TAYLOR, FL VORTAC	ALMA, GA VORTAC	18000	45000
ALMA, GA VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	CHARLESTON, WV VORTAC	18000	45000
CHARLESTON, WV VORTAC	DRYER, OH VOR/DME	18000	45000

95.7086 JET ROUTE J86

BEATTY, NV VORTAC	FUZZY, NV FIX	18000	45000
FUZZY, NV FIX BO	ULDER CITY, NV VORTAC	29000	45000

95.7086ET ROUTE J86 – CONTINUED

FROM	TO	MEA	MAA
BOULDER CITY, NV VORTAC	PEACH SPRINGS, AZ VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
PEACH SPRINGS, AZ VORTAC	BAVPE, AZ FIX	18000	45000
BAVPE, AZ FIX	WINSLOW, AZ VORTAC	18000	45000
WINSLOW, AZ VORTAC	EL PASO, TX VORTAC	#27000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
EL PASO, TX VORTAC	FORT STOCKTON, TX VORTAC	18000	45000
FORT STOCKTON, TX VORTAC	JUNCTION, TX VORTAC	18000	45000
JUNCTION, TX VORTAC	HUMBLE, TX VORTAC	18000	45000
HUMBLE, TX VORTAC	LEEVILLE, LA VORTAC	18000	45000

95.7087 JET ROUTE J87

FROM	TO	MEA	MAA
HUMBLE, TX VORTAC	NAVASOTA, TX VORTAC	18000	45000
NAVASOTA, TX VORTAC	TORNN, TX FIX	18000	45000
TORNN, TX FIX	COWBOY, TX VOR/DME	18000	45000
COWBOY, TX VOR/DME	TULSA, OK VORTAC	18000	45000
TULSA, OK VORTAC	BUTLER, MO VORTAC	18000	45000
BUTLER, MO VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	MOLINE, IL VORTAC	18000	35000
MOLINE, IL VORTAC	JOLIET, IL VORTAC	18000	35000
JOLIET, IL VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

95.7088 JET ROUTE J88

FROM	TO	MEA	MAA
LOS ANGELES, CA VORTAC	SAN MARCUS, CA VORTAC	18000	45000
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	18000	45000
SALINAS, CA VORTAC	POINT REYES, CA VORTAC	18000	45000

95.7089 JET ROUTE J89

FROM	TO	MEA	MAA
HITTR, FL FIX	VALDOSTA, GA VOR/DME	18000	45000
VALDOSTA, GA VOR/DME	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	BOILER, IN VORTAC	18000	45000
BOILER, IN VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	DULUTH, MN VORTAC	18000	45000
DULUTH, MN VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7090 JET ROUTE J90

FROM	TO	MEA	MAA
SEATTLE, WA VORTAC	MOSES LAKE, WA VOR/DME	18000	45000
MOSES LAKE, WA VOR/DME	HELENA, MT VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
HELENA, MT VORTAC	MILES CITY, MT VOR/DME	28000	45000
MILES CITY, MT VOR/DME	ABERDEEN, SD VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ABERDEEN, SD VOR/DME	REDWOOD FALLS, MN VOR/DME	18000	45000
REDWOOD FALLS, MN VOR/DME	MASON CITY, IA VORTAC	18000	45000
MASON CITY, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7091 JET ROUTE J91

INPIN, FL FIX	CROSS CITY, FL VORTAC	18000	45000
CROSS CITY, FL VORTAC	#ATLANTA, GA VORTAC	24000	45000
#ATLANTA R-169 DME UNUSABLE			
ATLANTA, GA VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	HENDERSON, WV VORTAC	18000	45000
HENDERSON, WV VORTAC	BELLAIRE, OH VOR/DME	18000	45000

95.7092 JET ROUTE J92

KLAMATH FALLS, OR VORTAC	MUSTANG, NV VORTAC	18000	45000
MUSTANG, NV VORTAC	COALDALE, NV VORTAC	18000	45000
COALDALE, NV VORTAC	BEATTY, NV VORTAC	18000	45000
BEATTY, NV VORTAC	BOULDER CITY, NV VORTAC	24000	45000
BOULDER CITY, NV VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	PHOENIX, AZ VORTAC	18000	45000
PHOENIX, AZ VORTAC	STANFIELD, AZ VORTAC	18000	45000
STANFIELD, AZ VORTAC	TUCSON, AZ VORTAC	18000	45000
TUCSON, AZ VORTAC	U.S. MEXICAN BORDER	18000	45000

95.7093 JET ROUTE J93

U.S. MEXICAN BORDER	JULIAN, CA VORTAC	18000	45000
JULIAN, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	LOS ANGELES, CA VORTAC	18000	45000

95.7094 JET ROUTE J94

OAKLAND, CA VORTAC	MANTECA, CA VOR/DME	18000	45000
MANTECA, CA VOR/DME	MUSTANG, NV VORTAC	19000	45000
MUSTANG, NV VORTAC	LOVELOCK, NV VORTAC	18000	45000
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	18000	45000
BATTLE MOUNTAIN, NV VORTAC	LUCIN, UT VORTAC	18000	45000
LUCIN, UT VORTAC	ROCK SPRINGS, WY VOR/DME	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROCK SPRINGS, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	18000	45000
SCOTTSBLUFF, NE VORTAC	O'NEILL, NE VORTAC	18000	45000
O'NEILL, NE VORTAC	FORT DODGE, IA VORTAC	18000	45000
FORT DODGE, IA VORTAC	DUBUQUE, IA VORTAC	18000	45000
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	PULLMAN, MI VOR/DME	18000	45000
PULLMAN, MI VOR/DME	FLINT, MI VORTAC	18000	45000
FLINT, MI VORTAC	PECK, MI VORTAC	18000	45000
PECK, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	18000	45000
BUFFALO, NY VOR/DME	ALBANY, NY VORTAC	18000	45000
ALBANY, NY VORTAC	BOSTON, MA VOR/DME	18000	45000

95.7095 JET ROUTE J95

DEER PARK, NY VOR/DME	*GAYEL, NY FIX	18000	45000
*5500 – MRA			

FROM	TO	MEA	MAA

95.7095ET ROUTE J95 CONTINUED

GAYEL, NY FIX	BINGHAMTON, NY VORTAC	18000	45000
#GNSS MEA, GNSS REQUIRED			
BINGHAMTON R-129 UNUSABLE. GNSS REQUIRED			
BINGHAMTON, NY VORTAC	BUFFALO, NY VOR/DME	18000	45000
BUFFALO, NY VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7096 JET ROUTE J96

LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CIMARRON, NM VORTAC	GARDEN CITY, KS VORTAC	18000	45000
GARDEN CITY, KS VORTAC	SALINA, KS VORTAC	18000	45000
SALINA, KS VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	PEORIA, IL VORTAC	18000	35000
PEORIA, IL VORTAC	JOLIET, IL VORTAC	18000	35000

95.7097 JET ROUTE J97

SLATN, OA FIX	NANTUCKET, MA VOR/DME	25000	45000
NANTUCKET, MA VOR/DME	BOSTON, MA VOR/DME	18000	45000
BOSTON, MA VOR/DME	PLATTSBURGH, NY VORTAC	18000	45000

95.7098 JET ROUTE J98

LIBERAL, KS VORTAC	MITBEE, OK VORTAC	18000	45000
MITBEE, OK VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	TULSA, OK VORTAC	18000	45000
TULSA, OK VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	FARMINGTON, MO VORTAC	18000	45000

95.7099 JET ROUTE J99

COLLIERS, SC VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	LOUISVILLE, KY VORTAC	18000	45000

95.7100 JET ROUTE J100

LOS ANGELES, CA VORTAC	DAGGETT, CA VORTAC	18000	45000
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC	18000	45000
LAS VEGAS, NV VORTAC	BRYCE CANYON, UT VORTAC	18000	45000
BRYCE CANYON, UT VORTAC	MEEKER, CO VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MEEKER, CO VOR/DME	SIDNEY, NE VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

FROM	TO	MEA	MAA

95.7100 JET ROUTE J100 – CONTINUED

SIDNEY, NE VORTAC	WOLBACH, NE VORTAC	18000	45000
WOLBACH, NE VORTAC	DUBUQUE, IA VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

95.7101 JET ROUTE J101

HUMBLE, TX VORTAC	LUFKIN, TX VORTAC	18000	45000
LUFKIN, TX VORTAC	LITTLE ROCK, AR VORTAC	18300	45000
LITTLE ROCK, AR VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	SPINNER, IL VORTAC	18000	45000
SPINNER, IL VORTAC	PONTIAC, IL VOR/DME	18000	31000
PONTIAC, IL VOR/DME	JOLIET, IL VORTAC	18000	35000
JOLIET, IL VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	GREEN BAY, WI VORTAC	18000	45000
GREEN BAY, WI VORTAC	SAULT STE MARIE, MI VOR/DME	18000	45000

95.7102 JET ROUTE J102

PHOENIX, AZ VORTAC	ZUNI, NM VORTAC	18000	45000
ZUNI, NM VORTAC	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000
ALAMOSA, CO VORTAC	LAMAR, CO VOR/DME	18000	45000
LAMAR, CO VOR/DME	SALINA, KS VORTAC	18000	45000

95.7103 JET ROUTE J103

ORMOND BEACH, FL VORTAC	SAVANNAH, GA VORTAC	18000	45000

95.7104 JET ROUTE J104

LOS ANGELES, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	18000	45000
TWENTYNINE PALMS, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	TUCSON, AZ VORTAC	18000	45000
TUCSON, AZ VORTAC	SAN SIMON, AZ VORTAC	18000	45000
SAN SIMON, AZ VORTAC	SOCORRO, NM VORTAC	20000	45000
SOCORRO, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	PUEBLO, CO VORTAC	18000	45000

95.7105 JET ROUTE J105

RANGER, TX VORTAC	MC ALESTER, OK VORTAC	18000	45000
MC ALESTER, OK VORTAC	RAZORBACK, AR VORTAC	18000	45000
RAZORBACK, AR VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	BRADFORD, IL VORTAC	18000	45000
BRADFORD, IL VORTAC	BADGER, WI VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7106 JET ROUTE J106

GOPHER, MN VORTAC	GREEN BAY, WI VORTAC	18000	45000
GREEN BAY, WI VORTAC	FLINT, MI VORTAC	18000	45000
FLINT, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	JAMESTOWN, NY VOR/DME	18000	45000
JAMESTOWN, NY VOR/DME	WILKES-BARRE, PA VORTAC	18000	45000
WILKES-BARRE, PA VORTAC	STILLWATER, NJ VOR/DME	18000	45000
STILLWATER, NJ VOR/DME	LA GUARDIA, NY VOR/DME	18000	24000

95.7107 JET ROUTE J107

LOS ANGELES, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC	18000	45000
BOULDER CITY, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	ROCK SPRINGS, WY VOR/DME	#33000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROCK SPRINGS, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	DUPREE, SD VORTAC	18000	45000
DUPREE, SD VORTAC	HUMBOLDT, MN VORTAC	21000	45000
HUMBOLDT, MN VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7108 JET ROUTE J108

WINSLOW, AZ VORTAC	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	18000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	WINK, TX VORTAC	24000	45000

95.7109 JET ROUTE J109

WILMINGTON, NC VORTAC	FLAT ROCK, VA VORTAC	18000	45000
FLAT ROCK, VA VORTAC	LINDEN, VA VORTAC	18000	45000
LINDEN, VA VORTAC	BUFFALO, NY VOR/DME	18000	45000

95.7110 JET ROUTE J110

OAKLAND, CA VORTAC	SALINAS, CA VORTAC	18000	45000
SALINAS, CA VORTAC	CLOVIS, CA VORTAC	18000	45000
CLOVIS, CA VORTAC	BOULDER CITY, NV VORTAC	#29000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BOULDER CITY, NV VORTAC	RATTLESNAKE, NM VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
RATTLESNAKE, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000
ALAMOSA, CO VORTAC	GARDEN CITY, KS VORTAC	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
GARDEN CITY, KS VORTAC	BUTLER, MO VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BUTLER, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	BRICKYARD, IN VORTAC	18000	45000
BRICKYARD, IN VORTAC	BELLAIRE, OH VOR/DME	18000	45000
BELLAIRE, OH VOR/DME	VINSE, PA FIX	18000	45000
VINSE, PA FIX	KIPPI, PA FIX	26000	45000
KIPPI, PA FIX	COYLE, NJ VORTAC	22000	45000

FROM	TO	MEA	MAA

95.7111 JET ROUTE J111

NOME, AK VOR/DME	UNALAKLEET, AK VOR/DME	18000	45000
UNALAKLEET, AK VOR/DME	MC GRATH, AK VORTAC	18000	45000
MC GRATH, AK VORTAC	ANCHORAGE, AK VOR/DME	18000	45000

95.7112 JET ROUTE J112

BUTLER, MO VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	POCKET CITY, IN VORTAC	18000	45000
POCKET CITY, IN VORTAC	LOUISVILLE, KY VORTAC	18000	45000

95.7113 JET ROUTE J113

VIRGINIA KEY, FL VOR/DME	CRAIG, FL VORTAC	18000	45000

95.7114 JET ROUTE J114

MILE HIGH, CO VORTAC	SIDNEY, NE VORTAC	18000	45000
SIDNEY, NE VORTAC	O'NEILL, NE VORTAC	23000	45000
O'NEILL, NE VORTAC	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	GOPHER, MN VORTAC	18000	45000

95.7115 JET ROUTE J115

SHEMYA, AK NDB	MOUNT MOFFETT, AK NDB/DME	18000	45000
MOUNT MOFFETT, AK NDB/DME	DUTCH HARBOR, AK NDB/DME	18000	45000
DUTCH HARBOR, AK NDB/DME	COLD BAY, AK VORTAC	18000	45000
COLD BAY, AK VORTAC	KING SALMON, AK VORTAC	#18000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

KING SALMON, AK VORTAC	KENAI, AK VOR/DME	18000	45000
KENAI, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	BIG LAKE, AK VORTAC	18000	45000
BIG LAKE, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	CHANDALAR LAKE, AK NDB	18000	45000
CHANDALAR LAKE, AK NDB	DEADHORSE, AK VOR/DME	18000	45000

95.7116 JET ROUTE J116

WASATCH, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	MEEKER, CO VOR/DME	18000	45000
MEEKER, CO VOR/DME	FALCON, CO VORTAC	20000	45000

95.7117 JET ROUTE J117

MC GRATH, AK VORTAC	GALENA, AK VOR/DME	18000	45000
GALENA, AK VOR/DME	KOTZEBUE, AK VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7118 JET ROUTE J118

MEMPHIS, TN VORTAC	CHOO CHOO, TN VORTAC	18000	45000
CHOO CHOO, TN VORTAC	SPARTANBURG, SC VORTAC	18000	45000

95.7119 JET ROUTE J119

ST PETERSBURG, FL VORTAC	TAYLOR, FL VORTAC	18000	45000

95.7120 JET ROUTE J120

MOUNT MOFFETT, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	18000	45000
ST PAUL ISLAND, AK NDB/DME	BETHEL, AK VORTAC	28000	45000
BETHEL, AK VORTAC	MC GRATH, AK VORTAC	18000	45000
MC GRATH, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	*CHATA, AK FIX	18000	45000
*7000 - MRA			
CHATA, AK FIX	FORT YUKON, AK VORTAC	18000	45000

95.7121 JET ROUTE J121

CRAIG, FL VORTAC	CHARLESTON, SC VORTAC	18000	45000
CHARLESTON, SC VORTAC	KINSTON, NC VORTAC	18000	45000
KINSTON, NC VORTAC	NORFOLK, VA VORTAC	18000	45000
NORFOLK, VA VORTAC	SNOW HILL, MD VORTAC	18000	45000
SNOW HILL, MD VORTAC	SEA ISLE, NJ VORTAC	18000	45000
SEA ISLE, NJ VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	SANDY POINT, RI VOR/DME	18000	45000
SANDY POINT, RI VOR/DME	KENNEBUNK, ME VORTAC	18000	45000

95.7122 JET ROUTE J122

FAIRBANKS, AK VORTAC	GALENA, AK VOR/DME	18000	45000
GALENA, AK VOR/DME	NOME, AK VOR/DME	18000	45000

95.7123 JET ROUTE J123

MARLO, AK FIX	KODIAK, AK VOR/DME	18000	45000
KODIAK, AK VOR/DME	KING SALMON, AK VORTAC	18000	45000
KING SALMON, AK VORTAC	BETHEL, AK VORTAC	18000	45000
BETHEL, AK VORTAC	NOME, AK VOR/DME	18000	45000
NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	18000	45000
KOTZEBUE, AK VOR/DME	BARROW, AK VOR/DME	#21000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

FROM	TO	MEA	MAA

95.7124 JET ROUTE J124

ANCHORAGE, AK VOR/DME	BIG LAKE, AK VORTAC	18000	45000
BIG LAKE, AK VORTAC	GULKANA, AK VOR/DME	18000	45000
GULKANA, AK VOR/DME	NORTHWAY, AK VORTAC	18000	45000

95.7125 JET ROUTE J125

KODIAK, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	TALKEETNA, AK VOR/DME	18000	45000
TALKEETNA, AK VOR/DME	NENANA, AK VORTAC	18000	45000

95.7126 JET ROUTE J126

LOS ANGELES, CA VORTAC	SAN MARCUS, CA VORTAC	18000	45000
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	18000	45000
SALINAS, CA VORTAC	SACRAMENTO, CA VORTAC	18000	45000
SACRAMENTO, CA VORTAC	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	ROGUE VALLEY, OR VORTAC	18000	45000
ROGUE VALLEY, OR VORTAC	EUGENE, OR VORTAC	18000	45000
EUGENE, OR VORTAC	NEWBERG, OR VOR/DME	18000	45000
NEWBERG, OR VOR/DME	OLYMPIA, WA VORTAC	18000	45000
OLYMPIA, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7127 JET ROUTE J127

KING SALMON, AK VORTAC	RINGO, AK FIX	18000	45000
RINGO, AK FIX	NONDA, AK FIX	18000	45000

95.7128 JET ROUTE J128

LOS ANGELES, CA VORTAC	RUSTT, CA FIX	18000	45000
RUSTT, CA FIX	PEACH SPRINGS, AZ VORTAC	25000	45000
PEACH SPRINGS, AZ VORTAC	TUBA CITY, AZ VORTAC	18000	45000
TUBA CITY, AZ VORTAC	BLUE MESA, CO VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	HAYES CENTER, NE VORTAC	18000	45000
HAYES CENTER, NE VORTAC	WOLBACH, NE VORTAC	18000	45000
WOLBACH, NE VORTAC	DUBUQUE, IA VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

95.7129 JET ROUTE J129

NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7130 JET ROUTE J130

MC COOK, NE VOR/DME	PAWNEE CITY, NE VORTAC	18000	41000

95.7131 JET ROUTE J131

SAN ANTONIO, TX VORTAC	EDNAS, TX FIX	18000	45000
EDNAS, TX FIX	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	TEXARKANA, AR VORTAC	18000	45000
TEXARKANA, AR VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	POCKET CITY, IN VORTAC	#18000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7132 JET ROUTE J132

ELMIRA, NY VOR/DME	HUGUENOT, NY VOR/DME	18000	45000

95.7133 JET ROUTE J133

SITKA, AK NDB	ORCA BAY, AK NDB	18000	45000
ORCA BAY, AK NDB	JOHNSTONE POINT, AK VOR/DME	18000	45000
JOHNSTONE POINT, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	GALENA, AK VOR/DME	18000	45000

95.7134 JET ROUTE J134

LOS ANGELES, CA VORTAC	SEAL BEACH, CA VORTAC	18000	45000
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	18000	45000
THERMAL, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CIMARRON, NM VORTAC	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	BUTLER, MO VORTAC	18000	45000
BUTLER, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	FALMOUTH, KY VOR/DME	18000	45000
FALMOUTH, KY VOR/DME	HENDERSON, WV VORTAC	18000	45000
HENDERSON, WV VORTAC	LINDEN, VA VORTAC	18000	45000

95.7135 JET ROUTE J135

BETHEL, AK VORTAC	UNALAKLEET, AK VOR/DME	18000	45000

95.7136 JET ROUTE J136

NEWPORT, OR VORTAC	BATTLE GROUND, WA VORTAC	18000	45000
BATTLE GROUND, WA VORTAC	YAKIMA, WA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7136 JET ROUTE J136 – CONTINUED

YAKIMA, WA VORTAC	SPOKANE, WA VORTAC	18000	45000
SPOKANE, WA VORTAC	MULLAN PASS, ID VOR/DME	18000	45000
MULLAN PASS, ID VOR/DME	HELENA, MT VORTAC	18000	45000
HELENA, MT VORTAC	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	MEDICINE BOW, WY VOR/DME	28000	45000

95.7137 JET ROUTE J137

SPINNER, IL VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	WALNUT RIDGE, AR VORTAC	18000	45000
WALNUT RIDGE, AR VORTAC	LITTLE ROCK, AR VORTAC	18000	45000

95.7138 JET ROUTE J138

FORT STOCKTON, TX VORTAC	CENTER POINT, TX VORTAC	18000	45000
CENTER POINT, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	HOBBY, TX VOR/DME	18000	45000
HOBBY, TX VOR/DME	LAKE CHARLES, LA VORTAC	18000	45000
LAKE CHARLES, LA VORTAC	SEMMES, AL VORTAC	18000	45000

95.7139 JET ROUTE J139

BETTLES, AK VOR/DME	DEADHORSE, AK VOR/DME	18000	45000

95.7140 JET ROUTE J140

FARGO, ND VORTAC	DULUTH, MN VORTAC	18000	45000
DULUTH, MN VORTAC	SAULT STE MARIE, MI VOR/DME	18000	45000

95.7141 JET ROUTE J141

EL PASO, TX VORTAC	U.S. MEXICAN BORDER	18000	45000

95.7142 JET ROUTE J142

SOCORRO, NM VORTAC	ANTON CHICO, NM VORTAC	18000	45000
ANTON CHICO, NM VORTAC	BORGER, TX VORTAC	18000	45000

95.7143 JET ROUTE J143

POINT REYES, CA VORTAC	MENDOCINO, CA VORTAC	18000	45000
MENDOCINO, CA VORTAC	ROSEBURG, OR VOR/DME	18000	45000
ROSEBURG, OR VOR/DME	EUGENE, OR VORTAC	18000	45000
EUGENE, OR VORTAC	KLICKITAT, OR VOR/DME	18000	45000
KLICKITAT, OR VOR/DME	SPOKANE, WA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7144 JET ROUTE J144

WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	DUBUQUE, IA VORTAC	18000	45000

95.7145 JET ROUTE J145

FOOTHILLS, GA VORTAC	CHARLESTON, WV VORTAC	18000	45000
CHARLESTON, WV VORTAC	ELLWOOD CITY, PA VORTAC	18000	45000

95.7146 JET ROUTE J146

LOS ANGELES, CA VORTAC	DAGGETT, CA VORTAC	18000	45000
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC	18000	45000
LAS VEGAS, NV VORTAC	NOOTN, AZ FIX	18000	45000
NOOTN, AZ FIX	DOVE CREEK, CO VORTAC	#25000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DOVE CREEK, CO VORTAC	BLUE MESA, CO VOR/DME	18000	45000
BLUE MESA, CO VOR/DME	GOODLAND, KS VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
GOODLAND, KS VORTAC	LINCOLN, NE VORTAC	18000	45000
LINCOLN, NE VORTAC	IOWA CITY, IA VORTAC	18000	45000
IOWA CITY, IA VORTAC	JOLIET, IL VORTAC	18000	45000
JOLIET, IL VORTAC	GIPPER, MI VORTAC	18000	45000
GIPPER, MI VORTAC	CHARDON, OH VOR/DME	18000	45000
CHARDON, OH VOR/DME	KEATING, PA VORTAC	18000	45000
KEATING, PA VORTAC	MILTON, PA VORTAC	18000	45000
MILTON, PA VORTAC	ALLENTOWN, PA VORTAC	18000	45000
ALLENTOWN, PA VORTAC	KENNEDY, NY VOR/DME	18000	45000
#ALLENTOWN R-104 UNUSABLE. USE KENNEDY R-287.			

95.7147 JET ROUTE J147

BECKLEY, WV VORTAC	GREENBRIER, WV VOR/DME	18000	45000
GREENBRIER, WV VOR/DME	CASANOVA, VA VORTAC	18000	45000

95.7148 JET ROUTE J148

COALDALE, NV VORTAC	DELTA, UT VORTAC	27000	45000
DELTA, UT VORTAC	MYTON, UT VOR/DME	18000	45000
MYTON, UT VOR/DME	CHEYENNE, WY VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CHEYENNE, WY VORTAC	O'NEILL, NE VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
O'NEILL, NE VORTAC	MASON CITY, IA VORTAC	18000	45000

95.7149 JET ROUTE J149

#ARMEL, VA VORTAC	EYTEE, WV FIX	#*31000	41000

*18000 - GNSS MEA
#ARMEL R-281 UNUSABLE BYD 119 NM. NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS.
GNSS REQUIRED.

FROM	TO	MEA	MAA

95.7149T ROUTE J149CONTINUED

FROM	TO	MEA	MAA
EYTEE, WV FIX	GEFFS, WV FIX	#*31000	41000
*18000 - GNSS MEA			
#GNSS REQUIRED			
GEFFS, WV FIX	HACKS, WV FIX	#*29000	41000
*18000 - GNSS MEA			
HACKS, WV FIX	ROSEWOOD, OH VORTAC	#*23000	45000
*18000 - GNSS MEA			
ROSEWOOD, OH VORTAC	FORT WAYNE, IN VORTAC	18000	45000

95.7150 JET ROUTE J150

FROM	TO	MEA	MAA
GORDONSVILLE, VA VORTAC	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	*GRACO, MD FIX	18000	35000
*10000 - MRA			
GRACO, MD FIX	WOODSTOWN, NJ VORTAC	18000	45000
WOODSTOWN, NJ VORTAC	COYLE, NJ VORTAC	18000	45000
COYLE, NJ VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	MARCONI, MA VOR/DME	18000	45000
MARCONI, MA VOR/DME	STOOL, MA FIX	18000	45000

95.7151 JET ROUTE J151

FROM	TO	MEA	MAA
CROSS CITY, FL VORTAC	VULCAN, AL VORTAC	26000	45000
VULCAN, AL VORTAC	FARMINGTON, MO VORTAC	25000	41000
FARMINGTON, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	O'NEILL, NE VORTAC	18000	45000
O'NEILL, NE VORTAC	RAPID CITY, SD VORTAC	18000	45000
RAPID CITY, SD VORTAC	BILLINGS, MT VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BILLINGS, MT VORTAC	WHITEHALL, MT VOR/DME	18000	45000

95.7152 JET ROUTE J152

FROM	TO	MEA	MAA
ROSEWOOD, OH VORTAC	JOHNSTOWN, PA VORTAC	18000	45000
JOHNSTOWN, PA VORTAC	HARRISBURG, PA VORTAC	18000	40000

95.7153 JET ROUTE J153

FROM	TO	MEA	MAA
ROME, OR VOR/DME	BAKER CITY, OR VOR/DME	18000	45000
BAKER CITY, OR VOR/DME	SPOKANE, WA VORTAC	18000	45000

95.7154 JET ROUTE J154

FROM	TO	MEA	MAA
BATTLE MOUNTAIN, NV VORTAC	BONNEVILLE, UT VORTAC	18000	45000
BONNEVILLE, UT VORTAC	WASATCH, UT VORTAC	18000	45000
WASATCH, UT VORTAC	ROCK SPRINGS, WY VOR/DME	18000	45000
ROCK SPRINGS, WY VOR/DME	MILE HIGH, CO VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MILE HIGH, CO VORTAC	GARDEN CITY, KS VORTAC	21000	45000

FROM	TO	MEA	MAA

95.7155 JET ROUTE J155

CHANDALAR LAKE, AK NDB	NENANA, AK VORTAC	18000	45000

95.7156 JET ROUTE J156

WILSON CREEK, NV VORTAC	MEEKER, CO VOR/DME	#18000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7157 JET ROUTE J157

MYTON, UT VOR/DME	LARAMIE, WY VOR/DME	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
LARAMIE, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	18000	45000
SCOTTSBLUFF, NE VORTAC	RAPID CITY, SD VORTAC	18000	45000

95.7158 JET ROUTE J158

MINA, NV VORTAC	LUCIN, UT VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
LUCIN, UT VORTAC	MALAD CITY, ID VOR/DME	18000	45000
MALAD CITY, ID VOR/DME	BIG PINEY, WY VOR/DME	18000	45000
BIG PINEY, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	RAPID CITY, SD VORTAC	18000	45000
RAPID CITY, SD VORTAC	ABERDEEN, SD VOR/DME	18000	45000

95.7159 JET ROUTE J159

BATTLE GROUND, WA VORTAC	DESCHUTES, OR VORTAC	18000	45000

95.7160 JET ROUTE J160

FAIRBANKS, AK VORTAC	FORT YUKON, AK VORTAC	18000	45000
FORT YUKON, AK VORTAC	ADREW, AK FIX	18000	45000

95.7161 JET ROUTE J161

ZUNI, NM VORTAC	RATTLESNAKE, NM VORTAC	18000	45000

95.7162 JET ROUTE J162

DRYER, OH VOR/DME	BELLAIRE, OH VOR/DME	18000	45000
BELLAIRE, OH VOR/DME	MORGANTOWN, WV VORTAC	18000	45000
MORGANTOWN, WV VORTAC	MARTINSBURG, WV VORTAC	18000	29000

95.7163 JET ROUTE J163

BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7163T ROUTE J163CONTINUED

POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	21000	45000
ROCK SPRINGS, WY VOR/DME	HAYDEN, CO VOR/DME	18000	45000

95.7165 JET ROUTE J165

CHARLESTON, SC VORTAC	RICHMOND, VA VORTAC	#18000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7166 JET ROUTE J166

SAN SIMON, AZ VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	18000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	CHISUM, NM VORTAC	24000	45000
CHISUM, NM VORTAC	WICHITA FALLS, TX VORTAC	#18000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7167 JET ROUTE J167

JOHNSTONE POINT, AK VOR/DME	GULKANA, AK VOR/DME	18000	45000
GULKANA, AK VOR/DME	BIG DELTA, AK VORTAC	18000	45000
BIG DELTA, AK VORTAC	FORT YUKON, AK VORTAC	18000	45000
FORT YUKON, AK VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7168 JET ROUTE J168

WICHITA FALLS, TX VORTAC	LAMAR, CO VOR/DME	#22000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7169 JET ROUTE J169

LOS ANGELES, CA VORTAC	SEAL BEACH, CA VORTAC	18000	45000
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	18000	45000
THERMAL, CA VORTAC	BLYTHE, CA VORTAC	18000	45000
BLYTHE, CA VORTAC	STANFIELD, AZ VORTAC	18000	45000

95.7170 JET ROUTE J170

CRAZY WOMAN, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	MEDICINE BOW, WY VOR/DME	18000	45000

95.7171 JET ROUTE J171

TOBE, CO VOR/DME	HUGO, CO VOR/DME	18000	45000

95.7173 JET ROUTE J173

WASATCH, UT VORTAC	MEEKER, CO VOR/DME	18000	45000**95.7174**

FROM	TO	MEA	MAA

JET ROUTE J174

CRAIG, FL VORTAC	CHARLESTON, SC VORTAC	18000	45000
CHARLESTON, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000
WILMINGTON, NC VORTAC	DIXON, NC NDB/DME	18000	45000
DIXON, NC NDB/DME	NORFOLK, VA VORTAC	18000	45000
NORFOLK, VA VORTAC	SNOW HILL, MD VORTAC	18000	45000
SNOW HILL, MD VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	MARCONI, MA VOR/DME	18000	45000
MARCONI, MA VOR/DME	HERIN, MA FIX	18000	45000

95.7175 JET ROUTE J175

CHEYENNE, WY VORTAC	LARAMIE, WY VOR/DME	18000	45000
LARAMIE, WY VOR/DME	DUBOIS, ID VORTAC	#29000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7177 JET ROUTE J177

HUMBLE, TX VORTAC	HOBBY, TX VOR/DME	18000	45000
HOBBY, TX VOR/DME	PALACIOS, TX VORTAC	18000	45000
PALACIOS, TX VORTAC	U.S. MEXICAN BORDER	31000	45000

95.7178 JET ROUTE J178

FORT WAYNE, IN VORTAC	APPLETON, OH VORTAC	18000	45000

95.7179 JET ROUTE J179

MIDDLETON ISLAND, AK VOR/DME	KENAI, AK VOR/DME	18000	45000
KENAI, AK VOR/DME	SPARREVOHN, AK VOR/DME	18000	45000
SPARREVOHN, AK VOR/DME	ANIAK, AK NDB	18000	45000
ANIAK, AK NDB	ST MARYS, AK NDB	18000	45000
ST MARYS, AK NDB	EMMONAK, AK VOR/DME	18000	45000

95.7180 JET ROUTE J180

HUMBLE, TX VORTAC	DAISETTA, TX VORTAC	18000	45000
DAISETTA, TX VORTAC	CIDOR, LA FIX	18000	45000
CIDOR, LA FIX	FOSIN, LA FIX	19000	45000
FOSIN, LA FIX	SAWMILL, LA VOR/DME	18000	45000
SAWMILL, LA VOR/DME	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	FORISTELL, MO VORTAC	18000	45000

95.7181 JET ROUTE J181

RANGER, TX VORTAC	OKMULGEE, OK VOR/DME	18000	45000
OKMULGEE, OK VOR/DME	NEOSHO, MO VOR/DME	18000	45000
NEOSHO, MO VOR/DME	HALLSVILLE, MO VORTAC	18000	45000
HALLSVILLE, MO VORTAC	BAYLI, IL FIX	18000	23000
BAYLI, IL FIX	BRADFORD, IL VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7182 JET ROUTE J182

GOODLAND, KS VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	RAZORBACK, AR VORTAC	18000	45000

95.7183 JET ROUTE J183

EL PASO, TX VORTAC	PECOS, TX VOR/DME	18000	45000
PECOS, TX VOR/DME	LLANO, TX VORTAC	20000	45000
LLANO, TX VORTAC	COLLEGE STATION, TX VORTAC	18000	45000

95.7184 JET ROUTE J184

BUCKEYE, AZ VORTAC	DEMING, NM VORTAC	23000	45000
DEMING, NM VORTAC	NEWMAN, TX VORTAC	18000	45000

95.7185 JET ROUTE J185

TRAVERSE CITY, MI VORTAC	FLINT, MI VORTAC	18000	45000

95.7186 JET ROUTE J186

FOOTHILLS, GA VORTAC	SNOWBIRD, TN VORTAC	18000	45000
SNOWBIRD, TN VORTAC	APPLETON, OH VORTAC	18000	45000

95.7187 JET ROUTE J187

MEMPHIS, TN VORTAC	FORISTELL, MO VORTAC	18000	45000

95.7188 JET ROUTE J188

BETHEL, AK VORTAC	SPARREVOHN, AK VOR/DME	18000	45000

95.7189 JET ROUTE J189

AVENAL, CA VORTAC	LINDEN, CA VORTAC	18000	45000
LINDEN, CA VORTAC	KLAMATH FALLS, OR VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
KLAMATH FALLS, OR VORTAC	BATTLE GROUND, WA VORTAC	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BATTLE GROUND, WA VORTAC	SEATTLE, WA VORTAC	18000	45000

95.7190 JET ROUTE J190

CARLETON, MI VORTAC	SLATE RUN, PA VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
SLATE RUN, PA VORTAC	BINGHAMTON, NY VORTAC	18000	38000
BINGHAMTON, NY VORTAC	ROCKDALE, NY VOR/DME	18000	45000
ROCKDALE, NY VOR/DME	ALBANY, NY VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7191 JET ROUTE J191

ROBBINSVILLE, NJ VORTAC	DAVYS, NJ FIX	18000	45000
DAVYS, NJ FIX	SMYRNA, DE VORTAC	18000	33000
SMYRNA, DE VORTAC	PATUXENT, MD VORTAC	18000	45000
PATUXENT, MD VORTAC	HUBBS, VA FIX	18000	45000
HUBBS, VA FIX	HOPEWELL, VA VORTAC	18000	22000
HOPEWELL, VA VORTAC	WILMINGTON, NC VORTAC	18000	45000

95.7192 JET ROUTE J192

GOODLAND, KS VORTAC	PAWNEE CITY, NE VORTAC	18000	45000
PAWNEE CITY, NE VORTAC	IOWA CITY, IA VORTAC	18000	45000

95.7193 JET ROUTE J193

WILMINGTON, NC VORTAC	COFIELD, NC VORTAC	18000	45000
COFIELD, NC VORTAC	HARCUM, VA VORTAC	18000	29000
HARCUM, VA VORTAC	HUBBS, VA FIX	18000	28000

95.7195 JET ROUTE J195

ANNETTE ISLAND, AK VOR/DME	BIORKA ISLAND, AK VORTAC	18000	45000

95.7196 JET ROUTE J196

BRYCE CANYON, UT VORTAC	MEEKER, CO VOR/DME	33000	45000

95.7197 JET ROUTE J197

DOVE CREEK, CO VORTAC	HUGO, CO VOR/DME	33000	45000
HUGO, CO VOR/DME	GOODLAND, KS VORTAC	18000	45000
GOODLAND, KS VORTAC	WOLBACH, NE VORTAC	18000	45000
WOLBACH, NE VORTAC	SIOUX FALLS, SD VORTAC	18000	45000

95.7198 JET ROUTE J198

MINA, NV VORTAC	WILSON CREEK, NV VORTAC	18000	45000
WILSON CREEK, NV VORTAC	MEEKER, CO VOR/DME	33000	45000

95.7199 JET ROUTE J199

WILSON CREEK, NV VORTAC	DELTA, UT VORTAC	18000	45000
DELTA, UT VORTAC	MEEKER, CO VOR/DME	33000	45000

FROM	TO	MEA	MAA

95.7202 JET ROUTE J202

FAIRFIELD, UT VORTAC	ROCK SPRINGS, WY VOR/DME	20000	45000
ROCK SPRINGS, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000

95.7203 JET ROUTE J203

BILLINGS, MT VORTAC	GREAT FALLS, MT VORTAC	18000	45000

95.7204 JET ROUTE J204

DUPREE, SD VORTAC	MILES CITY, MT VOR/DME	18000	45000
MILES CITY, MT VOR/DME	HILGR, MT FIX	19000	45000
HILGR, MT FIX	GREAT FALLS, MT VORTAC	18000	45000

95.7206 JET ROUTE J206

ALAMOSA, CO VORTAC	BLUE MESA, CO VOR/DME	18000	45000
BLUE MESA, CO VOR/DME	RED TABLE, CO VOR/DME	18000	45000
RED TABLE, CO VOR/DME	ROCK SPRINGS, WY VOR/DME	18000	45000

95.7207 JET ROUTE J207

SAVANNAH, GA VORTAC	FLORENCE, SC VORTAC	24000	45000
FLORENCE, SC VORTAC	RALEIGH/DURHAM, NC VORTAC	31000	45000
RALEIGH/DURHAM, NC VORTAC	FRANKLIN, VA VORTAC	18000	45000

95.7208 JET ROUTE J208

ATHENS, GA VORTAC	LIBERTY, NC VORTAC	18000	45000
LIBERTY, NC VORTAC	HOPEWELL, VA VORTAC	18000	45000

95.7209 JET ROUTE J209

GREENWOOD, SC VORTAC	RALEIGH/DURHAM, NC VORTAC	18000	45000
RALEIGH/DURHAM, NC VORTAC	TAR RIVER, NC VORTAC	18000	45000
TAR RIVER, NC VORTAC	NORFOLK, VA VORTAC	18000	45000
NORFOLK, VA VORTAC	SALISBURY, MD VORTAC	18000	45000
SALISBURY, MD VORTAC	COYLE, NJ VORTAC	18000	45000
COYLE, NJ VORTAC	WHITE, NJ FIX	18000	45000

95.7210 JET ROUTE J210

DUNKN, GA FIX	VANCE, SC VORTAC	18000	45000
VANCE, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7211 JET ROUTE J211

YOUNGSTOWN, OH VORTAC	JOHNSTOWN, PA VORTAC	18000	
#YOUNGSTOWN R-130 UNUSABLE ABOVE 24000.			
JOHNSTOWN, PA VORTAC	WESTMINSTER, MD VORTAC	18000	45000

95.7212 JET ROUTE J212

STANFIELD, AZ VORTAC	BUCKEYE, AZ VORTAC	18000	45000
BUCKEYE, AZ VORTAC	PALM SPRINGS, CA VORTAC	26000	45000

95.7213 JET ROUTE J213

ARMEL, VA VORTAC	#BECKLEY, WV VORTAC	#*18000	45000
*18000 - GNSS MEA			
#BECKLEY R-072 UNUSABLE.			

95.7217 JET ROUTE J217

HANCOCK, NY VOR/DME	KEATING, PA VORTAC	18000	45000

95.7220 JET ROUTE J220

ARMEL, VA VORTAC	STONYFORK, PA VOR/DME	18000	23000
STONYFORK, PA VOR/DME	WELLSVILLE, NY VORTAC	18000	45000
WELLSVILLE, NY VORTAC	BUFFALO, NY VOR/DME	18000	39000

95.7222 JET ROUTE J222

ROBBINSVILLE, NJ VORTAC	KENNEDY, NY VOR/DME	18000	45000
KENNEDY, NY VOR/DME	CAMBRIDGE, NY VOR/DME	18000	31000
CAMBRIDGE, NY VOR/DME	PLATTSBURGH, NY VORTAC	18000	45000

95.7223 JET ROUTE J223

LA GUARDIA, NY VOR/DME	CORDS, PA FIX	18000	25000

95.7225 JET ROUTE J225

CEDAR LAKE, NJ VORTAC	KENNEDY, NY VOR/DME	18000	33000
KENNEDY, NY VOR/DME	PROVIDENCE, RI VORTAC	18000	45000

95.7227 JET ROUTE J227

ARMEL, VA VORTAC	ELMIRA, NY VOR/DME	18000	23000

95.7230 JET ROUTE J230

FROM	TO	MEA	MAA
ROBBINSVILLE, NJ VORTAC	LARRI, PA FIX	18000	45000
LARRI, PA FIX	VINSE, PA FIX	26000	45000
VINSE, PA FIX	BELLAIRE, OH VOR/DME	18000	45000

95.7231 JET ROUTE J231

FROM	TO	MEA	MAA
TWENTYNINE PALMS, CA VORTAC	HIPPI, AZ FIX	23000	40000
HIPPI, AZ FIX	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	ANTON CHICO, NM VORTAC	18000	45000
ANTON CHICO, NM VORTAC	LIBERAL, KS VORTAC	18000	45000

95.7232 JET ROUTE J232

FROM	TO	MEA	MAA
MOLINE, IL VORTAC	KIRKSVILLE, MO VORTAC	18000	35000

95.7233 JET ROUTE J233

FROM	TO	MEA	MAA
WATERLOO, IA VORTAC	ST LOUIS, MO VORTAC	18000	45000

95.7236 JET ROUTE J236

FROM	TO	MEA	MAA
THERMAL, CA VORTAC	NEEDLES, CA VORTAC	18000	45000
NEEDLES, CA VORTAC	TUBA CITY, AZ VORTAC	18000	45000

95.7239 JET ROUTE J239

FROM	TO	MEA	MAA
ATLANTA, GA VORTAC	MERIDIAN, MS VORTAC	24000	45000

95.7240 JET ROUTE J240

FROM	TO	MEA	MAA
MYTON, UT VOR/DME	BLUE MESA, CO VOR/DME	19000	45000

95.7244 JET ROUTE J244

FROM	TO	MEA	MAA
FORT UNION, NM VORTAC	ZUNI, NM VORTAC	21000	45000
ZUNI, NM VORTAC	PHOENIX, AZ VORTAC	19000	45000

95.7477 JET ROUTE J477

FROM	TO	MEA	MAA
GLASGOW, MT VOR/DME	U.S. CANADIAN BORDER	18000	45000

FROM	TO	MEA	MAA

95.7478 JET ROUTE J478

GLASGOW, MT VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7483 JET ROUTE J483

MINOT, ND VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7488 JET ROUTE J488

WATERTOWN, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7500 JET ROUTE J500

U.S. CANADIAN BORDER	SAULT STE MARIE, MI VOR/DME	18000	45000
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	MILLINOCKET, ME VOR/DME	18000	45000
MILLINOCKET, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7501 JET ROUTE J501

SAN MARCUS, CA VORTAC	BIG SUR, CA VORTAC	18000	45000
BIG SUR, CA VORTAC	POINT REYES, CA VORTAC	18000	45000
POINT REYES, CA VORTAC	ROGUE VALLEY, OR VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROGUE VALLEY, OR VORTAC	HOQUIAM, WA VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
HOQUIAM, WA VORTAC	TATOOSH, WA VORTAC	18000	45000
TATOOSH, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	BIORKA ISLAND, AK VORTAC	18000	45000
BIORKA ISLAND, AK VORTAC	YAKUTAT, AK VOR/DME	18000	45000
YAKUTAT, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	18000	45000
JOHNSTONE POINT, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	SPARREVOHN, AK VOR/DME	18000	45000
SPARREVOHN, AK VOR/DME	VIDDA, AK FIX	18000	45000
VIDDA, AK FIX	BETHEL, AK VORTAC	18000	45000

95.7502 JET ROUTE J502

SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	18000	45000
ANNETTE ISLAND, AK VOR/DME	LEVEL ISLAND, AK VOR/DME	18000	45000
LEVEL ISLAND, AK VOR/DME	SISTERS ISLAND, AK VORTAC	18000	45000
SISTERS ISLAND, AK VORTAC	BURWASH, CANADA NDB	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
BURWASH, CANADA NDB	NORTHWAY, AK VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
NORTHWAY, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	KOTZEBUE, AK VOR/DME	#27000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

FROM	TO	MEA	MAA

95.7503 JET ROUTE J503

SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7505 JET ROUTE J505

SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	#24000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7506 JET ROUTE J506

MILLINOCKET, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7507 JET ROUTE J507

DEADHORSE, AK VOR/DME	FORT YUKON, AK VORTAC	18000	45000
FORT YUKON, AK VORTAC	NORTHWAY, AK VORTAC	18000	45000
NORTHWAY, AK VORTAC	U.S. CANADIAN BORDER	#21000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
U.S. CANADIAN BORDER	YAKUTAT, AK VOR/DME	22000	45000

95.7509 JET ROUTE J509

U.S. CANADIAN BORDER	HOULTON, ME VOR/DME	18000	45000
HOULTON, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7511 JET ROUTE J511

DILLINGHAM, AK VOR/DME	ANCHORAGE, AK VOR/DME	21000	45000
ANCHORAGE, AK VOR/DME	GULKANA, AK VOR/DME	18000	45000
GULKANA, AK VOR/DME	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7512 JET ROUTE J512

EMMONAK, AK VOR/DME	UNALAKLEET, AK VOR/DME	18000	45000
UNALAKLEET, AK VOR/DME	GALENA, AK VOR/DME	18000	45000

95.7513 JET ROUTE J513

THUNDER BAY, CANADA VORTAC	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
U.S. CANADIAN BORDER	SUDBURY, CANADA VOR/DME	#24000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7515 JET ROUTE J515

FROM	TO	MEA	MAA
FARGO, ND VORTAC	HUMBOLDT, MN VORTAC	18000	45000
HUMBOLDT, MN VORTAC	U.S. CANADIAN BORDER	18000	45000
WHITEHORSE, CANADA VOR/DME	NORTHWAY, AK VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
#MEA IS ESTABLISHED WITH GAP 110 NM FROM NORTHWAY, 100 NM FROM WHITEHORSE.			
NORTHWAY, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	BETTLES, AK VOR/DME	18000	45000
BETTLES, AK VOR/DME	BARROW, AK VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7516 JET ROUTE J516

FROM	TO	MEA	MAA
GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7517 JET ROUTE J517

FROM	TO	MEA	MAA
BOISE, ID VORTAC	SPOKANE, WA VORTAC	18000	45000
SPOKANE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7518 JET ROUTE J518

FROM	TO	MEA	MAA
DRYER, OH VOR/DME	INDIAN HEAD, PA VORTAC	18000	45000
INDIAN HEAD, PA VORTAC	BALTIMORE, MD VORTAC	18000	35000

95.7522 JET ROUTE J522

FROM	TO	MEA	MAA
BRAINERD, MN VORTAC	GREEN BAY, WI VORTAC	18000	45000
GREEN BAY, WI VORTAC	TRAVERSE CITY, MI VORTAC	18000	45000
TRAVERSE CITY, MI VORTAC	AU SABLE, MI VOR/DME	18000	45000
AU SABLE, MI VOR/DME	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	ROCHESTER, NY VOR/DME	18000	35000
#GNSS REQUIRED ABOVE FL350.			
ROCHESTER, NY VOR/DME	HANCOCK, NY VOR/DME	18000	45000
HANCOCK, NY VOR/DME	KINGSTON, NY VOR/DME	18000	45000

95.7523 JET ROUTE J523

FROM	TO	MEA	MAA
BRYCE CANYON, UT VORTAC	ELY, NV VOR/DME	18000	45000
ELY, NV VOR/DME	ROME, OR VOR/DME	29000	45000
ROME, OR VOR/DME	KIMBERLY, OR VORTAC	18000	45000
KIMBERLY, OR VORTAC	KLICKITAT, OR VOR/DME	18000	45000
KLICKITAT, OR VOR/DME	SEATTLE, WA VORTAC	18000	45000
SEATTLE, WA VORTAC	TATOOSH, WA VORTAC	18000	45000
TATOOSH, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7524 JET ROUTE J524

BUGSY, NY FIX	U.S. CANADIAN BORDER	18000	45000

95.7526 JET ROUTE J526

BECKLEY, WV VORTAC	LOUISVILLE, KY VORTAC	18000	45000

95.7528 JET ROUTE J528

WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7530 JET ROUTE J530

GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7531 JET ROUTE J531

BUFFALO, NY VOR/DME	SAULT STE MARIE, MI VOR/DME	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

95.7533 JET ROUTE J533

DULUTH, MN VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7534 JET ROUTE J534

IWACK, WA FIX	WHATCOM, WA VORTAC	18000	45000
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7536 JET ROUTE J536

SISTERS ISLAND, AK VORTAC	U.S. CANADIAN BORDER	#18000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7537 JET ROUTE J537

ROME, OR VOR/DME	MULLAN PASS, ID VOR/DME	20000	45000
#MULLAN PASS, ID VOR/DME	U.S. CANADIAN BORDER	*18000	45000

*GNSS MEA, GNSS REQUIRED
#MULLAN PASS R-357 UNUSABLE

95.7538 JET ROUTE J538

U.S. CANADIAN BORDER	DULUTH, MN VORTAC	18000	45000
DULUTH, MN VORTAC	DELLS, WI VORTAC	18000	45000
DELLS, WI VORTAC	BADGER, WI VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7539 JET ROUTE J539

GLASGOW, MT VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7540 JET ROUTE J540

MULLAN PASS, ID VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7541 JET ROUTE J541

YAKUTAT, AK VOR/DME	SISTERS ISLAND, AK VORTAC	18000	45000

95.7545 JET ROUTE J545

DRYER, OH VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7546 JET ROUTE J546

PECK, MI VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7547 JET ROUTE J547

NORTHBROOK, IL VOR/DME	PULLMAN, MI VOR/DME	18000	45000
PULLMAN, MI VOR/DME	FLINT, MI VORTAC	18000	45000
FLINT, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	18000	45000
BUFFALO, NY VOR/DME	SYRACUSE, NY VORTAC	18000	45000
SYRACUSE, NY VORTAC	CAMBRIDGE, NY VOR/DME	18000	45000
CAMBRIDGE, NY VOR/DME	KENNEBUNK, ME VORTAC	18000	45000

95.7548 JET ROUTE J548

PULLMAN, MI VOR/DME	TRAVERSE CITY, MI VORTAC	18000	45000
TRAVERSE CITY, MI VORTAC	SAULT STE MARIE, MI VOR/DME	18000	45000
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7549 JET ROUTE J549

WILLISTON, ND VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7551 JET ROUTE J551

PECK, MI VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7552 JET ROUTE J552

SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	18000	45000

FROM	TO	MEA	MAA

95.7553 JET ROUTE J553

PECK, MI VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7554 JET ROUTE J554

GIPPER, MI VORTAC	CARLETON, MI VORTAC	18000	45000
CARLETON, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	JAMESTOWN, NY VOR/DME	18000	45000

95.7559 JET ROUTE J559

SYRACUSE, NY VORTAC	WATERTOWN, NY VORTAC	18000	45000
WATERTOWN, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7560 JET ROUTE J560

PLATTSBURGH, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7561 JET ROUTE J561

PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7562 JET ROUTE J562

DICKINSON, ND VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7563 JET ROUTE J563

ALBANY, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7564 JET ROUTE J564

U.S. CANADIAN BORDER	PRESQUE ISLE, ME VOR/DME	18000	45000

95.7566 JET ROUTE J566

MESSENA, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7567 JET ROUTE J567

PLATTSBURGH, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7569 JET ROUTE J569

GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	18000	45000

FROM	TO	MEA	MAA

95.7570 JET ROUTE J570

ALBANY, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7573 JET ROUTE J573

KENNEBUNK, ME VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7575 JET ROUTE J575

BOSTON, MA VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7581 JET ROUTE J581

PUTNAM, CT VOR/DME	KENNEBUNK, ME VORTAC	18000	45000
KENNEBUNK, ME VORTAC	BANGOR, ME VORTAC	18000	45000
BANGOR, ME VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7582 JET ROUTE J582

PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7584 JET ROUTE J584

NORTHBROOK, IL VOR/DME	CARLETON, MI VORTAC	18000	45000
CARLETON, MI VORTAC	SLATE RUN, PA VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
SLATE RUN, PA VORTAC	WILLIAMSPORT, PA VOR/DME	18000	33000
WILLIAMSPORT, PA VOR/DME	BROADWAY, NJ VOR/DME	18000	31000

95.7585 JET ROUTE J585

NANTUCKET, MA VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7586 JET ROUTE J586

CARLETON, MI VORTAC	MASSENA, NY VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
MASSENA, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7587 JET ROUTE J587

THUNDER BAY, CANADA VORTAC	WAWA, CANADA VOR/DME	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7588 JET ROUTE J588

SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	25000	45000

95.7589 JET ROUTE J589

ROSEBURG, OR VOR/DME	CORVALLIS, OR VOR/DME	18000	45000
CORVALLIS, OR VOR/DME	U.S. CANADIAN BORDER	28000	45000

FROM	TO	MEA	MAA

95.7590 JET ROUTE J590

LAKE CHARLES, LA VORTAC	GREENE COUNTY, MS VORTAC	18000	45000
GREENE COUNTY, MS VORTAC	MONTGOMERY, AL VORTAC	18000	45000

95.7591 JET ROUTE J591

WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7594 JET ROUTE J594

MASSENA, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7595 JET ROUTE J595

U.S. CANADIAN BORDER	WATERTOWN, NY VORTAC	18000	45000
WATERTOWN, NY VORTAC	PLATTSBURGH, NY VORTAC	18000	45000
PLATTSBURGH, NY VORTAC	BANGOR, ME VORTAC	18000	45000
BANGOR, ME VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7599 JET ROUTE J599

MULLAN PASS, ID VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7603 JET ROUTE J603

ELFEE, AK NDB	DILLINGHAM, AK VOR/DME	18000	45000

95.7604 JET ROUTE J604

BORLAND, AK NDB/DME	WOODY ISLAND, AK NDB	18000	45000

95.7605 JET ROUTE J605

BIORKA ISLAND, AK VORTAC	MIDDLETON ISLAND, AK VOR/DME	23000	45000

95.7606 JET ROUTE J606

ST PAUL ISLAND, AK NDB/DME	CHINOOK, AK NDB	18000	45000

95.7614 JET ROUTE J614

SARASOTA, FL VORTAC	LEE COUNTY, FL VORTAC	18000	45000
LEE COUNTY, FL VORTAC	DOLPHIN, FL VORTAC	18000	45000

95.7616 JET ROUTE J616

SARASOTA, FL VORTAC	LA BELLE, FL VORTAC	18000	45000
LA BELLE, FL VORTAC	DOLPHIN, FL VORTAC	18000	45000

95.7617 JET ROUTE J617

HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7618 JET ROUTE J618

MOUNT MOFFETT, AK NDB/DME	ELFEE, AK NDB	18000	45000

95.7619 JET ROUTE J619

CAPE NEWENHAM, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	18000	45000

95.7623 JET ROUTE J623

PORT HEIDEN, AK NDB/DME	COLD BAY, AK VORTAC	18000	45000
COLD BAY, AK VORTAC	ST PAUL ISLAND, AK NDB/DME	18000	45000

95.7713 JET ROUTE J713

BILLINGS, MT VORTAC	BOYSEN RESERVOIR, WY VOR/DME	18000	45000
BOYSEN RESERVOIR, WY VOR/DME	BIG PINEY, WY VOR/DME	18000	45000
BIG PINEY, WY VOR/DME	WASATCH, UT VORTAC	26000	45000
WASATCH, UT VORTAC		26000	45000

&95.8003 VOR FEDERAL AIRWAYS CHANGEOVER POINTS

V1

CRAIG, FL VORTAC	CHARLESTON, SC VORTAC	96	CRAIG
CAPE CHARLES, VA VORTAC	WATERLOO, DE VOR/DME	31	CAPE CHARLES

V2

SPOKANE, WA VORTAC	MULLAN PASS, ID VOR/DME	32	SPOKANE
MISSOULA, MT VOR/DME	HELENA, MT VORTAC	35	MISSOULA
MILES CITY, MT VOR/DME	DICKINSON, ND VORTAC	60	MILES CITY
GOPHER, MN VORTAC	NODINE, MN VORTAC	50	GOPHER
BADGER, WI VORTAC	MUSKEGON, MI VORTAC	58	BADGER
BUFFALO, NY VOR/DME	ROCHESTER, NY VOR/DME	45	BUFFALO
ROCHESTER, NY VOR/DME	ROCHESTER, NY VOR/DME	13	ROCHESTER

V3

VERO BEACH, FL VORTAC	ORMOND BEACH, FL VORTAC	55	VERO BEACH
VANCE, SC VORTAC	FLORENCE, SC VORTAC	21	VANCE
FLORENCE, SC VORTAC	SANDHILLS, NC VORTAC	20	FLORENCE
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	10	SANDHILLS

V4

YAKIMA, WA VORTAC	PENDLETON, OR VORTAC	26	YAKIMA
BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	25	BAKER CITY
LEXINGTON, KY VORTAC	NEWCOMBE, KY VORTAC	37	LEXINGTON
CHARLESTON, WV VORTAC	ELKINS, WV VORTAC	27	CHARLESTON

V5

DUBLIN, GA VORTAC	ATHENS, GA VORTAC	47	DUBLIN
CINCINNATI, KY VORTAC	APPLETON, OH VORTAC	64	CINCINNATI
APPLETON, OH VORTAC	MANSFIELD, OH VORTAC	28	APPLETON
DRYER, OH VOR/DME	LONDON, CA VORTAC	55	DRYER

V6

OAKLAND, CA VORTAC	SACRAMENTO, CA VORTAC	34	OAKLAND
SACRAMENTO, CA VORTAC	SQUAW VALLEY, CA VOR/DME	40	SACRAMENTO
OGDEN, UT VORTAC	FORT BRIDGER, WY VOR/DME	25	OGDEN
GRAND ISLAND, NE VORTAC	OMAHA, IA VORTAC	52	GRAND ISLAND
DRYER, OH VOR/DME	YOUNGSTOWN, OH VORTAC	39	DRYER
YOUNGSTOWN, OH VORTAC	CLARION, PA VOR/DME	20	YOUNGSTOWN

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

V7

SEMINOLE, FL VORTAC	WIREGRASS, AL VORTAC	53	SEMINOLE

V8

SEAL BEACH, CA VORTAC	PARADISE, CA VORTAC	13	SEAL BEACH
PARADISE, CA VORTAC	HECTOR, CA VORTAC	44	PARADISE
HECTOR, CA VORTAC	GOFFS, CA VORTAC	38	HECTOR
HANKSVILLE, UT VORTAC	GRAND JUNCTION, CO VOR/DME	40	HANKSVILLE
GRAND JUNCTION, CO VOR/DME	RIFLE, CO VOR/DME	37	GRAND JUNCTION
RIFLE, CO VOR/DME	KREMMLING, CO VOR/DME	20	RIFLE
GRAND ISLAND, NE VORTAC	OMAHA, IA VORTAC	52	GRAND ISLAND
BELLAIRE, OH VOR/DME	GRANTSVILLE, MD VOR/DME	39	BELLAIRE
MARTINSBURG, WV VORTAC	WASHINGTON, DC VOR/DME	29	MARTINSBURG

V10

EMPORIA, KS VORTAC	JOHNSON COUNTY, KS VOR/DME	49	EMPORIA
YOUNGSTOWN, OH VORTAC	REVLOC, PA VOR/DME	37	YOUNGSTOWN

V12

PALMDALE, CA VORTAC	HECTOR, CA VORTAC	60	PALMDALE
HECTOR, CA VORTAC	NEEDLES, CA VORTAC	41	HECTOR
DRAKE, AZ VORTAC	WINSLOW, AZ VORTAC	39	DRAKE
ALBUQUERQUE, NM VORTAC	OTTO, NM VOR 23		ALBUQUERQUE
ANTON CHICO, NM VORTAC	TUCUMCARI, NM VORTAC	30	ANTON CHICO
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	46	PANHANDLE
EMPORIA, KS VORTAC	JOHNSON COUNTY, KS VOR/DME	49	EMPORIA
BIBLE GROVE, IL VORTAC	SHELBYVILLE, IN VORTAC	70	BIBLE GROVE
DAYTON, OH VOR/DME	APPLETON, OH VORTAC	41	DAYTON
APPLETON, OH VORTAC	NEWCOMERSTOWN, OH VOR/DME	26	APPLETON
JOHNSTOWN, PA VORTAC	HARRISBURG, PA VORTAC	62	JOHNSTOWN

V13

LUFKIN, TX VORTAC	BELCHER, LA VORTAC	64	LUFKIN
NAPOLEON, MO VORTAC	LAMONI, IA VORTAC	40	NAPOLEON

V14

MUNCIE, IN VOR/DME	FLAG CITY, OH VORTAC	44	MUNCIE

V15

HOBBY, TX VOR/DME	NAVASOTA, TX VORTAC	38	HOBBY
CEDAR CREEK, TX VORTAC	BONHAM, TX VORTAC	20	CEDAR CREEK

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
V16			
LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	25	LOS ANGELES
PARADISE, CA VORTAC	PALM SPRINGS, CA VORTAC	34	PARADISE
BLYTHE, CA VORTAC	BUCKEYE, AZ VORTAC	44	BLYTHE
COCHISE, AZ VORTAC	COLUMBUS, NM VOR/DME	50	COCHISE
SALT FLAT, TX VORTAC	WINK, TX VORTAC	42	SALT FLAT
TEXARKANA, AR VORTAC	PINE BLUFF, AR VOR/DME	62	TEXARKANA
JACKS CREEK, TN VOR/DME	SHELBYVILLE, TN VOR/DME	50	JACKS CREEK
VOLUNTEER, TN VORTAC	HOLSTON MOUNTAIN, TN VORTAC	38	VOLUNTEER
V20			
PALACIOS, TX VORTAC	HOBBY, TX VOR/DME	41	PALACIOS
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	30	MONTGOMERY
ATHENS, GA VORTAC	ELECTRIC CITY, SC VORTAC	20	ATHENS
V21			
SEAL BEACH, CA VORTAC	PARADISE, CA VORTAC	13	SEAL BEACH
PARADISE, CA VORTAC	HECTOR, CA VORTAC	44	PARADISE
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC	23	HECTOR
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	46	DUBOIS
V23			
LOS ANGELES, CA VORTAC	GORMAN, CA VORTAC	36	LOS ANGELES
GORMAN, CA VORTAC	SHAFTER, CA VORTAC	10	GORMAN
SHAFTER, CA VORTAC	CLOVIS, CA VORTAC	49	SHAFTER
CLOVIS, CA VORTAC	LINDEN, CA VORTAC	42	CLOVIS
RED BLUFF, CA VORTAC	FORT JONES, CA VOR/DME	53	RED BLUFF
ROGUE VALLEY, OR VORTAC	EUGENE, OR VORTAC	40	ROGUE VALLEY
EUGENE, OR VORTAC	BATTLE GROUND, WA VORTAC	57	EUGENE
WHATCOM, WA VORTAC	VANCOUVER, CA VOR/DME	10	WHATCOM
V25			
MISSION BAY, CA VORTAC	LOS ANGELES, CA VORTAC	40	MISSION BAY
KLAMATH FALLS, OR VORTAC	DESCHUTES, OR VORTAC	23	KLAMATH FALLS
V26			
MEEKER, CO VOR/DME	CHEROKEE, WY VOR/DME	35	MEEKER
MUDDY MOUNTAIN, WY VOR/DME	RAPID CITY, SD VORTAC	92	MUDDY MOUNTAIN
EAU CLAIRE, WI VORTAC	WAUSAU, WI VORTAC	71	EAU CLAIRE

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V27		
GAVIOTA, CA VORTAC	MORRO BAY, CA VORTAC	20	GAVIOTA
MENDOCINO, CA VORTAC	FORTUNA, CA VORTAC	67	MENDOCINO
FORTUNA, CA VORTAC	CRESCENT CITY, CA VORTAC	30	FORTUNA
NEWPORT, OR VORTAC	ASTORIA, OR VOR/DME	66	NEWPORT
	V30		
SELINSGROVE, PA VORTAC	EAST TEXAS, PA VOR/DME	20	SELINSGROVE
	V31		
HARRISBURG, PA VORTAC	SELINSGROVE, PA VORTAC	19	HARRISBURG
	V32		
BATTLE MOUNTAIN, NV VORTAC	BULLION, NV VOR/DME	24	BATTLE MOUNTAIN
BULLION, NV VOR/DME	BONNEVILLE, UT VORTAC	40	BULLION
WASATCH, UT VORTAC	FORT BRIDGER, WY VOR/DME	17	WASATCH
	V33		
HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	35	HARRISBURG
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	30	KEATING
	V35		
PHILIPSBURG, PA VORTAC	STONYFORK, PA VOR/DME	25	PHILIPSBURG
	V37		
SAVANNAH, GA VORTAC	ALLENDALE, SC VOR	36	SAVANNAH
CHARLOTTE, NC VOR/DME	PULASKI, VA VORTAC	74	CHARLOTTE
	V38		
ELKINS, WV VORTAC	GORDONSVILLE, VA VORTAC	46	ELKINS
	V44		
MORGANTOWN, WV VORTAC	MARTINSBURG, WV VORTAC	53	MORGANTOWN
	V45		
HENDERSON, WV VORTAC	APPLETON, OH VORTAC	59	HENDERSON

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V47		
PINE BLUFF, AR VOR/DME	GILMORE, AR VOR/DME	41	PINE BLUFF
POCKET CITY, IN VORTAC	NABB, IN VORTAC	53	POCKET CITY
	V51		
VERO BEACH, FL VORTAC	ORMOND BEACH, FL VORTAC	55	VERO BEACH
CRAIG, FL VORTAC	ALMA, GA VORTAC	48	CRAIG
DUBLIN, GA VORTAC	ATHENS, GA VORTAC	47	DUBLIN
NABB, IN VORTAC	SHELBYVILLE, IN VORTAC	20	NABB
SHELBYVILLE, IN VORTAC	BOILER, IN VORTAC	50	SHELBYVILLE
	V54		
CHOO CHOO, TN VORTAC	HARRIS, GA VORTAC	36	CHOO CHOO
HARRIS, GA VORTAC	SPARTANBURG, SC VORTAC	52	HARRIS
	V56		
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	30	MONTGOMERY
	V59		
BECKLEY, WV VORTAC	PARKERSBURG, WV VORTAC	46	BECKLEY
	V60		
ALBUQUERQUE, NM VORTAC	OTTO, NM VOR 23		ALBUQUERQUE
	V62		
SANTA FE, NM VORTAC	ANTON CHICO, NM VORTAC	30	SANTA FE
ANTON CHICO, NM VORTAC	TEXICO, TX VORTAC	61	ANTON CHICO
	V63		
STEVENS POINT, WI VORTAC	WAUSAU, WI VORTAC	12	STEVENS POINT
	V64		
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	59	SEAL BEACH
THERMAL, CA VORTAC	BLYTHE, CA VORTAC	29	THERMAL

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

V66

MISSION BAY, CA VORTAC	IMPERIAL, CA VORTAC	39	MISSION BAY
GILA BEND, AZ VORTAC	TUCSON, AZ VORTAC	48	GILA BEND
DOUGLAS, AZ VORTAC	COLUMBUS, NM VOR/DME	#44	DOUGLAS
#UTILIZE DEMING VORTAC 233 M RAD FROM COP TO ANIMA FIX			
MIDLAND, TX VORTAC	ABILENE, TX VORTAC	51	MIDLAND
GREENWOOD, SC VORTAC	SANDHILLS, NC VORTAC	64	GREENWOOD
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	10	SANDHILLS

V68

CORONA, NM VORTAC	CHISUM, NM VORTAC	33	CORONA
SAN ANGELO, TX VORTAC	JUNCTION, TX VORTAC	25	SAN ANGELO

V71

EL DORADO, AR VORTAC	HOT SPRINGS, AR VOR/DME	49	EL DORADO
HOT SPRINGS, AR VOR/DME	HARRISON, AR VOR/DME	47	HOT SPRINGS

V74

TULSA, OK VORTAC	FORT SMITH, AR VORTAC	48	TULSA

V77

ABILENE, TX VORTAC	WICHITA FALLS, TX VORTAC	56	ABILENE

V83

CARLSBAD, NM VORTAC	CHISUM, NM VORTAC	31	CARLSBAD
CHISUM, NM VORTAC	CORONA, NM VORTAC	48	CHISUM
CORONA, NM VORTAC	OTTO, NM VOR	20	CORONA

V86

MISSOULA, MT VOR/DME	COPPERTOWN, MT VOR/DME	35	MISSOULA
SHERIDAN, WY VOR/DME	RAPID CITY, SD VORTAC	100	SHERIDAN

V87

SAN FRANCISCO, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	19	SAN FRANCISCO

V92

BELLAIRE, OH VOR/DME	GRANTSVILLE, MD VOR/DME	39	BELLAIRE

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V94

STANFIELD, AZ VORTAC	SAN SIMON, AZ VORTAC	82	STANFIELD
DEMING, NM VORTAC	NEWMAN, TX VORTAC	35	DEMING
SALT FLAT, TX VORTAC	WINK, TX VORTAC	42	SALT FLAT
MIDLAND, TX VORTAC	TUSCOLA, TX VOR/DME	51	MIDLAND
JACKS CREEK, TN VOR/DME	BOWLING GREEN, KY VORTAC	70	JACKS CREEK

V95

WINSLOW, AZ VORTAC	RATTLESNAKE, NM VORTAC	91	WINSLOW
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	#77	BLUE MESA

#USE THE HUGO (HGO) VORTAC FROM THE COP TO THE GORJE INT

V97

ST PETERSBURG, FL VORTAC	SEMINOLE, FL VORTAC	97	ST PETERSBURG
SHELBYVILLE, IN VORTAC	BOILER, IN VORTAC	50	SHELBYVILLE
NODINE, MN VORTAC	GOPHER, MN VORTAC	60	NODINE

V101

GILL, CO VOR/DME	HAYDEN, CO VOR/DME	71	GILL
HAYDEN, CO VOR/DME	VERNAL, UT VOR/DME	56	HAYDEN
VERNAL, UT VOR/DME	WASATCH, UT VORTAC	75	VERNAL
OGDEN, UT VORTAC	BURLEY, ID VOR/DME	61	OGDEN

V102

SALT FLAT, TX VORTAC	CARLSBAD, NM VORTAC	24	SALT FLAT

V103

GREENSBORO, NC VORTAC	ROANOKE, VA VORTAC	28	GREENSBORO

V104

MASSENA, NY VORTAC	PLATTSBURGH, NY VORTAC	16	MASSENA
MONTPELIER, VT VOR/DME	BERLIN, NH VOR/DME	39	MONTPELIER
BERLIN, NH VOR/DME	BANGOR, ME VORTAC	25	BERLIN

V105

DRAKE, AZ VORTAC	BOULDER CITY, NV VORTAC	55	DRAKE
BEATTY, NV VORTAC	COALDALE, NV VORTAC	34	BEATTY
COALDALE, NV VORTAC	MUSTANG, NV VORTAC	55	COALDALE

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V107		
FILLMORE, CA VORTAC	AVENAL, CA VORTAC	31	FILLMORE
AVENAL, CA VORTAC	PANOCHE, CA VORTAC	45	AVENAL
	V111		
BIG SUR, CA VORTAC	SALINAS, CA VORTAC	21	BIG SUR
SALINAS, CA VORTAC	MODESTO, CA VOR/DME	22	SALINAS
	V112		
PENDLETON, OR VORTAC	SPOKANE, WA VORTAC	57	PENDLETON
	V113		
MORRO BAY, CA VORTAC	PASO ROBLES, CA VORTAC	7	MORRO BAY
MUSTANG, NV VORTAC	SOD HOUSE, NV VORTAC	48	MUSTANG
BOISE, ID VORTAC	SALMON, ID VOR/DME	45	BOISE
SALMON, ID VOR/DME	COPPERTOWN, MT VOR/DME	60	SALMON
HELENA, MT VORTAC	LEWISTOWN, MT VOR/DME	40	HELENA
	V115		
VULCAN, AL VORTAC	CHOO CHOO, TN VORTAC	59	VULCAN
HAZARD, KY VOR/DME	CHARLESTON, WV VORTAC	40	HAZARD
PARKERSBURG, WV VORTAC	NEWCOMERSTOWN, OH VOR/DME	25	PARKERSBURG
	V116		
KALAMAZOO, MI VOR/DME	JACKSON, MI VOR/DME	36	KALAMAZOO
	V119		
NEWCOMBE, KY VORTAC	HENDERSON, WV VORTAC	32	NEWCOMBE
INDIAN HEAD, PA VORTAC	PARKERSBURG, WV VORTAC	60	INDIAN HEAD
	V120		
SEATTLE, WA VORTAC	WENATCHEE, WA VOR/DME	51	SEATTLE
WENATCHEE, WA VOR/DME	EPHRATA, WA VORTAC	10	WENATCHEE
MULLAN PASS, ID VOR/DME	GREAT FALLS, MT VORTAC	80	MULLAN PASS
LEWISTOWN, MT VOR/DME	MILES CITY, MT VOR/DME	74	LEWISTOWN
MILES CITY, MT VOR/DME	DUPREE, SD VORTAC	90	MILES CITY
SIOUX FALLS, SD VORTAC	MASON CITY, IA VORTAC	82	SIOUX FALLS

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

V121

KIMBERLY, OR VORTAC	BAKER CITY, OR VOR/DME	67	KIMBERLY

V123

WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	19	WOODSTOWN

V124

PARIS, TX VOR/DME	HOT SPRINGS, AR VOR/DME	75	PARIS
HOT SPRINGS, AR VOR/DME	LITTLE ROCK, AR VORTAC	14	HOT SPRINGS

V128

SMARS, IL FIX	KANKAKEE, IL VOR/DME	#44	SMARS
#COP MEASURED FROM BDF VORTAC.			
CINCINNATI, KY VORTAC	YORK, KY VORTAC	38	CINCINNATI
YORK, KY VORTAC	CHARLESTON, WV VORTAC	29	YORK
CHARLESTON, WV VORTAC	CASANOVA, VA VORTAC	114	CHARLESTON

V133

BARRETTS MOUNTAIN, NC VOR/DME	CHARLESTON, WV VORTAC	77	BARRETTS MOUNTAIN
CHARLESTON, WV VORTAC	ZANESVILLE, OH VOR/DME	52	CHARLESTON

V134

FAIRFIELD, UT VORTAC	CARBON, UT VOR/DME	20	FAIRFIELD
GRAND JUNCTION, CO VOR/DME	RED TABLE, CO VOR/DME	#56	GRAND JUNCTION
#THE COP IS AT THE SLOLM INT.			

V135

GOFFS, CA VORTAC	BEATTY, NV VORTAC	31	GOFFS
BEATTY, NV VORTAC	COALDALE, NV VORTAC	#34	BEATTY

#COP 53 NM FROM AND UTILIZES COALDALE, NV VORTAC ON THE 129 M RAD.

V136

VOLUNTEER, TN VORTAC	SNOWBIRD, TN VORTAC	25	VOLUNTEER

V137

PALM SPRINGS, CA VORTAC	PALMDALE, CA VORTAC	30	PALM SPRINGS
GORMAN, CA VORTAC	AVENAL, CA VORTAC	31	GORMAN

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V139		
CAPE CHARLES, VA VORTAC	SNOW HILL, MD VORTAC	38	CAPE CHARLES
SNOW HILL, MD VORTAC	SEA ISLE, NJ VORTAC	25	SNOW HILL
	V140		
BLUEFIELD, WV VORTAC	MONTEBELLO, VA VOR/DME	44	BLUEFIELD
	V142		
MALAD CITY, ID VOR/DME	FORT BRIDGER, WY VOR/DME	32	MALAD CITY
	V144		
BRADFORD, IL VORTAC	KANKAKEE, IL VOR/DME	44	BRADFORD
	V146		
ALBANY, NY VORTAC	CHESTER, MA VOR/DME	8	ALBANY
	V148		
THURMAN, CO VORTAC	HAYES CENTER, NE VORTAC	65	THURMAN
GOPHER, MN VORTAC	HAYWARD, WI VOR/DME	65	GOPHER
	V153		
LAKE HENRY, PA VORTAC	GEORGETOWN, NY VORTAC	51	LAKE HENRY
	V155		
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	10	SANDHILLS
	V157		
VANCE, SC VORTAC	FLORENCE, SC VORTAC	21	VANCE
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	19	WOODSTOWN
	V159		
VERO BEACH, FL VORTAC	ORLANDO, FL VORTAC	32	VERO BEACH

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V161		
NAPOLEON, MO VORTAC	LAMONI, IA VORTAC	40	NAPOLEON
INTERNATIONAL FALLS, MN VORTAC	WINNIPEG, CA VORTAC	77	INTERNATIONAL FALLS
	V162		
ALLENTOWN, PA VORTAC	HUGUENOT, NY VOR/DME	10	ALLENTOWN
	V163		
BROWNSVILLE, TX VORTAC	CORPUS CHRISTI, TX VORTAC	71	BROWNSVILLE
	V165		
CLOVIS, CA VORTAC	MUSTANG, NV VORTAC	94	CLOVIS
MUSTANG, NV VORTAC	LAKEVIEW, OR VORTAC	70	MUSTANG
LAKEVIEW, OR VORTAC	DESCHUTES, OR VORTAC	73	LAKEVIEW
DESCHUTES, OR VORTAC	NEWBERG, OR VOR/DME	43	DESCHUTES
	V166		
WESTMINSTER, MD VORTAC	DUPONT, DE VORTAC	40	WESTMINSTER
	V170		
PULLMAN, MI VOR/DME	SALEM, MI VORTAC	61	PULLMAN
	V177		
JOLIET, IL VORTAC	JANESVILLE, WI VOR/DME	40	JOLIET
STEVENS POINT, WI VORTAC	WAUSAU, WI VORTAC	12	STEVENS POINT
WAUSAU, WI VORTAC	HAYWARD, WI VOR/DME	59	WAUSAU
HAYWARD, WI VOR/DME	DULUTH, MN VORTAC	42	HAYWARD
	V182		
NEWPORT, OR VORTAC	NEWBERG, OR VOR/DME	29	NEWPORT
KLICKITAT, OR VOR/DME	BAKER CITY, OR VOR/DME	119	KLICKITAT
	V183		
SAN MARCUS, CA VORTAC	SHAFTER, CA VORTAC	20	SAN MARCUS
	V184		
PHILIPSBURG, PA VORTAC	HARRISBURG, PA VORTAC	21	PHILIPSBURG

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V186		
VAN NUYS, CA VOR/DME	PARADISE, CA VORTAC	39	VAN NUYS
	V187		
ALBUQUERQUE, NM VORTAC	RATTLESNAKE, NM VORTAC	58	ALBUQUERQUE
RATTLESNAKE, NM VORTAC	GRAND JUNCTION, CO VOR/DME	90	RATTLESNAKE
GRAND JUNCTION, CO VOR/DME	ROCK SPRINGS, WY VOR/DME	86	GRAND JUNCTION
BOYSEN RESERVOIR, WY VOR/DME	BILLINGS, MT VORTAC	97	BOYSEN RESERVOIR
GREAT FALLS, MT VORTAC	MISSOULA, MT VOR/DME	84	GREAT FALLS
MISSOULA, MT VOR/DME	NEZ PERCE, ID VOR/DME	35	MISSOULA
	V189		
WRIGHT BROTHERS, NC VOR/DME	TAR RIVER, NC VORTAC	25	WRIGHT BROTHERS
	V190		
PHOENIX, AZ VORTAC	ST JOHNS, AZ VORTAC	67	PHOENIX
ALBUQUERQUE, NM VORTAC	FORT UNION, NM VORTAC	38	ALBUQUERQUE
	V191		
IRONWOOD, MI VORTAC	DULUTH, MN VORTAC	32	IRONWOOD
	V194		
SABINE PASS, TX VOR/DME	LAFAYETTE, LA VORTAC	50	SABINE PASS
	V198		
JUNCTION, TX VORTAC	SAN ANTONIO, TX VORTAC	51	JUNCTION
HARVEY, LA VORTAC	BROOKLEY, AL VORTAC	61	HARVEY
	V200		
MENDOCINO, CA VORTAC	WILLIAMS, CA VORTAC	22	MENDOCINO
WILLIAMS, CA VORTAC	MUSTANG, NV VORTAC	84	WILLIAMS
FAIRFIELD, UT VORTAC	MYTON, UT VOR/DME	32	FAIRFIELD
	V201		
LOS ANGELES, CA VORTAC	PALMDALE, CA VORTAC	19	LOS ANGELES

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V203

ALBANY, NY VORTAC	SARANAC LAKE, NY VOR/DME	60	ALBANY
SARANAC LAKE, NY VOR/DME	MASSENA, NY VORTAC	11	SARANAC LAKE

V204

HOQUIAM, WA VORTAC	OLYMPIA, WA VORTAC	31	HOQUIAM

V208

THERMAL, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	20	THERMAL
NEEDLES, CA VORTAC	PEACH SPRINGS, AZ VORTAC	39	NEEDLES
PEACH SPRINGS, AZ VORTAC	GRAND CANYON, AZ VOR/DME	57	PEACH SPRINGS
PAGE, AZ VOR/DME	HANKSVILLE, UT VORTAC	61	PAGE
CARBON, UT VOR/DME	MYTON, UT VOR/DME	17	CARBON
VERNAL, UT VOR/DME	CHEROKEE, WY VOR/DME	54	VERNAL

V209

SEMMES, AL VORTAC	KEWANEE, MS VORTAC	50	SEMMES

V210

POMONA, CA VORTAC	HECTOR, CA VORTAC	16	POMONA
HECTOR, CA VORTAC	GOFFS, CA VORTAC	38	HECTOR
GOFFS, CA VORTAC	PEACH SPRINGS, AZ VORTAC	42	GOFFS
PEACH SPRINGS, AZ VORTAC	GRAND CANYON, AZ VOR/DME	57	PEACH SPRINGS
ALAMOSA, CO VORTAC	LAMAR, CO VOR/DME	60	ALAMOSA

V212

LUFKIN, TX VORTAC	ALEXANDRIA, LA VORTAC	65	LUFKIN

V213

TAR RIVER, NC VORTAC	HOPEWELL, VA VORTAC	43	TAR RIVER

V214

BELLAIRE, OH VOR/DME	GRANTSVILLE, MD VOR/DME	39	BELLAIRE

V216

JANESVILLE, WI VOR/DME	MUSKEGON, MI VORTAC	92	JANESVILLE
SAGINAW, MI VOR/DME	MUSKEGON, MI VORTAC	48	SAGINAW

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V217		
RHINELANDER, WI VORTAC	DULUTH, MN VORTAC	49	RHINELANDER
	V218		
GRAND RAPIDS, MN VOR/DME	GOPHER, MN VORTAC	46	GRAND RAPIDS
KEELER, MI VOR/DME	LANSING, MI VORTAC	39	KEELER
	V219		
SIOUX CITY, IA VORTAC	FAIRMONT, MN VOR/DME	74	SIOUX CITY
	V220		
GRAND JUNCTION, CO VOR/DME	RIFLE, CO VOR/DME	#56	GRAND JUNCTION
#COP- THE COP IS AT THE SLOLM INT			
	V222		
SALT FLAT, TX VORTAC	FORT STOCKTON, TX VORTAC	52	SALT FLAT
BARRETTS MOUNTAIN, NC VOR/DME	LYNCHBURG, VA VORTAC	62	BARRETTS MOUNTAIN
	V228		
MADISON, WI VORTAC	NORTHBROOK, IL VOR/DME	56	MADISON
	V229		
BRIDGEPORT, CT VOR/DME	HARTFORD, CT VOR/DME	19	BRIDGEPORT
	V230		
SALINAS, CA VORTAC	PANOCHE, CA VORTAC	30	SALINAS
FRIANT, CA VORTAC	MINA, NV VORTAC	40	FRIANT
	V231		
MISSOULA, MT VOR/DME	KALISPELL, MT VOR/DME	29	MISSOULA
	V234		
DALHART, TX VORTAC	LIBERAL, KS VORTAC	45	DALHART

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V235		
FAIRFIELD, UT VORTAC	FORT BRIDGER, WY VOR/DME	32	FAIRFIELD
ROCK SPRINGS, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	65	ROCK SPRINGS
	V237		
NEEDLES, CA VORTAC	BOULDER CITY, NV VORTAC	60	NEEDLES
	V240		
HARVEY, LA VORTAC	BROOKLEY, AL VORTAC	61	HARVEY
	V243		
WAYCROSS, GA VORTAC	VIENNA, GA VORTAC	30	WAYCROSS
HUNTINGBURG, IN VOR/DME	TERRE HAUTE, IN VORTAC	36	HUNTINGBURG
	V244		
MANTECA, CA VOR/DME	COALDALE, NV VORTAC	96	MANTECA
COALDALE, NV VORTAC	TONOPAH, NV VORTAC	14	COALDALE
TONOPAH, NV VORTAC	WILSON CREEK, NV VORTAC	50	TONOPAH
WILSON CREEK, NV VORTAC	MILFORD, UT VORTAC	40	WILSON CREEK
MILFORD, UT VORTAC	HANKSVILLE, UT VORTAC	40	MILFORD
BLUE MESA, CO VOR/DME	PUEBLO, CO VORTAC	53	BLUE MESA
	V252		
GENESEO, NY VOR/DME	BINGHAMTON, NY VORTAC	34	GENESEO
	V253		
LUCIN, UT VORTAC	TWIN FALLS, ID VORTAC	40	LUCIN
TWIN FALLS, ID VORTAC	BOISE, ID VORTAC	48	TWIN FALLS
NEZ PERCE, ID VOR/DME	PULLMAN, WA VOR/DME	13	NEZ PERCE
	V257		
GRAND CANYON, AZ VOR/DME	BRYCE CANYON, UT VORTAC	36	GRAND CANYON
DELTA, UT VORTAC	MALAD CITY, ID VOR/DME	63	DELTA
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	46	DUBOIS
DILLON, MT VOR/DME	COPPERTOWN, MT VOR/DME	27	DILLON
	V259		
GRAND STRAND, SC VORTAC	FLORENCE, SC VORTAC	25	GRAND STRAND

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V263		
SANTA FE, NM VORTAC	FORT UNION, NM VORTAC	21	SANTA FE
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	28	FORT UNION
	V264		
LOS ANGELES, CA VORTAC	POMONA, CA VORTAC	25	LOS ANGELES
POMONA, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	37	POMONA
DRAKE, AZ VORTAC	WINSLOW, AZ VORTAC	39	DRAKE
	V265		
HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	35	HARRISBURG
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	30	KEATING
	V266		
SOUTH BOSTON, VA VORTAC	LAWRENCEVILLE, VA VORTAC	38	SOUTH BOSTON
	V267		
DUBLIN, GA VORTAC	ATHENS, GA VORTAC	47	DUBLIN
	V268		
WESTMINSTER, MD VORTAC	BALTIMORE, MD VORTAC	12	WESTMINSTER
	V269		
WELLS, NV VOR	TWIN FALLS, ID VORTAC	33	WELLS
	V270		
JAMESTOWN, NY VOR/DME	WELLSVILLE, NY VORTAC	22	JAMESTOWN
	V271		
MUSKEGON, MI VORTAC	MANISTEE, MI VOR/DME	37	MUSKEGON
	V273		
HANCOCK, NY VOR/DME	GEORGETOWN, NY VORTAC	31	HANCOCK
	V276		
TYRONE, PA VORTAC	RAVINE, PA VORTAC	31	TYRONE

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V277		
FORT WAYNE, IN VORTAC	KEELER, MI VOR/DME	38	FORT WAYNE
	V278		
GUTHRIE, TX VORTAC	BOWIE, TX VORTAC	64	GUTHRIE
	V280		
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	46	PANHANDLE
	V282		
SARANAC LAKE, NY VOR/DME	MONTREAL, CA VOR/DME	37	SARANAC LAKE
	V283		
SEAL BEACH, CA VORTAC	HOMELAND, CA VOR	24	SEAL BEACH
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC	23	HECTOR
	V285		
WHITE CLOUD, MI VOR/DME	MANISTEE, MI VOR/DME	28	WHITE CLOUD
	V286		
BROOKE, VA VORTAC	CAPE CHARLES, VA VORTAC	22	BROOKE
	V287		
BATTLE GROUND, WA VORTAC	OLYMPIA, WA VORTAC	41	BATTLE GROUND
	V290		
TAR RIVER, NC VORTAC	PAMLICO/DCMSND, NC NDB/DME	44	TAR RIVER
	V291		
ALBUQUERQUE, NM VORTAC	GALLUP, NM VORTAC	44	ALBUQUERQUE
	V293		
ELY, NV VOR/DME	BULLION, NV VOR/DME	26	ELY
BULLION, NV VOR/DME	TWIN FALLS, ID VORTAC	66	BULLION

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

V298

DONNELLY, ID VOR/DME	DUBOIS, ID VORTAC	109	DONNELLY
DUNOIR, WY VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	15	DUNOIR

V299

LOS ANGELES, CA VORTAC	VENTURA, CA VOR/DME	18	LOS ANGELES

V300

THUNDER BAY, CANADA VORTAC	SAULT STE MARIE, MI VOR/DME	142	THUNDER BAY
SHERBROOKE, CANADA VORTAC	MILLINOCKET, ME VOR/DME	61	SHERBROOKE

V306

DAISETTA, TX VORTAC	LAKE CHARLES, LA VORTAC	30	DAISETTA

V316

IRONWOOD, MI VORTAC	SAWYER, MI VOR/DME	64	IRONWOOD
SAWYER, MI VOR/DME	NEWBERRY, MI VOR/DME	50	SAWYER

V317

POGGI, CA VORTAC	IMPERIAL, CA VORTAC	25	POGGI

V319

WORLAND, WY VOR/DME	CODY, WY VOR/DME	39	WORLAND

V323

MONTGOMERY, AL VORTAC	EUFAULA, AL VORTAC	32	MONTGOMERY

V324

CRAZY WOMAN, WY VOR/DME	WORLAND, WY VOR/DME	15	CRAZY WOMAN

V328

JACKSON, WY VOR/DME	BIG PINEY, WY VOR/DME	20	JACKSON

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V330		
IDAHO FALLS, ID VOR/DME	JACKSON, WY VOR/DME	48	IDAHO FALLS
DUNOIR, WY VOR/DME	RIVERTON, WY VOR/DME	15	DUNOIR
	V336		
ELLENSBURG, WA VORTAC	EPHRATA, WA VORTAC	19	ELLENSBURG
	V343		
DUBOIS, ID VORTAC	BOZEMAN, MT VOR/DME	60	DUBOIS
	V361		
RATTLESNAKE, NM VORTAC	MONTROSE, CO VOR/DME	61	RATTLESNAKE
	V365		
HELENA, MT VORTAC	CUT BANK, MT VORTAC	51	HELENA
	V370		
LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	25	LOS ANGELES
PARADISE, CA VORTAC	PALM SPRINGS, CA VORTAC	34	PARADISE
	V372		
SEAL BEACH, CA VORTAC	HOMELAND, CA VOR	24	SEAL BEACH
	V373		
GREENSBORO, NC VORTAC	SANDHILLS, NC VORTAC	43	GREENSBORO
	V375		
ROANOKE, VA VORTAC	GORDONSVILLE, VA VORTAC	48	ROANOKE
	V382		
CONES, CO VOR/DME	DURANGO, CO VOR/DME	25	CONES
	V393		
NOGALES, AZ VOR/DME	HERMOSILLO, MX VOR/DME	64	NOGALES

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V394		
POMONA, CA VORTAC	DAGGETT, CA VORTAC	16	POMONA
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC	59	DAGGETT
	V401		
WORLAND, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	35	WORLAND
	V413		
IRONWOOD, MI VORTAC	EAU CLAIRE, WI VORTAC	45	IRONWOOD
	V419		
BOSTON, MA VOR/DME	BRADLEY, CT VORTAC	49	BOSTON
	V428		
ITHACA, NY VOR/DME	GEORGETOWN, NY VORTAC	20	ITHACA
	V430		
MINOT, ND VORTAC	MINOT, ND VORTAC	56	MINOT
DULUTH, MN VORTAC	IRONWOOD, MI VORTAC	55	DULUTH
IRONWOOD, MI VORTAC	IRON MOUNTAIN, MI VOR/DME	44	IRONWOOD
	V432		
THERMAL, CA VORTAC	PARKER, CA VORTAC	30	THERMAL
	V433		
LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME	9	LA GUARDIA
	V437		
ORMOND BEACH, FL VORTAC	SAVANNAH, GA VORTAC	80	ORMOND BEACH
	V438		
GRANTSVILLE, MD VOR/DME	HAGERSTOWN, MD VOR	39	GRANTSVILLE

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

V442

HECTOR, CA VORTAC	PARKER, CA VORTAC	#41	HECTOR

#USE THE NEEDLES (EED) VORTAC FROM THE COP TO THE CLIPP INT.

V444

BURLEY, ID VOR/DME	BOISE, ID VORTAC	#95	BURLEY

#COP 95 NM FROM AND UTILIZES POCATELLO, ID VORTAC ON THE 269 M RAD.

BOISE, ID VORTAC	BAKER CITY, OR VOR/DME	77	BOISE

V448

YAKIMA, WA VORTAC	MOSES LAKE, WA VOR/DME	15	YAKIMA
SPOKANE, WA VORTAC	KALISPELL, MT VOR/DME	105	SPOKANE

V450

MUSKEGON, MI VORTAC	FLINT, MI VORTAC	54	MUSKEGON

V452

EUGENE, OR VORTAC	KLAMATH FALLS, OR VORTAC	67	EUGENE

V454

LIBERTY, NC VORTAC	LAWRENCEVILLE, VA VORTAC	82	LIBERTY

V465

BULLION, NV VOR/DME	WELLS, NV VOR	25	BULLION
WELLS, NV VOR	MALAD CITY, ID VOR/DME	40	WELLS
MALAD CITY, ID VOR/DME	JACKSON, WY VOR/DME	#63	MALAD CITY

#MEA GAP AT COP

DUNOIR, WY VOR/DME	BILLINGS, MT VORTAC	45	DUNOIR

V467

RICHMOND, IN VORTAC	WATERVILLE, OH VOR/DME	56	RICHMOND

V469

HARRISBURG, PA VORTAC	DUPONT, DE VORTAC	32	HARRISBURG

V475

LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME	9	LA GUARDIA

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V484		
TWIN FALLS, ID VORTAC	WASATCH, UT VORTAC	59	TWIN FALLS
WASATCH, UT VORTAC	MYTON, UT VOR/DME	28	WASATCH
	V487		
LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME	9	LA GUARDIA
	V489		
GLENS FALLS, NY VORTAC	PLATTSBURGH, NY VORTAC	21	GLENS FALLS
	V490		
CAMBRIDGE, NY VOR/DME	MANCHESTER, NH VOR/DME	37	CAMBRIDGE
	V493		
LEXINGTON, KY VORTAC	YORK, KY VORTAC	41	LEXINGTON
	V494		
MENDOCINO, CA VORTAC	SANTA ROSA, CA VOR/DME	25	MENDOCINO
	V495		
WHATCOM, WA VORTAC	VICTORIA, CA VOR/DME	10	WHATCOM
SEATTLE, WA VORTAC	VICTORIA, CA VOR/DME	50	SEATTLE
BATTLE GROUND, WA VORTAC	SEATTLE, WA VORTAC	20	BATTLE GROUND
	V500		
NEWBERG, OR VOR/DME	KIMBERLY, OR VORTAC	79	NEWBERG
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	66	BOISE
	V501		
ST THOMAS, PA VORTAC	PHILIPSBURG, PA VORTAC	22	ST THOMAS
	V505		
GOPHER, MN VORTAC	SIREN, WI VOR/DME	38	GOPHER
	V510		
GAYLE, MI FIX	MUSKEGON, MI VORTAC	#47	GAYLE

#COP MEASURED FROM MUSKEGON VORTAC.

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V514

THERMAL, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	20	THERMAL
GOFFS, CA VORTAC	BOULDER CITY, NV VORTAC	#60	GOFFS

#COP MEASURED FROM NEEDLES VORTAC.

V520

NEZ PERCE, ID VOR/DME	SALMON, ID VOR/DME	53	NEZ PERCE
DUBOIS, ID VORTAC	JACKSON, WY VOR/DME	60	DUBOIS

V527

HOT SPRINGS, AR VOR/DME	RAZORBACK, AR VORTAC	42	HOT SPRINGS

V532

SALINA, KS VORTAC	LINCOLN, NE VORTAC	51	SALINA

V536

MULLAN PASS, ID VOR/DME	KALISPELL, MT VOR/DME	45	MULLAN PASS
KALISPELL, MT VOR/DME	GREAT FALLS, MT VORTAC	35	KALISPELL

V542

YOUNGSTOWN, OH VORTAC	TIDIOUTE, PA VORTAC	21	YOUNGSTOWN

V569

FRANKSTON, TX VOR/DME	CEDAR CREEK, TX VORTAC	5	FRANKSTON

V571

HUMBLE, TX VORTAC	NAVASOTA, TX VORTAC	24	HUMBLE

V573

HOT SPRINGS, AR VOR/DME	LITTLE ROCK, AR VORTAC	14	HOT SPRINGS

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

V574

NAVASOTA, TX VORTAC	HUMBLE, TX VORTAC	18	NAVASOTA

V578

TIFT MYERS, GA VOR	ALMA, GA VORTAC	26	TIFT MYERS

V591

GRAND JUNCTION, CO VOR/DME	RED TABLE, CO VOR/DME	#56	GRAND JUNCTION

#THE COP IS AT THE SLOLM INT

V595

DESCHUTES, OR VORTAC	PORTLAND, OR VOR/DME	42	DESCHUTES

V611

SANTA FE, NM VORTAC	FORT UNION, NM VORTAC	21	SANTA FE
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	28	FORT UNION
CIMARRON, NM VORTAC	PUEBLO, CO VORTAC	30	CIMARRON

ALASKA V309

PRINCE RUPERT, CANADA NDB	ANNETTE ISLAND, AK VOR/DME	26	PRINCE RUPERT

ALASKA V311

ANNETTE ISLAND, AK VOR/DME	BIORKA ISLAND, AK VORTAC	103	ANNETTE ISLAND

ALASKA V317

ANNETTE ISLAND, AK VOR/DME	LEVEL ISLAND, AK VOR/DME	35	ANNETTE ISLAND
LEVEL ISLAND, AK VOR/DME	SISTERS ISLAND, AK VORTAC	51	LEVEL ISLAND

ALASKA V319

YAKUTAT, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	119	YAKUTAT
SPARREVOHN, AK VOR/DME	BETHEL, AK VORTAC	92	SPARREVOHN

ALASKA V320

MC GRATH, AK VORTAC	ANCHORAGE, AK VOR/DME	95	MC GRATH

ALASKA V321

KING SALMON, AK VORTAC	HOMER, AK VOR/DME	70	KING SALMON

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

ALASKA V333

HOOPER BAY, AK VOR/DME	NOME, AK VOR/DME	70	HOOPER BAY
NOME, AK VOR/DME	SHISHMAREF, AK NDB	65	NOME

ALASKA V401

AMBLER, AK NDB/DME	KOTZEBUE, AK VOR/DME	40	AMBLER
KOTZEBUE, AK VOR/DME	SHISHMAREF, AK NDB	60	KOTZEBUE

ALASKA V428

BIORKA ISLAND, AK VORTAC	SISTERS ISLAND, AK VORTAC	55	BIORKA ISLAND
SISTERS ISLAND, AK VORTAC	HAINES, AK NDB	21	SISTERS ISLAND
HAINES, AK NDB	WHITEHORSE, CA VOR/DME	30	HAINES

ALASKA V436

TALKEETNA, AK VOR/DME	NENANA, AK VORTAC	50	TALKEETNA
NENANA, AK VORTAC	CHANDALAR LAKE, AK NDB	120	NENANA
CHANDALAR LAKE, AK NDB	DEADHORSE, AK VOR/DME	63	CHANDALAR LAKE

ALASKA V438

KODIAK, AK VOR/DME	HOMER, AK VOR/DME	66	KODIAK
HOMER, AK VOR/DME	ANCHORAGE, AK VOR/DME	53	HOMER

ALASKA V440

MC GRATH, AK VORTAC	ANCHORAGE, AK VOR/DME	95	MC GRATH

ALASKA V441

MIDDLETON ISLAND, AK VOR/DME	KENAI, AK VOR/DME	84	MIDDLETON ISLAND

ALASKA V444

BARROW, AK VOR/DME	EVANSVILLE, AK NDB	105	BARROW
BETTLES, AK VOR/DME	FAIRBANKS, AK VORTAC	89	BETTLES
NORTHWAY, AK VORTAC	BURWASH, CA NDB	97	NORTHWAY

ALASKA V445

BETTLES, AK VOR/DME	BETTLES, AK VOR/DME	#67	BETTLES

#USE THE NENANA (ENN) VORTAC FROM THE COP TO THE RAMPA INT.

ALASKA V447

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
FAIRBANKS, AK VORTAC	CHANDALAR LAKE, AK NDB	103	FAIRBANKS

ALASKA V452

KUKULIAK, AK VOR/DME	NOME, AK VOR/DME	67	KUKULIAK
MOSES POINT, AK VOR/DME	GALENA, AK VOR/DME	70	MOSES POINT
GALENA, AK VOR/DME	NENANA, AK VORTAC	75	GALENA

ALASKA V453

BETHEL, AK VORTAC	UNALAKLEET, AK VOR/DME	109	BETHEL

ALASKA V457

ILIAMNA, AK NDB/DME	KENAI, AK VOR/DME	47	ILIAMNA

ALASKA V459

EMMONAK, AK VOR/DME	ST MARYS, AK NDB	40	EMMONAK

ALASKA V480

ST PAUL ISLAND, AK NDB/DME	BETHEL, AK VORTAC	223	ST PAUL ISLAND
BETHEL, AK VORTAC	MC GRATH, AK VORTAC	128	BETHEL
MC GRATH, AK VORTAC	NENANA, AK VORTAC	70	MC GRATH

ALASKA V481

GULKANA, AK VOR/DME	BIG DELTA, AK VORTAC	63	GULKANA
BIG DELTA, AK VORTAC	FORT YUKON, AK VORTAC	69	BIG DELTA

ALASKA V488

HOOPER BAY, AK VOR/DME	HOOPER BAY, AK VOR/DME	91	HOOPER BAY
TANANA, AK VOR/DME	FAIRBANKS, AK VORTAC	40	TANANA

ALASKA V496

HOOPER BAY, AK VOR/DME	ST MARYS, AK NDB	40	HOOPER BAY

ALASKA V498

GALENA, AK VOR/DME	KOTZEBUE, AK VOR/DME	85	GALENA

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

ALASKA V504

NENANA, AK VORTAC	BETTLES, AK VOR/DME	67	NENANA
BETTLES, AK VOR/DME	DEADHORSE, AK VOR/DME	116	BETTLES

ALASKA V506

KODIAK, AK VOR/DME	KING SALMON, AK VORTAC	55	KODIAK
KING SALMON, AK VORTAC	BETHEL, AK VORTAC	102	KING SALMON
NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	64	NOME
HOTHAM, AK NDB	BARROW, AK VOR/DME	186	HOTHAM

ALASKA V508

MIDDLETON ISLAND, AK VOR/DME	KENAI, AK VOR/DME	85	MIDDLETON ISLAND
KENAI, AK VOR/DME	SPARREVOHN, AK VOR/DME	67	KENAI
SPARREVOHN, AK VOR/DME	ANIAK, AK NDB	68	SPARREVOHN

ALASKA V510

EMMONAK, AK VOR/DME	ANVIK, AK NDB/DME	69	EMMONAK
ANVIK, AK NDB/DME	MC GRATH, AK VORTAC	40	ANVIK

ALASKA V531

FAIRBANKS, AK VORTAC	TANANA, AK VOR/DME	69	FAIRBANKS
TANANA, AK VOR/DME	HUSLIA, AK VOR/DME	40	TANANA
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	30	SELAWIK
KOTZEBUE, AK VOR/DME	POINT HOPE, AK NDB	116	KOTZEBUE

ALASKA V603

ELFEE, AK NDB	DILLINGHAM, AK VOR/DME	55	ELFEE

ALASKA V617

HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	63	HOMER

HAWAII V15

MOLOKAI, HI VORTAC	MAUI, HI VORTAC	31	MOLOKAI

HAWAII V16

LANAI, HI VORTAC	UPOLU POINT, HI VORTAC	47	LANAI

&95.8005 JET ROUTES CHANGEOVER POINTS

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
J1			
ROGUE VALLEY, OR VORTAC	BATTLE GROUND, WA VORTAC	90	ROGUE VALLEY
J2			
BARD, AZ VORTAC	GILA BEND, AZ VORTAC	32	BARD
J5			
LAKEVIEW, OR VORTAC	SEATTLE, WA VORTAC	156	LAKEVIEW
J6			
DRAKE, AZ VORTAC	ZUNI, NM VORTAC	76	DRAKE
MARTINSBURG, WV VORTAC	LANCASTER, PA VORTAC	24	MARTINSBURG
J8			
GALLUP, NM VORTAC	FORT UNION, NM VORTAC	101	GALLUP
J10			
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	50	BLUE MESA
J15			
RATTLESNAKE, NM VORTAC	GRAND JUNCTION, CO VOR/DME	90	RATTLESNAKE
J16			
BATTLE GROUND, WA VORTAC	PENDLETON, OR VORTAC	60	BATTLE GROUND

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J17		
CHEYENNE, WY VORTAC	RAPID CITY, SD VORTAC	90	CHEYENNE
	J18		
PHOENIX, AZ VORTAC	ST JOHNS, AZ VORTAC	88	PHOENIX
MOLINE, IL VORTAC	JOLIET, IL VORTAC	45	MOLINE
	J19		
BUKKO, NM FIX	FORT UNION, NM VORTAC	82	BUKKO
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	40	ROBERTS
	J20		
POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	82	POCATELLO
	J21		
GOPHER, MN VORTAC	DULUTH, MN VORTAC	81	GOPHER
	J24		
HUGO, CO VOR/DME	HAYS, KS VORTAC	80	HUGO
CHARLESTON, WV VORTAC	MONTEBELLO, VA VOR/DME	104	CHARLESTON
	J32		
ABERDEEN, SD VOR/DME	DULUTH, MN VORTAC	130	ABERDEEN
	J36		
DUNKIRK, NY VORTAC	LAKE HENRY, PA VORTAC	130	DUNKIRK
	J37		
KENNEDY, NY VOR/DME	KINGSTON, NY VOR/DME	37	KENNEDY

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J40		
MONTGOMERY, AL VORTAC	MACON, GA VORTAC	139	MONTGOMERY
	J42		
MEMPHIS, TN VORTAC	NASHVILLE, TN VORTAC	119	MEMPHIS
	J44		
FALCON, CO VORTAC	MC COOK, NE VOR/DME	90	FALCON
MC COOK, NE VOR/DME	LINCOLN, NE VORTAC	51	MC COOK
	J48		
CASANOVA, VA VORTAC	MONTEBELLO, VA VOR/DME	58	CASANOVA
	J52		
BIGBEE, MS VORTAC	VULCAN, AL VORTAC	25	BIGBEE
	J55		
BOSTON, MA VOR/DME	KENNEBUNK, ME VORTAC	38	BOSTON
	J56		
WASATCH, UT VORTAC	HAYDEN, CO VOR/DME	66	WASATCH
HAYDEN, CO VOR/DME	FALCON, CO VORTAC	#55	HAYDEN
#USE THE GILL (GLL) VORTAC FROM THE COP TO THE RIDJE INT			
	J58		
COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	44	COALDALE
MILFORD, UT VORTAC	RATTLESNAKE, NM VORTAC	92	MILFORD
	J60		
HANKSVILLE, UT VORTAC	RED TABLE, CO VOR/DME	75	HANKSVILLE
RED TABLE, CO VOR/DME	MILE HIGH, CO VORTAC	39	RED TABLE
GOSHEN, IN VORTAC	DRYER, OH VOR/DME	90	GOSHEN

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J64		
RATTLESNAKE, NM VORTAC	PUEBLO, CO VORTAC	93	RATTLESNAKE
PUEBLO, CO VORTAC	HILL CITY, KS VORTAC	80	PUEBLO
FORT WAYNE, IN VORTAC	ELLWOOD CITY, PA VORTAC	112	FORT WAYNE
	J68		
DELLS, WI VORTAC	GOPHER, MN VORTAC	115	DELLS
	J70		
DICKINSON, ND VORTAC	ABERDEEN, SD VOR/DME	60	DICKINSON
	J71		
CENTRALIA, IL VORTAC	ROBERTS, IL VOR/DME	98	CENTRALIA
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	40	ROBERTS
	J78		
DRAKE, AZ VORTAC	ZUNI, NM VORTAC	76	DRAKE
	J79		
FRANKLIN, VA VORTAC	SALISBURY, MD VORTAC	20	FRANKLIN
	J80		
COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	44	COALDALE
MILFORD, UT VORTAC	GRAND JUNCTION, CO VOR/DME	50	MILFORD
BELLAIRE, OH VOR/DME	EAST TEXAS, PA VOR/DME	132	BELLAIRE
	J82		
BATTLE GROUND, WA VORTAC	DONNELLY, ID VOR/DME	90	BATTLE GROUND
RAPID CITY, SD VORTAC	SIOUX FALLS, SD VORTAC	125	RAPID CITY
GOSHEN, IN VORTAC	DRYER, OH VOR/DME	90	GOSHEN
JAMESTOWN, NY VOR/DME	ALBANY, NY VORTAC	145	JAMESTOWN

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J83		
APPLETON, OH VORTAC	DRYER, OH VOR/DME	75	APPLETON
	J84		
NORTHBROOK, IL VOR/DME	DANVILLE, IL VORTAC	67	NORTHBROOK
	J87		
MOLINE, IL VORTAC	JOLIET, IL VORTAC	45	MOLINE
	J88		
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	71	SAN MARCUS
	J89		
ATLANTA, GA VORTAC	LOUISVILLE, KY VORTAC	126	ATLANTA
	J90		
HELENA, MT VORTAC	MILES CITY, MT VOR/DME	115	HELENA
	J91		
VOLUNTEER, TN VORTAC	HENDERSON, WV VORTAC	135	VOLUNTEER
	J92		
BEATTY, NV VORTAC	BOULDER CITY, NV VORTAC	12	BEATTY
	J94		
ROCK SPRINGS, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	105	ROCK SPRINGS

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J96		
DRAKE, AZ VORTAC	GALLUP, NM VORTAC	77	DRAKE
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	146	GALLUP
	J107		
MILFORD, UT VORTAC	ROCK SPRINGS, WY VOR/DME	120	MILFORD
	J110		
BELLAIRE, OH VOR/DME	COYLE, NJ VORTAC	132	BELLAIRE
	J115		
CHANDALAR LAKE, AK NDB	DEADHORSE, AK VOR/DME	15	CHANDALAR LAKE
	J116		
MEEKER, CO VOR/DME	FALCON, CO VORTAC	60	MEEKER
	J118		
MEMPHIS, TN VORTAC	CHOO CHOO, TN VORTAC	130	MEMPHIS
	J120		
ST PAUL ISLAND, AK NDB/DME	BETHEL, AK VORTAC	190	ST PAUL ISLAND
	J121		
CHARLESTON, SC VORTAC	KINSTON, NC VORTAC	128	CHARLESTON
SNOW HILL, MD VORTAC	SEA ISLE, NJ VORTAC	20	SNOW HILL
	J123		
KODIAK, AK VOR/DME	KING SALMON, AK VORTAC	60	KODIAK

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM

J125

KODIAK, AK VOR/DME	ANCHORAGE, AK VOR/DME	103	KODIAK

J126

SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	71	SAN MARCUS

J128

BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	50	BLUE MESA

J130

MC COOK, NE VOR/DME	PAWNEE CITY, NE VORTAC	72	MC COOK

J134

DRAKE, AZ VORTAC	GALLUP, NM VORTAC	77	DRAKE
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	146	GALLUP
HENDERSON, WV VORTAC	LINDEN, VA VORTAC	133	HENDERSON

J136

YAKIMA, WA VORTAC	SPOKANE, WA VORTAC	50	YAKIMA
MULLAN PASS, ID VOR/DME	HELENA, MT VORTAC	100	MULLAN PASS
BILLINGS, MT VORTAC	MEDICINE BOW, WY VOR/DME	149	BILLINGS

J139

BETTLES, AK VOR/DME	DEADHORSE, AK VOR/DME	83	BETTLES

J140

DULUTH, MN VORTAC	SAULT STE MARIE, MI VOR/DME	171	DULUTH

J143

MENDOCINO, CA VORTAC	ROSEBURG, OR VOR/DME	150	MENDOCINO

J152

JOHNSTOWN, PA VORTAC	HARRISBURG, PA VORTAC	62	JOHNSTOWN

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J153		
BAKER CITY, OR VOR/DME	SPOKANE, WA VORTAC	60	BAKER CITY
	J154		
WASATCH, UT VORTAC	ROCK SPRINGS, WY VOR/DME	35	WASATCH
ROCK SPRINGS, WY VOR/DME	MILE HIGH, CO VORTAC	104	ROCK SPRINGS
	J157		
MYTON, UT VOR/DME	LARAMIE, WY VOR/DME	112	MYTON
	J163		
POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	82	POCATELLO
	J173		
WASATCH, UT VORTAC	MEEKER, CO VOR/DME	47	WASATCH
	J180		
SAWMILL, LA VOR/DME	LITTLE ROCK, AR VORTAC	105	SAWMILL
LITTLE ROCK, AR VORTAC	FORISTELL, MO VORTAC	118	LITTLE ROCK
	J181		
RANGER, TX VORTAC	OKMULGEE, OK VOR/DME	139	RANGER
OKMULGEE, OK VOR/DME	NEOSHO, MO VOR/DME	58	OKMULGEE
NEOSHO, MO VOR/DME	HALLSVILLE, MO VORTAC	45	NEOSHO
	J183		
LLANO, TX VORTAC	COLLEGE STATION, TX VORTAC	93	LLANO
	J187		
MEMPHIS, TN VORTAC	FORISTELL, MO VORTAC	96	MEMPHIS

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM

J189

KLAMATH FALLS, OR VORTAC	BATTLE GROUND, WA VORTAC	78	KLAMATH FALLS

J193

COFIELD, NC VORTAC	HARCUM, VA VORTAC	36	COFIELD

J197

DOVE CREEK, CO VORTAC	HUGO, CO VOR/DME	105	DOVE CREEK

J209

NORFOLK, VA VORTAC	SALISBURY, MD VORTAC	42	NORFOLK

J220

ARMEL, VA VORTAC	STONYFORK, PA VOR/DME	122	ARMEL

J230

LARRI, PA FIX	BELLAIRE, OH VOR/DME	#163	LARRI

#COP MEASURED FROM COYLE, NJ VORTAC.

J233

WATERLOO, IA VORTAC	ST LOUIS, MO VORTAC	55	WATERLOO

J236

THERMAL, CA VORTAC	NEEDLES, CA VORTAC	53	THERMAL
NEEDLES, CA VORTAC	TUBA CITY, AZ VORTAC	72	NEEDLES

J240

MYTON, UT VOR/DME	BLUE MESA, CO VOR/DME	60	MYTON

J244

FORT UNION, NM VORTAC	ZUNI, NM VORTAC	86	FORT UNION

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM

J501

SANDSPIT, CANADA VOR/DME	BIORKA ISLAND, AK VORTAC	99	SANDSPIT
BIORKA ISLAND, AK VORTAC	YAKUTAT, AK VOR/DME	98	BIORKA ISLAND
YAKUTAT, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	117	YAKUTAT

J502

SEATTLE, WA VORTAC	VICTORIA, CA VOR/DME	50	SEATTLE
SISTERS ISLAND, AK VORTAC	BURWASH, CA NDB	80	SISTERS ISLAND

J505

SEATTLE, WA VORTAC	CRANBROOK, CA VOR/DME	108	SEATTLE

J507

NORTHWAY, AK VORTAC	YAKUTAT, AK VOR/DME	135	NORTHWAY

J511

GULKANA, AK VOR/DME	BURWASH, CA NDB	55	GULKANA

J515

BETTLES, AK VOR/DME	BARROW, AK VOR/DME	130	BETTLES

J517

BOISE, ID VORTAC	SPOKANE, WA VORTAC	100	BOISE

J518

INDIAN HEAD, PA VORTAC	BALTIMORE, MD VORTAC	20	INDIAN HEAD

J522

ROCHESTER, NY VOR/DME	HANCOCK, NY VOR/DME	54	ROCHESTER
HANCOCK, NY VOR/DME	KINGSTON, NY VOR/DME	41	HANCOCK

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J523		
BRYCE CANYON, UT VORTAC	ELY, NV VOR/DME	119	BRYCE CANYON
	J537		
MULLAN PASS, ID VOR/DME	CALGARY, CA VORTAC	95	MULLAN PASS
	J589		
CORVALLIS, OR VOR/DME	VICTORIA, CA VOR/DME	100	CORVALLIS
	J617		
HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	63	HOMER
	J713		
BIG PINEY, WY VOR/DME	WASATCH, UT VORTAC	94	BIG PINEY