

**NATIONAL WEATHER SERVICE INSTRUCTION 10-803**

**September 3, 2008**

**Operations and Services**

**Aviation Weather Services, NWSPD 10-8**

**SUPPORT TO AIR TRAFFIC CONTROL FACILITIES**

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**NOTICE:** This publication is available at: <http://www.nws.noaa.gov/directives/>.

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**SUMMARY OF REVISIONS:** Supersedes NWSI 10-803 “Support to Air Traffic Control Facilities” dated June 13, 2006. This instruction details the procedures NWS Weather Forecast Offices (WFOs), Alaska Aviation Weather Unit (AAWU), and Center Weather Service Units (CWSUs) use to provide weather support to the Federal Aviation Administration (FAA) Air Traffic Control Facilities. The changes made include:

1. Extensive revision to reflect initiatives to improve support to air traffic control facilities. Paragraphs and subsections were rearranged to reflect a logical progression of information, and renumbered as necessary.
2. Revised chapter 6: moved background information to chapter 3 and emphasized lines of authority.
3. Revised chapter 7: eliminated a discussion of product headers; added guidance of when center weather advisories are needed; emphasized forecast coordination and introduced work products to help that function; and updated subsections dealing with forensic requirements.
4. Deleted section 7.1 (Priority of Duties) and the associated Appendix C, and section 7.7 (Dissemination of PIREPS) as duplicates of the new section 5.2.
5. Added Appendix E.

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//Signed//

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August 20, 2008

Date

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**1. Purpose.** This directive provides general procedures for National Weather Service (NWS) meteorological support to Federal Aviation Administration (FAA) Air Traffic Facilities. Specific guidelines are provided for NWS participation in jointly (FAA/NWS) operated weather service facilities.

**2. General.** NWS support is designed to improve aviation safety and enhance efficient flow of air traffic by forecasting and monitoring adverse weather. Efficiency is affected by maintaining close coordination with traffic managers whose decisions affect the flow of air traffic through the National Airspace System (NAS).

**3. Background.** NWS meteorologists in Center Weather Service Units (CWSU) and FAA Traffic Management Unit (TMU) specialists are components of joint FAA/NWS units directly supporting the FAA's 21 Air Route Traffic Control Centers (ARTCC). NWS personnel work as a team with FAA Air Traffic Control (ATC) specialists assigned to the TMU. These TMU specialists are the designated interface between CWSU meteorologists and ARTCC controllers, FAA facilities within the ARTCC area of responsibility, and CWSU product users. They provide information critical to the safe and efficient flow of air traffic and serve the NAS directly. CWSU forecasters provide meteorological consultation, forecasts, and advice to ARTCC managers, staff, and other supported FAA facilities and activities, regarding weather impact on their missions, equipment outages and repairs, and FAA staffing. In the event that assigned resources make it impossible to accomplish all of the assigned duties, the CWSU staff should work with the TMU, and refer to the local Station Duty Manual (see NWSI 10-1608 *Station Duty Manual*) for guidance, to determine which task(s) are most important.

CWSU staff members provide meteorological training for ARTCC personnel. The CWSU is also the liaison between FAA facilities and other NWS offices in its area. CWSU meteorologists may assist in the distribution of weather forecasts, advisories, and warnings issued by other NWS offices. Complete details of the relationship between the FAA and the CWSU are contained in an interagency agreement.

Weather support is accomplished through various products and verbal briefings describing weather conditions (forecasts or observations) which may affect air traffic flow or operational safety in the ARTCC's portion of the NAS (the CWSU area of responsibility), and in other locally-defined, special operations areas (e.g., offshore helicopter operations areas). Additionally, the CWSU provides advisories of hazardous weather conditions for airborne aircraft. These advisories are disseminated through NWS and FAA communications systems and are available to both internal FAA and external aviation users. The CWSU meteorologists must remain cognizant of FAA requirements and procedures to adequately perform these tasks.

**4. Air Traffic Meteorological Concerns.** Aviation operations impacted by adverse weather places increased demands on the FAA Air Traffic resources that facilitate safe and efficient use of airspace and airports. FAA personnel need the best weather information available to enhance their mission of supporting aviation operations. Required weather information includes, but is not limited to, the following:

- a. Convective weather including thunderstorm timing, tops, movement, intensity, and character such as broken and solid lines or large clusters
- b. Operationally significant ceilings/visibility
- c. Cloud tops
- d. Winds and temperatures, surface and aloft
- e. Wind shear
- f. Operationally significant pressure changes

- g. Precipitation
- h. Turbulence
- i. Icing
- j. Volcanic ash

The specific operational situation dictates the significance of any particular aviation weather phenomenon.

## **5. Support to Air Traffic Facilities.**

### **5.1 Air Traffic Facilities.**

a. ARTCC. ARTCCs provide ATC service to aircraft operating on Instrument Flight Rules (IFR) flight plans within controlled airspace, principally during the en route phase of flight. When equipment capabilities and controller work load permit, certain advisory and assistance services may also be provided to Visual Flight Rules (VFR) aircraft.

The Air Traffic Manager (ATM), or designee, of each ARTCC has operational responsibility for the collocated CWSU. The ATM, or designee, oversees CWSU operations and brings any special local weather support requirements to the attention of the CWSU Meteorologist in Charge (MIC).

b. TMU. The TMU in an ARTCC is responsible for the management of facility air traffic. The TMU is usually under the direct supervision of an assistant manager for traffic management.

c. Airport Traffic Control Tower (ATCT). The ATCT is an airport terminal facility which uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport. The ATCT authorizes aircraft to land or take off at the airport it controls or to transit the associated airspace regardless of flight plan or weather conditions. An ATCT may also provide approach control services (radar or non-radar).

d. Terminal Radar Approach Control (TRACON) Facility. The TRACON is a terminal ATC facility usually located within the vicinity of an airport. The TRACON controls approaching and departing aircraft between 5 and 50 miles of the airport.

e. Automated Flight Service Station (AFSS) and Flight Service Station (FSS). The AFSS and FSS are air traffic facilities providing aviation services such as:

- (1) Pilot weather briefing (PWB)
- (2) En route communications
- (3) VFR search and rescue services

- (4) Assistance to lost aircraft and aircraft in emergency situations
- (5) Relay of ATC clearances
- (6) Pre-flight and in-flight advisory broadcasts, and other services to pilots, via air/ground communications facilities

Selected AFSSs also provide En Route Flight Advisory Services (EFAS) which are specifically designed to exchange timely weather information directly with en route pilots.

**5.2 CWSU Support.** The CWSU meteorologist provides direct support to ATC operations. The CWSU meteorologist:

- a. Provides meteorological forecasts, information and briefings in support of ATC operations during weather-related emergencies;
- b. Issues Center Weather Advisories (CWA) and Meteorological Impact Statements (MIS) as conditions warrant;
- c. Solicits and collects pilot reports (PIREPs) through the ATC work force;
- d. Relays reports of conditions meeting specific urgent PIREP criteria. More information on PIREPs is available in NWSI 10-804, *Pilot Reports*.
- e. Issues collaboration work files on aviation forecasts and TAFs;
- f. Participates in discussions with ATC personnel as required, and with Air Traffic Control System Command Center (ATCSCC) personnel as requested;
- g. Provides weather forecasts and briefings for appropriate ATC personnel as required. This includes participation in collaborative decision making sessions, such as the Collaborative Convective Forecast Product (CCFP).
- h. Provides meteorological forecasts and information to pilots in contact with the ARTCC through appropriate ARTCC personnel;
- i. Assists in backing up an adjacent CWSU if requested (see Appendix B); and
- j. Conducts weather training and product familiarization sessions for ARTCC personnel as work load permits.
- l. Coordinates duty priorities with the ARTCC and TMU.

**5.3 WFO, and Alaska Aviation Weather Unit (AAWU) Support.** WFOs (and AAWU for Alaska) provide direct meteorological support through advice and consultation to the TMU when CWSU meteorologists are not on duty. Other FAA facilities (ATCTs) are directly supported In Accordance With (IAW) local agreements. Support consists of:

- a. Providing CWSU and/or AFSS and FSS shift briefings.
- b. Assisting the CWSU and ARTCC during in-flight emergencies.
- c. Providing ARTCC with forecast services and critical weather updates through the normal suite of aviation products when the CWSU is closed.
- d. Providing Information Technology (IT) and IT security support. NWS Regional Headquarters (RH) may choose to provide this support for CWSUs in their local area.

NOTE: WFO Honolulu provides Pacific Region support equivalent to the Aviation Weather Center (AWC). For their area of responsibility, WFO Honolulu issues FAs, SIGMETs, and AIRMETs. Alaska in-flight weather is coordinated and disseminated by the Alaska Aviation Weather Unit (AAWU). Refer to NWSI 10-811 *Enroute Forecasts and Advisories* for more detail.

**6. CWSU Lines of Authority.** The supporting WFO's MIC is the first line supervisor of the CWSU MIC and is responsible for providing administrative and training support to NWS personnel at the CWSU. In Alaska, the AAWU MIC is the first line supervisor of the CWSU's MIC. The supporting MIC's FAA contact at the ARTCC is the ATM or their designee. The supporting MIC should ensure all WFO forecasters are aware of CWSU services and have a general knowledge of ARTCC meteorological needs. Forecaster exchanges between WFOs and CWSUs are encouraged. Further, NWS meteorologists are encouraged to visit ARTCCs, ATCTs, TRACONS, and AFSS/FSSs as part of their aviation training.

Open lines of communication must be maintained between FAA facilities and NWS aviation weather support units within the ARTCC's area to ensure timely exchange of necessary weather information. The supporting MIC or their designee monitors and evaluates the various links between relevant NWS and FAA facilities. Service, product, data, or data exchange deficiencies should be documented and forwarded to the respective NWS Regional Meteorological Services Division (MSD) or their equivalent (known hereafter as regional MSD), as either part of a station evaluation report (with appropriate distribution) or as a separate memorandum with copies to the supervisors of the NWS and FAA facilities or units involved. Initial attempts to remedy deficiencies should be made at the local level. Problems not resolved locally should be brought to the regional or NWS Headquarters (NWSH) level for resolution.

The supporting MIC or their designee should make semi-annual visits to the CWSU, and send a written report of each visit to the regional MSD with copies to the CWSU MIC, the ARTCC ATM, and Aviation Services Branch of the Office of Climate, Water, and Weather Services (OCWWS), NWSH.

**6.1 CWSU MIC Responsibilities.** The CWSU MIC is the first line supervisor for assigned CWSU meteorologists. In this position, the CWSU MIC:

- a. Serves as NWS liaison to the supported ARTCC and is responsible for ensuring all CWSU services are provided to the FAA;

- b. Has oversight of CWSU service obligations, labor-management relations, meteorological training for CWSU staff, and specified training for ARTCC staff;
- c. In agreement with the ARTCC ATM (or a designee with responsibility for CWSU operational oversight), establishes CWSU meteorologist duty hours and implements procedures and policies detailed in this instruction and compatible or approved alternate instructions to meet special local requirements; and
- d. Works with the ARTCC ATM to arrange access to office supplies, internet and voice communications, and other day-to-day necessities for the CWSU office.

On occasion, it may be necessary to temporarily change or amend the CWSU meteorologist's duty hours. Two examples of when duty hours may need changing: a staff shortage due to illness or vacant positions. These changes may be requested by the FAA ARTCC ATM or CWSU MIC.

If the request for change is from the local FAA ARTCC ATM, the CWSU MIC should ask for written notice of the proposed changes and coordinate this request with the supporting WFO/AAWU MIC to determine if resources allow the change in hours. If the two MICs agree the resources are available, the duty hours may be changed. The CWSU MIC should send a letter detailing all aspects of the duty hours change to the region MSD or their equivalent, who may forward a copy to the Office of Climate, Water, and Weather Services (OCWWS), NWSH as needed.

If the CWSU MIC requests a permanent change in the meteorologist's duty hours, the CWSU MIC should send a letter to the FAA ARTCC ATM and the supporting WFO/AAWU MIC, explaining why the change is needed. If all parties agree, the hours may be changed. The CWSU MIC should send a letter detailing all aspects of the change in duty hours to the regional MSD, who may forward a copy to OCWWS, NWSH as needed.

## **7. CWSU Operations and Products.**

**7.1 Product Preparation.** CWSUs issue and disseminate forecasts and products, and conduct briefings as detailed in this and other applicable NWS instructions. Conditions described in these products are generally restricted to those within the boundaries of ARTCC airspace.

Products generated for local dissemination and use describing conditions outside the CWSU's area of responsibility may be prepared if, in the meteorologist's judgment, sufficient information and resources are available. However, meteorologists should first contact the CWSU responsible for the area in question in order to ensure spatial consistency of products.

Reference points used in CWAs to describe the areal location and extent of these conditions should be the same as those used in SIGMETs/AIRMETs (see NWSI 10-811, *En route Forecasts and Advisories*), or distances from those points. The Miami CWSU uses the following reference points for CWAs issued for the Bahamas Islands: ZBV (Bimini Island), ZFP (Freeport on Grand Bahama Island), ZQA (Nassau on New Providence Island), ZLA (Stella Maris on Long Island),

ZIN (Matthew Town on Great Inagua Island), and GTK (Grand Turk Island).

Forecasters should use the minimum number of points needed to describe the area accurately. Points outside of the ARTCC area may be used, but only after appropriate coordination with adjoining CWSUs. Advisories broadcast to aircraft should be kept as brief and concise as possible. All references to distance in the location line of the CWA and MIS products are in nautical miles (NM). The body of the text products includes NM and not statute miles when referring to line and areal width.

As much as possible International Civil Aviation Organization (ICAO) abbreviations and codes should be used in CWSU products. If ICAO contractions conflict with 3-letter identifier, then use the FAA or General contraction. The contractions can be found at:

[http://www.faa.gov/airports\\_airtraffic/air\\_traffic/publications/at\\_orders/media/CNT.pdf](http://www.faa.gov/airports_airtraffic/air_traffic/publications/at_orders/media/CNT.pdf)

The contraction, VC, may be used in CWSU products in conjunction with the following meteorological terms describing conditions in the area of, but not directly at, airfields or aerodromes (i.e., METAR/TAF): DS, SS, FG, FC, SH, PO, BLDU, BLSA, BLSN, and TS (i.e., VCFG, VCTS, etc.). Terms used must be consistent with NWSI 10-811, *Enroute Forecasts and Advisories*. All times must be expressed in Coordinated Universal Time (UTC or Z). The communications header format must be followed exactly if the CWSU product is to be disseminated through the FAA and other communications systems.

Scheduled briefings and products must be developed locally in agreement with the ATM or designee. These briefings should normally be produced and presented as required by the host ARTCC.

All users of CWSU advisories, statements, forecasts, and briefings should be kept aware all CWSU products are not available 24 hours a day. This can be accomplished by adding the remark "NO UPDATES AFT ddtttZ" to the end of products which will be in effect when CWSU duty hours end. The notation "dd" is the day of the month, and "tttt" is the hour and minute in UTC.

**7.2 Briefings.** A CWSU briefing must be discussion-based, include current and forecast weather conditions expected in the ARTCC operations area during the upcoming shift, and an outlook for the following shift or, if the CWSU is ceasing operations, the overnight hours. Each briefing should contain sufficient information for ATC and TMU managers to make decisions and appropriate operational adjustments based on weather impacts on the NAS.

A shift briefing product (alphanumeric or graphic) should contain a heading with the ARTCC designator (zzz); CWSU BRIEFING; date and time (UTC) issued; and valid date and time (UTC). For example:

ZKC CWSU BRIEFING 141805Z VALID TIL 151100Z

The following information should be included in each briefing when appropriate. Local requirements may determine the order of the items b-g:



- a. Advisories in effect at the time of the briefing; e.g., SIGMETs, AIRMETs, airport weather warnings, CWAs, MISs, etc.;
- b. Synopsis - discussion of weather systems and their movements;
- c. An outlook of en route flight conditions, e.g., convective weather, turbulence, icing, volcanic ash, etc.;
- d. Terminal weather, i.e., heavy snow, freezing precipitation, low IFR ceiling and/or visibility, and/or operationally significant surface winds, for designated large airports;
- e. Wind direction and speed at key flight levels, including jet stream location(s);
- f. Freezing level; and
- g. Locally required items affecting the ARTCC area of responsibility, e.g., altimeter settings forecast or observed below 29.92 inches or above 31.00 inches.

**7.3 Meteorological Impact Statement (MIS).** A MIS is an unscheduled flow control and flight operations planning forecast. It is a non-technical forecast and briefing product for personnel at ARTCC, ATCSCC, TRACONS and ATCTs responsible for making flow control-type decisions. The MIS details weather conditions expected to adversely impact air traffic flow in the CWSU area of responsibility, and is valid up to 12 hours after issuance time. The MIS may be effective immediately for existing conditions when CWSU operations begin, or for rapidly deteriorating conditions, or up to two hours in advance of expected conditions. Do NOT issue a MIS if meteorological conditions warrant an advisory or warning type product. Use a CWA instead.

A MIS should not be a re-packaging of a current SIGMET, AIRMET, or CWA. A MIS should provide additional information on the current or expected weather information and be tailored to meet the unique requirements of the host ARTCC. These special requirements should be coordinated between the host ARTCC and the CWSU.

A MIS enables ATC facility personnel to include the impact of specific weather conditions in their flow control decision making. Before issuing a MIS, the CWSU meteorologist must ensure forecast conditions triggering the MIS reflect meteorological consistency with other products, such as those issued by the AWC, other national centers, and the WFOs. At a minimum, a MIS should be issued when:

- a. Any of the following conditions occur, are forecast to occur, and, if previously forecast, are no longer expected:
  - (1) Conditions meeting convective SIGMET criteria (see NWSI 10-811)
  - (2) Icing - moderate or greater

- (3) Turbulence - moderate or greater
  - (4) Heavy precipitation
  - (5) Freezing precipitation
  - (6) Conditions at or approaching Low IFR (see NWSI 10-813)
  - (7) Surface winds/gusts  $\geq 30$  knots
  - (8) Low Level Wind Shear (surface - 2,000 feet)
  - (9) Volcanic ash, dust storms, or sandstorms; and
- b. In the forecaster's judgment, the conditions listed above, or any others, may adversely impact the flow of air traffic within the ARTCC area of responsibility.

MIS forecasts should use the location reference point identifiers depicted on the In-Flight Advisory Plotting Chart, and include the height, extent, and movement of the conditions. MIS product issuances should be numbered sequentially beginning at Midnight local time each day. The MIS is disseminated and stored as a "replaceable" product. Therefore, each issuance should contain the details of all pertinent known conditions meeting MIS issuance criteria, including ongoing conditions described in previously issued MISs.

The MIS should be distributed to ARTCC personnel (see Appendix D for MIS format and examples), including TMU personnel, and disseminated via FAA and NWS communications systems. If a MIS is included in, or issued concurrently with a CWSU briefing, the meteorologist should ensure the MIS portion of the briefing is disseminated to those supported facilities which do not normally receive the CWSU briefing.

Electronic graphic versions of MISs may be developed and used to provide quick reference to ARTCC users, or augment the official alphanumeric MIS products. At a minimum graphic MISs should depict all hazards or expected hazards with clearly defined boundaries. They should also show all of the associated information covered in the alphanumeric text, a valid period date/time group, and map backgrounds, as required by the local ARTCC.

If the MIS is distributed over the FAA Flight Data Entry Printout (FDEP) system, the system's message size restriction of 10 lines should be considered. Meteorologists may revise an already disseminated product for FDEP-only use.

**7.4 Center Weather Advisory (CWA).** The CWA is an aviation weather warning for conditions meeting or approaching national in-flight advisory (AIRMET, SIGMET or SIGMET for convection) criteria (see NWSI 10-811, *Enroute Forecasts and Advisories*). The CWA is primarily used by air crews to anticipate and avoid adverse weather conditions in the en route and terminal environments. It is not a flight planning product because of its short lead time and duration. Additionally, the CWA should be meteorologically consistent with other products and reflect conditions at the time of issuance and/or in the near future. If a CWA has been issued prior to coordination, notification to the appropriate offices, national center, or WFO should

follow as soon as higher priority duties permit.

CWAs are valid for up to two (2) hours and may include forecasts of conditions expected to begin within two (2) hours of issuance. If conditions are expected to persist after the advisory's valid period, a statement to that effect should be included in the last line of the text. Follow-up CWAs should be issued as appropriate. Notice of significant changes in the phenomenon described in a CWA should be provided by a new CWA issuance for that phenomenon. If the forecaster deems it necessary, CWAs may be issued hourly for convective activity. This may improve the usefulness of the Hazardous In-flight Weather Advisory Service (HIWAS) recordings which include those CWAs.

The Urgent CWA (UCWA) communications header is intended for those situations when weather conditions occur that have not been forecast and have an immediate effect on the safe flow of air traffic within the ARTCC area of responsibility. It should only be used when the CWSU meteorologist believes any delay in dissemination to FAA facilities would impact aviation safety. Use the routine CWA header for subsequent issuances of the same phenomenon. CWAs may be issued for the same phenomena described in advisories and forecast products issued by WFOs, the AWC, or the National Centers for Environmental Prediction (NCEP).

The first line of each CWA's FAA communications system header must have an ARTCC identifier immediately followed by a Phenomenon Number (1-6) (see Appendix D for CWA format and examples). The Phenomenon Number must be assigned to each meteorologically distinct condition, group of conditions, or to each set of similar condition(s) in distinctly separate areas. The first meteorological event of the local calendar day which requires the issuance of a CWA should be assigned phenomenon number 1. The latest CWA issuance with this number can replace and update the previous issuance. This numbering makes it possible to disseminate CWAs for up to six (6) unrelated events with each event issuance capable of being individually updated.

The first line must also contain an issuance/beginning valid time. When a CWA is issued with some lead time, the time entered is the issuance time. The time the meteorologist expects the conditions to begin should be stated in the text. If there is no lead time, the issuance time is considered the beginning time of the phenomena. In either case, CWAs are valid upon issuance.

On the second line, the product identifier CWA must be followed by a three-digit number. The first digit is the phenomenon number; the second two digits are an issuance number. Issuance numbers for phenomena must be issued sequentially beginning with 01. This should be followed by the VALID TIL time. The valid period (issuance time to end time) should not exceed two (2) hours. If the meteorological conditions are expected to persist after the two (2) hour period, append a remark at the end of the advisory text, and on subsequent CWAs when appropriate stating conditions might extend past valid time (e.g. CONDS EXP TO CONT AFT 20Z).

Time permitting, any CWA overlapping into another center's airspace should be coordinated and a statement should be included in the text, e.g., SEE ZOB CWA 201 FOR TS CONDS IN ZOB CTA (CTA is control area). If issuance prior to coordination is necessary, a statement regarding the area(s) affected should be included in the text, e.g., LINE TS EXTDS NW INTO ZOB CTA.

AIRMETS/SIGMETs being augmented by the CWA should be referenced in a text remark, e.g.

SEE CONVECTIVE SIGMET 8W. Each CWA should normally be disseminated via FAA and NWS communications systems.

Graphic versions of CWAs may be created to augment the disseminated text versions and provide quick reference to product users within the ARTCC. As a minimum graphic CWAs must depict all hazards detailed in the text, with hazard boundaries clearly defined, appropriate descriptive alphanumeric text, date and time group, and map backgrounds as required by the local ARTCC. Forecasters should be aware that if the CWA is to be distributed over the FAA FDEP system, that system has a product length restriction.

#### **7.4.1 Situations Where a CWA Should be Issued.**

1. When existing or anticipated weather conditions do not meet national in-flight advisory criteria (i.e., in terms of intensity or areal coverage) but current PIREPs or other weather information sources indicate those conditions, in the judgment of the CWSU meteorologist, may adversely impact the safe flow of air traffic within the ARTCC area of responsibility.
2. As a supplement to an existing in-flight advisory. The purpose of the CWA in this case is to improve upon or update the existing advisory's description of the phenomenon. These improvements may be to make the location more relevant to users within the ARTCC area or to be more precise in describing the location, movement, extent, or intensity of the phenomenon. For example, a CWA describing the specific area(s) of low IFR conditions within the ARTCC area would be a valid redefinition of the location and intensity relative to the ARTCC area and meeting documented requirements.
3. When an in-flight advisory has not been issued, but observed or expected weather conditions meet in-flight advisory criteria (based on current PIREPs and/or other sources of information) which the CWSU forecaster believes will impact the NAS within the ARTCC area of responsibility. The CWSU meteorologist should call the appropriate forecaster at the AWC, or AAWU to coordinate.
4. To cancel a CWA when the phenomenon described in the CWA is no longer expected. Use the next higher number in sequence and ensure the valid time is at least 30 minutes in length.

**7.4.2 Conditions or Events Where a CWA Should be Issued.** CWAs should be issued for any of the following events when they are expected to occur within two hours and have not been previously forecast by AWC or AAWU products, or to supplement the AWC and AAWU products.

- a. Any of the following conditions occur, are forecast to occur, and, if previously forecast, are no longer expected:
  - (1) Conditions meeting convective SIGMET criteria (see NWSI 10-811)
  - (2) Icing - moderate or greater

- (3) Turbulence - moderate or greater
  - (4) Heavy precipitation
  - (5) Freezing precipitation
  - (6) Conditions at or approaching Low IFR (see NWSI 10-813)
  - (7) Surface winds/gusts  $\geq 30$  knots
  - (8) Low Level Wind Shear (surface - 2,000 feet)
  - (9) Volcanic ash, dust storms, or sandstorms; and
- b. In the forecaster's judgment, the conditions listed above, or any others, may adversely impact the flow of air traffic within the ARTCC area of responsibility.

**7.5 Forecast Coordination.** Forecast products issued by WFOs, AWC, AAWU, other NCEP centers, and CWSUs often address the same spatial and temporal events. CWSU meteorologists should strive to ensure forecasts, advisories, or information they provide are consistent with other forecast products, whether those products are issued locally or by other NWS offices. Coordination with responsible NWS offices prior to product issuances is important and necessary, especially when those products concern unexpected or suddenly changing observed weather conditions. This coordination prevents or minimizes confusion to end users impacting aviation safety. In the interest of preserving forecast consistency, the issuing office's decision on the forecast product is considered final.

The following is an exception:

CWSU meteorologists routinely provide TMU decision-makers with TRACON-area weather briefings. The TRACON-area briefing typically contains high-resolution details on weather conditions expected to occur within a 25 nautical mile radius of a terminal.

CWSU personnel should coordinate with personnel at the appropriate WFOs to avoid significant discrepancies between their TRACON-area weather briefings and the affected TAFs. However, since the TRACON briefing and affected TAF can involve different spatial and time resolution, differences between the two can occur.

At a minimum, the CWSU meteorologist should coordinate with the WFO aviation forecaster when the portion of the TRACON-area briefing describing terminal weather (conditions within five nm of the terminal) contradicts the affected TAF at a level requiring an amendment to the TAF (See NWSI 10-813, *Terminal Aerodrome Forecasts*). This coordination should be accomplished as soon as the CWSU forecaster becomes aware a current, or anticipated, TRACON-area weather briefing differs from the TAF and that difference requires a TAF amendment.

Such coordination should not delay the delivery of the TRACON-area weather briefing if, in the judgment of the CWSU meteorologist, a delay would cause significant impact to air traffic flow

and/or compromise safety. In such a case, coordination should occur as soon as possible after the delivery of the briefing.

Occurrences when CWSU/WFO coordination fails to produce a common forecast solution should be documented on the CWSU operations log. In any case, the CWSU meteorologist is the final authority for the TRACON-area weather briefing and the WFO forecaster is the final authority for the TAF.

When there are repeated significant forecast differences between the CWSU TRACON area weather briefing and a TAF, the MICs of the CWSU and the WFO(s) should coordinate to resolve the problem.

**7.5.1 Forecast Continuity with Federal Aviation Administration Order 7110.10S.** When describing levels of precipitation, the following terms must be used: Light (LGT), Moderate (MOD), Heavy (HVY), and Extreme (EXTRM). These terms are applied only to intensity of precipitation; other terms may be applied in modification of icing, turbulence, or thunderstorms.

When reporting thunderstorms in a CWA or MIS, precipitation should be included at the forecaster's discretion and should use only those modifiers listed in the above paragraph. The type of precipitation associated with the thunderstorm (TS) must follow the symbol TS.

The symbol TS may be preceded by only one modifier, SEV, at the meteorologist's discretion. If a thunderstorm does not meet the criteria for SEV no modifier should be placed in front of the symbol.

Area of coverage for a thunderstorm may be included preceding the strength modifier when necessary.

**7.5.2 TAF Collaboration.** The TAF for the 35 Operational Evolution Partner (OEP) airports (Appendix E) is an important part in determining air traffic flow at the terminal and throughout the NAS. Consistency between the TAF and the information provided by the CWSU meteorologist is paramount in providing the FAA with weather information to aid in their decision-making process. The CWSU and WFO MICs should agree to the content, and level of detail, provided in the collaboration process; and keep documentation of that agreement in their respective offices.

For CWSUs with one or more of the 35 OEP airports in their area of responsibility, the CWSU meteorologist should collaborate on the TAF for each OEP airport(s) with the WFO meteorologist responsible for issuing the TAF as necessary. The collaboration can be conducted using any method available to the meteorologist (e.g. telephone, chat, etc.). However, using the work file described in section 7.5.3 below is a good way to create a record of collaboration.

**7.5.3 Collaborative Work File.** The CWSU meteorologists must provide airport-specific operations information for each of the 35 OEP airports in their area of responsibility to the WFO issuing the TAF IAW the agreement reached by the respective MICs. Other airports may be added to this requirement in coordination with the regional MSD. This information should be in the form of a work file on the AWIPS Remote Display. This work file is designed as a technical communication between qualified meteorologists, and not intended for use by non-

meteorologists or the general public.

The CWSU meteorologist should provide, at least once and at least one hour prior to each scheduled TAF issuance (see NWSI 10-813, *Terminal Aerodrome Forecasts*, for TAF issuance times) during the CWSU operational hours, input into the TAF for each of their OEP airports by sending a collaborative work file to the responsible WFO. The work file should contain a brief discussion of the anticipated weather elements for inclusion in the TAF and weather impacts at the affected airport using the format below. To minimize workload issues, those CWSUs with multiple OEP airports should incorporate the information for each OEP airport into a single work file whenever possible.

CWSUs with operational hours starting at 1100 UTC or later should not provide a collaborative work file to the WFO for the 1200Z issuance unless the meteorologist has adequate time and information to provide input to the WFO. In these cases, and as time allows, the CWSU meteorologist should contact the WFO meteorologist to discuss the TAF.

**Example:**

```
WRKZFW
CONCERNS...WIND TREND CDFROPA. CDFRNT CRRNTLY NR A ADM-XBP-BKD LN...CONTS TO MOV
SEWRD THIS AM. 18Z STILL LUKS GOOD FOR CDFROPA AT THE DFW TERM. VFR CONDS AHD
AND BHND THE FNT WL PRVL THRU THE AFTN/EVE HRS.ONLY CLDS TO MENTION DURG THIS
PD WL BE SCT/BKN CI. AFT 06Z THUR XPECTG TO SEE BKN-OVC MVFR CIGS DVLP AS
ISNETRPC LIFT AT 295K BFNS TO SATURATE THE LWR LYRS PER NMM.
```

ADDITIONAL/OPTIONAL ELEMENTS

DFW AIRPORT ACCEPTANCE RATE...S FLOW 126.

DFW WX DELAYS/ACFT...NONE.

IMPORTANT NUMBERS FOR DFW (Timing of onset/ending very important)

CIGS	VSBY	ARRIVALS/HR (AAR)	IMPACT
>4000	>6	120+	No ARTCC problems
1000-4000	3-6	112-114	Limited or no vis approaches (NO VAPS)
200-900	1/2-3	96	In-trail spacing needed (MIT)
<200	<1/4	78-84	Significant delays (MIT GDP)
TSRA		0+	Variable delays (MIT GDP GS)
FZRA/FZDZ			Major delays for de-icing (MIT GDP GS)
WINDSHIFTS			Up to 30 minutes of ground/airborne delays to switch rwys.
CROSSWINDS			
20-24KT		114-84	MIT
>25KT		< 78	MIT GDP

Miles in Trail (MIT)                      Ground Delay Program (GDP)                      Ground Stop (GS)

**7.6 Support to Enroute Flight Advisory Services (EFAS) and Automated Flight Service Stations/Flight Service Stations (AFSS/FSS).** The CWSU in each ARTCC is designated the primary support facility for each associated EFAS facility. CWSUs (and WFOs when CWSUs are closed) should assist the EFAS specialist to the best of their ability. Exchange of weather information can be helpful to both parties since the EFAS staff has access to additional sources of PIREP information.

Shift briefings for AFSS/FSS personnel should normally be done by the CWSU IAW FAA Order

7110.10. Weather support when the CWSU is closed or not available (unless back-up services are in effect) is the responsibility of designated WFOs IAW FAA Order 7110.10. This responsibility ensures the link with an NWS facility able to provide 24-hour support remains clear cut. Refer any requests for CWSU PWBs to an AFSS/FSS.

**7.7 Operational Records.** The CWSU MIC is responsible for ensuring shift logs are maintained. Information logged should include, but not be limited to, weather discussions, briefings, and equipment functionality. Each entry should record the time, the name or initials of the individual requesting information, and a brief summary of the discussion.

Logs should be retained in accordance with NOAA policies and practices as stated in NWSI 1-803, *Records Management*.

**7.7.1 Handling of Weather Records.** CWSU weather records and daily operations logs should be retained as directed by this instruction. Electronically displayed products generated on AWIPS or any other computerized system should not be printed solely for retention purposes. Worksheets used to update briefings or to supplement other products need not be retained. If the FAA ARTCC requires the CWSU daily operations log or its equivalent be turned over to the FAA as part of a facility record, the CWSU should make a copy of the log to meet NWS retention purposes.

**7.7.2 Retention.** Texts of written weather briefings and hard copy graphic records, and copies of the Daily Record of Facility Operation Log (FAA Form 7230-4) or its equivalent prepared by the CWSU should be retained for 30 days at the CWSU. After 30 days, copies of all these records should be retained for 5 years at either the CWSU or supporting WFO.

**7.7.3 Protection of CWSU Records.** All requests for copies of weather exhibits or written records prepared by CWSU meteorologists must be handled IAW NWSI 10-2003. In the event of an aircraft mishap or accident within the ARTCC's area of responsibility, retention procedures described above must be followed unless otherwise requested by the Manager, Forensic Services, Office of Climate, Water, and Weather Services, NWSH. In the event of a major accident, all relevant products prepared by CWSU meteorologists, including available observations, charts, and forecasts, should be collected together. If space is limited in the CWSU work area the records may be forwarded to the appropriate WFO. These records should be protected and retained in either the CWSU or the WFO for at least 30 days, allowing time to determine:

- a. To what extent weather was a factor, and/or
- b. What weather information is required for investigation purposes.

After 30 days, follow normal retention procedures unless the Forensic Services manager requests otherwise.

**7.8 Statements.** Refer to NWSI 10-2004, 10-2005, and 10-2006 for detailed instructions for handling requests for information, including forecaster statements. CWSU meteorologists do not provide written statements concerning a system incident, or an aircraft incident or accident to any government or public offices, agencies, organizations, or individuals outside of NWS



without the approval of the Forensic Services manager at NWSH.

There is no requirement to allow anyone that is not part of a government investigation team to question or interview personnel in connection with an aircraft accident, whether in person or over the phone. Refer requests for interviews to the Forensic Services manager at NWSH.

**7.9 Back-Up of CWSU Operations.** On occasion, a CWSU may be closed for all or part of their duty day. Refer to Appendix B for back-up operations procedures.

**Appendix A**

**CWSU Support Facility Locations**

<b>CWSU</b>	<b>Supporting NWS WFO</b>
ZAB Albuquerque Center	WFO Albuquerque, NM
ZAN Anchorage Center	AAWU
ZTL Atlanta Center	WFO Peachtree, GA
ZBW Boston Center	WFO Boston/Taunton, MA
ZAU Chicago Center	WFO Chicago, IL
ZOB Cleveland Center	WFO Cleveland, OH
ZDV Denver Center	WFO Denver-Boulder, CO
ZFW Fort Worth Center	WFO Fort Worth, TX
ZHU Houston Center	WFO Houston/Galveston, TX
ZID Indianapolis Center	WFO Indianapolis, IN
ZJX Jacksonville Center	WFO Jacksonville, FL
ZKC Kansas City Center	WFO Kansas City/Pleasant Hill, MO
ZLA Los Angeles Center	WFO Los Angeles/Oxnard, CA
ZME Memphis Center	WFO Memphis, TN
ZMA Miami Center	WFO Miami-South Florida, FL
ZMP Minneapolis Center	WFO Chanhassen, MN
ZNY New York Center	WFO Upton, NY
ZOA Oakland Center	WFO San Francisco Bay Area/Monterey, CA
ZLC Salt Lake City Center	WFO Salt Lake City, UT
ZSE Seattle Center	WFO Seattle, WA
ZDC Washington Center	WFO Baltimore/Washington Sterling, VA

## Appendix B

### Back-Up of CWSU Operations

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**1. General.** Because there is no operational back-up support from ATCSCC to CWSUs, the following plan must be used in the event a CWSU is closed:

a. Upon request AWC will provide consultation directly to ATCSCC. AWC does not issue CWAs and cannot be expected to perform the duties of the CWSU. In Alaska, the AAWU may provide backup weather support to the Anchorage ARTCC.

b. During CWSU duty hours (normally from 5 AM to 10 PM local time), if a CWSU is non-operational (either unstaffed or for other reasons), for all or part of that time, the adjacent CWSU (or AAWU for Alaska) should provide, if able to do so, back-up CWAs and other support (if necessary) to FAA facilities such as TRACON, ATCTs, and FSS.

**NOTE: If the back-up CWSU is being impacted by weather such that support to the affected CWSU's FAA-supported facilities would cause undue hardship, then support to these facilities must be on an as-requested basis. Such occurrences should be logged with the reason(s) for not providing support.**

Restoration of normal service occurs when the affected CWSU is back in operation and no longer needs back-up. MISs are not included in the back-up services except as noted in the notification procedures (see example). MISs contain different criteria for each CWSU in addition to what is listed as the MIS content in Section 7.5. Therefore, it must be emphasized that the CWSU providing back-up cannot provide the same range of services that the affected CWSU provided to its ARTCC.

Information exchanges are necessary between CWSU pairs and should include support requirement information about the operational and meteorological differences between the CWSUs should back-up become necessary. Information should be shared as to the type and extent of back-up which is to be provided.

The AWC and each CWSU should be provided with a phone list of each ARTCC Watch Officer, CWSU, and AFSS by OCWWS, NWSH. For ATCSCC operations, the point of contact is the National Operations Manager (NOM): 703-708-5100.

**2. Notification Procedures.** When the CWSU determines it will be unstaffed or non-operational, the CWSU should inform its back-up CWSU, the ARTCC Area Manager,

supporting WFO, NWS Region MSD, and the AWC forecaster for the region in which the CWSU resides, i.e. FA East, FA Central, FA West, or the AAWU for Alaska. If time permits, the back-up CWSU should call the ATCSCC NOM when they have assumed responsibility for the affected CWSU.

If the back-up CWSU is unavailable for support, the affected CWSU should call the AWC lead forecaster. The AWC should support the closed CWSU with its own products, except for the CWA and MIS. No support to other air traffic facilities in the closed CWSU's operational area should be given or expected in this case. NOTE: This occurrence should also be logged with a reason for the backup not being available.

The WFO/AAWU can be considered as a resource for the ARTCC in the event the CWSU is not in operation. The WFO/AAWU cannot provide all the services of a CWSU. The WFO/AAWU can answer questions about the TAF and weather affecting its local terminal as workload permits. The closing CWSU should issue a MIS specifying which CWSU has backup responsibility, any expected MIS criteria weather, the closing time, and reopening time (if known).

**3. MIS Examples for Back-Up Operations:**

FAUS20 KZDV 092112  
ZDV MIS 01 VALID 070200-070400  
...FOR ATC PLANNING PURPOSES ONLY...  
ZDV CWSU WILL CLOSE 07/0200Z DUE TO SHORT STAFFING. ZAB CWSU WILL  
ASSUME SERVICES BACKUP. ZDV CWSU WILL REOPEN 071230Z.  
CWSU/WB.

FAUS20 KZNY 121457  
ZNY MIS 01 VALID 121455-130200  
...FOR ATC PLANNING PURPOSES ONLY...  
HI PRESS LOCATED OVER THE NORTHEAST WILL MOV EWD THRU THE PERIOD AS  
TWO LO PRESS SYSTEMS DVLP AND MOV INTO THE AREA. ON LO WILL DVLP IN  
TN/KY AND MOV INTO THE NRN OH VALLEY REGION THRU LATE TODAY AND  
TONIGHT. THE SECOND LO WILL DVLP OFF THE COAST OF VA AND BEG TO MOV  
NEWD OVERNIGHT.

.  
ICING/TURB- MOD ICING IS EXPECTED IN ALL DOMESTIC ZNY FM FZLVL TO  
FL180...ICING WILL LAST BYD THE END OF THE PERIOD. OCNL TURB IS POSS  
BETWEEN FL280 AND FL370...TURB IS MORE LIKELY IN SRN ZNY.

.  
TRACON AREA FORECAST- VFR COND TILL AROUND 20-22Z WHEN SNOW  
SHOWERS  
WILL MOV INTO THE AREA. WITH THE SNOW SHOWERS CIGS WILL BEC OVC  
008-012 WITH VIS 1-3SM...BY THE END OF THE PERIOD THE SNOW MAY  
CHANGE OVER TO SLEET/FREEZING RAIN BEFORE CHANGING TO ALL RAIN BYD  
THE END OF THE PERIOD. WINDS WILL BE LGT/VRB BEC 090-110 10-12KT BY  
18Z.

ZNY OCEANIC AIRSPACE- NO SIG WX.

.

THUNDERSTORMS- NIL.

.

OUTLOOK 02-14Z...SHRA WITH IFR CONDS AND POSS ISOL LIFR. RAIN MAY BE HEAVY AT TIMES AND WILL LAST THRU THE PERIOD.

.

ZDC WILL PROVIDE SERVICE BACKUP FOR ZNY AFT 122300Z.

FAUS20 KZME 191333

ZME MIS 01 VALID 191330-191900

...FOR ATC PLANNING PURPOSES ONLY...

THRUOUT ZME:

OCNL MOD TURB 050-FL350.

OVR ZME N OF A LINE FROM PXV-MEM-VUZ:

OCNL MOD RIME ICING 030-100. CONDS ENDG BY 21Z.

ZTL CWSU HAS ASSUMED LIMITED BACKUP OF ZME OPS UFN. UPDATED MIS NA.

**4. CWSU Back-Up Pairings:**

ZAB	Albuquerque, NM	ZDV
ZAN	Anchorage, AK	AAWU
ZTL	Atlanta, GA	ZME
ZBW	Nashua, NH	ZOB
ZAU	Aurora, IL	ZID
ZDV	Longmont, CO	ZAB
ZFW	Fort Worth, TX	ZHU
ZHU	Houston, TX	ZFW
ZOB	Oberlin, OH	ZBW
ZID	Indianapolis, IN	ZAU
ZJX	Jacksonville, FL	ZMA
ZKC	Olathe, KS	ZMP
ZLA	Palmdale, CA	ZOA
ZME	Memphis, TN	ZTL
ZMA	Miami, FL	ZJX
ZMP	Minneapolis, MN	ZKC
ZNY	Ronkonkoma, NY	ZDC
ZOA	Fremont, CA	ZLA
ZLC	Salt Lake City, UT	ZSE
ZSE	Auburn, WA	ZLC
ZDC	Leesburg, VA	ZNY

This chart is reversible, e.g. ZME backs up ZTL and vice versa, except for ZAN and the AAWU.

## Appendix C

## MIS Format and Examples

1. **MIS Format.** The FAA header line is zzz MIS ii VALID ddtttt-ddtttt; where "zzz" is the ARTCC identification, (e.g., ZJX), "MIS" is the product type, "ii" is the 2-digit sequential issuance number, and "ddtttt" is the valid beginning and ending date/time UTC. The second sentence of the MIS must be "FOR ATC PLANNING PURPOSES ONLY".

Any remarks such as "SEE CONVECTIVE SIGMET 8W"; "NO UPDATES AVBL AFT 0230Z"; and Forecaster initials and/or facility identifier may be placed at the end of the MIS.

If the phenomenon described in a MIS is no longer expected, a cancellation MIS message must be issued. The FAA header does not contain an issuance number. However, the MIS text begins with "Cancel zzz MIS ii." A text explanation for the cancellation should follow. If the phenomenon described in the MIS is expected to continue beyond the operating hours of the CWSU, then the remark "NO UPDATES AFT ttttZ" (where "ttttZ" is the UTC closing time of the CWSU) should be added at the text end. The MIS is non-technical in nature to convey expected weather and impacts in the clearest, and simplest, manner possible to the FAA user.

2. **MIS Examples:** These examples are actual products issued by CWSUs and archived at the National Climate Data Center (NCDC).

Preferred Formats:

FAUS20 KZOB 010158

ZOB MIS 03 VALID 010200-011300

...FOR ATC PLANNING PURPOSES ONLY...

HI PRESSURE BRINGS VFR CONDS. A W-E ORIENTED JET ACROSS ZOB WITH WINDS UP TO 175KT AT FL300-390.

CONF LVL: HIGH

HAZARDS WITHIN ZOB AIRSPACE THRU 12HRS...

1. TS...NONE

2. ICING...NONE

3. TURB...NONE

4. STG LOW LEVEL WINDS...LLWS AND  
SGFNT HUB AIRPORT CROSSWINDS...NONE

5. IFR COND...NONE

ZOB AIRSPACE OUTLOOK 12-24HRS... INCREASING HI CLOUDS AHEAD OF NEXT SYSTEM BUT STILL NO SIG HAZARDS.

NO UPDTS AFT 0230Z.

FAUS20 KZOB 011736

ZOB MIS 02 VALID 011736-020230

...FOR ATC PLANNING PURPOSES ONLY...

LOW PRESSURE NEAR BUFFALO WILL TRACK EAST OF ZOB TODAY WHILE AN UPPER LEVEL TROF WAS STILL TO THE W. SYSTEM SNOW WILL GRADU GIVE WAY

TO A LESS

GENERAL LAKE EFFECT SNOW SCENARIO THRU TOMORROW.

A STRONG UPPER LEVEL JET OF ABOUT 150KT WAS ASSOCIATED WITH TURBULENCE IN ZOB. THIS JET WILL SHIFT SE OF ZOB...ALLOWING FOR A DECREASING TREND IN TURBULENCE.

HAZARDS IN ZOB THRU 02/0600Z...

1. TS...NONE.
2. ICING...AREAS LGT-MOD RIME/MX BLW 120 THROUGHOUT.
3. TURBULENCE...E OF A LINE FROM 55NNE FWA TO 25SE ECK...AREAS LGT-MOD TURB/CHOP SURFACE TO FL350. COND SLOWLY DIMINISHING FROM NW-SE AS UPPER JET SHIFTS SE OF ZOB/LOW LEVEL WINDS DIMINISH.
4. STRONG LOW LEVEL WINDS, LLWS, CROSSWINDS AT THE HUB AIRPORTS... UNFAVORABLE SURFACE WINDS AT DTW OF 30015G22KT WILL GRADU DIMINISH TODAY.
5. IFR...MAINLY NE OF A LINE FROM 25SE ECK TO 55SSW CLE TO PSB...PATCHY IFR TO LIFR IN SHSN/BLSN.

THE OUTLOOK IN ZOB FROM 02/0600Z THRU 02/1800Z...

GENERAL SNOWFALL ASSOCIATED WITH AN UPPER TROF BEGINS TO DIMINISH WHILE LAKE EFFECT SNOW SHOWERS

INCREASE. ICING/FLIGHT LEVEL TURB DECREASES.

UNFAVORABLE GUSTY NW SURFACE WINDS CONTINUE AT DTW.

FAUS20 KZBW 011714

ZBW MIS 02 VALID 011700-020000

...FOR ATC PLANNING PURPOSES ONLY...

IMPACTS: 011700-020500Z

OCNL MOD ICG FRZLVL-170 THRUT BY 012100Z. FRZLVL SFC

NRN ZBW AREA RISING TO 030 SRN AREA. OCNL MOD TURB

BLW 150 THRUT BY 012100Z. OCNL MOD CAT 150-FL350

THRUT BY 012100Z. SFC WND GSTG ABV 30KT S OF BOS TO

25NE JFK LN BY 012200Z. PTCHY CIG BLW 5 HND FT AND/OR

VIS BLW 1SM IN -SN BR THRUT BY 020300Z. NO UPDATES

AFT 020200Z.

THUNDERSTORMS: NONE

SHORT TERM: 011700-020500Z

LO PRES AREA OVR ERN LK ERIE WITH OCFNT SEWD TO

DELMARVA PEN THIS MRNG. MVFR/IFR CIG -SN NY AND NEW

ENG EXCP VFR ME. SFC WND VARIOUS DRCTNS 5-10KT. LO

WL MOV NEWD TO NS TNGT ACCORDING TO NAM AND GFS.

CONTD MVFR/IFR CIG -SN BR NY AND NRN NEW ENG. BCMG VFR



SERN NY AND SRN NEW ENG. SFC WND N-NE 5-10KT NRN NEW ENG AND W-NW 10-20 GSTG 20-30KT REST ZBW AREA. OCNL MOD ICG, OCNL MOD LO LVL TURB WITH LLWS AND OCNL MOD CAT THRUT.

OUTLOOK: 020500-021700Z

LO PRES MOVS NEWD INTO NFLD AND HI PRES AREA MOVS INTO CNTRL PLAINS WED MRNG ACCORDING TO NAM AND GFS. CONTD MVFR/IFR CIG -SN BR NY AND NRN NEW ENG. CONTD VFR SERN NY AND SRN NEW ENG. SFC WND W-N 10-20KT GSTG 20-30KT. FQT MOD ISOLD SVR LO LVL TURB WITH LLWS THRUT. CONTD OCNL MOD ICG NY AND NRN NEW ENG. NO CAT EXPCD.

FAAK20 KZAN 010344

ZAN MIS 02 VALID 010345-011545

...FOR ATC PLANNING PURPOSES ONLY...

A LAYER OF VERY COLD AIR ALOFT COVERS THE ALASKA PANHANDLE AND PART

OF THE EASTERN MAINLAND ALONG WITH THE ADJACENT NORTH AND EASTERN GULF OF ALASKA.

BALLOON SOUNDINGS ALONG WITH SATELLITE...MODEL AND ACARS DATA INDICATE TEMPERATURES OF -65C AND COLDER BETWEEN FL340 TO FL420. AT THESE TEMPERATURES FUEL CAN CONGEAL.

THE AREA OF CONCERN IN ALASKAN AIRSPACE IS THE AREA EAST AND SOUTH OF A LINE FROM:

67 NORTH LATITUDE SOUTHWARD ALONG 146 WEST LONGTITUDE TO JOH...AND FROM JOH TO 120 SW OF ANN

THIS LAYER WILL MOVE NORTHEAST ACROSS MOST IF NOT ALL THE PANHANDLE

DURING THE NIGHT LEAVING AN AREA OF VERY COLD AIR OVER PARTS OF THE WRANGEL MTNS AND COPPER VALLEY AT 01/1545Z.

A FURTHER STATEMENT CAN BE EXPECTED.

GJD JAN 08

FAUS20 KZDC 011746

ZDC MIS 02 VALID 011800-020600

...FOR ATC PLANNING PURPOSES ONLY...

STRONG COLD FNT MOV E ACROSS ZDC. MVFR/IFR CIG/SN MTNS WV

...MOD-SEV RIME/MX ICE INC/PRECIPITATION BLW 120.

ELSEWHR ZDC...VFR INCLUDING IAD DCA BWI RDU ORF.

...

SFC WINDS BECMG W-WNW 15-30 KT VA N INCLUDING IAD DCA BWI AND 15-25 KT INCLUDING RDU ORF. ISOL GUSTS 35 KT VA N.

...

MOD-SEV TURB BLW 100 ACROSS ZDC DUE STG WINDS.

STRONG UP-AND-DOWN-DRAFTS OVER/E OF MTNS.

MOD ISOL SEV TURB 150-FL360 ESPECIALLY VA N DUE JTST WS.

...

OUTLOOK 02/0600Z-02/1800Z...UPR LVL LO PRES OVER OH/TN VLYS  
MOV ESE. IFR CIG/SN MTNS WV. MVFR/VFR CIG/SHSN ELSEWHR INCLUDG  
VCNTY DCA IAD BWI RDU. NW WINDS 15-30 KT. MOD-SEV ICE/TURB.

Alternative Formats:

FAUS20 KZMA 010132

ZMA MIS 01 VALID 010130-011330

...FOR ATC PLANNING PURPOSES ONLY...

OVR ZMA AIRSPACE, OVR CNTL FL, NORTH OF A LINE FM 10S PBI TO 20S FMY  
AREA OF MVFR CONDS WITH PATCHY IFR CONDS. A SFC LOW PRESS TROF FM A  
REMNANT FRONTAL BNDRY MOVD S DURING FRI AND BROUGHT WITH IT LOW  
CIG AND LOW VIS. XPC CONDS TO CONT THRU 1330Z.

MR

FAUS20 KZMP 010154

ZMP MIS 03 VALID 010150-011300

...FOR ATC PLANNING PURPOSES ONLY...

ZMP AREAS SW OF A LN FM DIK - 55S DSM..

LGT-MOD TURB BLW 100...LGT-MOD ICING BLW 140...DVLPG SPRDG OVR FM SW  
06-9Z AND CONTG TO SPRD NE OVR N IA & S MN THRU 12Z. AREAS OF  
IFR-LIFR CONDS DVLPG SAME AREA FM THE SW AHD OF A DEEP LOW PRESS SYS  
MOVG OUT OF NE CO SAT MORNG.

...UPDTS UNAVBL 01/0230Z-01/1100Z...

FAUS20 KZID 010159

ZID MIS 03 VALID 010200-011200

...FOR ATC PLANNING PURPOSES ONLY..

ACROSS ZID

FRQ LGT OCNL MOD TURB FL320-390. OCNL LGT CHOP FL400-430..

BECMG OCNL MOD AFT 06Z. CONDS IN JTST WS.. CONTG BYD 12Z.

IN ZID N OF A LINE FROM 45SE DEC TO 20NW EKN

ISOL MOD RIME ICE IN CLDS DVLPG FM WEST AFT 06Z.. SPRDG OVER

NRN ZID BY 12Z.

LAST.. NO UPDTS

ZID CWSU.=

FAUS20 KZDC 010227

ZDC MIS 03 VALID 010215-011400

...FOR ATC PLANNING PURPOSES ONLY...

COLD FNT OH VALLEY MOV E INTO ZDC. VFR.

SFC WIND BECMG S-SW 5-10 KT INCLUDG DCA IAD BWI  
AND S 5 KT OR LESS NC AND SERN VA INCLUDG RDU ORF.

...

OCNL MOD TURB MAINLY BLW 080 AND FL260-400 VA N.

...

OUTLOOK 01/1400Z-02/0200Z...COLD FNT MOV E ACROSS ZDC.

WINDS BECMG NW 10-25 KT. MOD TURB BLW 100 AND FL250-400.

**NWSI 10-803 September 3, 2008**

VFR CIGS/RA/IP SPREADING E INTO ERN WV ABT 00Z.

...

NO UPDTS AFT 01/0230Z.

**Appendix D**

**CWA Format and Examples**

**1. CWA Format:**

a. Line one of FAA header:

zzzp (U) CWA ddtttt (Note: () = optional)

b. Line two of FAA header:

zzz CWA pii VALID TIL ddtttt, where header elements are:

zzz	ARTCC Identification, e.g., ZKC
p	Phenomenon Number (single digit, 1-6)
(U)CWA	Product Type (note: UCWA is only used on line one of the header)
ddtttt	Beginning and/or issuance UTC date/time
ii	Issuance Number (issued sequentially for each Phenomenon Number, can go as high as 99 if needed)
ddtttt	Ending valid UTC date/time

c. Line one of text - Phenomenon Location

FROM aaa TO bbb TO ccc TO aaa	Polygons
FROM aaa TO bbb	Lines
VC or VCY aaa	Vicinity
aaa	Point
nnnDDD aaa	Point

Notes:

(1) The location line should not exceed one line of text and must end **without** a period.

(2) aaa, bbb, etc. are location identifiers depicted on the in-flight advisory plotting chart. These identifiers should be used as area or line-defining points, or as all or part of a point reference (i.e., VC or VCY (n)nn DD(D) XXX). The (n)nn is distance in nautical miles and DD(D) is a 16-point compass direction (e.g., VC IAH or 40NNE LBB). NOTE: While VC or VCY are valid methods to depict location, the use of a direction and distance (i.e., 40NNE LBB) is preferred.

(3) Polygon areas are defined with the keyword FROM and followed by three or more points starting in the northernmost corner of the areas, proceeding clockwise, and ending by repeating the first point.

(4) The text for a line phenomenon must contain the keywords LINE and nn NM WIDE where nn is the width of the line in nautical miles. Describe a line from north to south and west to east using as many points as necessary to indicate any changes in line orientation.

(5) The text for a phenomenon defined around a point must contain the keywords AREA or ISOL. The diameter of a point phenomenon, i.e., DIAM nn NM must also be specified.

(6) If some or all of a CWA phenomenon is outside of the points depicted on the in-flight advisory plotting chart, then describe the location by using latitude, longitude, or plain language geographic location.

Line two of text - phenomenon description: Text description should include key phrases detailed in the notes above. Remarks, if appropriate, should be added to the end of the text. NOTE: The forecaster may choose to include initials, facility identifier, or the forecaster number at the end of the CWA.

**2. CWA Examples:** These examples are actual products issued by CWSUs and archived at NCDC.

FAUS21 KZMA 010157  
ZMA1 CWA 010155  
ZMA CWA 102 VALID UNTIL 010355  
FROM 75SW SRQ TO 180WSW FMY  
BKN LINE...20 NM WIDE...OF SHRA AND ISOL TS MOV FROM 25020KT. MAX  
TOPS EST NR FL320. XPC LTL CHG IN TS CVRG/INTST THRU 0355Z.  
MR

FAUS21 KZOA 010227  
ZOA1 CWA 010225  
ZOA CWA 101 VALID UNTIL 010425  
FROM 8NNW OAK-25SSE OAK  
LINE 20NM WIDE MOD-SEV TURB BLW 060 WITH LLWS CONDS. DUE TO STRONG  
NE WINDS OV RUFF TRRN. REPTD BY SMALL ACFT. ZOA CWSU.

FAUS24 KZJX 130208  
ZJX4 CWA 130210  
ZJX CWA 401 VALID UNTIL 130410  
50SE FLO  
DIAM...15NM WIDE OF CIGS BLW 005 AND/OR VSBY AOB 1SM  
IN BR/FG.CONDS EXPD TO CONT AND SPRD S AND W OF THE AREA

DRG THE NXT 2 HRS. NO UPDATES AFT 0230Z.  
VC

FAUS21 KZJX 130214  
ZJX1 CWA 130215  
ZJX CWA 103 VALID UNTIL 130415  
FROM 25SW SAV TO CRG TO 40E CTY  
LN...15NM WIDE OF CIGS BLW 005 AND/OR VSBY BLW 1SM IN  
BR/FG. CONDS EXPD TO INCR IN COVERAGE OVR GA/FL BYD THE  
NXT 2 HRS. NO UPDATES AFT 0230Z.  
VC

FAUS21 KZFW 131144  
ZFW1 CWA 131145  
ZFW CWA 101 VALID UNTIL 131330  
FROM 25SE TXK TO 35SE EIC TO 55ENE LFK  
TO 40NW LFK TO GGG TO 25SE TXK  
AREA OCNL LIFR CONDS.  
CIGS BLW 005/VIS BLW 1SM BR/FG.  
CONDS ENDG MOST AREAS BY 1330Z.  
XZ

FAUS22 KZJX 131152  
ZJX2 CWA 131155  
ZJX CWA 201 VALID UNTIL 131355  
FROM 220SW TLH TO 200S CEW TO 135SSE CEW TO 220SW TLH  
AREA...SCT SHRA/ISOLD EMBDD TS MOVG FM 24020KTS.  
MAX TS TOPS EST NR FL350. EXP SLO INCRS IN CVRG/INTST THRU PD.  
JW

FAUS21 KZME 291421  
ZME1 CWA 291420  
ZME CWA 101 VALID UNTIL 291600  
FROM 20W BWG TO 25W BNA TO 50SE DYR TO 25W ARG TO 20W BWG  
AREA OF SHRA WITH ISOLD CLUSTERS OF TS. TOPS MOSTLY TO FL300 WITH  
ISOLD TOPS TO FL340. STORM MOTION IS FM 24040KT.

FAUS21 KZAU 291600  
ZAU1 CWA 291600  
ZAU CWA 101 VALID UNTIL 291700  
28N IND  
ISOL TSRA..DIAMETER 15NM  
MOV FROM 22050KT..TOP TO FL250.  
=

FAUS21 KZLC 312010  
ZLC1 CWA 312010  
ZLC CWA 101 VALID UNTIL 312210

FROM LWT TO SHR  
WIDTH 40NM WEST TO 100NM EAST OF LINE. MOD-SEV MTN WAVE FL340-FL380.  
+/- 15-20KT AND +/- 500FT. RPTD BY MULT ACFT. CONDS EXP TO CONT  
AFTER 2007.

FAUS21 KZOA 312134  
ZOA1 CWA 312130  
ZOA CWA 101 VALID UNTIL 312330  
FROM 90N FMG-90SSE FMG-50NNW CZQ-35NNE RBL-90N FMG  
AREA MOD-SEV RIME ICE BTN FL100 AND FL220.  
RPRTD BY AIRCRAFT. ZOA CWSU.

FAUS22 KZFW 312321  
ZFW2 CWA 312321  
ZFW CWA 201 VALID UNTIL 312345  
CANCELLED. LIFR CIGS HAVE IMPROVED.  
XZ=

FAUS21 KZDC 101921  
ZDC1 CWA 101925  
ZDC CWA 102 VALID UNTIL 101955  
CANCEL ZDC1 CWA 101. SEE CONVECTIVE SIGMET 73E. RPG.

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FAUS21 KZME 162041  
ZME1 CWA 162040  
ZME CWA 101 VALID UNTIL 162240  
FROM 40W HEC TO HEC TO 35W MZB TO 50SSW LAX TO 40W HEC  
AREA SCT RASH AND FEW TSRA CB TOPS 370 MOVG FM 150 15KTS. MOST  
SIG ATC IMPACT IS VCY DAG HEC CORRIDOR AND PMD. CONDS CONTG BYOD  
2248Z. WX=

FAUS22 KZHU 080201  
ZHU2 CWA 080200  
ZHU CWA 201 VALID UNTIL 080300  
15S IAH  
ISOL TS. DIAM 25NM. MOV FM 14015KT.  
TOPS TO FL400.  
SJ=

FAUS22 KZMP 202210  
ZMP2 UCWA 202210  
ZMP CWA 201 VALID UNTIL 202300  
FROM 25NE OBH TO 75NW OVR  
RAPIDLY DVLPG AREA SEV TSRA 20NM WIDE MOV FM 30030KT. TOPS ABV  
FL450. TORNADOES..HAIL TO 2 INCHES...WIND GUSTS TO 60KT PSBL.

...CONVECTIVE SIGMET EXPECTED SHORTLY...=

FAUS21 KZID 221505

ZID1 CWA 221500

ZID CWA 101 VALID UNTIL 221700

FROM ROD TO 60E APE TO HNN TO 45SE DEC TO DEC TO ROD

FRQ MOD OCNL SEV TURB FL300-330 IN STRONG JTST WS.

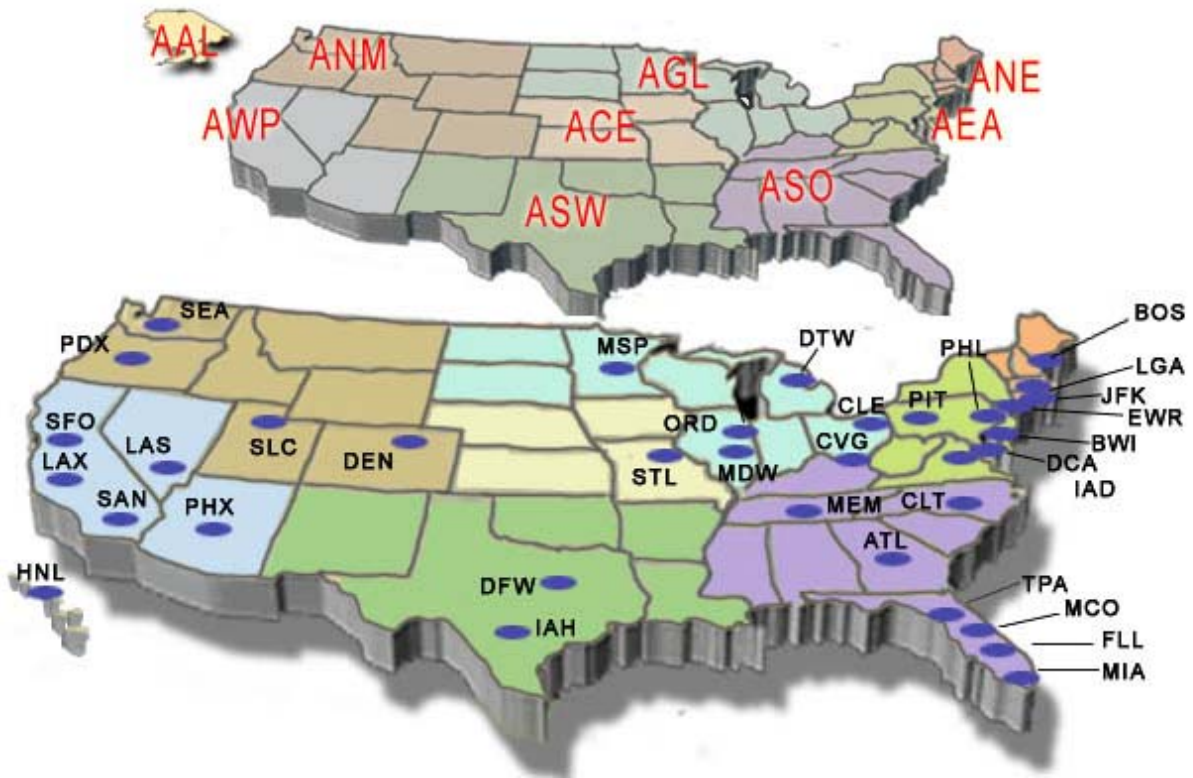
ACFT RPT WINDS @FL350 250135KT.. @FL310 250050KT.=



## APPENDIX E

## OEP Airports and Associated CWSU

Airport	CWSU
Phoenix Sky Harbor International -- PHX	Albuquerque
Atlanta/Hartsfield-Jackson Atlanta International -- ATL	Atlanta
Charlotte/Douglas International -- CLT	Atlanta
Chicago Midway -- MDW	Chicago
Chicago O'Hare International -- ORD	Chicago
Cleveland-Hopkins International -- CLE	Cleveland
Detroit Metropolitan Wayne County -- DTW	Cleveland
Pittsburgh International -- PIT	Cleveland
Denver International -- DEN	Denver
Dallas-Fort Worth International -- DFW	Ft Worth
George Bush Intercontinental/Houston -- IAH	Houston
Cincinnati-Northern Kentucky International-- CVG	Indianapolis
Orlando International -- MCO	Jacksonville
Lambert St. Louis International -- STL	Kansas City
Las Vegas McCarran International -- LAS	Los Angeles
Baltimore-Washington International Thurgood Marshall-- BWI	Leesburg
Ronald Reagan National -- DCA	Leesburg
Washington Dulles International -- IAD	Leesburg
Los Angeles International -- LAX	Los Angeles
San Diego International Lindbergh -- SAN	Los Angeles
Memphis International -- MEM	Memphis
Fort Lauderdale-Hollywood International -- FLL	Miami
Miami International -- MIA	Miami
Tampa International -- TPA	Jacksonville
Minneapolis-St Paul International -- MSP	Minneapolis
Boston/General Edward Lawrence Logan International -- BOS	Nashua
New York John F. Kennedy International -- JFK	New York
New York LaGuardia -- LGA	New York
Newark International -- EWR	New York
Philadelphia International -- PHL	New York
San Francisco International -- SFO	Oakland
	Salt Lake City
Salt Lake City International -- SLC	City
Portland International -- PDX	Seattle
Seattle -Tacoma International -- SEA	Seattle
Honolulu International -- HNL	



Map of the 35 OEP Airports and the FAA Regions (courtesy of the FAA)