

VOLUME 3 GENERAL TECHNICAL ADMINISTRATION**CHAPTER 26 AVIATION WEATHER REGULATORY REQUIREMENTS****Section 2 Approved Sources of Aviation Weather Reports and Forecasts and Aviation Weather Information Systems – Parts 91K, 121 and 135.**

3-2071 BACKGROUND. Title 14 of the Code of Federal Regulations (14 CFR) contains regulatory requirements for certificate holders and program managers conducting aircraft operations in accordance with 14 CFR parts 91 subpart K (part 91K), 121, and 135 to use an approved source for obtaining weather reports and forecasts for the purpose of controlling flight movements (operations). These regulatory requirements are discussed in greater detail in Volume 3, Chapter 26, Section 1. The information contained in this section focuses on a certificate holder's and program manager's method of compliance with the 14 CFR requirements for using approved sources of weather reports and forecasts.

A. Aviation Weather Information Systems. These are systems used by certificate holders and program managers to obtain and disseminate aviation weather reports and forecasts. Aviation weather information systems are discussed in greater detail later in this section.

B. Aviation Weather Products. The individual types of reports and forecasts, such as those of adverse weather phenomena, are often referred to as weather products. The development of new aviation weather products is an evolutionary process with distinct stages of product maturity. The growing demand for new weather products and the corresponding increase in research and development to meet that demand has led to the availability of a wide variety of weather information, some of which may be experimental in nature. Consequently, the Federal Aviation Administration (FAA) finds it necessary to draw a distinction between weather products that satisfy regulatory requirements and can be used to control flight operations versus those that may provide useful information that could be used to enhance situational awareness. In order to draw such a distinction, the FAA has developed the following definitions.

1) Primary Weather Product. For the purpose of this chapter, a primary weather product is one that meets the pertinent 14 CFR regulatory requirements for aviation weather. These products may be used to control flight movements (operations). Certificate holders and program managers must use primary weather products for all operational decisionmaking. Examples of primary weather products include, but are not limited to:

- Weather reports and forecasts prepared by the National Weather Service (NWS) or a source approved by the NWS,
- Reports and forecasts prepared by FAA-approved adverse weather phenomena reporting and forecast system,
- Weather forecasts issued by an Enhanced Weather Information System (EWINS) that are prepared from reports issued by the NWS or a source approved by the NWS, and
- Weather reports and forecasts approved for use by the Administrator, in accordance with part 91, § 91.1039(a)(1); part 121, §§ 121.101(b)(2), and 121.119(a); and part 135, § 135.213(a).

NOTE: Certificate holders and program managers are allowed by regulation to use primary weather products provided by the NWS or a source approved by the NWS. Certificate holders/program managers may only use primary weather products produced by an EWINS, adverse weather phenomena reporting and forecast system, or by any other source subject to approval by the Administrator, when specifically authorized in operations specification (OpSpec) or management specification (MSpec) A010, Aeronautical Weather Data. Specific guidance on approving sources of aviation weather in OpSpec/MSpec A010 is located in Volume 3, Chapter 18, Section 3.

2) Supplementary Weather Product. For the purposes of this order, a supplementary weather product is one that may be used to enhance situational awareness, but that does not necessarily meet the regulatory requirements of 14 CFR. Examples of supplementary weather products include, but are not limited to:

- Experimental weather reporting or forecasting tools or systems, and
- Weather information obtained outside of the certificate holder's/program manager's system and/or procedures for obtaining weather information (e.g., via television, public radio, or personal handheld device).

NOTE: Principal operations inspectors (POI) will not authorize supplementary weather products in a certificate holder's/program manager's OpSpec/MSpec A010 because supplementary weather products are not intended for use as a means to comply with the regulatory requirements for aviation weather.

C. Aviation Weather Reports—Surface Observations. Surface weather observations are fundamental to all meteorological services. Observations are the basic information upon which forecasts and warnings are made in support of aviation safety. Surface observations are issued as Aviation Routine Weather Reports (METAR) or Aviation Selected Special Weather Reports (SPECI). A METAR is a regularly scheduled report that is typically issued hourly, while a SPECI is an unscheduled report issued between the hourly METAR. A SPECI will be issued when conditions such as wind shift, a drop in visibility or Runway Visual Range (RVR), or when adverse weather phenomena change significantly. The criteria used to determine whether or not a SPECI is necessary can be found in the current addition of Advisory Circular (AC) 00-45, Aviation Weather Services.

D. Required Elements of a Surface Weather Report/Observation. Aircraft performance is typically predicated on aircraft weight, ambient temperature, wind direction, wind speed, and altimeter setting. In order to ensure aircraft takeoff and landing limitations are met and obstacles are avoided, an aviation weather report must contain at least the following elements.

- The station identifier (e.g., airport code),
- Date and time of observation (to establish relevance of the report),
- Ambient temperature at the station (airport),
- Wind direction,

- Wind speed,
- Altimeter setting,
- Visibility (for obstacle avoidance and instrument approach procedures (IAP)), and
- Ceiling (only where required by published airport minimums).

NOTE: Most surface observations will also contain dew point information and remarks.

E. Aviation Weather Reports—Adverse Weather Phenomena. Reports of adverse weather phenomena are based on real-time information provided by radar reports, radar, and satellite imagery. Pilots can also report adverse weather phenomena, when encountered or observed, via Pilot Weather Reports (PIREP). Reports of adverse weather phenomena are issued by the NWS, in the United States, and by meteorological offices operated by foreign states outside of the United States. Reports of volcanic ash are issued by the Volcanic Ash Advisory Center (VAAC), which has locations across the world. Examples of types of reports of adverse weather phenomena are as follows.

1) Significant Meteorological Information (SIGMET). A SIGMET advises (reports) and/or forecasts potentially hazardous weather other than convective activity. SIGMETs are issued for the following adverse weather phenomena.

- Severe icing,
- Severe or extreme turbulence,
- Duststorms and sandstorms lowering visibilities to less than 3 miles,
- Volcanic ash,
- Thunderstorm activity outside of the 48 contiguous United States,
- Radioactive cloud, and
- Tropical cyclone activity.

2) Convective SIGMET. Convective SIGMETs are issued for thunderstorm-related aviation hazards. A convective SIGMET implies severe or greater turbulence, severe icing, and low-level wind shear. Convective SIGMETs may report actual phenomena and/or forecast it. The following types of adverse weather phenomena are contained in a convective SIGMET:

- a) Severe surface weather including:
 - Surface winds greater than or equal to 50 knots,
 - Hail at the surface greater than or equal to $\frac{3}{4}$ of an inch in diameter, and
 - Tornadoes.
- b) Thunderstorm activity in the 48 contiguous United States.

3) Airmen's Meteorological Information (AIRMET). An AIRMET advises of potentially hazardous weather that does not meet SIGMET criteria. AIRMETs are issued for the following adverse weather phenomena.

- a) Instrument flight rules (IFR) or mountain obscuration,

- Ceilings less than 1,000 feet and/or visibility less than 3 miles affecting over 50 percent of the area, and
- Extensive mountain obscuration.

b) Turbulence.

- Moderate, and
- Sustained surface winds of greater than 30 knots.

c) Icing.

- Moderate, and
- Freezing level reports.

4) Volcanic Ash Advisories (VAA). The VAAC monitors volcanic ash plumes via satellite imagery, initiates computer trajectory/dispersion modeling, and issues VAAs. Information regarding the VAAC can be found via the National Oceanic and Atmospheric Administration's (NOAA) VAAC. The Web site for the two U.S. VAACs in Washington, DC, and Anchorage, AK, can be found at <http://www.ssd.noaa.gov/VAAC> and <http://vaac.arh.noaa.gov>.

5) Aviation Tropical Cyclone Advisory (TCA). Tropical Cyclone Advisory Centers (TCAC) are located worldwide and provide forecasts for tropical cyclones (i.e., tropical storms, typhoons, hurricanes, and cyclones). There are two TCACs in the United States: one in Miami, FL, and one in Honolulu, HI. These TCACs monitor portions of the Atlantic and Pacific oceans. Additional information regarding TCACs can be found at the following sources:

- Information regarding worldwide TCACs can be found at <http://www.nhc.noaa.gov/aboutrsmc.shtml>.
- Eastern Pacific and Atlantic tropical cyclone information is available at <http://www.nhc.noaa.gov>.
- Central Pacific tropical cyclone information is available at <http://www.prh.noaa.gov/hnl/cphc>.
- Western Pacific tropical cyclone information is available at <http://www.cpc.ncep.noaa.gov/products/fews/CYCLONES/wpacific.shtml>.

6) Space Weather Alerts, Warnings, and Watches. The NOAA/NWS Space Weather Prediction Center provides alerts, warnings, and watches for solar storm events (known as space weather) that could have an impact on navigation and communication capabilities.

7) PIREPS. Pilots may report, and the Air Traffic Organization (ATO) may solicit reports of, severe weather phenomena such as:

- Ceilings at or below 5,000 feet,
- Thunderstorms and related phenomenon,
- Moderate or greater turbulence,
- Icing,

- Wind shear, and
- Volcanic ash.

F. Aviation Weather Forecasts. Forecasts are predictions of the development and/or movement of weather phenomena based on surface and satellite observations, reports of adverse weather phenomena, and various mathematical models. Examples of aviation weather forecasts include, but are not limited to:

- Terminal Aerodrome Forecast (TAF),
- Area forecast,
- SIGMET,
- Convective SIGMETs,
- AIRMET,
- VAA,
- TCAs (issued for U.S. oceanic flight information region (FIR) and international FIRs).

3-2072 AUTHORIZED SOURCES OF WEATHER REPORTS—PARTS 91K, 121, and 135. Title 14 CFR generally requires certificate holders and program managers to use weather reports and forecasts prepared by the NWS, a source approved by the NWS, or a source approved by the Administrator.

A. Weather Reports Prepared by the NWS or a Source Approved by the NWS. Parts 91K, 121, and 135 certificate holders and program managers are allowed by regulation to use weather reports prepared by and weather facilities operated by the NWS or a source approved by the NWS. POIs do not need to authorize these sources in a certificate holder's or program manager's OpSpec/MSpec A010. As previously stated in Volume 3, Chapter 26, Section 1, sources approved by the NWS are approved and/or maintained in collaboration with the FAA. In accordance with the current edition of FAA Order 7000.2, FAA/NWS Memorandum of Understanding (MOU) for Policy Agreements, the FAA and NWS share the responsibility for management of the aviation surface weather observing program. In accordance with the MOU, sources approved and/or maintained by the FAA and NWS are as follows:

1) Automated Surface Observing System (ASOS) and Automated Weather Observing System (AWOS). An ASOS or AWOS supplies an automated surface weather observation. ASOS and AWOS observations in METAR and SPECI formats are transmitted electronically to the NWS where they are processed (conversion to international units) and retransmitted worldwide. The NWS requires METAR and SPECI for the generation of the TAFs. The NWS commissions ASOS systems and the FAA commissions AWOS sites. The AWOS, though not approved directly by the NWS, follows their commissioning and installation guidelines and is equivalent to an NWS-approved system.

2) Supplementary Aviation Weather Reporting System (SAWRS). A SAWRS may be used as a stand-alone observation or as a backup to an automated system such as an AWOS or ASOS. A SAWRS observer is usually an employee of the certificate holder or program manager who provides weather information at a particular station (typically an airport or heliport). Each SAWRS observer must be approved by the NWS to complete weather

observations at a particular airport. Under the SAWRS program, an observer may augment an automated weather system by providing specific elements (e.g., temperature) of a weather report, or an observer may provide an entire METAR (report), depending on the need.

3) Limited Aviation Weather Reporting Stations (LAWRS). LAWRS are stations (typically airports) where aviation weather observations are provided by air traffic control (ATC) tower personnel.

B. Weather Reports Prepared by a Source Approved by the Administrator. In some circumstances, 14 CFR allows a certificate holder or program manager to use weather reports prepared by a source approved by the Administrator. Upon granting his or her approval (as a representative of the Administrator) to use such a source, POIs will list the source in a certificate holder's or program manager's OpSpec/MSpec A010. Title 14 CFR does not stipulate what particular sources of weather reports the Administrator (or the POI on behalf of the Administrator) may approve; however, it is FAA policy that POIs may automatically approve the following sources as a representative of the Administrator.

- U.S. and North Atlantic Treaty Organization (NATO) military observing sources,
- Meteorological offices operated by International Civil Aviation Organization (ICAO) Member States, and
- Members of the World Meteorological Organization (WMO).

1) Surface Weather Reports Prepared by Sources Other Than the NWS. It is FAA policy that wherever NWS reports are available, certificate holders/program managers use these reports to control flight operations. Where NWS reports are not available, POIs may approve any of the sources listed in subparagraph 3-2072B, provided the reports prepared by that source contain all of the required elements of a surface weather report. (Refer to subparagraph 3-2071D.)

2) Reports of Adverse Weather Phenomena. POIs may approve the use of reports of adverse weather phenomena prepared by the following sources.

- The NWS or a source approved by the NWS (within the 48 contiguous United States and the District of Columbia),
- U.S. and NATO military observing sources,
- Meteorological offices operated by ICAO Member States,
- Members of the WMO,
- PIREPs provided by aircraft of the same, or similar, type and size, and
- AIREPs provided by aircraft of the same or similar type and size.

3) Alternate Sources of Weather Approvable by a POI. If a certificate holder or program manager desires to use a weather source other than what is listed in subparagraph 3-2072A or 3-2072B1) and 2), POIs may approve such sources if a certificate holder or program manager develops and maintains an EWINS. An EWINS is a system of gathering, evaluating, and disseminating aviation weather information and issuing weather forecasts prepared by properly trained and qualified aviation meteorologists or aircraft dispatchers. An EWINS must base the weather forecasts it issues on weather reports issued by

the NWS or a source approved by the NWS and/or the FAA. An EWINS is generally optional, however, if a certificate holder/program manager that does not have an EWINS desires to use weather sources other than the ones listed in subparagraphs 3-2072A and B1) and 2), the POI must obtain prior permission from the Air Transportation Division (AFS-200) (refer to subparagraph 3-2072B4)) before approving these sources. EWINS are discussed in greater detail in Volume 3, Chapter 26, Section 4. Guidance on approving an EWINS as a weather source in OpSpec/MSpec A010 is contained in Volume 3, Chapter 18, Section 3.

4) Weather Sources Requiring Approval from AFS-200. POIs may approve sources other than the ones listed in subparagraphs 3-2072B1), 2), and 3) with prior permission from AFS-200. AFS-200 will coordinate with the General Aviation and Commercial Division (AFS-800) when part 91K program managers are involved. When requesting such permission, POIs should provide AFS-200 with information that shows that an equivalent or greater level of safety is provided by approving a source of weather other than the ones listed above. At a minimum, POIs will provide the following information to AFS-200:

- a) The name of the weather source;
- b) The reason for the need to use the weather source;
- c) The method the certificate holder/program manager proposes to use to obtain and disseminate the weather report or forecast (e.g., through their dispatch or flight following system, via the Internet, or by voice);
- d) A copy of the portion of the certificate holder's/program manager's training program for flightcrew members, dispatchers, or persons authorized to exercise operational control that contains instruction on the use of the weather report or forecast prepared by the weather source;
- e) A copy of the training program for meteorologists or local observers providing the weather report or forecast;
- f) For weather reports (in addition to the requirements of subparagraphs 3-2072B4)a) through e)):
 - The location(s) at which the certificate holder/program manager intends to use the weather report;
 - The elements that will be reported (e.g., temperature, visibility, wind direction, and wind speed; see Volume 3, Chapter 26, Section 1, subparagraph 3-2071D for a full list of required elements contained in a weather report); and
 - The method the certificate holder or program manager proposes for maintaining or ensuring the maintenance (to certificated standards) of the weather-sensing equipment used in generating the weather report.

NOTE: POIs should be prepared to submit additional information to AFS-200 upon request, such as the qualifications of individuals providing weather reports or forecasts for the certificate holder/program manager.

5) Weather Reports—Special Consideration for Part 135 Operations.

a) **Visual Flight Rules (VFR).** In accordance with § 135.213(a), if NWS or other approved weather reports are not available for VFR operations, a pilot in command (PIC) may use weather information based on his or her own weather observation or on the observations of other competent persons.

b) **IFR.** In accordance with § 135.213(b), weather observations made and furnished to pilots conducting IFR operations at an airport must be obtained at the airport where those IFR operations are conducted. There is also a provision contained in § 135.213(b) that could allow a pilot to use a weather observation taken at a location other than the one at which an IFR operation is being conducted; however, POIs may not approve this provision unless the NWS and the certificate-holding district office (CHDO) find that “the standards of safety for that operation would allow a deviation from the requirement to have the observation taken at the airport at which the IFR operation is being conducted.” In other words, using a weather report from the proposed alternate location must provide an equivalent or greater level of safety. In order to approve such a deviation, the POI must select the deviation in the Web-based Operations Safety System (WebOPSS) and add it to the certificate holder’s OpSpec A005, Exemptions and Deviations, and add the appropriate conditions and limitations. The POI will specify which locations (airport, seaport, etc.) the deviation may be applied to, and under what conditions by adding nonstandard language to the part 135 certificate holder’s OpSpec A010. All nonstandard text (provisions) to OpSpec A010 must be approved by AFS-200. Refer to Volume 3, Chapter 18, Section 2 for guidance on obtaining headquarters (HQ) approval for nonstandard authorizations.

3-2073 APPROVED SOURCES OF WEATHER FORECASTS.

A. Weather Forecasts—Part 91K Operations. Part 91K does not contain specific regulatory requirements governing a part 91K program manager’s use of weather forecasts to control flight movements; however, there are regulatory requirements contained in § 91.1039 for pilots operating program aircraft under IFR to use weather reports prepared by the NWS, a source approved by the NWS, or a source approved by the Administrator. Also, Volume 3 Chapter 26, Section 1 outlines certain regulatory requirements for part 91K program managers that indicate a need to have a method of obtaining forecasts (and reports) of adverse weather phenomena. It is therefore FAA policy that part 91K program managers and pilots operating program aircraft under IFR use only forecasts prepared from weather reports issued by the authorized sources outlined in subparagraphs 3-2072A and B.

B. Weather Forecasts—Part 121 Domestic and Flag Operations Inside the 48 Contiguous United States and the District of Columbia. In accordance with § 121.101(c), a certificate holder conducting domestic and flag operations may only use forecasts to control flight movements (operations) within the 48 contiguous United States and the District of Columbia if those forecasts are prepared from the following:

- Weather reports issued by the NWS or a source approved by the NWS (§ 121.101(b)(1)). The sources approved by the NWS can be found in subparagraph 3-2072A.
- A certificate holder's approved system of obtaining forecasts and reports of adverse weather phenomena (§ 121.101(d)). Forecasts of adverse weather phenomena must be based on reports issued by the approved sources listed in subparagraph 3-2072B.

C. Weather Forecasts—Part 121 Domestic and Flag Operations Outside the 48 Contiguous United States and the District of Columbia. In accordance with § 121.101(c), a certificate holder conducting domestic and flag operations may only use forecasts to control flight operations outside the 48 contiguous United States and the District of Columbia if those forecasts are prepared from the following:

- Weather reports issued by a source approved by the Administrator (§ 121.101(b)(2)). Examples of approved sources of weather reports are contained in subparagraph 3-2072B.
- A certificate holder's approved system of obtaining forecasts and reports of adverse weather phenomena (§ 121.101(d)). Forecasts of adverse weather phenomena must be based on reports issued by the approved sources listed in subparagraph 3-2072B.

D. Weather Forecasts—Part 121 Supplemental Operations Inside the United States. In accordance with § 121.119(b), a certificate holder conducting supplemental operations inside the United States may only use a forecast to control flight movements (operations) if that forecast was prepared from weather reports issued by the NWS or a source approved by the NWS. The sources approved by the NWS can be found in subparagraph 3-2072A.

E. Weather Forecasts—Part 121 Supplemental Operations Outside the United States or at U.S. Military Airports. In accordance with § 121.119(b), a certificate holder conducting supplemental operations may only use forecasts to control flight movements (operations) outside the United States or at U.S. Military airports if those forecasts are prepared from the reports issued by a source approved by the Administrator (§ 121.119(a)). Approved sources of weather reports are contained in subparagraph 3-2072B.

F. Weather Forecasts—Part 135 Operations. Section 135.213 generally requires a certificate holder conducting part 135 operations to use a weather forecast that was prepared by the NWS, a source approved by the NWS, or a source approved by the Administrator. Refer to subparagraphs 3-2072A and B for a list of authorized sources and the means whereby a POI may request to approve sources other than those automatically authorized. POIs may approve a certificate holder conducting part 135 operations to use weather forecasts prepared from weather reports issued by the approved sources in subparagraph 3-2072B.

3-2074 USE OF COMMERCIAL WEATHER PRODUCTS. This paragraph discusses a certificate holder's or program manager's use of commercial weather products and vendors as a means of compliance with 14 CFR.

1) Commercial Weather Information Providers (CWIP). CWIPs typically provide the weather reports and forecasts required by regulation for certificate holders and program managers conducting parts 91K, 121, and 135 operations.

a) Repackaged Weather Information. Repackaged weather information provided by a CWIP is simply the retransmission of weather information provided by the NWS, a source approved by the NWS, or a source approved by the Administrator, such as a member of the WMO (refer to subparagraph 3-2072B). A CWIP will often format an existing weather report or forecast without making any material changes to the weather information itself. This is commonly known as “repackaging.” Repackaging is often done as part of a certificate holder’s/program manager’s dispatch, flight following, and/or operational control system. For example, CWIPs will format (repackage) a report issued by the NWS so it conforms to and works with a certificate holder’s information technology (IT) systems such as those used for flight planning and crew scheduling. Any time a CWIP alters the weather information itself (e.g., anything other than editorial changes to formatting), it cannot be considered repackaging.

- Program managers conducting part 91K operations should describe the use of CWIPs in their operating manual if the CWIP provides the weather information required by the procedures described in §§ 91.1025(n) and/or 91.1025(q).
- Part 121 certificate holders who use repackaged weather information provided by a CWIP as part of their dispatch, flight following, and/or operational control system must describe the process in accordance with §§ 121.135(b)(4) and 121.135(b)(15).
- Part 135 certificate holders who operate turbine-powered large transport category aircraft (refer to § 135.385) should describe the use of CWIPs in their manual if the CWIP provides weather information required by § 135.23(r).
- Typically, POIs do not approve CWIPs who provide purely repackaged weather information in a certificate holder’s/program manager’s OpSpec/MSpec A010. However, POIs must be able to positively determine that a CWIP is only repackaging information provided by a source allowable by regulation or by approval by the Administrator. Otherwise, that CWIP must be specifically approved in A010.

b) Weather Information Prepared by A CWIP. Certificate holders and program managers have the option of using forecasts that are specifically prepared by a CWIP. POIs may approve a certificate holder/program manager to use weather information prepared by a CWIP if the certificate holder/program manager has an FAA-approved EWINS or if otherwise approved by AFS-200. Refer to subparagraph 3-2072B3) or 4). It’s important to note that in order to comply with 14 CFR, CWIP-generated forecasts must be prepared from the weather reports issued by the sources allowable by §§ 91.1039, 121.101, 121.119, and 135.213. These sources are also outlined in subparagraphs 3-2072A and B.

2) Qualified Internet Communications Provider (QICP). A QICP is a communication system that provides access to aviation weather and Notice to Airmen (NOTAM) information via the public Internet, and has FAA-approved Internet communications practices

for reliability, accessibility, and security. (Refer to the current edition of AC 00-62, Internet Communications of Aviation Weather and NOTAMs.) Using a QICP may prevent data corruption during transmission. The FAA believes a greater level of safety may be achieved by using a QICP to access aviation weather information as opposed to using a Web site without the same level of reliability and security. Therefore, the FAA recommends that certificate holders and program managers who access aviation weather information via the public Internet do so through the QICPs listed on FAA's Web site. To access the list of QICPs, visit http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/operations/qicp/approved.

3-2075 AVIATION WEATHER INFORMATION SYSTEMS. Aviation weather information systems are typically used by certificate holders and program managers as an integral part of their flight dispatch, flight following, or operational control systems to obtain (through electronic or satellite communication) aviation weather information from authorized and approved weather sources and to disseminate that information to flightcrews, dispatchers, and persons authorized to exercise operational control. Some aviation weather information systems may be stand-alone briefing systems that are not necessarily integrated into a certificate holder's or program manager's dispatch, flight following, or operational control system. Whether stand-alone or integrated, certificate holders and program managers who use aviation weather information systems as a means of obtaining and disseminating weather information required by regulation must ensure that these systems are able to do so rapidly, accurately, and in a format that is operationally suitable. Aviation weather information systems include the equipment and personnel necessary to collect, process, and disseminate weather reports and forecasts. Whether through the use of an aviation weather information system or other means of obtaining aviation weather information, certificate holders and program managers are required at all times to meet the regulatory requirements for weather contained in 14 CFR.

A. Capabilities. An aviation weather information system should have adequate equipment and procedures for obtaining and distributing operational weather information to flightcrews, dispatchers, and persons authorized to exercise operational control. Aviation weather information systems should provide meteorological information to meet the pertinent regulatory requirements for all phases of flight.

- Preflight planning,
- Departure,
- En route, and
- Arrival.

1) Preflight Planning. For preflight planning purposes, an aviation weather information system should provide enough information for flightcrews, dispatchers, and persons authorized to exercise operational control to become thoroughly familiar with current (reports) and forecast weather conditions along the entire route of flight, which includes the origin airport, the airports along the route, the destination, and any alternate airports.

2) Departure. For the departure phase of a flight, an aviation weather information system should provide current and forecast information to flightcrews, dispatchers, and persons authorized to exercise operational control that is specific to the conditions at the departure airport

and departure (takeoff) alternate (when required by § 91.1039(d), § 121.617, or § 135.217). The information provided must include surface observations (METARs) and field condition reports (when issued). Field condition reports are typically issued as NOTAMs and are depicted as “FICON.”

3) En Route. While a flight is en route, an aviation weather information system should continuously update actual weather information to flightcrews, dispatchers, and persons authorized to exercise operational control. Significant changes in current or forecast conditions, such as the location, intensity, and movement of the weather phenomena, must be available to ensure the continued safety of flight. Each aviation weather information system should provide at least the following information while a flight is en route.

- a) Current areas of adverse weather phenomena (such as thunderstorms, turbulence, and heavy weather radar returns),
- b) Hazardous conditions such as volcanic ash,
- c) Current reports and forecasts of winds and temperatures aloft,
- d) Current reports and forecasts of destination and alternate airport weather,
- e) Continual updates to weather and hazard advisories such as SIGMETs, convective SIGMETs, AIRMETS, VAAs, and PIREPS, and
- f) Aviation weather information systems that support flight operations above 18,000 feet should also provide the following information:
 - High-level severe weather information (clear air turbulence),
 - Tropopause height information,
 - High-level (500-175 millibar (mb)) Significant Weather (SIGWX) forecasts.

4) Arrival. For the arrival phase of flight, an aviation weather information system should provide current and forecast weather information and FICON reports (when issued) to flightcrews, dispatchers, and persons authorized to exercise operational control that is specific to the conditions at the destination airport and designated alternate airport(s) (when required by § 91.1039(b), § 121.619, § 121.621, § 121.623, § 121.624, or § 135.223).

5) All Phases of Flight. For all phases of flight (preflight planning, departure, en route, and arrival), an aviation weather information system should provide flightcrews, dispatchers, and persons authorized to exercise operational control with at least the following weather information:

- Weather reports and forecasts for departure, destination, and alternate airports;
- Weather reports and forecasts for airports along the route of flight;
- Forecast winds and temperatures aloft for all route segments at planned cruising altitudes;

- Surface observations for departure, destination, alternate, and diversionary airports;
- NOTAMs for departure, destination, alternate, and diversionary airports, and navigational facilities;
- Area forecasts;
- Information to determine the Density Altitude (DA) at airports where takeoff and landing will occur;
- Hazards and adverse weather phenomena en route such as thunderstorms, turbulence, wind shear, icing, and volcanic ash;
- Severe weather cloud types such as cumulonimbus (CB) and standing lenticular (SL);
- Tropical cyclone data (tropical storm, typhoon, hurricane, and cyclone); and
- Continual updates to weather and hazard advisories such as SIGMETs, convective SIGMETs, AIRMETS, VAAs, and PIREPS.

B. Weather Briefing Documents (Weather Package). Initial dissemination of weather information obtained from an aviation weather information system is typically provided to the flightcrew by a dispatcher or person authorized to exercise operational control via a weather or briefing document. This document is often referred to as a weather package. Certificate holders and program managers typically use a weather package (or similar briefing document) to provide flightcrews with weather information required by regulation, and to provide situational awareness. Therefore, the FAA recommends, and POIs should encourage, certificate holders and program managers to include at least the following information in a weather package or similar briefing document:

1) All Flights.

- Weather reports and forecasts for the origin, destination, and alternate airports;
- Weather reports and forecasts for airports located along the route of flight;
- FICON reports, when issued, at the origin, destination, and alternate airports;
- Winds aloft if not included in the flight plan;
- PIREPS; and
- AIRMETS, SIGMETs, convective SIGMETs, and VAAs (when in effect) for the entire route of flight.

2) Oceanic Flights. In addition to the weather required for all flights in subparagraph 3-2075B1), the following additional information should be provided to flightcrews in the weather package for all oceanic flights.

- High-level SIGWX charts;
- Upper wind (mb) charts;
- Lower-level wind charts for equal time points (ETP) (when designated);
- Weather reports and forecasts for ETP airports (when designated); and
- Tropopause height and jetstream location.

3) Extended Operations (ETOPS). In addition to the weather required for all flights and oceanic flights in subparagraphs 3-2075B1) and 2), the following additional information is required for ETOPS and should be included in a weather package for an ETOPS flight.

- Wind and icing conditions at 10,000 feet mean sea level (MSL), and
- Weather reports and forecasts for en route alternates.

4) Polar Operations. The polar regions as defined in OpSpec B050, Authorized Areas of En route Operations, Limitations and Provisions, are as follows:

- The North Polar Area of operations is located north of 78 degrees north latitude to the North Pole, and
- The South Polar Area is located 67 degrees south latitude to the South Pole (inclusive).

NOTE: Flight operations in this area can be affected by sunspot activity (space weather), which can have a negative effect on aircraft communications, particularly those that are conducted via high frequency (HF) radio and certain satellite-based navigation systems. Certificate holders/program managers who are authorized to conduct north and/or south polar operations must provide flightcrews with information regarding sunspot/solar flare activity. Therefore, this information should be included in a weather package for a flight involved in north and/or south polar operations.

5) Helicopter Remote Site Operations. Helicopter operations at remote sites may require special meteorological information. The extent of special weather information needed for a particular operation depends on the type of operation and the operating environment. High DAs, high winds, and icing conditions can be critical factors in helicopter operations, particularly when helicopters are required to hover out of ground effect or to make downwind or crosswind takeoffs or landings. In addition to weather information ordinarily required for helicopter operations, the following weather information is required for remote site operations and should be included in a weather package for helicopter remote site operations:

a) Operations to high-elevation operating sites.

- Mountain waves,
- Low-level wind shear,
- Strong surface winds (20 knots or greater),
- Moderate turbulence, and
- Surface temperature (for DA computations).

b) Offshore operations:

- Wave heights (for single-engine operations or IFR helicopter operations using Airborne Radar Approach (ARA) procedures or offshore standard approach procedures (OSAP),

- Strong surface winds (20 knots or greater), and
- Fog conditions.

6) Valid and Pertinent Information. A weather briefing document should only contain valid and pertinent weather information. Weather information that is no longer valid should not be included in a weather package unless the information provides data relevant to establishing a trend.

7) En Route Navigation Facilities and NOTAMs. Although not technically weather, information contained in NOTAMs, such as the operational availability of en route navigation facilities, must be provided to the flightcrew. FICON NOTAMs are particularly important when issued, as they provide runway contamination information. It is a common practice for certificate holders/program managers to include NOTAMs as part of the weather package.

8) Retention of the Weather Package.

a) Part 121 Domestic and Flag Operations. Section 121.687(b) requires the dispatch release to contain or have attached to it weather reports and weather forecasts for the destination, intermediate stops, and alternate airports that are the latest at the time the release is signed by the PIC and dispatcher. This means that a weather briefing document is actually part of the dispatch release. As such, the briefing document (weather package) must be retained with the dispatch release in accordance with § 121.695.

b) Part 121 Supplemental Operations. Section 121.689(b) requires the flight release to contain or have attached to it weather reports and weather forecasts for the destination and alternate airports that are the latest at the time the release is signed. Similar to domestic and flag operations, the weather package is considered to be part of the flight release and so must be retained in accordance with § 121.697.

RESERVED. Paragraphs 3-2076 through 3-2090.