

VOLUME 3 GENERAL TECHNICAL ADMINISTRATION**CHAPTER 26 AVIATION WEATHER REGULATORY REQUIREMENTS****Section 2 Safety Assurance System: Regulatory Sources of Aviation Weather Information and Aviation Weather Information Systems—Parts 91K, 121, and 135**

3-2071 PURPOSE. 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 specific sources or specific facilities for obtaining weather reports and forecasts. Some sources/facilities are specified by regulation, while others are up to the Administrator's discretion to approve. These sources are discussed throughout this section. The information in this section is applicable to all part 91K, 121, and 135 operations except where otherwise noted. Paragraph 3-2074 of this section discusses the sources for aviation weather forecasts by regulatory part. This section is related to Safety Assurance System (SAS) Elements 3.3.1, (OP) Operational Control, and 3.3.2, (OP) Dispatch/Flight Release.

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 various types of weather 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 order, 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;
- Weather reports and forecasts prepared by an FAA-approved adverse weather phenomena reporting and forecast system;
- Weather reports and forecasts prepared by an FAA-approved Enhanced Weather Information System (EWINS); 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), as applicable.

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 prepared 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)/Management Specification (MSpec) A010, Aviation Weather Information. 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 purpose of this order, a supplementary weather product is one that may be used to enhance situational awareness but does not necessarily meet the regulatory requirements of 14 CFR. Certificate holders and program managers may not use supplementary weather products to control flight operations. 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.

3-2072 AVIATION WEATHER REPORTS.

A. Surface Observations. Surface weather observations are fundamental to all meteorological services. Observations are the basic information upon which forecasts and warnings are issued 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 adverse weather phenomena change significantly. The criteria used to determine whether or not a SPECI is necessary can be found in the current edition of Advisory Circular (AC) 00-45, Aviation Weather Services.

1) Required Elements of a Surface Observation. Aircraft performance is 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 (SID) (e.g., airport code);
- Date and time of observation (to establish relevance of the report);
- Ambient temperature at the station (e.g., airport or seaport);
- Wind direction;
- Wind speed;
- Altimeter setting at the station (unless the current published approach plate lists an alternate source);
- Visibility (for obstacle avoidance and instrument approach procedures (IAP)); and
- Ceiling (only where required by published airport minimums).

2) Remarks Contained in a Surface Observation. A METAR or SPECI contains a report of wind, visibility, RVR, present weather, sky condition, temperature, dew point, and altimeter setting. In the United States and its territories, this information is collectively referred to as the body of the report. In addition to information contained in the body of the report, significant information which elaborates on data contained in the body of the report may be appended in a section referred to as “Remarks.” Information contained in “Remarks” will often include recent significant weather at the airport or its vicinity. The contents of the remarks will vary according to the type of weather station and degree of automation. Remarks may be automated or manual and may appear in coded, abbreviated, or plain language. The FAA considers the information contained in the “Remarks” section of a weather report to be as operationally significant as the information contained in the body of the weather report. Therefore, information contained in “Remarks” must be considered for all operational decisionmaking. “Remarks” in a METAR or SPECI are typically identified as “RMK” and will generally be used to elaborate on the following type of information:

NOTE: International METAR and SPECIs do not typically contain remarks. International reports are formatted to include a section of recent significant weather within the body of the report.

- Volcanic eruptions;
- Funnel clouds, tornadoes, or waterspouts – began/ended/location/movement;
- Type of automation station (A02/A03) – precipitation discriminator;
- Peak wind – gusts of 25 knots (kts) or greater and time of occurrence (PK WND);
- Wind shift or frontal passage and time of occurrence (WSHFT/FROPA);
- Tower or surface visibility when both are reported (TWR/SFC);
- Variable prevailing visibility (VIS);
- Sector visibility or visibility at second location (VIS);
- Lightning – frequency, type, and location (LTG);
- Beginning and ending of precipitation;
- Beginning and ending of thunderstorms (TS);
- Thunderstorm location and movement;
- Hail size (GR/GS);
- Virga;
- Variable ceiling height (CIG);

- Obscurations, such as smoke (FU);
- Variable ceiling (e.g., CIG 006V013);
- Significant cloud types (e.g., CB, TCU, and ROTOR);
- Pressure rising/falling rapidly (PRESRR/PRESFR);
- Sea level pressure (SLP);
- Aircraft mishap notation (ACFT MSHP);
- Snow increasing rapidly (SNINCR) and depth on the ground;
- Additive Data (coded), such as hourly precipitation amounts, minimum/maximum temperature, snow depth, pressure tendencies, cloud types, etc.;
- Automated System Maintenance: coded sensor status indicators describing information that should be reported but is missing, such as RVR, freezing rain, precipitation amounts, etc.; and
- Other significant information, such as first/last observation from the station.

B. Reports of Adverse Weather Phenomena. Reports of adverse weather phenomena are based on real-time information provided by 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 worldwide. 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 future phenomena. 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 kts;
 - Hail at the surface greater than or equal to three-fourths 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 kts.

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.ospo.noaa.gov/Products/atmosphere/vaac/index.html> 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>; and
- 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 phenomena;
- Moderate or greater turbulence;
- Icing;
- Wind shear; and
- Volcanic ash.

8) Aircraft Reports (AIREP). AIREPs are messages from an aircraft to a ground station. AIREPs are normally comprised of the aircraft's position, time, flight level (FL), estimated time of arrival (ETA) over its next reporting point, destination ETA, fuel remaining, and meteorological information (METI). AIREPs can also include information regarding adverse weather phenomena, such as:

- Moderate-to-severe turbulence;
- Icing conditions;
- Supplementary information, such as freezing rain, snow, funnel clouds, etc.; and
- Operationally significant weather radar echoes.

9) METARs and SPECIs. These surface reports may contain important information regarding adverse weather phenomena at an airport or in its vicinity.

C. 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; and
- TCAs (issued for U.S. oceanic flight information region (FIR) and international FIRs).

3-2073 REGULATORY SOURCES OF AVIATION 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 required by regulation to use weather reports prepared by, and weather facilities operated by, the NWS or a source approved by the NWS. 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/NOAA Memorandum of Agreement, the FAA and NWS share the responsibility for management of the aviation surface weather observing program. In accordance with the Memorandum of Understanding (MOU) found in Order 7000.2, sources approved and/or maintained by the FAA, in collaboration with the 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, are approved by agreement and in collaboration with the NWS. The FAA follows the NWS commissioning and installation guidelines:

- a) ASOS. All ASOS are automatically NWS/FAA approved weather sources.
- b) AWOS-3 (or better). All AWOS-3 (or better) are automatically FAA/NWS approved weather sources. AWOS systems below the AWOS-3 level are not FAA/NWS approved weather sources, with the exception of an AWOS-2, which is approved for limited use (see subparagraph c) below).
- c) AWOS-2. AWOS-2 is approved for limited use only. An AWOS-2 does not report ceiling information; therefore, an AWOS-2 is not an NWS/FAA approved weather source and is for use under the following circumstances:
 1. IFR operations that require ceiling information are prohibited at airports where AWOS-2 reports are the only official source of weather information.
 2. Terminal visual flight rules (VFR) operations are prohibited at airports at which an AWOS-2 is the only official source of weather information.
 3. An airport at which an AWOS-2 is used solely as the official source of weather information is prohibited for use as an alternate airport.
 4. At airports where ceiling information is required to comply with nonstandard takeoff minimums dictated by 14 CFR part 97 or OpSpecs, IFR takeoffs are prohibited if an AWOS-2 is the sole source of weather information.

2) Supplementary Aviation Weather Reporting System (SAWRS). A SAWRS is a facility where weather observations are taken, prepared, and transmitted by a local operator, under Federal Government oversight. The responsibility for SAWRS facilities previously belonged to the NWS, who has recently delegated that responsibility to the FAA. A SAWRS is established at an airport (including offshore platforms and helipads) when the FAA has determined that the weather observations are needed to satisfy the regulatory requirements of parts 121 and/or 135, or for the safe conduct of other aircraft operations. A SAWRS may be used to prepare a primary weather observation or as a backup to an automated system such as an AWOS or ASOS. A SAWRS observer is usually an employee of a certificate holder who provides weather information 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. As of October 1, 2015, the FAA (Air Traffic Services, AJV), is assuming oversight of the SAWRS program and maintaining its current state of operation under NWS program policies and requirements. The FAA intends to terminate the SAWRS program itself and work with the existing SAWRS sites to transition to the FAA's Non-Federal Observation (NF-OBS) program. Existing SAWRS sites may continue to operate until the FAA actually terminates the SAWRS program. Existing sites may also continue to add new individual observers at an existing site, provided the observer is approved by the FAA, under the authority delegated by the NWS. The FAA will not approve any new SAWRS sites. Any certificate holder desiring to operate a weather reporting system must apply for approval under the FAA's NF-OBS program.

3) NF-OBS Program. The NF-OBS program is sponsored by the NWS, who has delegated responsibility to implement and manage the program to the FAA. The NF-OBS program will eventually replace SAWRS. The NF-OBS program is maintained by the FAA Contract Operations Group (AJT-21). In accordance with the current edition of FAA Order JO 7900.5, Surface Weather Observing, appendix B, NF-OBS applicants may elect to provide full weather augmentation, (NF-OBS), backup-only service, NF-OBS(B), or manual weather observation, NF-OBS(M)). Applicants desiring to operate an NF-OBS site may send a request through email to: 9-AJT-HQ-ASWO@faa.gov and provide the following information:

- a) Name and title of person making the request.
 - b) Name of sponsoring entity (e.g., airline, Fixed-Base Operator (FBO), or port authority).
 - c) Name and location identifier of the desired site.
 - d) The physical location of the site (address, city, state, and ZIP code).
 - e) Type of automated weather equipment on the site.
 - f) Identify if the automated weather equipment on the site is federally owned.
- A federally owned site is an AWOS, ASOS or an Automated Weather Sensor System (AWSS). For these federally owned systems, no further information is required.

g) If the automated weather equipment on the site is a non-federally owned AWOS, or other type of automated weather equipment, individual device or sensor, please provide the following additional information:

1. Manufacturer's name.
2. Equipment model number.
3. Maintenance technician's name and phone number.
4. Are there any maintenance records of the equipment that can be provided?

h) If there is backup weather equipment at the site, please identify the equipment and provide the following additional information:

1. Manufacturer's name.
2. Equipment model number.
3. Maintenance technician's name and phone number.
4. Are there any maintenance records of the equipment that can be provided?

i) Name of current and/or prospective weather observer(s). For current observers, include weather certificate number and currency status.

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

5) Real-Time Mesoscale Analysis (RTMA) for Surface Temperature When Temperature is Not Being Reported by ASOS, AWOS, or Human Observer. Occasionally, the ASOS or AWOS automated sensors fail. Many airports have human backup to provide weather information when there is a sensor failure on an automated system. At airports where the ASOS or AWOS is not reporting temperature or there is no human observer to provide surface temperature information, the NWS provides an alternative report of surface temperature in the RTMA. An RTMA provides a simple hourly report of surface temperature, similar to what would have been included in a METAR. An RTMA is intended for use when the primary method of temperature reporting at the airport is out of service, inoperative, or otherwise unavailable. When temperature is being reported by an ASOS, AWOS, human weather observer, or automated terminal information service (ATIS), these reports of surface temperature take precedence over the temperature reported in an RTMA.

a) A Certificate Holder Must Have Policies and Procedures Describing the Appropriate Use of RTMA Temperature Reports. In accordance with 14 CFR part 119, § 119.43 and §§ 121.135, 121.539, and 135.23, as applicable, certificate holders must have policies and procedures that describe the use of an RTMA as an alternative report of surface temperature.

Certificate holders must include information for pilots, Aircraft Dispatchers, and the appropriate operational control personnel.

b) Information to the Pilot in Command (PIC). RTMA surface temperature reports are currently available via the Internet. Certificate holders are responsible for ensuring their pilots have access to, or are provided with, all current RTMA surface temperature reports during the conduct of operations at any airport where temperature is not being reported by an automated weather system or human weather observer.

1. For part 121 domestic and flag operations, in addition to a certificate holder's responsibility for ensuring pilots have access to or are provided with current RTMA surface temperature reports, Aircraft Dispatchers must directly provide the PIC with RTMA surface temperature reports any time temperature sensors at the airport of operation (origin, destination, or alternate airport) fail to report temperature and there is no human backup. Section 121.601 requires the dispatcher to provide the PIC with all available current weather reports, before and during flight. In accordance with §§ 121.687 and 121.695, RTMA surface temperature reports must be included in or attached to the dispatch release and retained accordingly.

2. In part 121 supplemental operations, the responsibility of obtaining available and current weather reports falls on the PIC. However, the RTMA is currently only available via the Internet. The Director of Operations must ensure the PIC has access to current RTMA surface temperature reports, or the Director of Operations must directly provide the PIC with current RTMA surface temperature reports any time temperature sensors at the airport of operation (origin, destination, or alternate airport) fail to report temperature and there is no human backup. The Director of Operations may delegate this function; however, he or she may not delegate his or her responsibility for ensuring the PIC has a current surface temperature report in accordance with part 121 regulatory and aircraft performance requirements. In accordance with §§ 121.689 and 121.697, RTMA surface temperature reports must be included in or attached to the flight release and retained accordingly.

3. For part 135 operations that require weather reports at the airport of operation, the certificate holder is responsible to ensure the PIC is able to obtain current RTMA surface temperature reports any time temperature sensors at the airport of operation (origin, destination, or alternate airport) fail to report temperature and there is no human backup.

c) Part 135 Operations at Airports without Weather Facilities. For part 135 operations that do not require weather facilities or weather reports at the airport of operation, part 135 certificate holders and operators may use an RTMA surface temperature report (where provided) at an airport that does not have an automated weather system, a human weather observer, or when the sensors on an automated system fail to report temperature. This applies to the following part 135 operations:

1. Part 135 operations conducted under a deviation to § 135.213(b).
(See subparagraph 3-2073D.)

2. Part 135 eligible on-demand operations in accordance with § 135.225(b).

B. Accessing International Weather Information via the NWS. The NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas. The NWS (as part of NOAA) also provides access to international weather information via the Internet. The Internet information can be accessed via the NOAA or NWS Web sites, or via the NOAA/NWS Aviation Digital Data Service (Aviation Weather Center). Weather information for international locations outside of NWS's jurisdiction is not actually generated by the NWS. Rather, it is generated by internationally recognized weather sources such as members of the World Meteorological Organization (WMO) or meteorological offices operated by International Civil Aviation Organization (ICAO) Member States. While these sources may be recognized by the NWS and accessed through the NWS, they are not actually approved by the NWS and therefore do not meet regulatory requirements as a source approved by the NWS. Certificate holders and program managers may still use weather information provided by these internationally recognized sources, provided those sources are approved by the Administrator in the certificate holder's/program manager's OpSpecs/MSpecs. In order to approve one of these weather sources on behalf of the Administrator, POIs must follow the guidance contained in subparagraph 3-2073C, and paragraphs 3-2074 and 3-2075 of this section.

C. Weather Reports Prepared by a Source Approved by the Administrator.

1) General. In many cases, 14 CFR allows a certificate holder or program manager to use weather reports prepared by a source approved by the Administrator (see also Volume 3, Chapter 26, Section 1). For part 121 operations, weather reports must be available to the flightcrew as well as the dispatcher (domestic and flag operations), or the person authorized to exercise operational control (supplemental operations). As a representative of the Administrator, a POI will grant approval to use a particular source for weather reports by listing 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 may approve; however, it is FAA policy that POIs may automatically approve the following sources as a representative of the Administrator:

- The NWS for those United States and its territories located outside of the 48 contiguous States;
- U.S. and North Atlantic Treaty Organization (NATO) military observing sources;
- Meteorological offices operated by ICAO Member States;
- ICAO Member State-authorized meteorological station or automated observation; and
- Members of the WMO.

2) Surface Weather Reports Prepared by Sources Other Than the NWS. It is FAA policy that wherever NWS reports are available, certificate holders/program managers must use these reports to control flight operations. Where NWS reports are not available, POIs may approve any of the sources listed in subparagraph 3-2073C, provided the reports prepared by that source contain all of the required elements of a surface weather report (See subparagraph 3-2072A1)).

3) Reports of Adverse Weather Phenomena. POIs may automatically 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);
- The NWS for those United States and its territories located outside of the 48 contiguous States;
- U.S. and NATO military observing sources;
- Meteorological offices operated by ICAO Member States;
- ICAO Member State-authorized meteorological station, or automated observation;
- Members of the WMO;
- PIREPs provided by aircraft of similar speed and performance; and
- AIREPs provided by aircraft of similar speed and performance.

4) Alternate Sources of Weather Reports Approvable by a POI. If a certificate holder or program manager identifies a need to use a weather source other than what is listed in subparagraph 3-2073A or 3-2073C1), C2), or C3), POIs may approve an alternate source of weather reports if the certificate holder or program manager develops and maintains an FAA-approved EWINS. An EWINS is a system of gathering, evaluating, and disseminating aviation weather information and issuing weather reports or forecasts prepared by properly trained and qualified aviation meteorologists or Aircraft Dispatchers. An EWINS must base weather forecasts on the weather reports issued by sources allowable by regulation, or approved by the Administrator (depending on where a flight is conducted). 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. An EWINS is generally optional; however, if a certificate holder/program manager who does not have an EWINS desires to use weather sources other than the ones listed in subparagraphs 3-2073A and 3-2073C1), C2), or C3), the POI must obtain prior approval in writing from the manager of the Air Transportation Division (AFS-200). AFS-200 will grant approval if the certificate holder/program manager demonstrates an equivalent or greater level of safety to an EWINS. Instructions on obtaining headquarters (HQ) approval are contained in paragraph 3-2075 of this section.

D. Weather Reports—Special Consideration for Part 135 Operations.

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

2) IFR Operations in Accordance with a § 135.213(b) Deviation. 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. Section 135.213(b) also contains a provision that could authorize a certificate holder to permit a pilot to use a weather observation taken at a location other than the one at which an IFR operation is being conducted. Using an observation taken from an alternative location must provide an equivalent or greater level of safety, and is only allowable by deviation. POIs are not

authorized to issue the deviation unless the NWS and the certificate-holding district office (CHDO) conduct an investigation. Specifically, § 135.213(b) requires that the NWS and CHDO are able to determine 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. A NWS aviation meteorologist will make the ultimate determination of whether or not a weather report taken at an alternative location proposed by the certificate holder is appropriate for use at the location of the actual IFR operation (the takeoff or landing site). If a certificate holder desires a deviation of this nature, the CHDO will follow the steps outlined in the subparagraphs below:

a) First the CHDO will determine using their best judgment, if the certificate holder's proposal presents an equivalent level of safety and warrants moving forward to the NWS.

1. If the CHDO determines it is warranted, it will move the request forward to the NWS in accordance with subparagraph 3-2073D2)b) below.

2. If the CHDO determines the certificate holder's request does *not* warrant moving forward to the NWS, the POI must notify the certificate holder in writing and provide an explanation.

b) The POI will present the certificate holder's proposal to use a weather observation taken at an alternative location to the NWS Regional Aviation Meteorologist, located in the NWS Regional Office that holds jurisdiction over the actual takeoff/landing site. To assist the NWS in efficiently accommodating the request, format the letter specifying the details of the request according to the example contained in Figure 3-109, Sample Letter to the NWS Regional Aviation Weather Meteorologist Requesting an Investigation of an Alternative Meteorological Site.

1. Based on the location of the actual takeoff/landing site, select the appropriate NWS Regional Office. It is important to note that NWS Regions do not parallel FAA Regions. Consult the NWS Web site for the correct regional office based on the location of the takeoff/landing site. You will find this by accessing the NOAA NWS Web site at <http://www.weather.gov/organization>.

2. Once on the Web page, select "Regional Support Centers," and then select the most appropriate Regional Headquarters from the dropdown list, based on the location of the takeoff/landing site.

3. At the bottom of the Regional Headquarters Web page there will either be a phone number or a Web master email address. Make positive contact by phone or email to verify that you are sending the proposal to the correct Regional Office. If possible, obtain the name and email address of the Regional Aviation Meteorologist, so you can send the proposal letter as an email attachment to the appropriate meteorologist. If there is no phone number, review the same Web page to verify if the actual takeoff/landing site is near a city listed in that region. In the event the name of an individual is not available, address the letter to the

“Regional Aviation Meteorologist.” Then, send the proposal as an email attachment to the Web master email address shown at the bottom of the Web page.

c) The proposal must contain the following information:

1. Include a reference to § 135.213(b) and NWS Instruction 10-1301, Aviation and Synoptic Observing—Land, to orient the Regional Aviation Meteorologist as to why this proposal is being submitted to the NWS.

2. Provide the location of the actual takeoff/landing site (e.g., airport, seaplane port, or heliport). When available, include the three-letter FAA identifier and the four-letter ICAO identifier. Also provide the latitude and longitude (LAT/LONG) of the takeoff/landing site.

3. Provide the name of the proposed alternative meteorological site at which the weather observation will be taken. It should be nearest aviation weather observation site(s). Include the three letter FAA identifier and the four-letter ICAO identifier of the site when available. Include the LAT/LONG as well.

d) The NWS Regional Aviation Meteorologist will review the proposal and determine whether or not the alternative meteorological site where the weather observation will be taken is representative of the weather at the actual takeoff/landing site. The NWS will determine one of the following:

1. The alternative meteorological site is adequate and appropriate to support operations at the takeoff/landing site;

2. The alternative meteorological site is adequate provided certain conditions and limitations imposed by the NWS are implemented by the user; or

3. The alternative meteorological site is not sufficiently or consistently representative of weather conditions at the takeoff/landing site.

e) If the NWS meteorologist determines the alternative location is not sufficiently or consistently representative of weather conditions at the takeoff/landing site, the CHDO may *not* grant the deviation to allow the use of a weather observation at a location other than the actual takeoff/landing site. In this case, POI will inform the certificate holder in writing of the NWS findings.

f) If the NWS meteorologist determines that observations taken at the proposed alternative location are adequate for use in IFR operations at the takeoff/landing site, the NWS will provide a letter describing the outcome of their investigation to the CHDO. The POI will then proceed by issuing the deviation and providing the conditions and limitations in the certificate holder’s OpSpecs.

g) To issue the 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. The POI will then list the following information in the appropriate

table (Table 2 for the 135 template and Table 3 for the 121/135 combination template) of the certificate holder's OpSpec A010: include the location of the actual takeoff/landing sites that the deviation applies to; the location(s) where the weather observation will be taken for each; the date of the NWS concurrence; and the associated conditions and limitations. For more information on how to populate OpSpecs A005 and A010, see Volume 3, Chapter 18, Section 3, OpSpecs A005 and A010.

Figure 3-109. Sample Letter to the NWS Regional Aviation Weather Meteorologist Requesting an Investigation of an Alternative Meteorological Site

FAA Letterhead

Regional Aviation Meteorologist

(Specify) Region Headquarters, National Weather Service

(Street address)

RE: Investigation of Alternative Meteorological Site.

Dear [State name or State "Sir or Madam"]:

The Federal Aviation Administration (FAA) is requesting the assistance of the National Weather Service in the performance of an investigation of meteorological conditions at the locations listed in this letter. The investigations are necessary to determine if weather observations taken at certain locations are suitable for use at other locations at which no observations are available.

Title 14 of the Code of Federal Regulations (14 CFR) part 135, section 135.213(b) provides for a deviation from the requirement for an official weather observation to be taken at the airport of intended takeoff and/or landing. United States Air Carriers can request this deviation based on specific locations proposed by the carrier. National Weather Service Policy #10-1301 provides direction for the Regional Aviation Meteorologist to review requests such as this and to provide a disposition.

Accordingly, please review the meteorological conditions and considerations involved when using weather observations taken at an alternative location as compared to the actual takeoff/landing site. We have provided information on the actual takeoff/landing site along with a proposed alternative meteorological location(s). Please provide us with a determination as to whether or not it would be appropriate to use weather observations at the alternative location(s) as a substitute for a weather report taken at the actual takeoff/landing site.

Actual Takeoff/Landing Site:

- Name of actual takeoff/landing site, including the three letter FAA aerodrome identifier and the four-letter ICAO identifier when available.
- LAT/LONG of the landing site or the missed approach point in space from which the aircraft would proceed visually.
- The distance (in nautical miles) and bearing from the alternative meteorological site.
- Provide the PINS WAAS GPS approach data (enclose a copy of the approach plate).

Alternative Meteorological Site:

- Name of the alternative meteorological site, including the three letter FAA aerodrome identifier and the four letter ICAO identifier (when available).
- LAT/LONG of the alternative meteorological site.
- Type of aviation weather observation made at the site (e.g., AWOS II, ASOS, Certified Weather Observer, Augmented ASOS observation, etc.).

Please provide us with a formal response in your own format, stating whether or not the aviation meteorological conditions at the proposed alternative meteorological site(s) are representative of those conditions that may be expected at the takeoff/landing site. If you find in favor of using weather observations taken at the proposed alternative meteorological site(s), please include any conditions and limitations which would be required or appropriate. If you determine that the meteorological conditions at the alternative meteorological site are not sufficiently representative of those that can be expected at the actual takeoff/landing site, please state that use of weather observations taken at the alternative meteorological site are not appropriate for use to conduct operations at the actual site of takeoff/landing. Please include a simple explanation of what factors led to this determination, if possible.

Thank you for your consideration. If you have any questions, please contact the undersigned.

Sincerely,

[Type name of person letter is from]

[Type Title]

[Type the word Enclosure here if you are enclosing something]

3-2074 REGULATORY 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 operations; 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 only use forecasts prepared from weather reports issued by the sources outlined in subparagraphs 3-2073A and 3-2073C.

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 using 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 3-2073A.
- A source approved in a certificate holder's FAA-approved system of obtaining forecasts and reports of adverse weather phenomena (§ 121.101(d)). Approved sources of reports of adverse weather phenomena are contained in subparagraph 3-2073C. These same sources are approvable for weather forecasts, with the exception of PIREPs and AIREPs.

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 using the following:

- Weather reports issued by a source approved by the Administrator (§ 121.101(b)(2)). Weather sources approved by the Administrator are contained in subparagraph 3-2073C.
- Any source approved in a certificate holder's FAA-approved system of obtaining forecasts and reports of adverse weather phenomena (§ 121.101(d)). Approved sources of adverse weather phenomena are contained in subparagraph 3-2073C.

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 3-2073A.

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 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 3-2073C.

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. See subparagraphs 3-2073A and 3-2073C for a list of regulatory sources and those approved by the Administrator.

3-2075 WEATHER SOURCES REQUIRING PRIOR APPROVAL FROM AFS-200. With approval from the POI, a certificate holder/program manager may use a weather source listed in paragraphs 3-2073 and 3-2074, or it may have an FAA-approved EWINS in lieu of using one of those sources. Using any other weather source without an EWINS requires approval from AFS-200. In order to obtain approval from AFS-200, a certificate holder/program manager must be able to demonstrate an equivalent or greater level of safety to what would be provided by an EWINS. The process for obtaining AFS-200 approval is as follows:

A. The Certificate Holder/Program Manager Makes the Request to the CHDO.

A certificate holder/program manager will request approval from the POI to use a weather source that would otherwise require an EWINS. The certificate holder must be able to show that using the weather source without having an EWINS provides an equivalent or greater level of safety.

B. The CHDO Requests Approval from AFS-200 through the Regional Flight Standards Division (RFSD). The POI will review the certificate holder's request. If the POI approves of the request, she/he will prepare a memo from the CHDO (certificate management office (CMO), Flight Standards District Office (FSDO), etc.) manager to the manager of AFS-200, through the manager of the RFSD. The memo must state that the POI initially approves of the certificate holder's request and that the CHDO is requesting approval from AFS-200 to issue the approval through a nonstandard text authorization to OpSpec/MSpec A010. Specifically, the CHDO will request approval to issue a nonstandard text authorization, allowing the certificate holder/program manager to use a weather source other than one listed in paragraphs 3-2073 and 3-2074, without having an EWINS. All nonstandard text authorizations must provide an equivalent or greater level of safety to what is otherwise provided in the standard OpSpec text. POIs must review Volume 3, Chapter 18, Section 2, paragraphs 3-712 and 3-713, for further direction on nonstandard text OpSpec authorizations. (POIs should also review Volume 3, Chapter 1, Section 1, which outlines the FAA's general process for approval.) In addition to stating the POI's initial approval, the memo requesting AFS-200's approval must include the CHDO manager's recommendation to AFS-200 to approve the request, along with the manager's rationale for the recommendation. When requesting such approval, the CHDO must provide AFS-200 with information that shows that an equivalent or greater level of safety is provided. The minimum required information that the CHDO must provide to AFS-200 is as follows:

1) The Name of the Weather Source (Provider). Provide the name of the weather source (e.g., the certificate holder, a vendor, or other entity).

2) The Reason for the Need to use the Weather Provider. Provide the reason for the need to use the weather source. For example, NWS information that is not available at the station.

3) The Equivalent or Greater Level of Safety. Provide a detailed description of the equivalent or greater level of safety provided by using the particular weather provider without having an EWINS.

4) The Method of Dissemination. Provide information on how the certificate holder/program manager proposes to obtain and disseminate the weather report or forecast (e.g., through their dispatch or flight following system, via the Internet, or by voice).

5) Certificate Holder's Training Program. Provide 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.

6) Weather Provider's Training Program. Provide a copy of the training program for weather provider personnel that will be involved in generating weather reports or forecasts for the certificate holder.

7) The Weather Provider's Personnel Qualifications. Provide information that shows that the personnel who will be generating the weather information for the certificate holder, have qualifications that meet or exceed those contained in Volume 3, Chapter 26, Section 4, subparagraph 3-2124A.

8) For Weather Reports. In addition to the requirements of subparagraphs A1) through 5) above, provide the following information:

- 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, or subparagraph 3-2072A1) 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.

C. The RFSD Forwards the Request to AFS-200. If the RFSD manager concurs with the CHDO's request and recommendation, the RFSD may forward the entire request to AFS-200. The RFSD will include a memo that contains the RFSD manager's concurrence and recommendation and attach it to the memo from the CHDO. AFS-200 will not consider the request without the concurrence and recommendation memo from the RFSD manager.

D. AFS-200 Action. AFS-200 will review all of the documentation forwarded by the CHDO through the RFSD and determine if it presents an equivalent or greater level of safety to an EWINS. If AFS-200 determines that an equivalent or greater level is presented, AFS-200 will

provide approval by memo to issue the nonstandard text authorization to OpSpec/MSpec A010. AFS-200 will also provide the specific text for the authorization. AFS-200 may send notification of the approval to the principal inspector (PI)/CHDO/RFSO via email.

3-2076 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.

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

1) 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 (see subparagraph 3-2073C). 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, a CWIP will format (repackage) a report issued by the NWS so that it conforms to and works with a certificate holder's information technology (IT) systems, such as those used for flight planning. Any time a CWIP alters the weather information itself (e.g., anything other than editorial changes to formatting), it cannot be considered repackaging.

NOTE: Repackaging must not include removing information contained in a weather report or forecast.

a) POIs do not need to list (approve) a CWIP who provides purely repackaged weather information in a certificate holder's/program manager's OpSpecs/MSpecs. However, POIs must list the source of the weather information provided by the CWIP. POIs must be able to positively determine that a CWIP is only repackaging information provided by a source specified by regulation or otherwise approved by the Administrator in OpSpec/MSpec A010. If a CWIP provides anything other than a purely repackaged weather product that was generated by a regulatory and/or approved weather source, then the certificate holder/program manager must have an EWINS, unless otherwise approved by AFS-200 (see subparagraphs 3-2073C4) and 3-2076A2)).

b) POIs of program managers conducting part 91K operations should encourage the program manager to describe the use of CWIPs in its operations manual if the CWIP provides the weather information required by the procedures described in § 91.1025(n) and/or § 91.1025(o).

c) 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). POIs of these certificate holders must ensure that the certificate holder's manual adequately describes the use of CWIPs who provide repackaged weather information.

d) Certificate holders and operators conducting part 135 operations are responsible to provide information to pilots regarding approved weather sources, in accordance with § 119.43. Part 135 certificate holders and operators should provide pilots with information that describes the use of CWIPs as a means to transmit repackaged weather information provided by an approved source, such as the NWS. In addition, part 135 certificate holders who operate turbine-powered large transport category aircraft (refer to § 135.385) should describe the use of CWIPs in their operations manual if the CWIP provides weather information required by § 135.23(r).

2) Weather Information Prepared by a CWIP. Certificate holders and program managers have the option of using weather reports or 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 (see subparagraph 3-2073C4) and paragraph 3-2075). It is 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, as applicable. These sources are also outlined in subparagraphs 3-2073A and C.

B. Accessing Weather Information via the Public Internet. Certificate holders and program managers often access weather information via the public Internet. When accessing weather information this way, certificate holders and program managers are required to use weather information that is provided by a weather source authorized by regulation, or approved by the Administrator, and is listed in the certificate holders'/program managers' OpSpecs/MSpecs. Certificate holders and program managers using the public Internet to access weather information are responsible for ensuring accurate and timely delivery of information without data corruption during the transmission.

3-2077 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 data or satellite communication) aviation weather information from authorized and approved weather sources. This information is then disseminated to flightcrews, dispatchers, and persons authorized to exercise operational control. Some aviation weather information systems may be standalone briefing systems that are not necessarily integrated into a certificate holder's or program manager's dispatch, flight following, or operational control system. Whether standalone 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 METI 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 reported and forecasted 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 Notices to Airmen (NOTAM) and are depicted as “field condition” (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, and
- 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;
- 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 clouds (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 (part 121 domestic and flag operations) 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. For part 121 operations, a weather briefing document or package is required. For all operations other than those under part 121, a weather briefing document is recommended.

1) All Flights. Unless otherwise allowed by regulatory part, pilots must be provided with at least the following information. This information is always required for part 121 operations:

- 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 (when reported by aircraft of similar speed and performance); 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 B1) above, 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 B1) and 2) above, the following additional information is required for ETOPS and must be included in a weather package for an ETOPS flight:

- Wind and icing conditions at 10,000 feet mean sea level (MSL);
- Weather reports and forecasts for ETOPS Alternates, including FICON; and
- Weather reports and forecasts for the Adequate Airports for ETOPS, which are listed in the certificate holder's OpSpecs and are within the ETOPS Area of Operation in which the flight is operating.

4) Polar Operations. Sunspot activity (space weather), can have a negative effect on aircraft communications in the Polar Areas. In particular, space weather can affect communications conducted via high frequency (HF) radio and certain satellite-based navigation systems. Certificate holders/program managers who are authorized to conduct operations in the North and/or South Polar Areas must provide flightcrews with information regarding sunspot/solar flare activity. The Polar Areas 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).

5) Helicopter Remote Site Operations. Helicopter operations at remote sites may require special METI. The extent of special weather information needed for a particular operation depends on the type of operation and the operating environment. High DA, 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 kts 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 kts 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 3-2078 through 3-2090.