

NATIONAL WEATHER SERVICE INSTRUCTION 10-803

January 26, 2010

Operations and Services

Aviation Weather Services, NWSPD 10-8

SUPPORT TO AIR TRAFFIC CONTROL FACILITIES

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OPR: W/OS23 (B. McNulty)

Certified by: W/OS23 (C. Abelman)

Type of Issuance: Emergency

SUMMARY OF REVISIONS: Supersedes NWSI 10-803 “Support to Air Traffic Control Facilities” dated September 3, 2008. This instruction details the procedures NWS Weather Forecast Offices (WFOs), Alaska Aviation Weather Unit (AAWU), and Center Weather Service Units (CWSUs) use to provide weather support to the Federal Aviation Administration (FAA) Air Traffic Control Facilities. This emergency update clarifies the definition of, and difference between, the Meteorological Impact Statement (MIS) and the Center Weather Advisory (CWA). Chapter 7, sections 7.3 and 7.4 are revised, including new sub-sections on philosophy, product standardization, and situations or conditions for issuance of MIS or CWA. This revision emphasizes standardized formats, lengths, and uses of the MIS and CWA products.

1. Section 7.3 is now broken into 7.3.1 (Philosophy of MIS), 7.3.2 (Standardization of MIS), and 7.3.3 (Conditions or Events Where MIS may be Used).
2. Section 7.4 is now broken into 7.4.1 (Philosophy of CWA), 7.4.2 (Standardization of CWA), 7.4.3 (Situations Where a CWA Should be Used), and 7.4.4 (Conditions or Events Where CWA Should Be Issued).
3. Updated examples for MIS and CWA products in Appendix C and Appendix D to reflect the new standardized formats and lengths of products.
4. Simplified section 7.7 (Operational Records) by combining repetitive sub-sections.
5. Clarified section 7.5.3 (Collaborative OEP Products) by updating terminology.

//Signed//

January 12, 2010

David Caldwell

Date

Director, Office of Climate, Water, and Weather Services

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

2. **General.** NWS support is designed to improve aviation safety and enhance efficient

flow of air traffic by forecasting and monitoring adverse weather. Efficiency is affected by maintaining close coordination with traffic managers whose decisions affect the flow of air traffic through the National Airspace System (NAS).

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

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

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

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

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

- e. Wind shear
- f. Operationally significant pressure changes
- g. Precipitation
- h. Turbulence
- i. Icing
- j. Volcanic ash

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

5. Support to Air Traffic Facilities.

5.1 Air Traffic Facilities.

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

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

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

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

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

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

- (1) Pilot weather briefing (PWB)

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

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

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

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

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

- a. Assisting the CWSU and ARTCC during in-flight emergencies;
- b. Providing ARTCC with forecast services and critical weather updates as needed; and
- c. Providing Information Technology (IT) and IT security support. NWS Regional Headquarters (RH) may choose to provide this support for CWSUs in their local area.

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

Open lines of communication must be maintained between FAA facilities and NWS aviation weather support units within the ARTCC's area to ensure timely exchange of necessary weather information. The supporting MIC or their designee monitors and evaluates the various links between relevant NWS and FAA facilities. Service, product, data, or data exchange deficiencies should be documented and forwarded to the respective NWS Regional Meteorological Services Division (MSD) or their equivalent (known hereafter as regional MSD), as either part of a station evaluation report (with appropriate distribution) or CWSU site evaluation (see NWSI 10-814, *Center Weather Service Unit Site Review Program*).

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

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

- a. Serves as NWS liaison to the supported ARTCC and is responsible for ensuring all CWSU services are provided to the FAA;
- b. Has oversight of CWSU service obligations, labor-management relations, meteorological training for CWSU staff, and specified training for ARTCC staff;
- c. In agreement with the ARTCC ATM (or a designee with responsibility for CWSU operational oversight), establishes CWSU meteorologist duty hours and

implements procedures and policies detailed in this instruction and compatible or approved alternate instructions to meet special local requirements; and

- d. Works with the ARTCC ATM to arrange access to office supplies, internet and voice communications, and other day-to-day necessities for the CWSU office.

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

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

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

7. CWSU Operations and Products.

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

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

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

Forecasters should use the minimum number of points needed to describe the area accurately. Points outside of the ARTCC area may be used, but only after appropriate coordination with

adjoining CWSUs. Advisories broadcast to aircraft should be kept as brief and concise as possible. All references to distance in the location line of the CWA and MIS products are in nautical miles (NM). The body of the text products includes NM and not statute miles when referring to line and areal width.

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

http://www.faa.gov/air_traffic/publications/atpubs/CNT/Cnthme.htm

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

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

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

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

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

ZKC CWSU BRIEFING 141805Z VALID TIL 151100Z

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

- a. Advisories in effect at the time of the briefing; e.g., SIGMETs, AIRMETs, airport weather warnings, CWAs, MISs, etc.;
- b. Synopsis - discussion of weather systems and their movements;

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

7.3 Meteorological Impact Statement (MIS). *Do NOT issue a MIS if meteorological conditions warrant an advisory or warning type product. Use a CWA instead.*

7.3.1 Philosophy of MIS. A MIS is a discussion product that summarizes anticipated weather conditions with potential impact on air traffic flow control and flight operations in the CWSU area of responsibility. Although focused on aviation, the MIS functions as a CWSU equivalent to the Hazardous Weather Outlook (HWO) public product issued by WFOs. Verification will generally use METAR, PIREP, or traffic flow data to confirm the overall occurrence of the general weather conditions mentioned in the MIS. The MIS is a unique plain language, non-technical description of weather expected to occur over an extended period ranging from several hours up to about two (2) days. The use of web products for longer term events, or complex weather patterns (i.e., multiple hazards projected to occur within the same period) is encouraged. The MIS does NOT rehash other products, and is issued as needed. A MIS should provide additional information on the current or expected weather impacts tailored to the unique requirements of the host ARTCC as coordinated between the host ARTCC and the CWSU.

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

7.3.2 Standardization of MIS. The MIS consists of a maximum of four (4) lines of plain language non-technical text. The product valid period, which varies depending on the expected event, is left to the judgment of the forecaster, but should be limited to less than 48 hours. A MIS will be updated as needed before or during the event, or canceled as conditions merit. The text may refer to an on-line graphic, especially for complex situations, using a specific web address. ***Do NOT re-package current SIGMET, AIRMET, or CWA into a MIS.***

MIS forecasts should include the height, extent, impact, and movement of the conditions. MIS product issuances should be numbered sequentially beginning at Midnight local time each day. The MIS is disseminated and stored as a "replaceable" product.

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

7.3.3 Conditions or Events Where MIS May Be Used. At a minimum, a MIS should be issued when in the forecaster's judgment, the conditions may adversely impact the flow of air traffic within the ARTCC area of responsibility.

7.4 Center Weather Advisory (CWA). *The CWA is an aviation weather warning for conditions meeting or approaching national in-flight advisory criteria (AIRMET, SIGMET or Convective SIGMET); see NWSI 10-811, Enroute Forecasts and Advisories.*

7.4.1 Philosophy of CWA. The CWA is a weather warning or watch focused on aviation. It focuses on the location and movement of weather hazards having potentially significant impacts to aviation operations and traffic flow control. The CWSU reviews the hazard forecast and meteorological conditions, and issues a CWA showing how, when, and where the forecast hazard will affect the ARTCC area. The CWA should be verified using PIREPS, METARS, lightning detection, weather radar and flight deviation records from the ARTCC TMU. The CWA focuses on aviation hazards and functions as a CWSU equivalent to the public weather warnings issued by WFOs. Unlike the MIS, the CWA uses very little free-form language. It is primarily used by air crews to anticipate and avoid adverse weather conditions in the en route and terminal environments. It is not a flight planning product because of its short lead time and duration. Additionally, the CWA should be meteorologically consistent with other products. If a CWA has been issued prior to coordination, notification to the appropriate offices, national center, or WFO should follow as soon as higher priority duties permit.

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

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

AIRMETS/SIGMETs being augmented by the CWA should be referenced in a text remark, e.g. SEE CONVECTIVE SIGMET 8W. Each CWA should be disseminated via FAA and NWS communications systems.

Graphic versions of CWAs may be created to augment the disseminated text versions and provide quick reference to product users within the ARTCC. As a minimum graphic CWAs must depict all hazards detailed in the text, with hazard boundaries clearly defined, appropriate descriptive alphanumeric text, date and time group, and map backgrounds as required by the local ARTCC.

7.4.2 Standardization of CWA. The CWA standardized format eases communication of the weather hazard, and also simplifies verification. Consisting of a maximum of four (4) lines of text, the CWA conveys:

1. Location at (local time) the hazard will be near (VOR or town/city), and direction of movement of the hazard, and
2. Nature of hazard (icing, turbulence, line of thunderstorms...),
3. VTEC coded latitude and longitude of VOR points that define the warned area, when available.

7.4.3 Situations Where a CWA Should be Issued.

1. When existing or anticipated weather conditions do not meet national in-flight advisory criteria but current PIREPs or other weather information sources indicate those conditions, in the judgment of the CWSU meteorologist, may adversely impact the safe flow of air traffic within the ARTCC area of responsibility.
2. When, in the judgment of the CWSU meteorologist, an existing in-flight advisory should be refined to improve upon or update an existing advisory. These improvements would be a valid redefinition of the location and intensity relative to the ARTCC area and not a reissuance of other hazard products.
3. When an in-flight advisory has not been issued, but, in the judgment of the CWSU meteorologist, observed or expected weather conditions meet in-flight advisory criteria, based on current PIREPs and/or other sources of information, and which the CWSU forecaster believes will impact the NAS within the ARTCC area of responsibility. The CWSU meteorologist should call the appropriate forecaster at the AWC, or AAWU to coordinate.
4. To cancel a CWA when the phenomenon described in the CWA is no longer expected. Use the next higher number in sequence and ensure the valid time is at least 30 minutes in length.

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

- a. Any of the following conditions occur, are forecast to occur, and, if previously

forecast, are no longer expected:

- (1) Conditions meeting convective SIGMET criteria (see NWSI 10-811)
- (2) Icing - moderate or greater
- (3) Turbulence - moderate or greater
- (4) Heavy and extreme precipitation
- (5) Freezing precipitation
- (6) Conditions at or approaching Low IFR (see NWSI 10-813)
- (7) Surface winds/gusts ≥ 30 knots
- (8) Low Level Wind Shear (surface - 2,000 feet)
- (9) Volcanic ash, dust storms, or sandstorms:
- (10) Cold air aloft; and

- b. In the forecaster's judgment, the conditions listed above, or any others, may adversely impact the flow of air traffic within the ARTCC area of responsibility.

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

The following is an exception:

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

CWSU personnel should coordinate with personnel at the appropriate WFOs/AAWU/AWC to avoid discrepancies between their TRACON-area weather briefings and the affected forecasts. However, since the TRACON briefing and other aviation forecasts can involve different spatial and time resolution, differences can occur.

At a minimum, the CWSU meteorologist should coordinate with the WFO aviation forecaster when the portion of the TRACON-area briefing describing terminal weather (conditions within five nm of the terminal) contradicts the affected TAF at a level requiring an amendment to the

TAF (See NWSI 10-813, *Terminal Aerodrome Forecasts*). This coordination should be accomplished as soon as the CWSU forecaster becomes aware a current, or anticipated, TRACON-area weather briefing differs from the TAF and that difference requires a TAF amendment.

Such coordination should not delay the delivery of the TRACON-area weather briefing if, in the judgment of the CWSU meteorologist, a delay would cause significant impact to air traffic flow and/or compromise safety. In such a case, coordination should occur as soon as possible after the delivery of the briefing.

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

When there are repeated significant forecast differences between the CWSU TRACON area weather briefing and other aviation forecasts, the MICs of the CWSU and the WFO(s)/AAWU/AWC should coordinate to resolve the problem.

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

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

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

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

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

For CWSUs with one or more of the 35 OEP airports in their area of responsibility, the CWSU meteorologist should collaborate on the TAF for each OEP airport(s) with the WFO meteorologist responsible for issuing the TAF as necessary. The collaboration can be conducted using any method available to the meteorologist (e.g. telephone, chat, etc.). However, total

forecast collaboration includes production of the OEP product described in section 7.5.3 below.

7.5.3 Collaborative OEP Product. The CWSU meteorologists must provide airport-specific operations information for each of the 35 OEP airports in their area of responsibility to the WFO issuing the TAF. Other airports may be added to this requirement in coordination with the regional MSD. This information should be in the form of an OEP product on the AWIPS Remote Display. This product is designed as a technical communication between qualified meteorologists, and not intended for use by non-meteorologists or the general public.

The CWSU meteorologist should provide, at least once prior to each scheduled TAF issuance (see NWSI 10-813, *Terminal Aerodrome Forecasts*, for TAF issuance times) during the CWSU operational hours, input into the TAF for each of their OEP airports by sending a collaborative OEP product to the responsible WFO. The OEP product should contain a brief discussion of the anticipated weather elements for inclusion in the TAF and weather impacts at the affected airport using the format below. The weather impacts are generally static and for the TAF forecaster's information only. They do not need to be changed with each OEP issuance. To minimize workload issues, those CWSUs with multiple OEP airports should incorporate the information for each OEP airport into a single OEP product whenever possible.

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

Example:

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

ADDITIONAL/OPTIONAL ELEMENTS

DFW AIRPORT ACCEPTANCE RATE...S FLOW 126.

DFW WX DELAYS/ACFT...NONE.

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

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

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

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

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

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

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

7.7.1 Retention. Logs should be retained in accordance with NOAA policies and practices as stated in NWSI 1-803, *Records Management*. Retain texts of written weather briefings and hard copy graphic records, and copies of the Daily Record of Facility Operation Log (FAA Form 7230-4) or its equivalent prepared by the CWSU for 30 days at the CWSU. After 30 days, copies of all these records should be retained for 5 years at either the CWSU or supporting WFO.

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

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

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

otherwise.

7.8 Statements. Refer to NWSI 10-2004, 10-2005, and 10-2006 for detailed instructions for handling requests for information, including forecaster statements. CWSU meteorologists do not provide written statements concerning a system incident, or an aircraft incident or accident to any government or public offices, agencies, organizations, or individuals outside of NWS without the approval of the Forensic Services manager at NWSH.

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

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

Appendix A

CWSU Support Facility Locations

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

Appendix B

Back-Up of CWSU Operations

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

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

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

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

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

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

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

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

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

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

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

3. MIS Example for Back-Up Operations:

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

4. CWSU Back-Up Pairings:

Station Needing Backup	Station Doing Backup
ZAB	ZDV
ZAN	AAWU
ZTL	ZME
ZBW	ZOB
ZAU	ZID
ZDV	ZAB
ZFW	ZHU
ZHU	ZFW
ZOB	ZBW
ZID	ZAU
ZJX	ZMA
ZKC	ZMP
ZLA	ZOA
ZME	ZTL
ZMA	ZJX
ZMP	ZKC
ZNY	ZDC
ZOA	ZLA
ZLC	ZSE
ZSE	ZLC
ZDC	ZNY

Appendix C

MIS Format and Examples

1. **MIS Format.** The MIS header format consists of an FAA header line, a valid period line, and the words “FOR ATC PLANNING PURPOSES ONLY”. The format is as follows :

- a. Line one of header

zzz MIS ii VALID ddtttt-ddtttt

zzz is the ARTCC identification, (e.g., ZJX),
MIS is the product type,
ii is the 2-digit sequential issuance number,
and ddtttt is the valid beginning and ending date/time UTC.

b. The second sentence of the MIS must be “FOR ATC PLANNING PURPOSES ONLY”

c. The body of the MIS is limited to 4 lines. This length precludes excess, non-topical information. The MIS is non-technical in nature to convey expected weather and impacts in the clearest, and simplest, manner possible to the FAA user. References to a graphic may use the local CWSU web site or aviationweather.gov as appropriate.

2. **MIS Examples:**

FAUS20 KZOB 010158
ZOB MIS 03 VALID 010200-030200
...FOR ATC PLANNING PURPOSES ONLY...
COLD FRONT CROSSING UPPER MIDWEST TO REACH ZOB LATE SUNDAY AFTERNOON.
STRONG NW WINDS EXPECTED WITH RAINSHOWERS.

FAAK20 KZAN 040255
ZAN MIS 01 VALID 040300-051200
...FOR ATC PLANNING PURPOSES ONLY...
COLD AIR ALOFT EXPECTED FROM FAIRBANKS TO POINT BARROW.

FAUS20 KZME 141749
ZME MIS 02 VALID 141800-150230
...FOR ATC PLANNING PURPOSES ONLY...
ICING AND TURB AHEAD OF APPROACHING COLD FRONT WILL SPREAD ACROSS ZME,
MOSTLY AFFECTING LEVELS 100-320. SOME TURB IS JET STREAM INDUCED ACROSS THE
SOUTHERN PORTIONS OF ZME. [SEE GRAPHIC AT xxxxx.noaa.gov](http://xxxxx.noaa.gov)

FAUS20 KZNY 171649
ZNY MIS 01 VALID 151700-160230
...FOR ATC PLANNING PURPOSES ONLY...
SWAP IS **EXPECTED** AFTER 17Z. SCATTERED LINE OF TS WILL DEVELOP FROM WEST
VIRGINIA NORTHEAST TO CENTRAL NY STATE. JET ROUTES MOST LIKELY AFFECTED
WILL BE J60 THROUGH J6; LATER J95 AND J36.

Appendix D

CWA Format and Examples

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

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

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

- a. Line one of FAA header:

zzzp CWA ddttt

zzz

p

CWA

ddttt

ARTCC Identification, e.g., ZKC
 Phenomenon Number (single digit, 1-9)
 Product Type
 Beginning and/or issuance UTC date/time

- b. Line two of FAA header:

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

zzz

CWA

ARTCC Identification, e.g., ZKC
 Product Type

p	Phenomenon Number (single digit, 1-6)
ii	Issuance Number (issued sequentially for each Phenomenon Number, can go as high as 99 if needed)
ddtttt	Ending valid UTC date/time

c. Line one of text - Phenomenon Location

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

Notes:

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

(2) aaa, bbb, etc. are location identifiers depicted on the in-flight advisory plotting chart. These identifiers should be used as area or line-defining points, or as all or part of a point reference (i.e., VC (n)nn DD XXX). The (n)nn is distance in nautical miles and DD is a 8-point compass direction (e.g., VC IAH or 40NE LBB). CWSUs with an over-water component in the CWA may use Latitude and Longitude coordinates as defined in NWSI 10-811, *Enroute Forecasts and Advisories*, for AIRMETs and SIGMETs. NOTE: The use of a direction and distance (i.e., 40NE LBB) is preferred; even though VC or VCY are valid FAA abbreviations to denote location.

(3) Polygon areas are defined with the keyword FROM and followed by three or more points starting in the northernmost corner of the areas, proceeding clockwise, and ending by repeating the first point. The number of polygon points should be kept to a minimum. CWSUs with an over-water component in the CWA may use Latitude and Longitude coordinates as defined in NWSI 10-811, *Enroute Forecasts and Advisories*, for AIRMETs and SIGMETs.

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

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

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

Line two of text - phenomenon description: Text description should include key phrases detailed in the notes above. Remarks, if appropriate, should be added to the end of the text. When VTEC coding becomes available for CWAs, the VTEC code will become a necessary part of the remarks.

2. CWA Examples:

FAUS21 KZMA 010157
ZMA1 CWA 010155
ZMA CWA 102 VALID UNTIL 010355
FROM 75SW SRQ-180SW FMY
BKN LN SHRA AND ISOL TS 20 NM WIDE. MOV FM 25020KT. MAX
TOPS EST NR FL320. LTL CHG EXP IN TS CVRG/INTST THRU 0355Z.
(VTEC CODING: Lat and LON)

FAUS21 KZOA 010227
ZOA1 CWA 010225
ZOA CWA 101 VALID UNTIL 010425
FROM 10NW OAK-25SE OAK
LN MOD-SEV TURB 20NM WIDE BLW 060 WITH LLWS CONDS. DUE TO STRONG
NE WINDS OV TRRN. REP BY SMALL ACFT.
(VTEC CODING: Lat and LON)

FAUS24 KZJX 130208
ZJX4 CWA 130210
ZJX CWA 401 VALID UNTIL 130410
50SE FLO
AREA CIGS BLW 005 AND/OR VSBY AOB 1SM IN BR/FG DIAM 15NM .
EXP CONDS TO CONT AND SPRD S AND W OF THE AREA DURG THE NXT 2 HRS. NO
UPDATES AFT 0230Z.
(VTEC CODING: Lat and LON)

FAUS22 KZJX 131152
ZJX2 CWA 131155
ZJX CWA 201 VALID UNTIL 131355
FROM 220SW TLH-200S CEW-135S CEW-220SW TLH
AREA SCT SHRA/ISOLD EMBDD TS MOVG FM 24020KTS. MAX TS TOPS EST NR FL350.
EXP SLO INCRS IN CVRG/INTST THRU PD.
(VTEC CODING: Lat and LON)

FAUS21 KZAU 291600
ZAU1 CWA 291600
ZAU CWA 101 VALID UNTIL 291700
25N IND
ISOL TS DIAMETER 15NM MOV FROM 22050KT TOPS TO FL250.
(VTEC CODING: Lat and LON)

FAUS21 KZLC 312010
ZLC1 CWA 312010
ZLC CWA 101 VALID UNTIL 312210
FROM LWT-SHR
AREA MOD-SEV MTN WAVE TURB 40NM WIDE. FL340-FL380. +/- 15-20KT AND +/-
500FT. REP BY NMRS ACFT. CONDS EXP TO CONT THRU PD.
(VTEC CODING: Lat and LON)

FAUS21 KZOA 312134
ZOA1 CWA 312130
ZOA CWA 101 VALID UNTIL 312330
FROM 90N FMG-90S FMG-50NNW CZQ-35NE RBL-90N FMG
AREA MOD-SEV RIME ICE BTN 100- L220. REP BY B717 ACFT.
(VTEC CODING: Lat and LON)

FAUS21 KZLA 162041
ZLA1 CWA 162040
ZLA CWA 101 VALID UNTIL 162240
FROM 40W HEC-HEC-35W MZB-50SSW LAX-40W HEC
AREA SCT SHRA AND ISOL TS TOPS FL370 MOVG FM 15015KTS.
CONDS CONTG BYD 2248Z.
(VTEC CODING: Lat and LON)

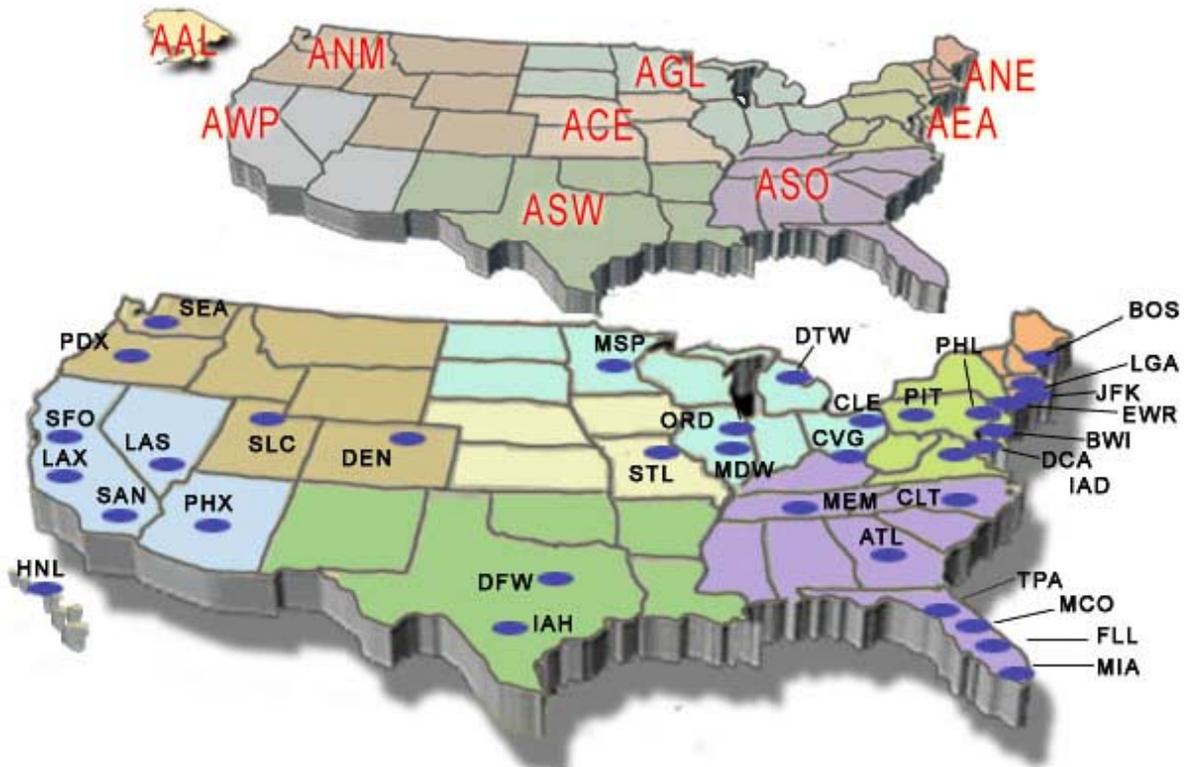
FAUS22 KZFW 312321
ZFW2 CWA 312321
ZFW CWA 202 VALID UNTIL 312345
CNCL CWA 201. LIFR CIGS HAVE IMPROVED.

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

APPENDIX E

OEP Airports and Associated CWSU

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



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