**CHANGE**

**U.S. DEPARTMENT OF TRANSPORTATION**
FEDERAL AVIATION ADMINISTRATION
National Policy

JO 7900.5D
CHG 1

Effective Date:
11/29/2017

**SUBJ:** JO 7900.5D Surface Weather Observing

1. **Purpose.** This change amends practices and procedures in Surface Weather Observing and also defines the FAA Weather Observation Quality Control Program.

2. **Audience.** This order applies to all FAA and FAA-contract personnel, Limited Aviation Weather Reporting Stations (LAWRS) personnel, Non-Federal Observation (NF-OBS) Program personnel, as well as United States Coast Guard (USCG) personnel, as a component of the Department of Homeland Security and engaged in taking and reporting aviation surface observations.

3. **Where I can find this order.** This order is available on the FAA Web site at http://faa.gov/air_traffic/publications and on the MyFAA employee website at http://employees.faa.gov/tools_resources/orders_notices/.

4. **Explanation of Changes.** This change adds references to the new JO 7210.77, Non-Federal Weather Observation Program Operation and Administration order and removes the old NF-OBS program from Appendix B. Backup procedures for manual and digital ATIS locations are prescribed. The FAA is now the certification authority for all FAA sponsored aviation weather observers. Notification procedures for the National Enterprise Management Center (NEMC) are added. Appendix B, Continuity of Service is added. Appendix L, Aviation Weather Observation Quality Control Program is also added.

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**5. Disposition of Transmittal.** Retain this transmittal sheet until the directive is replaced by a new directive.

**6. Distribution.** This order is distributed to select offices in Washington Headquarters; Air Traffic Organization; Office of Operations Planning; NAS Weather Office; Flight Standards Service; the Mike Monroney Aeronautical Center; the William J. Hughes Technical Center; the USCG Elizabeth City Facility; the Department of Defense (DoD); all air traffic field facilities; all Alaska flight service stations (FSS); FAA-contract weather; and the National Weather Service (NWS).

Glen A. Martin
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**a. Federal Meteorological Handbook No. 1, Surface Weather Observations and Reports (FMH-1)**. FMH-1 defines surface weather observing standards for all Federal agencies engaged in taking and reporting surface aviation observations. FMH-1 also defines the standard reporting and coding procedures used in surface aviation observation. Order 7900.5D defines the procedures and practices to be followed by FAA, FAA-contract, and NF-OBS personnel for observing, reporting, and coding surface observations that meet the Federal standards. A description of the NF-OBS Program is provided in FAA JO 7210.77, Non-Federal Weather Observation Program Operation and Administration. This order complements, but does not change the standards contained in FMH-1.

**b. Automated Weather Observing Systems Handbooks.** Handbooks are produced by automated systems manufacturers. However, all systems must be operated in accordance with practices and procedures contained in this order. A partial listing of the applicable handbooks necessary to operate the various automated weather observing systems includes:

(1) Federal Aviation Administration, Operator Instructions, Automated Weather Observing System (AWOS), August 1, 1994, U.S. Department of Transportation, Washington, DC.

(2) National Weather Service ASOS Ready Reference Guide (RSM1005-00038).

## 1.8. Applicability of Procedures and Practices

**a. Applicability.** The procedures and practices in this order apply to all facilities that have the equipment capability to comply with the stated procedure or practice. LAWRS requirements are contained in Appendix C, LAWRS Requirements. At sites ranked as Service Level C, the basic weather observing requirements are the same as a LAWRS observation. LAWRS observers are not required to back up an automated sensor if backup equipment is not available. Procedures for coding missing data are contained in Paragraph 6.6 and throughout this order.

**b. Conflicting Information**. In case of conflicting information, the procedures and practices in this order take precedence. However, any applicable FAA air traffic orders take precedence over any procedures or practices in this order that are in conflict. Such conflicts should be brought to the attention of the originator of this order.

**c. Terminology**. Throughout this order, the following terminology applies:

(1) “Must” indicates a procedure or practice that is mandatory at all applicable facilities.

(2) "Should" indicates a procedure or practice that is recommended at all applicable facilities.

(3) "May" indicates a procedure or practice that is optional.

(4) "Will" indicates futurity; it is not a requirement to be applied to current practices.

**h. Non-Federal Weather Observation (NF-OBS) Station**. A program in which FAA certified, non-Federal observers enter into an agreement with the appropriate FAA Office to provide backup and/or augmentation of the automated system, or provide manual weather observations. NF-OBS observers may include non-Federal control tower (NFCT) controllers, airline personnel, fixed base operator (FBO) personnel, or other entities. At these facilities, various degrees of automated sensors and/or other automated equipment may be available. However, when on duty, the NF-OBS observer must provide backup and/or augmentation in accordance with their NF-OBS agreement. Program establishment is contained in FAA JO 7210.77, Non-Federal Weather Observation Program Operation and Administration, and responsibilities are described in Chapter 4 of this order.

**2.3. General Types of Observations.** There are three general types of surface observations:

**a. Automated Observation**. Any observation which has been prepared and transmitted by an automated observing system without human intervention.

**b. Augmented Observation**. Any automated observation which has been evaluated by a human observer to which additional weather information has been manually added that is beyond the capabilities of the automated weather observing system and/or is deemed operationally significant. The guidelines concerning augmentation are presented in Paragraph 2.4, Augmentation Requirements. Backup is a method of providing an observation, part of an observation, documentation, or communication of an observation at selected sites when the primary method is unavailable or non-representative. The guidelines concerning backup information are presented in Paragraph 2.5 Backup Requirements.

***NOTE-***
*Backing up a failed automated system is not considered a manual observation.*

**c. Manual Observation.** Any observation, for which the human observer observes, evaluates, prepares, records, and transmits the observation without the use of an automated observing system. The guidelines for manual observations are presented in Chapter 3. General Procedures.

**2.4. Augmentation Requirements.** Certified observers are responsible for the completeness and accuracy of the weather observation. Automated weather observing systems are, by design, viewing a smaller area than a human observer. Therefore, the observer is responsible for providing additional information that covers a larger area when operationally significant. Augmentation of automated observations must be provided in accordance with the guidelines presented in the following subsections and as specified for the station's service level standard (Appendix D, Service Standards). Separate guidelines are presented for the two general types of automated weather observing systems: automated systems with SPECI capability and automated systems without SPECI capability. Procedures and practices to be followed to accomplish the required augmentation are presented in Chapter 4, General Procedures at Automated Weather Stations, and Chapter 5, Augmentation Requirements at Automated Weather Stations.

**a.** Facilities with an Automated System with SPECI Capability.

(1) Sensor/system Malfunction. One or more sensors or the entire observing system is (are) not reporting data (for any reason). Provide manual backup and make appropriate maintenance notifications.

(2) Communications Failure. The automated weather observing system and/or long-line communications are malfunctioning, thereby preventing the entry and/or transmission of the observation over long-line networks.

(a) At manual Automatic Terminal Information Service (ATIS) locations or uncontrolled airports, when it is apparent that observations are not being transmitted, the required information must be relayed to the overlying ARTCCs Flight Data unit for entry into an FAA approved electronic system (for example, AIS-R, SWIM or similar systems) or, in Alaska, phoned to the tie-in Flight Service Station. Notify the appropriate office of the outage.

(b) At digital ATIS locations, the weather observer must first coordinate with and receive approval from the ATCT prior to disseminating reports via the alternate methods (e.g., AIS-R, SWIM, relaying to the ARTCC Flight Data unit). The observer must also ensure that any weather reports entered via alternate methods are promptly relayed to the tower.

(3) Non-representative Data. The sensor is reporting data, but the data are incorrect or the sky condition, visibility, and/or present weather sensor(s) is/are accurately reporting conditions in the vicinity of the sensor, but those conditions are not representative of prevailing conditions for the operating areas of the airport and are considered operationally significant. When this occurs, provide manual backup. Outage notification is not required.

**b. Level of Support**. The information specified in these guidelines is the minimum required for each of the situations discussed in the following subsections. The FAA may specify additional information beyond this minimum. The observer is encouraged to add any other appropriate remarks. Procedures and practices to provide the required backup information are presented in Chapter 6, Backup Requirements at Automated Weather Stations.

**c. Communications**. Automated weather observing system failure may or may not include loss of long-line communications, local communications, or both. The level of backup information to be provided depends on the status of such communications and whether the information is required for long-line or local, ground-to-air dissemination.

(5) Temperature/Dew Point.

(6) Altimeter Setting.

(7) Required remarks and operationally significant remarks as deemed appropriate.

***NOTE-***
*Precipitation of unknown form may be reported only if the automated sensor is operational and is reporting precipitation of unknown form. However, if the observer can determine the type of precipitation, it should be reported using the allowable elements listed in Table 6-6.*

**b. Non-LAWRS ATCTs with a Surface-Based Observer**. At non-LAWRS towers with a surface-based observer, the surface-based observer must provide, at a minimum, the backup information for long-line transmission according to the requirements contained in the Service Standards for the service level of the airport. Backup must also include required remarks and operationally significant remarks as deemed appropriate by the observer. At these facilities, ATCT personnel must routinely provide ATCT visibility information to the surface-based observer as required.

**c. Non-towered Stations with a Surface-Based Observer**. At all non-towered stations, the surface-based observer must provide the backup information required by the Service Standards for the service level of the airport. At all facilities with an operator interface device, the required information must be entered into the automated weather observing system via the operator interface device. Backup must also include required remarks and operationally significant remarks as deemed appropriate by the observer.

**2.7. Certification of Personnel and Currency Requirements.** Before assuming full responsibility for taking any type of surface observation or any part thereof, each person must be certified in accordance with Appendix J of this order. The FAA is responsible for certifying all aviation weather observers at FAA sponsored stations, in one or more of the following observer types.

**a.** FAA observers.

**b.** LAWRS observers.

**c.** NF-OBS observers.

**d.** Tower visibility observer is certified by the FAA through eLMS.

Definitions of these types are presented in Paragraph 3.2, Definitions. Currency requirements are defined in FAA Order JO 3120.4, Air Traffic Technical Training and Appendix J of this order.

**e. Basic Weather Watch**. During a Basic Weather Watch, the observer may be required to perform other duties as their observing workload permits. Because of this and other restrictions (station location, structural design, etc.) that may limit the observer's capability to continuously view and evaluate weather conditions, observers performing a Basic Weather Watch cannot be expected to detect and report all weather changes as they occur. In addition to taking and disseminating required observations, facilities performing a Basic Weather Watch must recheck weather conditions to determine if a new observation (SPECI) is required when advised by any reliable source (for example, tower controller) that existing conditions differ from those reported in the last disseminated observation.

**f. Continuous Weather Watch**. At facilities performing a Continuous Weather Watch, the observer must monitor weather conditions on a continuous basis. In addition to METAR observations, observers must take and disseminate observations as conditions meeting criteria for SPECI observations occur.

**g. Coordinated Universal Time (UTC)**. UTC is the time in the zero degree meridian time zone, also commonly known as Zulu (Z) time.

**h. Local Standard Time (LST)**. LST is a time based on the geographic location of the facility in one of the legally established time zones of the globe.

**i. Observer**. The generic term "observer" applies to a number of different types of personnel with various responsibilities for providing weather information. These various types are:

(1)Weather Observer. FAA, FAA-contract personnel, and non-Federal personnel who are certified by the FAA to provide a designated range of weather observation elements.

(a) LAWRS Observer. An FAA certified ATCS with weather observation responsibilities for surface aviation weather elements.

(b) Tower Visibility Observer. An FAA-certified ATCS with tower visibility responsibilities from the control tower.

(2) NF-OBS Observer. A non-Federal observer certified by the FAA, working under the guidelines of the NF-OBS Program, providing backup and/or augmentation of the automated system with SPECI capability.

(3) DoD Aeronautical Meteorological Observer. A non- FAA aeronautical meteorological observer trained and certified by their respective DoD Service that works under the Service's regulations and provides backup and or augmentation of the automated systems with SPECI capability at airfields where the DoD has the responsibility to provide surface weather observations.

**j. Standard Time of Observation**. The standard time of observation is the hour to which a METAR observation applies.

**3.8. Rounding Off Numbers.** Except where otherwise designated in this order, when computations require that a number be rounded, if the fractional part of a positive number to be dropped is equal to or greater than one-half, the preceding digit must be increased by one. If the fractional part of a negative number to be dropped is greater than one-half, the preceding digit must be decreased by one. In all other cases, the preceding digit must remain unchanged. For example, 1.5 becomes 2, 1.3 becomes 1, -1.5 becomes -1, and -2.6 becomes -3. Refer to Paragraph 13.19, Rounding Pressure Values, for rounding of pressure values.

**3.9. Record Keeping and Forms**

**a. Manual Observations**. All manual observations, whether complete or partial, must be recorded on the electronic version of form MF1M-10C (does not include automated stations). The form is available from the NWS at http://www.nws.noaa.gov/om/forms. After completing the form, it must be archived at the facility for 90 days. Facilities must send the electronic form to the National Center for Environmental Information (NCEI) at SURFACE.QC@NOAA.GOV by the second working day of each month. Corrected copies of all forms must be retained locally for 90 days. Retention of copies beyond 90 days must be as directed by the FAA.

**b. Automated Weather Observations**. Automated weather observations and operator terminal entries are archived on site. No further action is required by FAA, FAA-contract, or NF-OBS facilities. In the event of a complete failure of automated equipment, observers are expected to follow manual observation recording requirements.

**3.10. Evaluating Weather Sensor Accuracy**

**a. Sensor Evaluations.** When the observer has reason to believe that the accuracy or validity of indications from meteorological sensors is questionable, the use of such equipment should be discontinued until necessary corrective maintenance has been completed. If the use of such equipment is discontinued, any required backup procedures or practices must be initiated. FAA personnel and NF-OBS sponsors must disseminate appropriate maintenance notifications in the event of any equipment outages.

***NOTE-***
*If the observer believes that the Federal or non-Federal AWOS information is inaccurate, see Appendix B for maintenance notifications.*

**b. ASOS Operations and Monitoring Center (AOMC).** If the observer believes that the ASOS information is inaccurate, they should notify the AOMC at 1-800-242-8194 OR 8895.

**c. Notices to Airmen (NOTAMS).** The FSS must accept, categorize, and distribute NOTAMs on all systems and system components following instructions in FAA Order JO 7930.2.

**3.11. Criteria for SPECI Observations.** The observer must take, record, and disseminate a SPECI observation when any of the following is observed to occur:

**a. Wind Shift**. Wind direction changes by 45 degrees or more in less than 15 minutes, and the wind speed is 10 knots or more throughout the wind shift.

**b.** Non-FAA Stations. In addition to the systems described above, there are various NWS, DOD, and non-Federal automated weather observing systems. NWS and DOD have their own certification and maintenance procedures. All non-Federal automated weather observing systems to be used for aviation must be certified and commissioned by the FAA in accordance with the most current version of FAA Advisory Circular AC 150/5220-16, Automated Weather Observing Systems (AWOS) for Non-Federal Applications.

**4.3. Certification.** All FAA, contract, and NF-OBS personnel responsible for providing weather observations, augmentation information, tower visibility observations, or backup weather information must be certified at least to the level commensurate with current duties. Certification must be in accordance with the provisions in Appendix J of this order.

**4.4. General Procedures.** At automated weather observing stations, the specified weather information must be taken, recorded and disseminated in accordance with the procedures and practices in this order. Operator procedures for recording and disseminating augmentation and backup information are summarized in Table 4-1: Operator Procedures for Providing Augmentation and Backup Information. Weather information taken and reported should reflect only those conditions seen, or reported by a reliable source, from the usual point of observation and, unless otherwise specified, must have occurred at the time of the observation.

***Table 4-1: Operator Procedures for Providing Augmentation and Backup Information***

| CONDITION | LONG-LINE | LOCAL |
|---|---|---|
| AUGMENTATION | Enter data via OID | Enter data via OID |
| BACKUP INFORMATION: | | |
| Sensor Failure | Edit data via OID | Edit data via OID |
| OID communications failure | Relay to the overlying ARTCCs Flight Data unit for entry into an FAA approved electronic system (for example, AIS-R) or, in Alaska, provide to Associated FSS. | Provide to Local Air Traffic Facility and follow other Local Procedures |
| Erroneous/Non-representative data | Edit data via OID | Edit data via OID |
| LEGEND: OID – any automated weather observing system operator interface device<br>FSS – Automated Flight Service Stations | | |

**4.5. General Equipment Procedures.** General equipment operating instructions to perform the duties associated with automated weather observing systems are contained in the following publications:

**a.** For all Federal systems, use handbooks, manuals, or Ready Reference Guides as provided by the Government.

**6.2. Summary of Backup Requirements.** Table 6-1 presents a summary of the backup weather information requirements that support pilot safety and regulatory requirements, and the terminal forecast preparation program of NWS. The table documents the level of backup required in accordance with the service level standards described in Appendix D, Service Standards. In addition to the observational elements shown in the tables, the minimum standards for communications and observational records, used as back up for the automated weather observing systems, are specified in this chapter. If a partial system failure or erroneous data involves weather elements that are not required to be provided in accordance with specifications in this chapter; those elements may be treated as missing. Responsible personnel may disable those automated sensors in accordance with applicable equipment manuals. When reverting to the manual mode, personnel must record their justification for reverting on FAA Form 7230-4, Daily Record of Facility Operation, or an approved version of the form. They must also disseminate appropriate maintenance notifications. At manual ATIS locations or uncontrolled airports, when long-line communications are unavailable and a certified weather observer is available, the report is to be relayed to the overlying ARTCCs Flight Data unit for entry into an FAA approved electronic system (for example, AIS-R, SWIM or similar systems). In Alaska, the FSS/Automated Flight Service Station (AFSS) must disseminate these reports. At digital ATIS locations, the weather observer must first coordinate with and receive approval from the ATCT prior to disseminating reports via any alternate methods, and ensure that any weather reports entered are promptly relayed to the tower. Dissemination procedures are outlined in Table 4-1: Operator Procedures for Providing Augmentation and Backup Information.

**6.3. Validity of Data.** Once an observation has been augmented, the observer must ensure the augmented data is correct prior to transmission.

**6.4. Equipment Requirements.** The following are minimum requirements for equipment required to provide the weather information specified in this chapter. Unless stated otherwise, the equipment is required only if that element is required at your facility. References to an "OID/OT" indicate any automated weather observing system operator interface device.

**a. Equipment for Wind Direction and Speed**. If available, the primary low-level wind shear alert system (LLWAS) sensor or other approved on-site wind equipment must be used. Otherwise, the wind direction and speed must be estimated during periods when all automated wind sensors are inoperative.

**b. Equipment for Visibility**. There is no equipment required for automated visibility sensor backup. However, a current list or visibility chart(s) depicting day and night visibility reference points must be maintained and available at the point of observation for use at each facility.

**c. Equipment for Present Weather and Obstructions to Vision**. Visual procedures must be used to identify the type(s) of present weather and/or obscurations. If necessary, visual procedures must be used to determine the intensity of precipitation.

**d. Equipment for Sky Condition**. There is no equipment required for automated sky condition sensor backup. Visual estimates must be made. Pilot reports of cloud heights may be used if available.

**e. Equipment for Temperature and Dew Point**. An approved remote readout hygrothermometer is an acceptable backup for temperature and dew point. Other acceptable backups are a battery-operated self-contained psychrometer or a stand-alone temperature measuring device, as approved by FAA.

**f. Equipment for Altimeter Setting**. Equipment to back up altimeter setting may be any FAA installed and maintained altimeter setting indicator (ASI), digital altimeter setting indicator (DASI), or any other approved facility station pressure instrument, with certification and calibration traceable to the National Institute of Standards and Technology as defined in FAA Order 7210.3, Facility Operation and Administration.

**g. Equipment for OID/OT**. If the OID fails on automated systems with SPECI capability and the automated systems with SPECI capability observation is currently representative, the observer must continue to maintain oversight of the automated system through the use of other automated systems with SPECI capability displays (e.g., Video Display Unit [VDU]) and must disseminate appropriate maintenance notifications. If significant weather is occurring or expected to occur, implement the procedures in Appendix B.1. b. (1). After coordinating with ATCT and only if the ATCT requests it, through appropriate maintenance channels, arrange for local and long-line communications to be disabled. Notify on-site users that have automated systems, with SPECI capability displays, to turn off power to their display and provide manual backup observations.

**h.** Equipment for Communications. No additional equipment is required for the communication of backup weather information.

(1) At manual ATIS locations or uncontrolled airports, when long-line communications are unavailable, the report is to be relayed to the overlying ARTCCs Flight Data unit for entry into an FAA approved electronic system (for example, AIS-R, SWIM or similar systems). In Alaska, disseminate weather reports to the FSS.

(2) At digital ATIS locations, the weather observer must first coordinate with and receive approval from the ATCT prior to disseminating reports via the alternate methods (for example, AIS-R, SWIM or similar systems) and ensure that any weather reports entered via alternate methods are promptly relayed to the tower.

**6.5. Procedures for Providing Backup Information.** General observer procedures for providing required backup information are summarized in Table 4-1: Operator Procedures for Providing Augmentation and Backup Information. At sites with an automated system with SPECI capability, required weather data elements must be entered into the automated weather observing system using the editing procedures for the OID. At sites with an automated system without SPECI capability, data must be entered as specified in the operator's instructions for the automated system without SPECI capability, or the appropriate FAA approved automated systems without SPECI capability manufacturer's equipment manual. For non-representative data, the observer may turn report processing off (automated system with SPECI capability) or set the channel out of service (automated system without SPECI capability). The turning off of report processing will lead to a "$" sign, and the generation of a trouble ticket for the NWS AOMC. Observers must not turn off report processing for altimeter setting without appropriate maintenance notification. Once the report processing for the altimeter setting is turned off, only the appropriate ASOS or AWOS technician can turn the report processing back on.

**6.6. Coding of Missing Data.** If any element normally included in the body of the observation, except present weather and obscurations, is missing because of sensor failure and that element is not required for backup, that element may be omitted. If the automated weather observing system's processor is operative, the system will do this automatically. If not operative, these missing elements must be omitted and skipped over. When an element or phenomena does not occur or cannot be observed, the corresponding group and preceding space are omitted from that particular report.

**6.7. Procedures for Wind Speed and Wind Direction**. General procedures for the reporting of backup weather information for wind are given in Table 6-2: Backup Reporting of Wind or Altimeter Setting. Alternate equipment, as specified in Paragraph 6.4, Equipment Requirements must be used to determine wind direction and speed as appropriate. If no backup sensor is available, wind speed and direction must be estimated.

***Table 6-2: Backup Reporting of Wind or Altimeter Setting***

| LOCATION/CONDITION | REPORTING PROCEDURES |
|---|---|
| **ALL LOCATIONS WITH SURFACE-BASED OBSERVER PRESENT** | |
| Sensor Failure | 1. Observer reports manually observed wind[1] or altimeter setting[2] in body of observation via designated procedures[3] and makes appropriate maintenance notification. |
| Non-representative Data | 1. Observer may turn report processing off (automated systems with SPECI capability) or set channel out of service (automated systems without SPECI capability). Maintenance notification must be made whenever report processing is turned off.<br><br>2. Observer reports manually observed wind or altimeter setting as above. For sensor failure only make appropriate maintenance notification. |

**z. Station Pressure (Column 36)** (NA LAWRS/NA CWO). Precision Aneroid Barometer or Altimeter Setting Indicator. If a precision aneroid barometer or altimeter-setting indicator is used to determine station pressure, the observer must record the reading to the nearest 0.005 inch (or 0.1 hectopascal).

**aa.** Barograph (Column 37). NA

**bb.** Barograph Correction (Column 38). NA

**cc.** 24-Hour Maximum Temperature (Column 57) (NA LAWRS).

**dd.** 24-Hour Minimum Temperature (Column 58) (NA LAWRS).

**ee.** 24-Hour Precipitation (Column 59) (NA LAWRS). The observer must record the total precipitation for the 24 hours ending at midnight (LST) as follows:

(1) No precipitation, record a "**0**".

(2) A trace (less than 0.005 inch), record a "**T**". A trace amount includes the sum of any number of "**T**" observations, unless a recording or totalizing gauge indicates 0.005 inch or more.

(3) A measurable amount has occurred, record the amount (water equivalent) to the nearest 0.01 inch.

(4) Where the 24-hour precipitation is derived from entries in column 33, disregard the entry in column 33 on the line captioned "**1**" if the midnight observation is taken. Record "**M**" if any data are missing.

(5) If the station is closed and unless measurable precipitation has occurred, record "**0**".

(6) If any entries in column 33 are missing, the entry in column 59 will also be missing (**M**).

(7) If any entries in column 33 are estimated (block 65 remark), the entry in column 59 must also be considered estimated. A remark in block 65 is not required to denote an estimated amount in column 59 since a remark is already noted for column 33.

**ff. 24-Hour Snowfall (Column 60)** (NA LAWRS). The observer must record the total amount (unmelted) of solid precipitation that fell in the 24 hours ending at midnight (LST) as follows:

(1) No 6-hour solid precipitation, record a "**0**".

(2) A trace (less than 0.05 inch), record a "**T**".

(3) A measurable amount occurred, record the total amount that fell in inches and tenths. Note that it is the total amount of fall that is entered. Therefore, the amount entered must be the

| Terms | Definitions |
|---|---|
| LOC | location |
| LST | Local Standard Time |
| LTG | lightning |
| LWR | lower |
| M | minus, less than, missing |
| METAR | aviation routine weather report |
| MF1M-10C | Meteorological Form 1M-10C |
| MI | shallow |
| MID | midnight |
| MOV | moved/moving/movement |
| MSL | mean sea level |
| MT | mountains |
| N | north |
| NA | not applicable |
| NCEI | National Center for Environmental Information |
| NE | northeast |
| NFCT | Non-Federal control tower |
| NF-OBS | Non-Federal Weather Observation |
| NGRVR | New Generation Runway Visual Range |
| NOAA | National Oceanic and Atmospheric Administration |
| NOSPECI | no SPECI reports are taken at the station |
| NOTAM | Notice to Airmen |
| NW | northwest |
| NWS | National Weather Service |
| OBS | observer, observation |
| OCNL | occasional |
| OFCM | Office of the Federal Coordinator for Meteorology |
| OHD | overhead |

# Appendix B. **CONTINUITY OF SERVICE**

**B.1 Standard Operating Procedures.** Timely and accurate aviation weather observations are critical to the NAS and require continuity of service. Weather Observers should implement the standard operating procedures below to the best of their ability.

**a. Equipment Outages:**

(1) All federally owned ASOS systems are monitored by the ASOS Operations and Monitoring Center (AOMC) and maintenance is conducted by NWS ASOS technicians. AOMC is available 24 hours a day, 7 days a week. The FAA has a Technical Operations ASOS representative in Surveillance/Weather, AJW-135, who coordinates ASOS equipment issues with the NWS.

(2) Federally owned and non-federally owned AWOS systems are not continuously monitored. Outages are reported to the FAA Network Enterprise Management Center (NEMC) at 1-855-FAA-NEMC (322-6362) for sites outside of Alaska, and to the Alaska SOC (907-269-1803) for Alaska AWOS sites. NEMC and Alaska SOC report AWOS technical problems to the appropriate FAA technicians or certified non-federal technicians who are responsible for maintaining the equipment. NEMC and the Alaska SOC are available 24 hours a day, 7 days a week.

**b. Service Disruptions:** Whenever FAA Contract or non-Federal Weather Observers are unable to perform their prescribed duties (Basic Weather Watch) from their normal place of operation.

(1) Notify the appropriate FAA Regional Operations Center (ROC) as soon as possible and activate the Weather Observation problem trigger. The ROC must be provided with the 3 or 4 letter identifier for the location, a brief description of the problem and a Point-of-Contact name and telephone number.

(a) East ROC (E-ROC)

(i) ANE Main Line – 404-305-5156 9-ESA-ROC@faa.gov

(ii) AEA Main Line – 404-305-5150 9-ESA-ROC@faa.gov

(iii) ASO Main Line – 404-305-5180 9-ESA-ROC@faa.gov

(b) Central ROC (C-ROC)

(i) Main Line – 817-222-5006 9-CSA-ROC@faa.gov

(c) West ROC (W-ROC)

(i) ANM Main Line – 425-227-2000 9-WSA-OPSCTR@faa.gov

(ii) AAL Main Line – 425-227-1999/2000/1389 9-WSA-OPSCTR@faa.gov

(iii) AWP Main Line – 425-227-1999/2000/1389 9-WSA-OPSCTR@faa.gov

(2) The ROC will then relay the information via email to 9-AJT-HQ-ASWO@faa.gov. The ROC will also notify via telephone:

(a) The local Air Traffic or Flight Service facility.

(b) The Terminal District Office or designee.

(3) FAA Contract Weather Observers must report to the local Air Traffic Manager and relocate to suitable location that has access to an ASOS Operator Interface device (OID). Continue providing aviation weather observations from the alternate location until service is restored at the primary location and released by the Air Traffic Manager or designee to return to the normal place of business. (See paragraph 6.4 g. of this order)

**Note:** *Some Air Traffic Facilities use a digital ATIS which directly interfaces with the automated weather system. The local Air Traffic Manager may direct the weather observers to leave the automated weather system in AUTO mode to ensure the digital ATIS operation is not affected.*

(a) If another ASOS OID and/or a suitable location with the proper backup equipment and visibility chart are not available, The Automated Weather System must be left in standalone AUTO mode.

(b) The Automated Weather System must operate in AUTO mode until a suitable location with access to an ASOS OID is available to continue performing a Basic Weather Watch, as defined in FAA JO 7900.5.

(c) If the Automated Weather System is out-of-service and there is no suitable location for weather observers to perform a Basic Weather Watch with the proper backup equipment and visibility charts, report to the local Air Traffic Manager for guidance and notify the local National Weather Service Field Office for NOTAMs to be issued in accordance with FAA JO 7930.2.

**Note:** *At sites with no FAA Air Traffic Facility, report to the CWO company for guidance.*

# Appendix L. AVIATION WEATHER OBSERVATION QUALITY CONTROL

**L.1 Advisory Board.** Air Traffic Services (AJT) will establish a joint Aviation Weather Observation Advisory Board to meet semi-annually to review FAA quality control practices and procedures and make necessary recommendations and/or adjustments. The Advisory Board should consist of FAA Air Traffic, Technical Operations, Quality Control Group (QCG) and Flight Standards personnel. The Board may also include National Weather Service and/or Union representatives.

**L.2 Daily Quality Control of Automated Weather Systems**

**a.** The daily quality control of federally owned ASOS systems is conducted by the ASOS Operations and Monitoring Center (AOMC) and NWS ASOS technicians. AOMC is available 24 hours a day, 7 days a week at 1-800-242-8194/8895. The FAA has a Technical Operations ASOS representative in AJW-135 who coordinates ASOS equipment issues with the NWS.

**b.** The daily quality control of federally owned and non-federally owned AWOS systems is conducted by the FAA Network Enterprise Management Center (NEMC) at 1-855-FAA-NEMC (322-6362) for sites outside of Alaska, and by the Alaska SOC (907-269-1803) for Alaska AWOS sites. NEMC and Alaska SOC report AWOS technical problems to the appropriate FAA technicians or certified non-federal technicians who are responsible for maintaining the equipment. NEMC and the Alaska SOC are available 24 hours a day, 7 days a week.

**L.3 Daily Quality Control of Aviation Weather Observations (METAR/SPECI).** NWS field office personnel and FAA Air Traffic personnel verify the quality of aviation weather observations on a routine and regular basis.

**a.** Whenever FAA Air Traffic staff identifies a problem or errors in the quality of aviation weather observations, they contact the local Certified Weather Observer on duty or Air Traffic Manager (LAWRS) for resolution. If the problem cannot be resolved promptly at the local level or is a persistent problem, relay the location, a brief description of the problem, and Point-of-Contact information to AJT at 9-AJT-HQ-ASWO@faa.gov for resolution through:

(1) The Contract Weather Observer vendor for CWO facilities.

(2) The FAA Contract Tower vendor for FCT LAWRS facilities.

(3) The Airport Sponsor for Non-Federal OBS or SAWRS facilities.

(4) Air Traffic Services, Technical Advisory Group (TAG), for FAA Tower LAWRS facilities.

(5) FAA System Operations, Flight Service Group AJR-B for Alaska Flight Service facilities.

(6) The National Weather Service Headquarters for NWS maintenance issues.

(7) FAA Technical Operations, AJW-135 for ASOS technical issues.

**b.** Whenever local or Regional NWS staff identifies a problem or errors in the quality of aviation weather observations, notify the appropriate FAA Regional Operations Center (ROC) to initiate a Weather Observation Problem Trigger. The ROC must be provided with the 3 or 4 letter identifier for the location, a brief description of the problem, and a NWS Point-of-Contact name and telephone number in the event further information is required.

(1) East ROC (E-ROC)

(a) ANE (New England) Main Line – 404-305-5156 9-ESA-ROC@faa.gov

(b) AEA Main Line (Eastern) – 404-305-5150 9-ESA-ROC@faa.gov

(c) ASO Main Line (Southern) – 404-305-5180 9-ESA-ROC@faa.gov

(2) Central ROC (C-ROC)

(a) Main Line – 817-222-5006 9-CSA-ROC@faa.gov

(3) West ROC (W-ROC)

(a) ANM Main Line (Northwest Mountain) 425-227-2000 9-WSA-OPSCTR@faa.gov

(b) AAL Main Line (Alaska) 425-227-1999/2000/1389 9-WSA-OPSCTR@faa.gov

(c) AWP Main Line (Western-Pacific) 425-227-1999/2000/1389 9-WSA-OPSCTR@faa.gov

(4) The ROC will then relay the National Weather Service information via email to 9-AJT-HQ-ASWO@faa.gov. The ROC will also notify via telephone:

(a) The local Air Traffic or Flight Service Facility, if available.
(b) The Terminal District Office or designee.

**L.4 Routine Quality Control of Weather Observations** AJT will conduct aviation weather observation desk audits on FAA and FCT LAWRS facilities as well as FAA Contract Weather Observers and non-Federal Weather Observing stations. AJT will conduct audits based on reports of erroneous weather observations received from internal or external FAA stakeholders and/or on a random basis. To ensure compliance with FAA JO 7900.5, data from various sources may be reviewed including:

(1) The ASOS Operations and Monitoring Center (AOMC) Trouble Tickets

(2) The FAA/NWS Aviation Digital Data Service (ADDS)

(3) The National Center for Environmental Information (NCEI)

(4) The National Center for Atmospheric Research (NCAR)

(5) Other Various third party weather reporting services

(6) Automated Weather System archives and edit logs

**a.** Ratings – AJT will assess the quality of weather observations using the following categories:

(1) Exemplary (E) – This finding is assigned to items that demonstrate exemplary performance in quality.

(2) Compliant (C) – This finding is assigned to items that are completed in compliance with national requirements (i.e. FAA JO 7900.5).

(3) Non-compliant Low Risk (NL) – This finding is assigned to items that are non-compliant but do not represent a significant safety risk to the NAS (i.e. signing on/off improperly).

(4) Non-compliant High Risk (NH) – This finding is assigned to items that are non-compliant and represent a significant safety risk to the NAS (i.e. weather elements missing and not backed up or coded incorrectly).

**b.** Findings – AJT will forward findings of the evaluation with a rating of NL or NH and a request for a Risk Mitigation Plan via email to:

(1) The Technical Advisory Group, AJT-22 Manager (FAA facilities only).

(2) The FAA Terminal District Manager.

(3) The FAA Vendor for FAA contract sites.

(4) The FAA Contracting Officer (CO) and Contracting Officers Representative (COR) (FAA contract sites).

(5) The Service Center Program Implementation Manager (PIM).

(6) The Service Center Quality Control Group Manager.

**c.** Responding to Findings – Facilities must respond to items identified as non-compliant in the following manner:

(1) NL – Facilities must develop a Risk Mitigation Plan to correct the item(s) and submit the Plan to AJT and the Terminal District Manager for concurrence. To close the item, the facility must document the processes used to ensure the effectiveness of the mitigation.

(2) NH – Due to the severity of the finding and subsequent risk to the NAS, facilities must, within 3 administrative days of being notified of the rating by AJT, develop a Risk Mitigation Plan to correct the item(s) and obtain Terminal District and AJT concurrence. To close the item, the facility must document the processes used to ensure the effectiveness of the mitigation.

(3) No action is required for checklist items rated "E" or "C."

***Note:*** *The Contracting Officer (CO) and Contract Officers Representative (COR) must receive a copy of all Contractor Risk Mitigation Plans.*

**d.** Follow-up Evaluations – AJT will conduct a follow-up evaluation for all NL and NH rated sites within 30 days, and also conduct 90 day follow-up quality control audits for any site rated NL or NH.

**L.5 Routine Inspections.** All FAA sponsored aviation weather observation personnel and sites are subject to inspection through the use of the FAA Internal Compliance Verification (ICV) tool, FAA External Compliance Verification (ECV) visits, FAA Service Center or FAA HQ physical on-site inspections, and the quality control process described in paragraph L.4. This is done in order to ensure compliance with FAA JO 7900.5 and other FAA weather observation practices and procedures.

The FAA reserves the right to revoke the certification of any weather observer or weather observing station for poor performance or non-compliance of the procedures and practices outlined in FAA JO 7900.5, Surface Weather Observing, and any other weather observing related guidance.