

NATIONAL WEATHER SERVICE INSTRUCTION 10-815

July 1, 2014

Operations and Services

Aviation Weather Services, NWSPD 10-8

AVIATION FORECASTER TRAINING AND COMPETENCIES

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

OPR: W/OS23 (C. Weiss)

Certified by: W/OS23 (C. Abelman)

Type of Issuance: Initial

SUMMARY OF REVISIONS:

Background. As the designated meteorological provider for the U.S. Aviation Meteorological Authority (the Federal Aviation Administration), the NWS is committed to meeting the standards and recommended practices set forth in International Civil Aviation Organization (ICAO) Annex 3 *Meteorological Service for International Air Navigation* governing aviation weather products and services. Recently, ICAO added a requirement to Annex 3 for all meteorological providers to establish a formal Quality Management System for aviation forecast products and services. Forecaster training and competency is a part of this Quality Management System. The NWS Aviation Training Program with its Aviation Professional Development Series (PDS) provides training that enables NWS forecasters to meet the World Meteorological Organization (WMO) competencies.

//Signed//

June 18, 2014

Christopher S. Strager

Date

Acting Director, Office of Climate, Water and Weather Services

Aviation Forecaster Training and Competencies

Table of Contents	Page
1. Purpose.....	3
2. Background.....	3
3. Aviation Forecasters.....	3
4. Aviation Training.....	3
4.1 Baseline.....	3
4.2 Initial.....	3
4.3 Recurrent.....	3
4.4 CWSU Meteorologists.....	4
5. Aviation Professional Development Series (PDS).....	4
6. Documentation and Reporting Requirements.....	4
APPENDIX A – Aviation PDS List of professional Competencies.....	A-1
APPENDIX B - WMO Aeronautical Forecaster Competencies.....	B-1
APPENDIX C - Confirmation Letter to the Regional Aviation Meteorologist.....	C-3
APPENDIX D - Confirmation Letter to OCWWS.....	D-4

1. **Purpose.** The purpose of this directive is to provide specifications for the training of National Weather Service (NWS) aviation forecasters. The Meteorologists-in-Charge (MICs) and the appropriate Regional Headquarters, and National Center Branch Chiefs and Directors are responsible for ensuring aviation weather forecasters are properly trained and competent to provide aviation weather services.

2. **Background.** As the designated meteorological provider for the U.S. Aviation Meteorological Authority (the Federal Aviation Administration), the NWS is committed to meeting the standards and recommended practices set forth in International Civil Aviation Organization (ICAO) Annex 3 *Meteorological Service for International Air Navigation* governing aviation weather products and services. Recently, ICAO added a requirement to Annex 3 for all meteorological providers to establish a formal Quality Management System for aviation forecast products and services. Forecaster training and competency is a part of this Quality Management System. The NWS Aviation Training Program with its Aviation Professional Development Series (PDS) provides training that enables NWS forecasters to meet the World Meteorological Organization (WMO) competencies.

3. **Aviation Forecasters.** NWS meteorologists producing, issuing, or providing service back-up to any of the suite of core aviation weather forecasts and advisories are required to complete baseline aviation training. This baseline consists of a core set of lessons covering the basic principles of aviation weather forecasting and aviation services. Special emphasis is placed on a) monitoring and forecasting the aviation weather environment to determine the need for issuance, cancellation, amendments, or updates of decision support information according to documented thresholds, regulations and operational impacts, and b) coordinating and communicating effectively with operational aviation partners to ensure the provision of the highest quality of aviation meteorological information and services.

4. **Aviation Training.**

4.1 **Baseline.** All NWS aviation forecasters are required to complete:

Distance Learning Aviation Course 1(Forecasting Fog/Low Stratus for Aviation Operations)
Distance Learning Aviation Course 2 (Producing Customer-Focused TAFs)
Impact of Weather on Air Traffic Management
Weather Decision Support for National Airspace System

In addition, all NWS aviation forecasters are encouraged to complete lessons within the PDS recommended by the Weather Forecast Office (WFO) Aviation Focal Point (AFP) and/or Science and Operations Officer (SOO).

4.2 **Initial.** New aviation forecasters with no previous NWS experience forecasting in the aviation environment will complete all baseline aviation training modules (Section 4.1), along with any additional aviation training requirements (as specified by regional supplements to this directive). Forecasters should complete the required training within six months of arrival on station. Meteorological Interns are required to complete the aviation training indicated in the [NWS Forecaster Development Program](#).

4.3 Recurrent. Experienced aviation forecasters should complete and periodically review the training materials indicated in Section 4.1 (Baseline Training Modules) as well as other available training materials. This should be done at least once every 5 years; however, the appropriate Regional Headquarters, National Centers, or local WFOs (MIC discretion) may require more periodic and/or specific refresher training.

4.4 Center Weather Service Unit (CWSU) Meteorologists. CWSU meteorologists should follow training guidelines outlined in NWS Instruction (NWSI) 10-803.

5. Aviation Professional Development Series. The PDS provides a framework for training and identifying specific core skills and competencies for aviation forecasting. The NWS established the aviation PDS to promote the highest quality NWS aviation products and services, and support the goals set forth in ICAO Annex 3. The PDS is designed to train NWS aviation forecasters in all aspects of aviation meteorology and related services.

The PDS is built upon five Professional Competency Units (PCUs). These PCUs describe specific aviation forecaster duties and/or programmatic services/support activities (Appendix A). The PCUs contain many aviation-related courses ranging from detailed scientific analysis, operational forecasting, and warnings to decision support services. Together, these five PCUs provide a comprehensive framework for assessing core skills and competencies for aviation forecasting, as well as maintain a high quality aviation program and associated services consistent with ICAO Annex 3 and established WMO Aeronautical Forecaster Competency standards.

All NWS forecasters are urged to complete the courses in the PDS. Necessary courses in the PDS may be determined by local NWS offices and National Centers to satisfy local training requirements. The NWS Aviation PDS can be found at:

<http://www.nws.noaa.gov/training/aviationPDS.php>.

The WMO Aeronautical Forecaster Competencies are outlined in Appendix B.

6. Documentation and Reporting Requirements. Those NWS field offices which provide aviation forecasts and services will include the NWS Aviation PDS as part of their aviation weather training program within their annual office training plan. The MIC, SOO, and AFP should review the NWS Aviation PDS and associated PCUs annually, incorporate the relevant portions of the PDS into their aviation training program, and perform individual forecaster assessments as appropriate.

WFOs, Aviation Weather Center (AWC) and Alaska Aviation Weather Unit (AAWU) are required to provide written confirmation to their Regional Aviation Meteorologist (RAM) or appropriate National Center for Environmental Prediction (NCEP) Center Director that the meteorologists performing aviation weather services are competent to do so. NWS Regions and National Centers providing aviation products or services are required to forward notification to the Director of the Office of Climate, Water, and Weather Services and the Aviation Weather Services Branch Chief (Appendix D).

APPENDIX A - NWS Aviation Professional Development Series List of Professional Competencies

Below are the descriptions of the job competencies associated with each of the five Professional Competency Units (PCU).

PCU 1: Coordinate and Communicate with Aviation System Operational Partners

A National Weather Service (NWS) meteorologist must communicate effectively with operational aviation partners (i.e., controllers, traffic managers, flight specialists, airline dispatchers, etc). Aviation meteorologists should understand the National Airspace System (NAS). Furthermore, an aviation meteorologist should understand the operations and responsibilities of our aviation partners and the impacts of aviation forecasts on operations. An aviation meteorologist also will be expected to coordinate with his or her peers (i.e., other NWS aviation meteorologists) to provide clear and consistent information.

PCU 2: Continuously Assess and Forecast the Aviation Weather Environment

Observations and forecasts of weather parameters and significant weather phenomena relevant to the mission of the meteorologist's office are continuously monitored to determine the need for issuance, cancellation, amendments, or updates of decision support information according to documented thresholds, regulations and operational impacts.

PCU 3: Provide Aviation Weather Information and Services

Forecasters produce timely, accurate and consistent (spatially and temporally) forecasts. These forecasts must maintain meteorological integrity across boundaries of the area of responsibility. Forecasts of meteorological parameters and phenomena are prepared using production tools (i.e., AvnFPS, IC4D, WARP, N-AWIPS, etc.) and issued in accordance with documented requirements (such as various NWS Directives and ICAO Annex 3), priorities and deadlines.

PCU 4: Perform Outreach to the Aviation Community

NWS aviation meteorologists should be able to identify customers of NWS aviation weather information and services and establish a relationship with customers and determine their needs. Encourage them to use NWS information and services. Meteorologists should be able to identify outreach opportunities, barriers to outreach and effective means for overcoming these barriers and provide outreach on NWS information and services for improved aviation decision support.

PCU 5: Ensure the Quality of Aviation Meteorological Information and Services

NWS aviation meteorologists should be able to identify documented aviation performance measures and standards and use available tools to determine current levels of performance. NWS aviation meteorologists should be able to maintain and improve the quality and value of meteorological information and services as required.

APPENDIX B - WMO Aeronautical Forecaster Competency

Aeronautical Meteorological Forecaster

The competencies apply:

- a) For the area and airspace of responsibility,
- b) In consideration of the impact of meteorological phenomena and parameters on aviation operations, and
- c) In compliance with aviation user requirements, international regulations, local procedures and priorities.

1. Analyze and monitor continuously the weather situation

Competence description – Observations and forecasts of weather parameters and significant weather phenomena are continuously monitored to determine the need for issuance, cancellation or amendment/update of forecasts and warnings according to documented thresholds and regulations.

2. Forecast aeronautical meteorological phenomena and parameters

Competence description – Forecasts of meteorological parameters and phenomena are prepared and issued in accordance with documented requirements, priorities and deadlines.

3. Warn of hazardous phenomena

Competence description – Aviation advisories are issued in a timely manner when hazardous conditions are expected to occur or when parameters are expected to reach documented threshold values, and updated or cancelled according to documented advisory criteria.

4. Ensure the quality of meteorological information and services

Competence description – The quality of meteorological forecasts, warnings and related products is ensured at the required level by the application of documented quality management processes.

5. Communicate meteorological information to internal and external users

Competence description – User requirements are fully understood and are addressed by communicating concise and complete forecasts/warnings in a manner that can be clearly understood by the users.

**APPENDIX C - Confirmation Letter to the Regional Aviation
Meteorologist/National Center Director**

MEMORANDUM FOR: Regional Aviation Meteorologist/National Center Director

FROM: Meteorologist-in-Charge/National Center Operations Branch Chief

SUBJECT: Aeronautical Forecaster Training and Competency

DATE: Month, Day, Year

All meteorologists providing aviation products and services at WFO XXX/CWSU XXX/AWC/AAWU/ATCSCC demonstrated competency in accordance with NWS policy and procedures.

**APPENDIX D - Confirmation Letter to the Director of the Office of Climate,
Water, and Weather Services and the Aviation Weather Services Branch Chief**

MEMORANDUM FOR: Director, OCWWS
FROM: Regional Director/National Center Director
SUBJECT: Aeronautical Forecaster Training and Competency
DATE: Month, Day, Year

All Regional/National Center meteorologists providing aviation products and services have demonstrated competency in accordance with NWS policy and procedures.