Volume 3. Air Operator Technical Administration

CHAPTER 7. AVIATION WEATHER INFORMATION SYSTEMS.

SECTION 2. WEATHER PRODUCTS AND APPROVAL PROCESS.

1417. BACKGROUND ON NATIONAL WEATHER SERVICE AND FEDERAL AVIATION ADMINISTRATION. This section gives an overview of the joint efforts of the Federal Aviation Administration (FAA) and the National Weather Service (NWS) to provide accurate and timely weather observations and forecasts to the aviation community. This background is presented to help principal operations inspectors (POI) better understand the relationship between the FAA and NWS, the different classifications of aviation weather products, and, most importantly, the use of FAA/NWS and commercial aviation weather products to fulfill regulatory requirements.

A. The NWS and FAA have joint responsibility for collecting, producing, and disseminating aviation weather data. The NWS provides basic meteorological services and mutually agreed upon aviation weather services. The FAA establishes user requirements for aviation weather services, determines which entities will provide specific services, provides aviation weather services, and verifies that the aviation weather services meet the established requirements.

B. Over the last 12 years, the FAA developed and funded a substantial aviation weather research and development (R & D) program to create new aviation weather products. The stimuli for these research efforts was growing demand for weather products to meet operational needs and scientific/technological advancements. Given the rapid increases in computer technology, the FAA and NWS have placed special emphasis on developing graphical weather products that accurately depict weather conditions in the terminal and en route environments.

C. The FAA, in conjunction with NWS, established the Aviation Weather Technology Transfer (AWTT) Board so that newly developed aviation weather products meet regulatory requirements and enhance safety. The AWTT is charged with managing and accelerating the transfer of these products into operational use. Members of the AWTT Board include mid-level managers from the FAA and NWS who are responsible for various aspects of the development and use of aviation weather products (e.g., aviation weather R & D, transition of weather products from R & D to operational use, etc.).

D. The AWTT is a management-review and decisionmaking process that applies criteria to weather products at various development stages (decision stages, i.e., "D-stages"). The D-stages are composed of the following: sponsorship of user needs (D1); R & D and controlled testing (D2); experimental application (D3); and operational application (D4). Weather products in the D3 stage are experimental. Although D3 products are available via the public Internet, they may not be used to meet aviation weather regulatory requirements. At the D4 stage, the FAA approves a weather product for operational use by end users (with restrictions, if necessary), and the product is made available to the public via long-line circuit, satellite, and/or other means of communication.

NOTE: When operational weather data is received over the public Internet, refer to AC 00-62, Internet Communications of Aviation Weather and NOTAMs, for an FAA-approved Qualified Internet Communications Provider (QICP) (see Order 8400.10, volume 3, chapters 1, 6, and 7).

1419. SOURCES OF AVIATION WEATHER INFORMATION.

A. The regulations pertaining to aviation weather reflect that, historically, the Federal Government was the only source of aviation weather information. That is, the FAA and NWS, or its predecessor organizations, were solely responsible for the collection and dissemination of weather data, including forecasts. Thus, the term "approved source(s)" referred exclusively to the Federal Government. The Federal Government is no longer the only source of weather information, due to the growing sophistication of aviation operations and scientific and technological advances.

B. The FAA has identified the following three distinct types of weather information that certificate holders or fractional ownership program managers may need to conduct operations:

(1) *Observations.* Raw weather data collected by some type of sensor suite, including surface and airborne observations, radar, lightning, satellite imagery, and profilers.

(2) *Analysis.* Enhanced depiction and/or interpretation of observed weather data.

(3) *Forecasts.* Predictions of the development and/or movement of weather phenomena based on meteorological observations and various mathematical models.

NOTE: In-flight weather advisories, including Significant Meteorological Information (SIGMET), Convective SIGMETs, Airman's Meteorological Information (AIRMET), Center Weather Advisories (CWA), and Meteorological Impact Statements (MIS), are considered forecast-type weather information or forecast products.

C. Since all three types of weather information defined above are not available from all sources of aviation weather information, the FAA has categorized the sources as follows:

(1) *Federal Government.* The FAA and NWS collect raw weather data, analyze the observations, and produce forecasts, including in-flight aviation weather advisories (e.g., SIGMETs). The FAA and NWS disseminate meteorological observations, analysis, and forecast products through a variety of systems. The Federal Government is the only approval authority for sources of weather observations (e.g., contract towers and airport operators).

(2) *Enhanced Weather Information System (EWINS).* An EWINS is an FAA-approved proprietary system for tracking, evaluating, reporting, and forecasting the presence or lack of adverse weather phenomena. An EWINS is authorized to produce flight movement forecasts, adverse weather phenomena forecasts, and other meteorological advisories. To receive FAA approval, an EWINS must have sufficient procedures, personnel, and communications and data processing equipment to effectively obtain, analyze, and disseminate aeronautical weather data. For a full explanation of the requirements for EWINS approval, see Order 8400.10, volume 3, chapter 7, section 4. An EWINS may produce weather analyses and forecasts based on meteorological observations provided by the Federal Government. The weather analyses and forecasts produced by an EWINS are considered primary weather products as defined below in paragraph 1421, Classification of Aviation Weather Products.

(3) *Commercial Weather Information Providers.* In general, commercial providers produce proprietary weather products based on FAA/NWS products with formatting and layout modifications but no material changes to the weather information itself. This is also referred to as "repackaging." In addition, commercial providers may produce forecasts, analyses, and other proprietary weather products that substantially alter the information contained in Government-produced products. However, those proprietary weather products that substantially alter Government-produced weather products or information, may only be approved for use by part 121 or part 135 operators or fractional ownership programs if the commercial provider is EWINS-qualified (see paragraph C(2), above). Government products that are only repackaged and not altered, or products produced by an EWINS, are considered primary weather products as defined below in paragraph 1421, Classification of Aviation Weather Products.

NOTE: Commercial weather information providers contracted by the FAA to provide weather observations (e.g., contract towers) are included in the Federal Government category of approved sources by virtue of maintaining required technical and quality assurance standards under Federal Government oversight.

1421. CLASSIFICATION OF AVIATION WEATHER PRODUCTS.

A. The development of new aviation weather products is an evolutionary process with distinct stages of product maturity. The growing demand for new weather products and the corresponding increase in research and development to meet that demand, along with relatively unfettered access to weather information via the public Internet, created confusion within the aviation community regarding the relationship between regulatory requirements and new weather products. Consequently, the FAA finds it necessary to differentiate between those weather products that may be used to comply with regulatory requirements and those that may only be used to improve situational awareness. To clarify the proper use of aviation weather products to meet the requirements of the regulations, the FAA developed the following definitions:

(1) *Primary Weather Product.* An aviation weather product that meets all the regulatory requirements and safety needs for use in making flight-related, aviation weather decisions.

(2) *Supplementary Weather Product.* An aviation weather product that may be used for enhanced situational awareness. If used, a supplementary weather product must only be used in conjunction with one or more primary weather products. In addition, the FAA may further restrict the use of supplementary weather products through limitations described in the product label.

NOTE: An aviation weather product produced by the Federal Government is a primary product unless designated as a supplementary product by the FAA.

B. In developing the definitions of primary and supplementary weather products, it is not the intent of the FAA to change or increase the regulatory burden upon certificate holders. Rather, the definitions are meant to eliminate confusion by differentiating between products that may be used to meet regulatory requirements and other

products that may only be used to improve situational awareness.

C. All flight-related, aviation weather decisions must be based on primary weather products. Supplementary weather products augment the primary products by providing additional weather information, but may not be used as stand-alone products to meet aviation weather regulatory requirements or without the relevant primary products. When discrepancies exist between primary and supplementary products pertaining to the same weather phenomena, users must base flight-related decisions on the primary weather product. Furthermore, multiple primary products may be necessary to meet all aviation weather regulatory requirements.

D. As previously noted, the FAA may choose to restrict certain weather products to specific types of usage or classes of user. Any limitations imposed by the FAA on the use of a product will appear in the product label.

1423. APPROVAL AND USE OF COMMERCIAL WEATHER PRODUCTS.

A. Operators/program managers may seek approval for the use of weather products outside the suite of Government (FAA/NWS) aviation weather products. In evaluating such products for operator/program manager use, POIs should consider the following:

(1) If a proprietary weather product is to be used to determine actions required for regulatory compliance, that product must contain at least the same information available from the FAA/NWS product(s) upon which that determination would otherwise be made.

(2) For operators/program managers to use proprietary products in making flight-related decisions, appropriate training to ensure the proper use of the product and any additional necessary guidance must be included in the certificate holder's A010 Operations Specifications (OpSpecs)/Management Specifications (MSpec) and provided to flight crewmembers and dispatchers. For more information regarding OpSpec/MSpec A010, see Order 8400.10, volume 3, chapter 1, section 3.

(3) The FAA presumes that non-EWINS, commercial weather information providers will "self-certify" aviation weather products. That is, FAA expects commercial providers to demonstrate that a weather product may be approved for operational use by a certificate holder or fractional ownership program. However, FAA anticipates situations in which POIs have technical and/or regulatory questions that may not be answerable by the operator/program manager or the commercial weather information provider. When such questions arise during the product approval process, POIs should contact AFS-400 with at least the following information available:

(a) Name of the commercial provider.

(b) EWINS qualification status (Yes or No).

(c) Product to be approved.

(d) Government equivalent(s) of product to be approved.

(e) Source of weather observations, analyses, and forecasts used in creating the product.

(f) Currency or age of the data/product.

(g) Method of displaying the data/product (i.e., text or graphical display).

(h) Qualifications of appropriate personnel (i.e., production staff).

(i) The commercial provider's quality assurance plan.

(4) Proprietary products, as defined herein, do not include aircraft equipment. This equipment must be approved by the Aircraft Certification Service (AIR).

B. When approving the use of weather products for operators certificated under 14 CFR part 119 and fractional ownership programs under part 91, subpart K, POIs are expected to perform reasonable due diligence unless there is specific knowledge about the inadequacy of a weather product. For the most part, commercial providers will self-certify their compliance with applicable regulations.

C. The FAA maintains a list of government-produced supplementary weather products at www.avmet.com.

1425. TECHNICAL SUPPORT. The following organization is available for aviation weather technical support in evaluating an applicant's or certificate holder's request for identifying approved sources of aviation weather information:

Flight Technologies and Procedures Division
AFS-400
800 Independence Ave., SW
Washington, DC 20591
(202) 385-4586

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