ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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3/23/89

SUBJ: AUTOMATED WEATHER OBSERVING SYSTEMS (AWOS) APPLICABILITY TO FAR PARTS 121 AND 135 FLIGHT OPERATIONS

1. PURPOSE. This order provides Flight Standards guidance on the applicability of Automated Weather Observing Systems (AWOS) to Federal Aviation Regulations (FAR) Parts 121 and 135 flight operations. This order provides guidance to principal operations inspectors for approving air carrier flight operations involving automated observing systems.

2. DISTRIBUTION. This order is distributed to the Associate Administrator for Aviation Safety; to the branch level in the Office of Airport Safety and Standards; to the Flight Standards, Aircraft Certification, Air Traffic Operations, Air Traffic Plans and Requirements, Advanced System Acquisition, Program Engineering, and Systems Maintenance Services; to the branch level in the regional Flight Standards, Air Traffic, Airway Facilities, and Airports Divisions; to the branch level in the Aviation Standards National Field Office; to all General Aviation, Air Carrier, and Flight Standards District Offices; to all Flight Inspection Field Offices, and International Field Offices; to all Airport Traffic Control Towers, and Flight Service Stations; to Airway Facilities General NAS Sectors, Air Route Traffic Control Center Sectors, and Sector Field Offices and Units; and to all Airports District Offices.

3. BACKGROUND.

a. Automated observation systems were first developed in the 1960's and various types and configurations have been used for maritime and aviation purposes since. The early model automated observation systems, common to aviation, include: Automatic Meteorological Observing System (AMOS), Remote AMOS (RAMOS), and the Automatic Observing Station (AUTOB). These systems are operated by the National Weather Service (NWS) at both manned and unmanned locations. AMOS, RAMOS, and AUTOB are NWS-approved weather sources and have been used to varying degrees for air carrier operations.

b. In 1979, Advisory Circular (AC) 91-54, Automatic Reporting Systems--Altimeter Setting and Other Operational Data, was published. This AC provided guidelines for the development and installation of automatic reporting systems for altimeter settings and other operational data designed for use in connection with instrument flight rules (IFR) operations. This action resulted in approval and operational use of commercially-developed automatic reporting systems which provided altimeter setting, windspeed and direction, temperature, and dewpoint. Approximately 50 systems have been deployed under the guidelines in this AC. In general, systems approved under AC 91-54 cannot be used as "stand alone" systems for air carrier operations, but are approvable as an official data source for an approved Supplementary Aviation Weather Reporting Station (SAWRS). There are a limited number of AC 91-54 systems in operation that were approved by letter and may have visibility and/or ceiling capability. These specific systems, approved

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by the Administrator, continue to be approved for FAR Part 135 operations. FAR Part 121 operations are not approved with these systems, since they have not been sanctioned by NWS. The commercial systems installed under the AC 91-54 guidelines are listed in the United States Government Flight Information Publication Airport/Facility Directory.

c. The current generation of automated observing systems being developed jointly by the Federal Aviation Administration (FAA) and NWS will be deployed in several configurations. The NWS systems are officially designated Automatic Surface Observation Systems (ASOS) and will be deployed in both attended (staffed locations) and unattended configurations. The FAA AWOS is configured in three categories. The category is determined by the number of weather elements the system provides. The basic system, AWOS-1, provides altimeter setting, wind data, temperature, dewpoint, and density altitude. AWOS-2 adds visibility and AWOS-3 adds visibility and cloud height to the basic system parameters.

d. In April 1986, AC 150/5220-16, Automated Weather Observing Systems (AWOS) for Non-Federal Applications, was published. This AC contains FAA standards for non-Federal systems and provides the guidelines for the installation, operation, and maintenance of non-Federal AWOS. The systems which meet these criteria contained in AC 150/5220-16 are approved by NWS as an official source of aviation weather reports. The systems which meet AC 150/5220-16 specifications are also qualified for funding assistance under the Airport Improvement Program (AIP).

4. RELATED REFERENCE MATERIAL.

a. AC 150/5220-16, Automated Weather Observing Systems (AWOS) for Non-Federal Applications, dated April 11, 1986.

b. Order 6560.20, Siting Criteria for Automated Weather Observing Systems (AWOS), dated May 22, 1987.

5. SCOPE. This order affects all Air Carrier District Offices, Flight Standards District Offices, General Aviation District Offices, and all principal operations inspectors directly responsible for the approval of FAR Parts 121 and 135 certificate holders' operating practices and procedures.

6. PROCEDURE. The following guidance is provided to facilitate approvals by principal operations inspectors of AWOS for FAR Parts 121 and 135 flight operations.

a. Generically referred to as AWOS, these systems are operationally categorized into three basic levels: AWOS-1, AWOS-2, and AWOS-3. AWOS-1 reports altimeter setting, wind data, temperature, dewpoint, and density altitude. AWOS-2 provides the AWOS-1 parameters, plus visibility. AWOS-3 will provide the basic data (AWOS-1), plus visibility and ceiling/cloud height. These guidelines are applicable to automated systems, installed, maintained, and operated by FAA or NWS; and, systems procured by non-Federal entities that are installed, maintained, and operated under the guidelines and specifications in AC 150/5220-16.

b. AWOS-1's, when operated as a "stand alone" system ("stand alone" in this order means systems which are the only source of weather observations at a particular airport), ARE NOT APPROVABLE as a SOLE official weather source for FAR

Parts 121 and 135 operations, since an AWOS-1 provides neither visibility nor ceiling/cloud height. This type of system IS APPROVABLE as a basic weather data source for an approved SAWRS.

c. AWOS-2's, both Federal and non-Federal, ARE APPROVABLE on a case-by-case basis for FAR Parts 121 and 135 operations with certain limitations. The certificate holder's operations specifications, or a reference in the specifications to supporting operations manuals or documentation, must contain the following information: A listing of the airports where an AWOS-2 is the approved weather source, the operator's procedures for using the system, and the limitations imposed on operations based on AWOS-2 as the weather source. Operational limitations imposed on AWOS-2 airports in general are:

(1) IFR operations that require ceiling information as a condition for conducting that operation are not permitted at airports where AWOS-2 reports are the official source of weather information.

(2) AWOS-2 airports cannot be used as alternates based solely on AWOS-2 reports. For dispatch/flight release purposes, an alternative method for determining ceiling at AWOS-2 airports must be approved by the principal operations inspector.

(3) AWOS-2 reports may not be used as a basis for IFR versus visual flight rules (VFR) decisions at non-towered airports.

(4) At airports where ceiling information is required to comply with nonstandard takeoff minima dictated by FAR Part 97 or operations specifications, IFR takeoffs are prohibited if an AWOS-2 is the sole source of weather information. However, at airports where a climb gradient alternative is specified, this restriction would not apply to aircraft capable of meeting climb gradient criteria.

(5) Principal operations inspectors are required to examine each request for approval for AWOS-2 operations and should impose any additional limitations deemed necessary to maintain safety.

d. AWOS-3's installed, maintained, and operated by FAA or NWS, and non-Federal AWOS-3's installed, maintained, and operated in accordance with the standards and specifications contained in AC 150/5220-16 ARE APPROVABLE for FAR Parts 121 and 135 flight operations without restriction.

e. The AWOS is a modular system that has a built-in, self-checking capability. Each measured weather element has certain error tolerances that are an integral part of the operating software. This characteristic, coupled with appropriate data processing algorithms designed to withhold out-of-tolerance measurements, allows the AWOS to continue to function while an element(s) is reported missing. An AWOS cannot be used as an authorized weather source for FAR Parts 121 and 135 IFR operations if the ALTIMETER SETTING, VISIBILITY, or WIND data are reported missing. IFR approaches will not be initiated by FAR Parts 121 and 135 aircraft if any of these elements are missing from the AWOS report. An AWOS should be considered out-of-service for all IFR approaches if the ALTIMETER SETTING is reported as missing. If the DATE/TIME GROUP is missing, the AWOS is not an official observation and the system must be taken out of service.

f. This subparagraph applies to systems approved under AC 91-54 only. AWOS-1's installed and operated under the guidelines of AC 91-54 as "stand alone" systems ARE NOT APPROVABLE for FAR Parts 121 and 135 operations. AWOS-2 or -3 installations with specific letter approvals, installed under the guidance of AC 91-54, ARE APPROVABLE for FAR Part 135 operations on a case-by-case basis. AC 91-54 systems, regardless of category or level, ARE NOT APPROVED for FAR Part 121 operations. AC 91-54 systems ARE APPROVABLE as a basic weather data source for an approved SAWRS.

7. SPECIAL NOTES.

a. AWOS that comply with the standards and specifications of AC 150/5220-16 are approved automatically by NWS as official sources of aviation weather reports. Technical approval of the system by Flight Standards is not required; Flight Standards approvals will address operational applications in accordance with the procedures delineated in this order.

b. All types and configurations of automated systems that have been installed, maintained, and operated in accordance with the guidelines in AC 91-54 and AC 150/5220-16 and all Federally-operated systems are approved for use by FAR Part 91 operators without restriction.

c. Inspectors should be aware that systems approved under AC 150/5220-16, as a part of the certification and commissioning process, are required to have an established and continuing maintenance program. Inspectors conducting facility inspections at locations where AWOS is the official weather source should review the maintenance documentation and procedures to ensure periodic maintenance checks are being performed.

d. AWOS (Levels 2 and 3) that have been established and commissioned by FAA or NWS and systems installed, maintained, and operated, in accordance with AC 150/5220-16 are considered the sole official source of weather observations for those airports/heliports.

e. Airport operators and flight operations personnel who become aware of an AWOS that has a malfunctioning altimeter setting or date/time group should notify the nearest flight service station. An appropriate local Notices to Airmen (NOTAM) will be issued.

8. REQUESTS FOR INFORMATION. For further information, clarification, or questions regarding the procedural guidance contained in this order, please contact the Special Programs Branch, AFS-430.

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