

VOLUME 4 AIRCRAFT EQUIPMENT AND OPERATIONAL AUTHORIZATIONS**CHAPTER 6 AIRPLANE AUTHORIZATIONS AND LIMITATIONS****Section 1 Selected Practices**

4-1011 GENERAL. This section contains background information, direction, and guidance to be used by operations inspectors on selected topics and practices related to aircraft equipment and operating procedures. Each paragraph of this section covers an individual practice. This section is related to Safety Assurance System (SAS) Element (OP) 2.3.1 Appropriate Operational Equipment.

4-1012 AIRBORNE THUNDERSTORM DETECTION EQUIPMENT REQUIREMENTS FOR TITLE 14 OF THE CODE OF FEDERAL REGULATIONS (14 CFR) PART 135 OPERATIONS. Part 135, § 135.173 requires that passenger-carrying aircraft equipped with 10 or more passenger seats be equipped with either approved thunderstorm detection equipment or approved airborne weather radar.

A. Exceptions to the Equipment Requirements.

1) Helicopters operating in day visual flight rules (VFR) conditions are excluded from this requirement.

2) Thunderstorm detection equipment is not required to be installed in aircraft used exclusively within the states of Hawaii or Alaska, and in Canada west of 130 degrees longitude and between 53 degrees and 70 degrees north latitude.

3) Operators are not required to have equipment installed in an aircraft during any training flights, test flights, or ferry flights.

B. Authorized Equipment. Section 135.173 neither defines nor identifies acceptable thunderstorm detection equipment, but does require that the equipment be approved by the Federal Aviation Administration (FAA). The FAA has approved airborne weather radar and passive detection equipment, such as lightning detection equipment. Technical Standard Order (TSO)-C110a, Airborne Passive Thunderstorm Detection Equipment, establishes the minimum operating performance standards and requirements for thunderstorm detection equipment. Operators may use such systems to fulfill the requirements of § 135.173. Principal Operations Inspectors (POI) should coordinate with the Principal Maintenance Inspector (PMI) or the Principal Avionics Inspector (PAI) to ensure that the equipment installation is based upon the approved data for the particular make and model of aircraft.

NOTE: Aircraft certified under 14 CFR part 25 must be equipped with radar. Aircraft certified under 14 CFR part 23 and other regulations have no such requirement.

4-1013 PASSENGER OCCUPANCY OF A PILOT SEAT. A part 135 operator may operate an aircraft of eight or less passenger seating capacity with a passenger occupying a pilot seat. Section 135.113, however, prohibits operation of an aircraft certified after October 15, 1971,

with a passenger seating capacity of more than eight seats with a passenger occupying a pilot seat.

A. Aircraft Type Certificated (TC) After October 15, 1971. Section 135.113 states that no certificate holder may operate an aircraft that was TC'd after October 15, 1971, with a passenger seating configuration of more than eight seats excluding the pilot seat, with anyone occupying a pilot seat except the following:

- The pilot in command (PIC),
- The second in command (SIC),
- A company check airman,
- An authorized representative of the Administrator,
- An authorized representative of the National Transportation Safety Board (NTSB), and/or
- An authorized representative of the United States Postal Service.

B. Aircraft Certificated On or Before October 15, 1971. Operation with a passenger in a second pilot seat was not prohibited until the implementation of § 135.113. Certificate holders may operate aircraft that were originally certificated on or before October 15, 1971, with eight or more passenger seats with a passenger occupying a pilot seat. Operators and inspectors should be aware that § 135.115 prohibits a PIC from allowing anyone to manipulate the controls except the following:

- A pilot employed by the operator and qualified in the aircraft; or
- An authorized safety representative of the Administrator who has the permission of the PIC, is qualified in the aircraft, and checks flight operations.

4-1014 FLIGHT MANAGEMENT SYSTEM (FMS) SET UP AND APPROACH

BRIEFING. This paragraph shall provide guidance for POIs to ensure their operators understand the importance of setting up flight management computers (FMC) correctly to include the consequences of possible vertical guidance misrepresentation with route discontinuities. This paragraph shall also advise POIs to ensure their operators have procedures in place for re-briefing an approach should any changes occur.

A. Background. The flightcrew of an accident failed to properly configure and verify the FMC for the profile approach. The FMC did not capture the vertical profile, most likely due to the route discontinuity. It is important to note, when conducting an approach with a vertical descent profile, any improper waypoints or route discontinuities could disrupt that Vertical Path (VPATH) and present misleading information. The pilot flying (PF) did not ask the pilot monitoring (PM) to verify that the flight plan was properly sequenced for the approach. Additionally, when the PF changed the method of descent from profile to Vertical Speed (VS) mode, the PM was not briefed on this change; as a result the PM was unprepared for a VS descent due to reduced situational awareness. It is critical to flight safety that consistent FAA-approved training, along with regular FAA surveillance of the training, in combination with the review and evaluation of fundamental procedures, be completed.

B. FMS Setup. POIs will verify that procedures are in place, within their operators' FAA-approved or accepted manuals, which address the criticality of setting up the approach in the FMC correctly.

C. Approach Briefing. POIs will work with their operators to ensure that operators have procedures that explicitly state that any changes to an approach after the initial briefing should be re-briefed in accordance with accepted crew briefing procedure. Last-minute runway or approach changes should be accepted only if pre-briefed as a backup to the planned approach. The PM should update the FMC to reflect an approach change and verify with the PF that the new approach is properly set up in the aircraft. If time does not allow for re-brief and verification of proper FMC/flight deck setup, the flightcrew should ask for extended vectors or holding until briefing/setup can be accomplished.

D. FMS Presentations. POIs will also work with their operators to develop information about how the FMS could provide an incorrect presentation in the lateral and/or vertical profiles if waypoints are incorrectly entered, or a route discontinuity exists that is not corrected before conducting an approach.

E. Reference (current edition). Advisory Circular (AC) 120-71, Standard Operating Procedures and Pilot Monitoring Duties for Flight Deck Crewmembers.

RESERVED. Paragraphs 4-1015 through 4-1030.