

## VOLUME 2 AIR OPERATOR AND AIR AGENCY CERTIFICATION AND APPLICATION PROCESS

### CHAPTER 4 THE CERTIFICATION PROCESS—14 CFR PART 135

#### Section 8 Safety Assurance System: Evaluate a Part 135 (Nine or Less) Operator's/Applicant's Maintenance Requirements

**2-506 REPORTING SYSTEM(S).** Use Safety Assurance System (SAS) automation to record Title 14 of the Code of Federal Regulations (14 CFR) part 135 maintenance oversight. This section is related to SAS elements in System 4, Aircraft Technical Operations.

**2-507 OBJECTIVE.** This section provides information, policy, and guidance on aircraft maintenance requirements a person must meet to operate under 14 CFR part 135 with aircraft type certificated (TC) for a passenger seating configuration, excluding any pilot seat, of nine seats or less. Inspectors should use this section with other applicable sections in Volume 2, Chapter 4.

#### **2-508 BACKGROUND.**

**A. Part 135 Maintenance Requirements.** The primary factor in determining the applicable maintenance, preventive maintenance, and alterations requirements for aircraft operated under part 135 is the number of TC'd passenger seats configured for the aircraft. Part 135, § 135.411(a)(1) contains the requirements for aircraft TC'd for a passenger seating configuration, excluding any pilot seat, of nine seats or less. Section 135.411(a)(2) contains the requirements for aircraft TC'd for a passenger seating configuration, excluding any pilot seat, of 10 seats or more. In practice, the number of seats installed in an aircraft as manufactured will differ from the maximum capacity approved as part of the aircraft's type design. Some manufacturers may approve passenger seating "configurations" as part of the type design with fewer number of passenger seats specified than the maximum "capacity" allowed by that type design. To determine which maintenance program under § 135.411(a) applies to a particular aircraft, one would compare the number of seats and as configured interior to those listed, or referenced, on either the Type Certificate Data Sheet (TCDS) or the type certificate (TC) (see 14 CFR part 21, § 21.41, for the definition of TC). For the purpose of this section, operators may elect to configure their aircraft in accordance with any of those TC'd passenger seating configurations.

**B. Distinction Between Nine or Less and 10 or More.** The Federal Aviation Administration (FAA) made the 9 or less and 10 or more distinction in 1978 when amending part 135. The preambles to both the Notice of Proposed Rulemaking (NPRM) and the Final Rule make clear that it is the TC'd passenger seating configuration (meaning the actual numbers of seats listed in the TC or Supplemental Type Certificate (STC) as an approved configuration) of an aircraft, not its size or complexity, that determines which of the above two alternative maintenance programs applies to a particular aircraft (42 FR 43536, August 29, 1977, and 43 FR 46779, October 10, 1978). As further discussed below, this means that the passenger seating configuration and the actual numbers of seats of the particular aircraft at issue must be included in the TC (which may be referenced on the TCDS or approved through an STC).

**C. Part 135 Maintenance Provisions.** For the purposes of § 135.411(a), an aircraft's maximum seating capacity does not necessarily determine the applicable maintenance provisions of this section. Some design approval holders (DAH) may obtain an FAA-issued TC for an aircraft, without providing or referencing an interior seating configuration on the TCDS. Based on an engineering analysis and proof of regulatory compliance, they will often place an "up to" or "maximum passenger capacity" limitation on the TCDS for that aircraft. This TCDS number is relevant because the DAH will generally demonstrate compliance to the applicable certification standards by specifying the maximum number of passenger seats allowed, giving consideration to such things such as weight, balance, floor loading, and passenger egress, for example. However, this figure does not generally represent the TC'd seating configuration and actual number of seats approved (TC'd) for a particular aircraft. Instead, it generally represents the maximum passenger capacity allowed for that particular type design.

**D. Removal of Passenger Seats.** The FAA considered that some air carriers could remove one or two seats from the aircraft that carried slightly more than 10 passengers to avoid the otherwise applicable regulation. However, the FAA believed this was unlikely to cause a problem because seat removal precluded the realization of the aircraft's full productivity potential and resulted in a significant economic penalty to the air carrier. The FAA noted that the trend at the time was to operate aircraft with more seats, not less.

NOTE: For aircraft conducting operations under the provisions of part 135, (with nine or less passenger seats) the pilot of that certificate holder may perform the removal and reinstallation of approved aircraft cabin seats, provided that pilot has satisfactorily completed an approved training program and is authorized in writing by the certificate holder to perform that task. The air carrier must have written procedures available for the pilot to evaluate the accomplishment of the task.

**E. Type Certificated Passenger Seating Configuration.** To determine which maintenance program under § 135.411(a) applies to a particular aircraft; one would compare the number of seats and as configured interior to those listed, or referenced, on the TCDS. Different configurations may also have been approved during the type certification process, but are not always provided to the owner/operator through TCDS; these configurations may reside only in the DAH's drawings. Accordingly, if an aircraft is being operated under part 135, and is configured with any one of a number of passenger seating configurations that are included in the TC (e.g., drawings that are approved as part of the type design), the passenger seating configuration and number of seats installed on that particular aircraft determines whether § 135.411(a)(1) or § 135.411(a)(2) applies for purposes of determining the aircraft's maintenance program. A DAH may also provide the FAA with one or more seating configuration(s) and seat numbers, at the time of certification, that are within the maximum capacity limitation. Generally, these configurations are referenced on the TCDS, and provide the various configurations through either the Aircraft Flight Manual (AFM) or pilot's operating handbook (POH). If there are any questions on whether the seating configurations located in the AFM or POH are approved or not, contact the Aircraft Certification Office (ACO) in your geographic area for assistance.

**F. Maintenance Programs for Custom Type Designs.** Occasionally, owners/operators elect to customize the interior configurations of their aircraft, with configurations that are not included in the approved type design, to meet their needs. In order to use these seating

configurations when determining which maintenance program should be used, (i.e., whether § 135.411(a)(1) or § 135.411(a)(2) applies), either the DAH would have to amend the type design, to include the owner/operator's configuration, or the configuration would require approval through the STC process.

**G. Operation Versus Maintenance.** Whereas the removal of passenger seats without an STC or TC amendment, blocking of passenger seats, and the use of place cards restricting the use of passenger seats may be acceptable for aircraft operations, it does not constitute an acceptable means of qualifying the aircraft for maintenance requirements under § 135.411(a)(1). These methods do not change the TC'd passenger seating configuration.

## **2-509 OPERATIONS SPECIFICATIONS (OPSPECS).**

**A. Commuter Operations.** The air carrier that conducts commuter operations under part 135 must obtain the OpSpecs listed in 14 CFR part 119, § 119.49.

**B. On-Demand Operations.** The air carrier that conducts on-demand operations under part 135 must obtain the OpSpecs listed in § 119.49(c).

**C. Additional Maintenance Requirements.** Section 119.49(c)(9) requires the air carrier conducting on-demand operations to obtain the following OpSpecs for additional maintenance requirements under § 135.421, as applicable. The following OpSpecs may not require the listing of every item on the aircraft with a time limit as OpSpec D088, Maintenance Time Limitations Authorization, or OpSpec D089, Maintenance Time Limitations Section, do. However, this does not relieve the air carrier from tracking and complying with time limit-related regulations such as 14 CFR part 91, §§ 91.403(c) and 91.409(e).

- OpSpec D101, Additional Maintenance Requirements—Aircraft Engine, Propeller, and Propeller Control (Governor);
- OpSpec D102, Additional Maintenance Requirements—Rotorcraft;
- OpSpec D103, Additional Maintenance Requirements—Single Engine IFR; and
- OpSpec D104, Additional Maintenance Requirements—Emergency Equipment.

## **2-510 MAINTENANCE AND INSPECTION REQUIREMENTS—§ 135.411(a)(1).**

**A. Maintenance and Inspection.** Section 135.411(a)(1) requires air carriers utilizing aircraft that are TC'd for a passenger seating configuration, excluding any pilot seat, of nine seats or less to maintain the aircraft under 14 CFR parts 43 and 91, including §§ 135.415, 135.417, 135.421, and 135.422. Section 135.411(a)(1) also provides the air carrier the option of using the Approved Aircraft Inspection Program (AAIP) under § 135.419 to inspect its aircraft in lieu of using an inspection listed under § 91.409. Additionally, § 135.411(b) provides a third option to the air carrier, which is to maintain its aircraft under a Continuous Airworthiness Maintenance Program (CAMP) under § 135.411(a)(2). The FAA evaluates and authorizes a CAMP in accordance with the guidance in Volume 3, Chapter 43, Section 1, Evaluating a Part 121 and Part 135 Continuous Airworthiness Maintenance Program. Because of these variables/options for maintaining aircraft with nine or less seats, the air carrier and inspector must read, understand, and follow the applicable regulations for maintaining the aircraft.

**B. Authority to Perform and Approve Maintenance.** The air carrier that maintains its aircraft under § 135.411(a)(1) is not a maintenance entity and is not authorized under part 135 to perform and approve maintenance on its aircraft under its certificate.

NOTE: The authority to perform and approve maintenance as provided in § 135.427 only applies to the air carrier that maintains its aircraft under § 135.411(a)(2). Therefore, the air carrier maintaining its aircraft under § 135.411(a)(1) must use persons listed in part 43, §§ 43.3 and 43.7 authorized to perform maintenance and approve the aircraft for return to service.

**C. Manual Requirements.** The air carrier that maintains its aircraft under § 135.411(a)(1) is not required to comply with the manual requirements specified in § 135.427. However, this does not relieve the air carrier from having the programs, instructions, and manuals required elsewhere in the regulations, such as in § 91.409(d). Except for single-pilot and single pilot-in-command (PIC) operations, all air carriers, regardless of how they maintain their aircraft, are required to have the manual specified in § 135.21. Although this manual is commonly referred to as the operations manual, it contains some maintenance-related items, such as the AAIP, when applicable.

**D. Part 135 Included.** Under § 135.411(a)(1), the air carrier is required to comply with the following maintenance related sections of part 135, which are discussed later in this section:

- Section 135.413;
- Section 135.415;
- Section 135.417;
- Section 135.419 (only required for AAIP);
- Section 135.421; and
- Section 135.422.

## **2-511 MAINTAINING AIRCRAFT UNDER PART 91.**

**A. Part 91.** Unless stated otherwise in the regulation, the part 91 maintenance regulations referenced in § 135.411(a)(1) are those listed in part 91 subpart E, Maintenance, Preventive Maintenance, and Alterations, and § 91.207. Instead of restating each part 91 subpart E regulation, this section will address those regulations that have caused the most confusion.

**B. Responsibility.** Section 135.413(a) makes the air carrier that maintains its aircraft under § 135.411(a)(1) primarily responsible for the airworthiness of its aircraft. However, responsibility for the performance of maintenance is shared between the air carrier and the mechanic performing the maintenance. This is consistent with the part 91 and part 43 regulation under which the aircraft is maintained, such as §§ 91.403, 91.405, 43.13, and 43.15.

**C. Part 91 Inspections.** If the air carrier does not choose the AAIP or CAMP options under § 135.411 for its nine or less aircraft, it must inspect its aircraft in accordance with § 91.409. The inspector should advise the air carrier to read § 91.409 carefully, starting at the beginning to determine which inspection is appropriate for their type of operation. Some types of inspections listed under § 91.409 are optional and some are required. If requested, the inspector

may provide assistance to the air carrier by explaining the inspections listed in § 91.409 applicable to the air carrier.

**D. Annual.** Section 91.409(a) states that, except as provided in § 91.409(c), no person may operate an aircraft unless, within the preceding 12 calendar-months, it has had an annual inspection in accordance with part 43 and has been approved for return to service by a person authorized by § 43.7. The air carrier that inspects its aircraft under the annual inspection must include all of the items listed in part 43 appendix D, Scope and Detail of Items (As Applicable to the Particular Aircraft) to Be Included in Annual and 100-Hour Inspections that apply to the air carrier's particular aircraft. The air carrier may include more items in its inspections than those listed in part 43 appendix D.

**E. 100-Hour.** Section 91.409(b) states that, except as provided in § 91.409(c), no person may operate an aircraft carrying any person (other than a crewmember) for hire unless within the preceding 100 hours of time in service the aircraft has received an annual or 100-hour inspection and has been approved for return to service in accordance with part 43 of this chapter or has received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter. Part 43 appendix D lists the scope and detail of the 100-hour inspection. The air carrier that inspects its aircraft under the 100-hour inspection must include all of the items listed in part 43 appendix D that apply to the air carrier's particular aircraft. The air carrier may include more items in its inspections than those listed in part 43 appendix D. The air carrier may exceed the 100-hour limitation by no more than 10 hours while en route to reach a place where the inspection can be done. However, this provision does not apply to Airworthiness Directives (AD) or airworthiness limitations (AL) in the manufacturer's maintenance manual or instructions for continued airworthiness (ICA). In computing the next 100 hours of time in service, the air carrier must include the excess time it used to reach the place where the inspection took place.

**F. Annual/100-Hour Applicability.** Section 91.409(c) states that § 91.409(a) and (b) do not apply to the following:

- An aircraft that carries a special flight permit, a current experimental certificate or a light-sport or provisional airworthiness certificate;
- An aircraft inspected in accordance with an AAIP under part 135 and so identified by the registration number in the OpSpecs of the certificate holder having the approved inspection program;
- An aircraft subject to the requirements of § 91.409(d) or (e); or
- Turbine-powered rotorcraft when the operator elects to inspect that rotorcraft in accordance with § 91.409(e).

**G. Progressive Inspection.** Section 91.409(d) provides that each registered owner or operator of an aircraft desiring to use a progressive inspection program must submit a written request to the Flight Standards District Office (FSDO) that has jurisdiction over the area in which the applicant is located, and shall provide the following:

1) A certificated mechanic holding an Inspection Authorization (IA), a certificated airframe repair station, or the manufacturer of the aircraft to supervise or conduct the progressive inspection.

2) A current inspection procedures manual available and readily understandable to pilot and maintenance personnel containing, in detail:

- An explanation of the progressive inspection, including the continuity of inspection responsibility, the making of reports, and the keeping of records and technical reference material;
- An inspection schedule specifying the intervals in hours or days for routine and detailed inspections that includes instructions for exceeding an inspection interval by not more than 10 hours while en route and for changing an inspection interval because of service experience;
- Sample routine and detailed inspection forms and instructions for their use;
- Sample reports, records and instructions for their use;
- Enough housing and equipment for necessary disassembly and proper inspection of the aircraft; and
- Appropriate current technical information for the aircraft.

**H. Progressive Inspection Advantages.** A progressive inspection allows the air carrier to inspect the aircraft progressively. It breaks down the large task of conducting a major inspection, such as an annual inspection, into smaller tasks that an air carrier can accomplish periodically without taking the aircraft out of service for an extended period of time. The air carrier normally gains the advantage of the progressive inspection when the aircraft operates beyond a minimum number of hours per year, usually established by the manufacturer.

**I. Progressive Inspection Review.** The Airworthiness inspector will verify the following criteria:

- 1) The air carrier has submitted their written request to use the progressive inspection.
- 2) The air carrier is located within the jurisdiction of the FSDO.
- 3) The air carrier's request contains the name of one of the persons listed under § 91.409(d)(1). If the air carrier provides the name of a mechanic, the inspector will verify the mechanic's certificate and IA. If the air carrier provides the name of a repair station, the inspector will verify the repair station is rated to conduct the inspection.
- 4) The air carrier provides a current inspection procedures manual that contains in detail all the requirements listed under § 91.409(d)(2) and the last paragraph under § 91.409(d).
- 5) The inspection procedures manual is available and readily understandable to the pilot and maintenance personnel.
- 6) The air carrier provides enough housing and equipment for necessary disassembly and proper inspection of the aircraft.
- 7) The air carrier provides appropriate current technical information for the aircraft.
- 8) The air carrier is aware of the regulatory requirements for discontinued use of the progressive inspection.

**J. Large Airplanes, Turbojet Multiengine Airplanes, Turbopropeller-Powered Multiengine Airplanes, and Turbine-Powered Rotorcraft.** Section 91.409(e) pertains to large airplanes (more than 12,500 pounds maximum takeoff weight (MTOW); see Volume 2, Chapter 2, Section 2, subparagraph 2-129C for modified aircraft), turbojet multiengine airplanes, turbopropeller-powered multiengine airplanes, and turbine-powered rotorcraft. The inspector will verify the following:

- The air carrier's aircraft conforms to the requirement for replacement of life-limited parts specified in the aircraft specifications, TCDS, or other documents approved by the Administrator.
- The air carrier has a method, means and controls for tracking life-limited parts and ensuring their replacement.
- The air carrier selects an inspection program under § 91.409(f) and inspects the aircraft including the airframe, engines, propellers, rotors, appliances, survival equipment, and emergency equipment in accordance with the program.

NOTE: The air carrier operating a turbine-powered rotorcraft may elect to use the inspection provisions of § 91.409(a), (b), (c), or (d) in lieu of an inspection option of § 91.409(f).

**K. Identify Inspection Program.** The inspector will verify the air carrier identifies the inspection program it selected under § 91.409(f) in the aircraft maintenance records. The inspector will also verify the air carrier includes in its program the name and address of the person responsible for scheduling the inspections required by the program. The inspector will verify that the air carrier makes a copy of that program available to the person performing inspections on the aircraft and, upon request, to the Administrator. The following is a list of programs under § 91.409(f) that the air carrier may select from:

NOTE: The inspection listed in § 91.409(f)(4) is the only inspection listed under § 91.409(f) that requires FAA approval.

1) If the air carrier selects a continuous airworthiness inspection program, it must show that it is part of a CAMP currently in use by a person holding an air carrier operating certificate or an operating certificate issued under 14 CFR parts 121 or 135 and operating that make and model aircraft under part 121, or operating that make and model under part 135 and maintaining it under § 135.411(a)(2).

NOTE: A continuous airworthiness inspection program is not the same thing as a CAMP. The inspection program is only one element of the maintenance program. The inspector will verify what the air carrier has submitted is correct.

2) If the air carrier chooses the AAIP program, it must show that it is approved under § 135.419 and currently in use by a person holding an operating certificate issued under part 135. The inspector will verify what the air carrier has submitted is correct. The inspector does not approve the AAIP again. However, once authorized, any changes must be FAA-approved.

3) If the air carrier selects a current inspection program recommended by the

manufacturer, it must provide the manufacturer's document that shows and describes the program. The inspector will verify that the program submitted is current, applicable, and complete.

NOTE: Normally, the manufacturer's inspection program applies to the aircraft as it was configured when it left the factory. If the aircraft was altered after it left the factory, the air carrier must account for the manufacturer's inspection requirements for the alteration.

4) Any other inspection program established by the registered owner or operator of that airplane or turbine-powered rotorcraft and approved by the Administrator under § 91.409(g). However, the Administrator may require revision of this inspection program in accordance with the provisions of § 91.415. The inspector will use the manufacturer's recommended inspection program as the basis for approving this program. The inspector should be aware that the manufacturer's inspection program might not cover all the equipment installed on the aircraft after it was manufactured.

**L. Changes to Inspection Program.** Section 91.409(h) requires that, when the air carrier changes from one inspection program under § 91.409(f) to another, the time in service, calendar times, or cycles of operation accumulated under the previous program must be applied in determining inspection due times under the new program.

**M. FAA Changes to Aircraft Inspection Programs.** Section 91.415 provides the authority to the FAA to make changes to the air carrier's FAA-approved inspection program under § 91.409(f)(4). The FAA must find that the revisions are necessary for the continued adequacy of the program.

**N. Maintenance Records.** Section 91.417 contains the maintenance records requirements for the air carrier maintaining its aircraft under § 135.411(a)(1). For additional information on maintenance records, see Volume 6, Chapter 1, Section 3.

## 2-512 MAINTAINING AIRCRAFT UNDER PART 43.

**A. Part 43.** The part 43 regulations referenced in § 135.411(a)(1) are all those listed in part 43, unless stated otherwise in each section of part 43. Instead of restating each part 43 regulation, this section will address those regulations that have caused the most confusion.

**B. Authority to Perform Maintenance.** An air carrier that is subject to § 135.411(a)(1) is not authorized to perform maintenance and must use persons authorized, as specified in §§ 43.3 and 43.7. Sections 43.3 and 43.7 list persons authorized to perform and approve maintenance on the air carrier aircraft maintained under § 135.411(a)(1). The inspector should note that the reference to the air carrier in § 43.3(f) and § 43.7(e), respectively, does not apply because the provision in § 135.437 to perform and approve maintenance only applies to the air carrier that maintains its aircraft under § 135.411(a)(2).

**C. Approval for Return to Service.** Sections 43.5 and 91.407 govern approval for return to service following the performance of maintenance on aircraft maintained under § 135.411(a)(1).

**D. Content Form and Disposition of Records.**

1) **Except Inspections.** Section 43.9 contains the requirements for recording maintenance, preventive maintenance, rebuilding, and alterations for aircraft maintained under § 135.411(a)(1).

2) **For Inspections.** Section 43.11 contains the requirements for recording inspections performed under part 91 and §§ 135.411(a)(1) and 135.419.

**E. Maintenance, Preventive Maintenance, and Alteration Performance Rules.** Section 43.13 contains the performance rule for maintenance, preventive maintenance, and alterations for aircraft maintained under § 135.411(a)(1). The provision under § 43.13(c) for using the air carrier's manual does not apply to aircraft maintained under § 135.411(a)(1).

**F. Additional Performance Rules for Inspections.** Section 43.15 contains additional performance rules for inspections performed under parts 91 and 135 that are applicable to aircraft maintained under § 135.411(a)(1).

**G. Airworthiness Limitations.** Section 43.16, which is applicable to the air carrier that maintains its aircraft under § 135.411(a)(1), requires each person performing an inspection or other maintenance specified in an ALs section of a manufacturer's maintenance manual or ICA shall perform the inspection or other maintenance in accordance with that section, or in accordance with the OpSpecs approved by the Administrator under part 135, or an inspection program approved under § 91.409(e). Additional information on ICAs is available in the current edition of Advisory Circular (AC) 33.4-1, Instructions for Continued Airworthiness.

**2-513 ADDITIONAL MAINTENANCE REQUIREMENTS.**

**A. Additional Requirements.** Each air carrier maintaining its aircraft under § 135.411(a)(1) must also comply with the additional maintenance requirements of § 135.421. Section 135.421 states that each certificate holder who operates an aircraft TC'd for a passenger seating configuration (excluding any pilot seat) of nine seats or less, must comply with the manufacturer's recommended maintenance programs or a program approved by the Administrator for each aircraft engine, propeller, rotor, and each item of emergency equipment required by the regulations. It is important to note that the requirements are not just limited to inspections; they must include all requirements, such as cleaning, inspecting, adjusting, testing, and lubricating.

**B. Manufacturer's Maintenance Program.** Section 135.421 specifies that a manufacturer's maintenance program is one that is contained in the maintenance manual or maintenance instructions set forth by the manufacturer as required by the applicable regulations for the aircraft, aircraft engine, propeller, rotor, or item of emergency equipment. These added requirements are intended to ensure the performance of the manufacturer's recommended maintenance programs on engines, propellers, rotors, and each item of required emergency equipment. These requirements do not apply to the airframe.

**C. Engines and Propellers.** Engine requirements apply to the engine itself, including turbosuperchargers and accessories necessary to its function. They do not include aircraft

provisions such as mounts or cowling, or accessories such as generators or starters. A propeller is defined in 14 CFR part 1 as including controls normally supplied by the manufacturer. Most propeller TCDSs specify the applicable control unit, which a person should consider part of the propeller.

**D. Program Approved by Administrator.** Section 135.421 provides the applicant the option to use an FAA-approved maintenance program in lieu of the manufacturer's recommended maintenance program for each aircraft engine, propeller, or rotor it intends to operate and each item of emergency equipment required by regulation. If the applicant chooses this option and submits a program for approval, the inspector will use the manufacturer's recommended maintenance program as the basis for the review.

1) The inspector must inform the applicant prior to the review that he or she will only consider any deviation from the manufacturer's program on the basis of the applicant submitting acceptable justification for the deviation. Additionally, the inspector may consider for approval a program submitted by the applicant that is based on a current approved program for another air carrier for a similar make and model aircraft. However, the inspector must take into account such things as the applicant's experience, operating environment, and maintenance support before approving the program.

2) Once approved, any changes made to the program must also receive FAA approval. Changes submitted by the air carrier that are based on changes to the manufacturer's program will not receive automatic approval. Again, the inspector will consider such things as the air carrier's experience, operating environment, and maintenance support prior to approving the changes.

**E. Single-Engine Aircraft Used in Passenger-Carrying Instrument Flight Rules (IFR) Operations.** Section 135.411(c) requires the air carrier that uses a single-engine aircraft in passenger-carrying IFR operations to maintain the aircraft in accordance with § 135.421(c), (d), and (e).

1) Section 135.421(c) requires that, for each single-engine aircraft used in passenger-carrying IFR operations, the air carrier must incorporate into its maintenance program either:

- The manufacturer's recommended engine trend monitoring program (see subparagraph 2-514A), which includes an oil analysis, if appropriate; or
- An FAA-approved engine trend monitoring program that includes an oil analysis at each 100-hour interval or at the manufacturer's suggested interval, whichever is more frequent (see subparagraph 2-514B).

2) Section 135.421(d) requires that, for single-engine aircraft to be used in passenger-carrying IFR operations, written maintenance instructions containing the methods, techniques, and practices necessary to maintain the equipment specified in §§ 135.105 and § 135.163(f) and (h) are required.

3) Section 135.421(e) states that no air carrier may operate a single-engine aircraft

under passenger-carrying IFR operations unless the air carrier records and maintains in the engine maintenance records the results of each test, observation, and inspection required by the applicable engine trend monitoring program specified in § 135.421(c)(1) and (2).

#### **2-514 ENGINE TREND MONITORING.**

**A. Manufacturer.** Some aircraft/engine manufacturers have developed engine trend monitoring programs for their products. Additionally, there are third-party service providers that will provide engine trend monitoring services to their customers. The inspector should review the engine trend monitor program to ensure that it is applicable to the air carrier's aircraft/operations and that the air carrier has the resources necessary to use the program (e.g., competent personnel, training, procedures, software (if applicable), equipment, and a recordkeeping system).

**B. FAA-Approved.** The current edition of AC 20-105, Reciprocating Engine Power-Loss Accident Prevention and Trend Monitoring, contains basic information on a trend monitoring program that the inspector should use to approve an engine trend monitoring program. Inspectors can seek assistance with approving the program from the applicable FAA Aircraft Evaluation Group (AEG).

**2-515 AAIP.** Section 135.411(a)(1) provides the air carrier the option of using the AAIP under § 135.419 for its TC'd nine or less passenger seat aircraft. Additionally, under § 135.419, the FAA may require the air carrier to use the AAIP for the reasons specified in the regulation. Regardless of the reason, the inspector will use Volume 3, Chapter 38, Section 1 to evaluate and approve the AAIP.

#### **2-516 AGING AIRPLANE INSPECTIONS AND RECORDS REVIEWS FOR MULTIENGINE AIRPLANES CERTIFICATED WITH NINE OR LESS PASSENGER SEATS.**

**A. Applicability.** Section 135.422 applies to multiengine airplanes certificated with nine or less passenger seats, operated by the air carrier in a scheduled operation under part 135, except for those airplanes operated by the air carrier in a scheduled operation between any point within the State of Alaska and any other point within the State of Alaska.

**B. Compliance Dates.** After the dates specified in § 135.422, the air carrier may not operate a multiengine airplane in a scheduled operation under part 135 unless the Administrator has notified the air carrier that the Administrator has completed the aging airplane inspection and records review required by § 135.422. During the inspection and records review, the air carrier must demonstrate to the Administrator that the maintenance of age-sensitive parts and components of the airplane has been adequate and timely enough to ensure the highest degree of safety.

1) Airplanes exceeding 24 years in service on December 8, 2003; initial and repetitive inspections and records reviews. For an airplane that has exceeded 24 years in service on December 8, 2003, no later than December 5, 2007, and thereafter at intervals not to exceed seven years.

2) Airplanes exceeding 14 years in service but not 24 years in service on

December 8, 2003; initial and repetitive inspections and records reviews. For an airplane that has exceeded 14 years in service, but not 24 years in service, on December 8, 2003, no later than December 4, 2008, and thereafter at intervals not to exceed 7 years.

3) Airplanes not exceeding 14 years in service on December 8, 2003; initial and repetitive inspections and records reviews. For an airplane that has not exceeded 14 years in service on December 8, 2003, no later than five years after the start of the airplane's 15th year in service and thereafter at intervals not to exceed 7 years.

**C. Scheduling Conflicts.** In the event of an unforeseen scheduling conflict for a specific airplane, the Administrator may approve an extension of up to 90 days beyond an interval specified in § 135.422(b).

**D. Must Make Available.** The air carrier must make available to the Administrator each airplane for which an inspection and records review is required under § 135.422 in a condition for inspection specified by the Administrator, together with the records containing the following information:

- Total years in service of the airplane;
- Total time in service of the airframe;
- Date of the last inspection and records review required by this section;
- Current status of life-limited parts of the airframe;
- Time since the last overhaul of all structural components required to be overhauled on a specific time basis;
- Current inspection status of the airplane, including the time since the last inspection required by the inspection program under which the airplane is maintained;
- Current status of applicable AD, including the date and methods of compliance and, if the AD involves recurring action, the time and date when the next action is required;
- A list of major structural alterations; and
- A report of major structural repairs and the current inspection status for these repairs.

**E. Notification to the FAA.** Each air carrier must notify the Administrator at least 60 days before the date on which it will make the airplane and airplane records available for inspection and records review.

**2-517 SERVICE DIFFICULTY REPORTS (SDR).** Section 135.415 (which applies to all part 135 air carriers, operations, and aircraft) requires the air carrier to report the occurrence or detection of each failure, malfunction, or defect in an aircraft for the items listed under § 135.415. The inspector should use Volume 8, Chapter 5, Section 6 to evaluate the air carrier's compliance.

**2-518 MECHANICAL INTERRUPTION SUMMARY REPORT (MISR).** Section 135.417 (which applies to all part 135 air carriers, operations, and aircraft) requires the air carrier to mail or deliver, before the end of the 10th day of the following month, a summary report of the

occurrences listed under § 135.417 in multiengine aircraft for the preceding month to the certificate-holding district office (CHDO). The inspector should use Volume 3, Chapter 32, Section 14 to evaluate the air carrier's compliance.

**2-519 EXTENDED OPERATIONS (ETOPS).** Section 135.411(d) requires an air carrier that elects to operate in accordance with § 135.364 to maintain its aircraft under § 135.411(a)(2) and the additional requirements of part 135 appendix G, Extended Operations (ETOPS). The inspector should use Volume 4, Chapter 6, Section 2 to evaluate the air carrier's compliance.

**2-520 MANUFACTURER'S SERVICE PUBLICATIONS.** Refer to the current edition of FAA Order 8620.2, Applicability and Enforcement of Manufacturer's Data.

**RESERVED.** Paragraphs 2-521 through 2-535.