CHANGE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

8300.10 CHG 18

3/4/04

SUBJ: AIRWORTHINESS INSPECTOR'S HANDBOOK

1. PURPOSE. This Change transmits new and revised portions of the handbook.

2. DISTRIBUTION. This Change is distributed to all addresses on special distribution list ZFS-830. An electronic message will be disseminated to Flight Standards employees (largely the airworthiness aviation safety inspectors, whom this change affects) to indicate when this Change is electronically published, which chapters are affected, and which bulletins are incorporated and will provide the Universal Resource Locator: <http://www.faa.gov/avr/afs/faa/8300/>. This Change will be electronically published on the appropriate FAA Internet site.

3. EXPLANATION OF CHANGES. This Change to the 8300.10 handbook uses change bars to indicate new and revised material. Significant areas of new direction, guidance, and policy included in this Change are as indicated. Volume 2, Chapter 226, coordinated with CHG 18 was withdrawn and will be published in a future change. This Change includes 11 chapters listed below including editorial updates and Federal Aviation Regulation (FAR) references changed to 14 CFR.

a. Bulletins are incorporated into the following chapters:

(1) Volume 2, Chapter 62, Evaluate Part 121/135 Maintenance Personnel Qualifications**,** is revised by incorporating HBAW 97-16, Deviations from Part 119 for Management Personnel.

(2) Volume 2, Chapter 69, Evaluate Part 121/135 Maintenance Contractual Arrangement**,** is a major rewrite by incorporating HBAW 96-05C, Air Carrier Operations Specifications Authorization to Make Arrangements With Other Organizations to Perform Substantial Maintenance; and HBAW 98-01, Air Carrier and Maintenance Provider Contracts.

(3) Volume 2, Chapter 105, Evaluate Part 125 Airplane Inspection Program and Maintenance, incorporates FSAW 97-16A, Lightning/High Intensity Radio Frequency (HIRF) Protection Maintenance; and FSAW 97-18, Manufacturers' Service Documents.

(4) Volume 3, Chapter 3, Conduct Ramp Inspection of Operator's Aircraft, incorporates FSAW 97-21, Acceptable Means of Maintaining Cargo Containers, Pallets, and Netting Installed on Transport Category Aircraft.

b. Volume 3, Chapter 19, Inspect a Computer Testing Center, major rewrite with new guidance on qualifications and requirements of computer testing centers. This chapter cancels volume 2, chapter 29, Designate/Renew a Written Test Examiner.

c. Editorial updates are incorporated in the following chapters:

(1) Volume 2, Chapter 1, Perform Field Approvals of Major Repairs and Major Alterations;

(2) Volume 2, Chapter 227, Evaluate Applicant's Refueling Procedures;

(3) Volume 2, Chapter 237, Evaluate Avionics Equipment Approval;

(4) Volume 3, Chapter 42, Inspect Part 121/135 (Ten or More) and Part 129 Operator's Maintenance Records; and

(5) Volume 3, Chapter 143, Monitor Cockpit Voice Recorders.

d. Volume 4, Chapter 9, Restricted Category Agricultural Airplanes, updates field approvals information.

4. DISPOSITION OF TRANSMITTAL. Retain and file this transmittal in the back of this handbook until it is superseded by a revision to this order.

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FOR

David E. Cann
Manager, Aircraft Maintenance Division

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CHAPTER 1. PERFORM FIELD APPROVAL OF MAJOR REPAIRS AND MAJOR ALTERATIONS

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3414, 3416, 3446

B. Avionics: 5414, 5416, 5446

3. OBJECTIVE. This chapter provides guidance in determining the category of a repair or alteration and ensuring that the aircraft, engine, or accessory can be returned to service in accordance with (IAW) the field approval process, regardless of the rules under which the aircraft is operated.

5. GENERAL.

A. Definitions.

(1) Acceptable Data. The drawings and specifications necessary to define the configuration and design features of the repair or alteration. These drawings and specifications include information on weight, balance, operating limitations, flight characteristics, dimensions, materials, and processes that are necessary to define the repair or alteration. The following are examples of acceptable data and may be used as a basis for developing approved data to substantiate repairs or alterations:

(a) Manufacturer's manuals are acceptable data that may be used as a basis for developing approved data for major alterations.

(b) Federal Aviation Administration (FAA) Form 337, Major Repair and Alteration, when the specified data has been previously approved as a one-time alteration or repair, is acceptable data that may be used as a basis for developing approved data for subsequent alterations.

(c) If it is not FAA-approved, data contained in a Structural Repair Manual (SRM); Advisory Circular (AC) 43.13-2, Acceptable Methods, Techniques, and Practices—Aircraft Alterations, as revised; and AC 43.13-1B, Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair, as revised, are acceptable. (The Original Equipment Manufacturer (OEM) SRM is a preferred manual even though the SRM is not FAA-approved.)

(2) Alter. To change or modify.

(3) Approval for Return to Service. The approval given by an appropriately rated person that enables an aircraft to be returned to service.

(4) Approved Data. Substantiating and descriptive technical data, used to make a major repair or alteration, that is approved by the Administrator. The following list, although not all-inclusive, contains sources of approved data:

(a) Type Certificate Data Sheets (TCDS).

(b) Supplemental Type Certificate (STC) data, provided it specifically applies to the item being repaired/altered. Such data may be used in whole or part as included within the design data associated with the STC.

(c) Appliance manufacturer's manuals or instructions, unless specifically not approved by the Administrator, are approved for major repairs.

(d) Airworthiness Directives (AD).

(e) FAA Form 337, which has been used to approve multiple identical aircraft (only by the original modifier).

NOTE: Aviation safety inspectors (ASI) no longer approve data for use on multiple aircraft.

(f) U.S. Civil Airworthiness Authority (CAA) Form 337, dated before October 1, 1955.

(g) FAA-approved portions of SRMs.

(h) Designated Engineering Representative (DER)-approved data, only when approval is authorized under his/her specific delegation.

(i) Designated Alteration Station (DAS) FAA-approved data, when the major alteration is performed specific to the authorization granted.

(j) Data in the form of an Appliance Type Approval issued by the Minister of Transport Canada for those parts or appliances for which there is no current Technical Standard Order (TSO) available. The installation manual provided with the appliance includes the Transport Canada certificate (see paragraph 13) as well as the date of issuance and an environmental qualification statement.

(k) Repair data issued under Special Federal Aviation Regulations (SFAR) 36.

(l) Foreign bulletins, for use on U.S.-certificated foreign aircraft, when approved by the foreign authority.

(m) Data describing an article or appliance used in an alteration which is FAA-approved under a TSO. As such, the conditions and tests required for TSO approval of an article are minimum performance standards. The article may be installed only if further evaluation by the operator (applicant) documents an acceptable installation which may be approved by the Administrator.

(n) Data describing a part or appliance used in an alteration which is FAA-approved under a Parts Manufacturer Approval (PMA). (An STC may be required to obtain a PMA as a means of assessing airworthiness and/or performance of the part.)

NOTE: Installation eligibility for subsequent installation or reinstallation of such part or appliance in a Type Certificated (TC) aircraft, other than the aircraft for which airworthiness was originally demonstrated, is acceptable, provided the part or appliance meets its performance requirements and is environmentally and operationally compatible for installation. The operator/applicant must provide evidence of previously approved installation by TC, STC, or field approval on FAA Form 337 that will serve as a basis for "follow-on" field approval.

(o) Any FAA-approved Service Bulletins (SB) and letters or similar documents, including DER approvals.

(p) Foreign bulletins as applied to use on a U.S.-certificated product made by a foreign manufacturer located within a country with whom a Bilateral Agreement (BA) is in place and by letter of specific authorization issued by the foreign civil air authority.

(q) Other data approved by the Administrator.

(r) AC 43.13-1, as revised, for FAA-approved major repairs on non-pressurized areas of aircraft only when the user determines that it is:

- Appropriate to the product being repaired
- Directly applicable to the repair being made
- Not contrary to the airframe, engine, propeller, product, or appliance manufacturer's data

(5) Field Approval. One of the means used by the FAA to approve technical data used to accomplish a major repair or major alteration. It is an approval by the Administrator, through an authorized ASI (airworthiness), of technical data and/or installations used to accomplish a major repair or major alteration. Technical data so approved becomes "technical data approved by the Administrator." This type of approval may be accomplished for one-time approval.

(6) Follow-On Approval. Approval of equipment of the same make and model on an aircraft using data from the initial approval. The make and model of the aircraft may be different if the installation is similar.

(7) Initial Approval. The first approval of equipment of a given make and model.

(8) Major/Minor Repair/Alterations. See Title 14 of the Code of Federal Regulations (14 CFR) part 1 and part 43, appendix A.

(9) Major/Minor Type Design Changes. See 14 CFR part 21, §§ 21.93 and 21.113.

(10) Meet the Minimum Standards Established in a TSO. Means that the equipment need not have TSO approval, but only meet requirements set by the TSO.

(11) Return to Service. The action of making an aircraft operational, after an appropriately rated person grants approval.

(12) Substantiating. To support and verify with proof or evidence.

NOTE: For other definitions, see FAA Order 8300.10, Airworthiness Inspector's Handbook, vol. 1, ch. 1, General Information.

B. ASI Qualifications and Responsibilities. The ASI must be authorized, experienced, and/or trained in the methods, techniques, and materials involved in the major repair/major alteration.

(1) The ASI must determine if, by granting a field approval, the affected product can be expected to result in safe operation and conform to regulatory requirements.

(2) If the ASI is not thoroughly familiar with all aspects of the alteration or repair, or has any doubt about the expected airworthiness, an airworthiness determination must not be given. He/she will seek assistance to the extent necessary to enable him/her to reach a clear decision before approval or denial is given.

(3) Flight Standards District Offices (FSDO) must ensure that an ASI's lack of experience or qualifications does not necessarily stop the approval process. The ASI's lack of qualifications does not mean the FSDO should deny a field approval and tell the applicant that they need an STC. The ASI can seek assistance from another ASI or FSDO, as appropriate.

(4) ASIs occasionally receive requests to approve alterations or repairs that do not require a field approval. These requests should be denied. Typically, these requests fall into one of two categories: minor alterations or repairs, or alterations or repairs that already have adequate approved data. Minor alterations and repairs do not need approved data and, therefore, should not receive field approvals. Alterations and repairs that are supported by sufficient previously approved DER-approved data may not require further approval. ASIs should review the data packages for each requested approval to ensure that a field approval is needed and is appropriate. ASIs who deny field approval requests to operators for alterations or repairs that do not need or qualify for field approvals should explain to the operator the reason for the denial and, if requested, provide the reason(s) in writing or via e-mail. The operator can then retain this as part of the aircraft records for future reference.

C. DER. If the applicant employs an appropriately authorized DER to provide supporting data for a field approval, then the ASI should coordinate activities with both the applicant and the DER. If the data addresses the entire alteration or repair, and all of the requirements of part 21 and part 43 are met, there is no requirement for any further approval by the ASI. The DER may be limited to technical areas that do not fully cover the entire project. For specific DER authorizations and limitations, reference FAA Order 8110.37, Designated Engineering Representative Guidance Handbook; FAA Order 8110.45, Use of Data Approved by Designated Engineering Representatives to Support Major Alterations; and AC 183.29-1, Designated Engineering Representatives Directory, as revised. The FAA must evaluate any area not covered by this approval.

D. DER Data. FAA Orders 8110.37 and 8110.45 address field approvals by reinforcing that although DERs are not authorized to approve alterations/repairs via a block 3 entry in FAA Form 337, DER data may still be used as the basis for an alteration in support of FAA Form 337. It also recommends inclusion of a note in the body of FAA Form 8110-3, Statement of Compliance with the Federal Aviation Regulations, stating, "This approval is for engineering design data only and is not an installation approval." DER data is not a field approval, but is approved data which, like other approved data, can be used to perform major alterations or repairs without further approval. DER data can also be included in the data package to support a field approval request.

E. Part 121 Air Carriers. Aircraft operated by 14 CFR part 121 air carriers, although not specifically prohibited from receiving field approvals, are not generally eligible for them. Field approvals may be performed on part 121 aircraft in rare instances for extenuating circumstances, and each request must be evaluated on a case-by-case basis. If an ASI from a FSDO/certificate management office (CMO)/ international field office (IFO) believes that a field approval request is appropriate, the FSDO/CMO/IFO will obtain concurrence from the Flight Standards Division regional office prior to performing the approval.

(1) The Flight Standards Division regional office will maintain a database of part 121 field approvals that it concurred or non-concurred with. This database will contain:

- A unique control number for each instance
- The date of concurrence or non-concurrence
- The name of the ASI assigned to field approve the alteration/repair
- The FSDO/CMO/IFO's routing symbol

- An indication of concurrence or non-concurrence
- The air carrier identifier
- The make/model of the aircraft
- A brief description of the requested approval

(2) Annually, the Flight Standards Division regional office will forward a report of the above information to the Aircraft Maintenance Division, AFS-300, by October 15.

7. REPLACEMENT AND MODIFICATION PARTS. Parts or appliances developed, manufactured, and shipped before the dates established by the policy published in the Federal Register on February 27, 1995, 60 FR 10480/10482, and installed or intended for installation in TC'd aircraft by TC, STC, or field approval process, may continue to be considered approved upon removal from the aircraft in which it was originally approved, for the purpose of repair or resale, including installation in a different TC'd aircraft. The intent of this paragraph is to protect the used value of previously installed parts that were installed and approved through the field approval process prior to the Federal Register Notice.

9. ALTERATIONS THAT MAY REQUIRE ENGINEERING EVALUATION, AIRCRAFT CERTIFICATION OFFICE (ACO) ASSISTANCE, OR STCs.

A. The list in Figure 1-3, Major Alterations Job Aid, describes methods of approval for typical major alterations. This list is not all-inclusive, and each project should be examined on a case-by-case basis. If an alteration is not identified on the list, it is eligible for a field approval unless the project is determined to be beyond the scope of the field approval process.

B. An alternative to the field approval process is the use of FAA DER-approved data on FAA Form 8110-3 (with data). If all the data supporting compliance with applicable airworthiness regulations is DER-approved, then the product can be altered IAW those data. The person(s) signing blocks 6 and 7 of FAA Form 337, not the DER, is then responsible for conforming and approving the installation. Refer to FAA Order 8110.45 for further details.

11. INCOMPLETE AND/OR INCREMENTAL INSTALLATIONS.

A. Incomplete or incremental installation field approvals are intended to approve partial-major alterations on aircraft that will be operated for an unspecified period of time. Aircraft having an incomplete equipment installation may be released for service only if the following have been accomplished:

(1) The alteration data has been FAA-approved;

(2) The incomplete/incremental alteration has been determined to not affect the safe operation of the aircraft;

(3) The equipment installed remains deactivated and has placards affixed to prevent use;

(4) The weight and balance reflects the incomplete installation; and

(5) The maintenance records, including the logbooks and Form 337, have been completed and signed for the work that was actually accomplished.

NOTE: In order to maintain an effective Airworthiness Certificate, the approval for return to service must be accomplished by an authorized person as defined in 14 CFR part 43, § 43.7.

B. The applicant must conduct a conformity inspection on the completed alteration. FAA approval of the incremental installation may provide for use of installed equipment if it can be determined that such equipment can be used safely (i.e., may require placards, Flight Manual Supplements, crew training.)

13. MAJOR REPAIR DESIGN APPROVALS BY TRANSPORT CANADA CIVIL AVIATION (TCCA) AND CANADIAN DESIGN APPROVAL REPRESENTATIVE (CANADIAN EQUIVALENT TO A U.S. DER). The FAA and TCCA have agreed in a Memo of Understanding (MOU) that certain TCCA and TCCA-delegated repair design approvals are considered to be FAA-approved data. The following information is provided for reference, but the MOU should be reviewed if additional guidance is required. The MOU is available at http://www.tc.gc.ca/CivilAviation/certification/Int/Memoranda/usa.htm.

A. For U.S.-held TCs, only repair design approvals issued by TCCA are considered to be approved data. Repair design approvals issued solely by a TCCA delegate are not approved data and, to be used as such, require TCCA approval or direct approval by the FAA or FAA designee.

B. For Canadian-held TCs, repair design approvals issued by either TCCA or a TCCA delegate are considered to be approved data.

C. For TCs held by all other countries, TCCA or TCCA-delegated repair design approvals are not considered to be approved data.

D. A TCCA Repair Design Certificate (equivalent to FAA Form 8110-3) can accompany data and can be signed by either a TCCA-approved Design Approval Representative or TCCA airworthiness authority.

15. USE OF MANAGEMENT DESIGNATED AIRWORTHINESS REPRESENTATIVES (DAR, FUNCTION CODE 50).

A. Management DARs serve as representatives of the Administrator. They review and certify alteration data packages for modifications to determine that:

(1) STC approval is not required.

(2) All regulatory aspects of the alteration(s) are addressed.

(3) Data approvals by DERs are within the scope and limitations of the DER's authority.

(4) Appropriate approvals exist for data that encompasses the entire alteration.

(5) Instructions for Continued Airworthiness (ICA) requirements are met.

B. To accomplish this task, the management DAR must:

(1) Determine the data package is complete with all FAA-approved data.

(2) If the data package is not complete, recommend completion of data approval by DERs, the ACO, or FSDO, as appropriate.

(3) Coordinate with the applicant and the FSDO when the alteration does not meet airworthiness requirements.

(4) If the data package meets all FAA requirements, complete Form 337, block 3, for certification of completeness.

(5) Return the package to the applicant for alteration completion.

(6) Maintain records of the work completed for review by the designee managing office.

C. Make the following entry in Form 337, block 3, for certification of completeness: "The alteration identified herein has been reviewed and found to be complete with appropriate DER approvals. All aspects of the alteration(s) are compatible and eligible for use on the above described aircraft, subject to conformity inspection by a person authorized in § 43.7."

17. FLIGHT TEST/OPERATIONAL CHECK REQUIREMENTS AND LIMITATIONS.

A. An alteration requiring a part 21, § 21.191(b) flight test to show compliance with the regulations must be coordinated with the appropriate engineering office or flight test DER. An Experimental Airworthiness Certificate to show compliance must be authorized by the Manufacturing Inspection District Office (MIDO) IAW FAA Order 8130.2, Airworthiness Certification of Aircraft and Related Products, as revised. If the flight test is unsatisfactory, the applicant must develop additional data.

B. Alterations requiring a flight manual supplement or operations limitations changes must be coordinated with the ACO, unless the Flight Standards inspector has been specifically authorized by Flight Standards to sign the document(s).

C. Any alteration or repair that will appreciably change the aircraft flight characteristics or substantially affect its operation in flight must be operationally checked IAW 14 CFR part 91, § 91.407, and the results recorded in the aircraft records.

19. FAA FORM 337, MAJOR REPAIR AND ALTERATION.

A. Types of Field Approval Data/Alteration Approvals.

(1) Data/alteration approvals issued for one aircraft are applicable only to the aircraft described in block 1 of FAA Form 337. The data/alteration may be used as acceptable data as a basis for obtaining approval on other aircraft.

NOTE: ASIs must not approve data for use on multiple aircraft.

(2) Data based on inspection or testing, such as approval of technical data by physical inspection (see section 2, paragraph 5D(3)).

B. Recording Data Deviations. Alterations that use data that does not differ appreciably from previously approved data do not require new or additional approval. Minor deviations that have no bearing on safety are acceptable without formal approval and without submission of a formal application by the applicant. A field approval is not required; however, the deviation should be recorded on FAA Form 337.

C. Disposition of FAA Form 337. Upon receipt of a completed FAA Form 337, accomplish the following:

(1) Review the form to ensure that all airworthiness requirements are met;

(2) Ensure that all applicable sections, signatures, and dates are affixed to the form;

(3) Ensure that the office identifier and the inspector's initials are entered in the place provided, in the upper right-hand corner of the form; and

(4) Mail the form to Civil Aviation Registry, AFS-700, Oklahoma City, OK 73169.

D. Alterations to Fuel Tanks and/or Systems. Within 24 hours of receipt of an FAA Form 337 that describes a modification to an aircraft fuel system or shows additional fuel tanks installed in the passenger or baggage compartment, review and mail as in paragraph 19C(1) through (4) above.

NOTE: Military aircraft without a civil TC, foreign-registered aircraft, and component parts not installed on an aircraft cannot have FAA Form 337 submitted to AFS-700. This is because they cannot be identified by aircraft make, model, serial number, and U.S. Registration Number.

21. INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICA).

A. The Administrator has determined that the field approval data package must include ICAs. The purpose of the ICA is to provide instructions on how to maintain aircraft that are altered and appliances that are installed IAW a field-approved major alteration. The ICA Checklist (Figure 1-1) is a guide for both the applicant who creates the ICA and the FAA Flight Standards inspector who accepts the ICA. The ICA developed IAW this guidance constitutes methods, techniques, and practices acceptable to the Administrator. If the ICA for the submitted field approval major alteration is not acceptable to the FAA inspector, that inspector should not sign block 3 of the applicant's FAA Form 337.

B. The ICA provides the aircraft owner/operator with the following advantages when included in block 8 of Form 337:

(1) The major alteration and reference to ICA is contained in one document;

(2) The ICA becomes a permanent aircraft record as required by part 91, § 91.417(a)(2)(vi); and

(3) The owner/operator can contact FAA registry for a replacement FAA Form 337 if the ICA is lost or destroyed. The additional reference to the presence of ICA as part of the major alteration in the aircraft's maintenance entry will ensure that maintenance personnel appropriately address ICAs during future inspections.

C. The applicant is to develop the ICA and present it in conjunction with the field approval request. The FAA inspector accepts the ICA if it meets the applicable requirements in 14 CFR part 23, § 23.1529; part 25, § 25.1529; part 27, § 27.1529; part 29, § 29.1529; part 31, § 31.82; part 33, § 33.4; and part 35, § 35.4. The checklist in Figure 1-1 is a guide so the applicant can be assured that all applicable requirements are met.

D. For field-approved major alterations to aircraft, engines, and propellers certificated under the Civil Air Regulations (CAR), the ICA must meet the original type design requirements. In cases where the major alteration is a total new design, or a substantial complete redesign which the CAR did not address, the major alteration must meet the applicable 14 CFR requirements. The checklist provides acceptable guidance for these types of installations.

E. The ICA requirements are the same for a field approval or STC. The vast majority of field-approved major alterations are simplistic in design and execution. Therefore, the applicant's ICA may not need as much detail as an ICA required for a complicated STC. If the manufacturers' instructions

are not available, the applicant may use FAA publications such as AC 43.13-1 and AC 43.13-2, as revised; appendix D of part 43, as revised; or other applicable aviation standards to develop the ICA.

F. Major alterations approved before October 7, 1998, were not required to have ICAs. However, if an owner/operator wishes to formally incorporate an ICA for existing field-approved major alterations, they may do so using the revision process in checklist item number 16 in Figure 1-1.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 21, 43, and 65
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent
- Successful completion of the Aircraft Alterations and Repair Course
- Identification and authorization to perform field approvals by the FSDO office manager and the regional Flight Standards manager in the form of a signed statement of authorization placed in the ASI's file or in the office manual (the authorization will state that the ASI is authorized to perform field approvals)

B. Coordination. This task may require coordination or assistance from FAA engineering, other technical personnel, and the operator. Direct communication between field personnel to permit a rapid exchange of technical information is recommended.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- 14 CFR parts 1, 21, 23, 25, 27, 29, 31, 33, 34, 35, 36, 39, 43, and 91
- Applicable Special Federal Aviation Regulations (SFAR)
- FAA Order 8000.50, Repair Station Production of Replacement or Modification Parts
- FAA Order 8100.8B, Designee Management Handbook
- FAA Order 8100.9, DAS, DOA, and SFAR 36 Authorization Procedures
- FAA Order 8110.37, Designated Engineering Representative (DER) Guidance Handbook
- FAA Order 8110.45, Use of Data Approved by Designated Engineering Representatives to Support Major Alterations
- FAA Order 8130.2, Airworthiness Certification of Aircraft and Related Products
- FAA Order 8310.6, Airworthiness Compliance Check Sheet Handbook
- FAA Order 8340.1, Maintenance Bulletins
- AC 20-114, Manufacturers' Service Documents
- AC 23-17, Systems and Equipment Guide for Certification of Part 23 Airplanes
- AC 33.4-1, Instructions for Continued Airworthiness
- AC 43-9, Maintenance Records
- AC 43.9-1, Instructions for Completion of FAA Form 337 (OMB No. 2120-0020), Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance)
- AC 43.13-1, Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair
- AC 43.13-2, Acceptable Methods, Techniques, and Practices—Aircraft Alterations
- CAR 3, 4a, 4b, 6, 7, and 8
- Aeronautics Bulletins 7A, 7H, and 8
- TCDS
- ATOS Element: 1.2.2

B. Forms:

- FAA Form 337, Major Repair and Alteration
- FAA Form 8110-3, Statement of Compliance with the Federal Aviation Regulations
- FAA Form 8110-12, Application for Type Certificate, Production Certificate, or Supplemental Type Certificate

C. Job Aids:

- FAA Order 8310.6
- Figure 1-1, ICA Checklist
- Figure 1-2, Decision Flow Chart for Field Approval Process
- Figure 1-3, Major Alterations Job Aid
- JTAs: 3.2.4, 4.8.11

5. PROCEDURES.

A. Review the Applicant's Request for a Field Approval. Ensure that the information supplied is complete enough and is appropriate to proceed with the field approval process for the proposed alteration or repair. The applicant should specify the certification rule used as a basis for the field approval (ref. part 21, § 21.101).

(1) Review and evaluate the following before the operator starts the actual work, as applicable:

(a) A formal request submitted on one of the following:

- FAA Form 337 completed in duplicate (in triplicate for extended range fuel tanks)
- Other administrative forms used by a manufacturer or operator that are acceptable to the Administrator, such as engineering orders

(b) Proposed Flight Manual Supplements.

(c) FAA Form 8110-3.

(d) The description of the proposed alteration or repair to ensure that it correctly and accurately describes the alteration or repair.

(e) Methods, sketches, drawings, stress analyses, photographs, electrical load analyses, etc., to ensure that the operator has considered all applicable design standards and has analyses to substantiate the findings in this regard. The inspector must consider at least the following:

- The certification basis, including special conditions (fail safe, damage tolerance, etc.)
- The structural requirements that may be affected by the alteration or repair
- Any hazards that may affect the aircraft or its occupants
- Weight and balance computations
- Operating limitations
- Any other factors affecting safety or airworthiness

(f) Ensure that all ground and flight tests and operational checks meet applicable certification requirements to substantiate the alteration or repair.

(g) ICAs.

(2) If data is not complete, the operator must supply any additional information needed.

B. Evaluate the Proposal. Determine if the applicant has conducted a conformity evaluation to ensure that the proposed alteration will not impact the airworthiness of the aircraft. The applicant will provide verification that he/she has inspected the aircraft and reviewed the aircraft records to ensure compatibility of this alteration or repair with previously approved modifications.

C. Evaluate Data Package.

(1) If a determination is made that the proposed alteration is beyond the scope of a field approval, advise the applicant that an STC is necessary. Assistance to the applicant will include the following:

- Furnish FAA Form 8110-12 application for an STC
- Advise that supporting data must be attached

(2) If assistance from an ACO is needed for approving a major alteration/repair, the ASI, not the applicant, should make the request for engineering evaluation/assistance and/or approval of non-approved engineering data for the field approval. This request should be made through the Flight Standards regional office. A memorandum from the ASI's office to the ACO through the regional office should accompany the file. The memorandum should provide pertinent and detailed information, such as the ASI's recommendations and specific requests for advice. The regional office should forward the request to the ACO. After the ACO has completed its evaluation, the file should be returned to the ASI through the regional office. Coordination with the applicant will include the following:

(a) Request that the applicant provide all supporting data.

(b) Caution against proceeding with the alteration/repair before receiving engineering approval.

(c) Provide the applicant with a proposed schedule for completion of the project that is consistent with available resources.

(d) Specific authorization:

- Flight Manual Supplement signature authority may be authorized by ACs, bulletins, or other written documentation

- Interior compliance inspections as authorized by an ACO
- Other written authorizations as requested by the ACO and MIDO during the coordination process

D. Data Package Accepted for Field Approval.

(1) ACO Concurrence. If engineering assistance was requested, written ACO concurrence (e.g., memo or e-mail) becomes an attachment to FAA Form 337.

(2) Approval for Data Only. If the repair or alteration data complies with regulations, record data approval by entering the appropriate statement and signing block 3 of FAA Form 337; return both copies to the applicant. When recording FAA approval in block 3, use the following statement for approval of technical data by examination of the data for use on only one aircraft:

> "The technical data identified herein has been found to comply with applicable airworthiness requirements and is hereby approved for use only on the above described aircraft, subject to conformity inspection by a person authorized in § 43.7."

(3) Approval of Technical Data by Physical Inspection. Schedule a physical inspection with the applicant to verify workmanship and compliance of the data submitted. If the repair or alteration complies with regulations, record alteration approval by entering the appropriate statement and signing block 3 of FAA Form 337, and return copies to the applicant. When recording FAA approval in block 3, use the following statement:

> "The alteration or repair identified herein complies with the applicable airworthiness requirements and is approved for use only on the above described aircraft, subject to conformity inspection by a person authorized in § 43.7."

NOTE: ASIs must not approve data for use on multiple aircraft.

(4) Denial of Proposed Alteration/Repair. If the applicant is unwilling or unable to comply with the requirements to obtain the requested field approval, terminate the process by notification in writing to the applicant. This notification should include the reason for denial. The applicant should be given the opportunity to make corrections as necessary.

E. ICAs. ASIs will ensure that each major alteration that requires additional maintenance or inspections not covered by original manufacturer's instructions approved under the field approval process will have ICAs prepared IAW §§ 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, or 35.4, as applicable. The ICA will be documented on FAA Form 337. The ASI will advise the applicant that the entry for the major alteration in the aircraft's maintenance records required by part 43, § 43.9 will also include a reference to the ICA and identify FAA Form 337 where the instructions are documented. The form will be kept in the aircraft's permanent records IAW § 91.417a(2)(vi). The checklist in Figure 1-1 is a guide so the applicant can be assured that all applicable requirements are met.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Completion of this task can result in the approval of the data, alteration, or repair; reference to the ACO for an STC; or denial of a request for a field approval.

9. FUTURE ACTIVITIES. None.

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FIGURE 1-1. ICA CHECKLIST

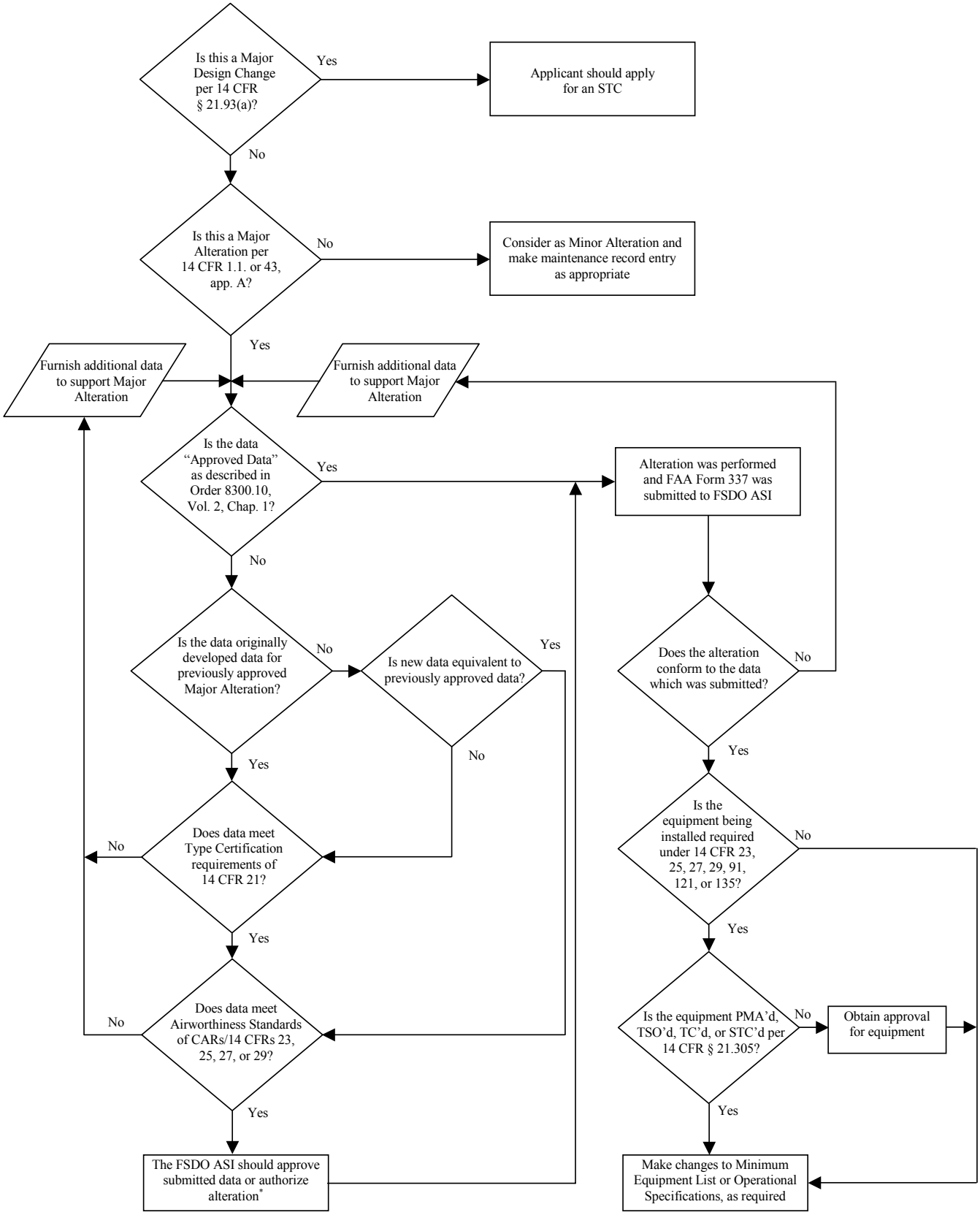
A/C Make: _____ Model: _____ S/N: _____ Reg. # N. _____
Revision: _____Date: _____ System: _____

Item	Subject
1.	**Introduction:** This section briefly describes the aircraft, engine, propeller, or component that has been altered. Include any other information on the content, scope, purpose, arrangement, applicability, definitions, abbreviations, precautions, units of measurement, referenced publications, and distribution of the ICA as applicable.
2.	**Description:** Of the major alteration, its functions, including an explanation of its interface with other systems, if any.
3.	**Control, operation information:** Or special procedures, if any.
4.	**Servicing information:** Such as types of fluids used, servicing points, and location of access panels, as appropriate.
5.	**Maintenance instructions:** Such as recommended inspection/maintenance periods in which each of the major alteration components are inspected, cleaned, lubricated, adjusted, and tested, including applicable wear tolerances and work recommended at each scheduled maintenance period. This section can refer to the manufacturer's instructions for the equipment installed where appropriate (e.g., functional checks, repairs, inspections). It should also include any special notes, cautions, or warnings, as applicable.
6.	**Troubleshooting information:** Information describing probable malfunctions, how to recognize those malfunctions, and the remedial actions to be taken.
7.	**Removal and replacement information:** This section describes the order and method of removing and replacing products, parts, and any necessary precautions. This section should also describe or refer to manufacturer's instructions to make required tests, trim checks, alignment, calibrations, center of gravity changes, lifting or shoring, etc., if any.
8.	**Diagrams:** Of access plates and information, if needed, to gain access for inspection.
9.	**Special inspection requirements:** Such as X-ray, ultrasonic testing, or magnetic particle inspection, if required.
10.	**Application of protective treatments:** To the affected area after inspection and/or maintenance, if any.
11.	**Data:** Relative to structural fasteners such as type, torque, and installation requirements, if any.
12.	**List of special tools:** Special tools that are required, if any.
13.	**For commuter category aircraft:** The following additional information must be furnished, as applicable: A. Electrical loads. B. Methods of balancing flight controls. C. Identification of primary and secondary structures. D. Special repair methods applicable to the aircraft.
14.	**Recommended overhaul periods:** Are required to be noted on the ICA when an overhaul period has been set by the manufacturer of a component or equipment. If there is no overhaul period, the ICA should state for item 14: "No additional overhaul time limitations."

FIGURE 1-1. (Continued)

Item	Subject
15.	**Airworthiness limitation section:** Include any "approved" airworthiness limitations identified by the manufacturer or FAA Type Certificate Holding Office (e.g., an STC incorporated in a larger field-approved major alteration may have an airworthiness limitation). The FAA inspector shall not establish, alter, or cancel airworthiness limitations without coordinating with the appropriate FAA Type Certificate Holding Office. If there are no changes to the airworthiness limitations, the ICA should state for item 15: "No additional airworthiness limitations" or "Not Applicable."
16.	**Revision:** This section should include information on how to revise the ICA. For example, a letter will be submitted to the local FSDO with a copy of the revised FAA Form 337 and revised ICA. The FAA inspector accepts the change by signing block 3 and including the following statement: "The attached revised/new Instructions for Continued Airworthiness (date_____) for the above aircraft or component major alteration have been accepted by the FAA, superseding the Instructions for Continued Airworthiness (date_____)." Once the revision has been accepted, a maintenance record entry will be made, identifying the revision, its location, and date of the Form 337.

FIGURE 1-2. DECISION FLOW CHART FOR FIELD APPROVAL PROCESS



*** NOTE: ASIs should see guidance in Figure 1-3 to determine when additional coordination with a DER or the ACO may be necessary.**

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FIGURE 1-3. MAJOR ALTERATIONS JOB AID

The following lists indicate which method(s) may be used for approving major alterations to TC'd and STC'd products. These lists are not all-inclusive, and each alteration should be evaluated on a case-by-case basis. Consult *each* section that concerns your product. Additionally, ASIs should review current bulletins, ACs, etc., for specific types of installations that have been identified as candidates for field approval. The legend is as follows:

- Items with the letters "STC" require an *STC*.
- Items with the letters "EVL" may be eligible for approval by means other than an STC, depending on the scope and complexity of the alteration. These items will not automatically qualify for a field approval; they require *evaluation* and review of guidance to determine if the field approval process may be used.
- Items with the letters "ENG" may be eligible for approval by means other than an STC, but require either supporting DER *engineering* data or concurrence from the ACO for field approval.

1. GENERAL AVIATION AIRCRAFT.	
The following list applies to aircraft certificated under 14 CFR parts 23 and 31 (or the earlier equivalents), SFAR 41, or Joint Aviation Regulation (JAR) 22.	
A. Weight and Balance.	
(1) Changes that increase the certificated maximum weight limits (increases in the maximum gross weight, maximum take-off, or landing weights).	**STC**
(2) Changes in the certificated center of gravity range limits (for example, decreasing the forward limit or increasing the aft limit).	**STC**
(3) Changes that increase the operational limits (maximum speed limits, such as V_A, V_{FE}, V_{NE}; minimum speed limitations, such as stall speed; increases in service ceiling; and so forth).	**STC**
B. Structural Strength.	
(1) Changing primary structures (structure that carries flight, ground, or pressure loads as defined in AC 25.571-1, Damage Tolerance and Fatigue Evaluation of Structure, as amended).	**ENG**
(2) Substituting airframe primary structural materials.	**STC**
(3) Substituting an engine or propeller (such as replacing a reciprocating engine with a turbine engine).	**STC**
(4) Substituting or altering a reciprocating engine such that the net result is an increase of more than 10 percent greater horsepower.	**STC**
(5) Substituting blind fasteners in primary load structures.	**ENG**
NOTE: All field approvals for blind fasteners (Cherry Max, or equivalent) in primary load structures must be coordinated with the ACO or supported by DER-approved data.	
(6) Altering passenger-carrying aircraft to an all-cargo or combination configuration.	**STC**

FIGURE 1-3. (Continued)

C. Reliability.	
(1) Changes to manifolding, air induction systems or air intake doors, engine cowling, or baffle that affect the flow of engine cooling air and carburetor/fire ignition heat rises.	**ENG**
(2) Changes to the basic engine or propeller design, controls, and operating limitations.	**ENG**
(3) Changes that include engine/propeller adjustments and settings limitations that affect power output.	**ENG**
(4) Modifications to approved avionics equipment that affect reliability or airworthiness, such as changes:	
• Deviating from the design environment performance.	**STC**
• Deviating from the component manufacturer's operating limitations.	**STC**
• To software.	**STC**
• To wire shielding that may affect High Intensity Radiated Fields (HIRF) and Electromagnetic Interference (EMI).	**EVL**
D. Operational Characteristics.	
(1) Changes or relocation of system components (including hydraulic, oil, and fuel systems components) and equipment that affect structural integrity, flight, ground handling characteristics, or noise/acoustics of the aircraft.	**ENG**
(2) Changes that alter the movable control surfaces that affect the dynamic and/or static balance, alter the aerodynamic contour of movable control surfaces, or change the weight distribution.	**STC**
(3) Changes in control surface travel, control system mechanical advantage, location of control system component parts, or direction of motion.	**STC**
(4) Changes in basic dimensions or external aerodynamic contour/configuration of the aircraft such as wing and tail planform or incidence angles, canopy, contour or radii, the location of wing and tail fairings, winglets, wing lift struts, tiptanks, windows, and doors.	**STC**
(5) Changes in canopies, windows, and doors on unpressurized aircraft.	**EVL**
(6) Changes in engine cowlings.	**ENG**
(7) Changes to flight-critical electrical/electronic systems such as electronic flight controls or the engine control system, Full Authority Digital Engine Control (FADEC), fly-by-wire, and so forth.	**STC**
(8) Changes that affect aircraft performance, drag, engine power, revolutions per minute (RPM), or exhaust muffler.	**EVL**
(9) Changes affecting noise.	**ENG**
(10) Changes affecting flight characteristics.	**ENG**
(11) Installation of:	
• Avionics systems performing critical functions or involving complex interfaces to other systems.	**STC**
• Heads up displays used for primary navigation.	**STC**
• Traffic Alert and Collision Avoidance Systems I (TCAS I).	**EVL**

FIGURE 1-3. (Continued)

• Traffic Alert and Collision Avoidance Systems II (TCAS II).	**STC**
• Autopilots.	**STC**
• Flight data recorders (FDR).	**STC**
• Ground proximity warning systems (GPWS).	**STC**
• Electronic flight instrument systems (EFIS) (see relevant bulletin(s)).	**STC**
• Terrain Awareness and Warning Systems (TAWS-A).	**STC**
• Terrain Awareness and Warning Systems (TAWS-B).	**EVL**
• Emergency Vision Assurance Systems (EVAS).	**STC**
• Global positioning system (GPS) (see relevant bulletin(s)).	**EVL**
NOTE: ASIs should also review current guidance for specific types of installations that have been identified as candidates for field approval.	
(12) Changes that increase the differential pressure limits of an atmospheric or climatic control system of aircraft interior compartments.	**ENG**
(13) Changes in engine and propeller combination (vibration approval).	**ENG**
(14) Any alteration that requires flight testing to show compliance with the regulations (not applicable to operational flights conducted under § 91.407(b)).	**ENG**
(15) Anti-terrorism countermeasures, including flares.	**STC**
E. Airworthiness.	
(1) Changes to landing gear and related components, such as internal parts of shock struts, length, geometry of members, brake and brake systems, or additions.	**EVL**
(2) Changes to systems that affect aircraft airworthiness, such as:	
• Relocation of exterior fuel vents, fuel drains, or battery vents. (Applicable to components not attached to the basic engine.)	**EVL**
• Crew or passenger liquid oxygen (LOX) or on-board generating systems.	**ENG**
• External critical access doors, Auxiliary Power Unit (APU) ram air, nacelle blowout doors, fuel drain.	**ENG**
(3) Changes to oil, hydraulic, pneumatic, and fuel lines, or systems that affect their operation or installation and flammability requirements, such as:	
• New types of hoses and/or hose fittings that may not meet installation requirements, such as flow rate and flammability requirements.	**ENG**
• Changes to fuel dump valves.	**EVL**
• New oil/fuel/hydraulic line materials beyond the scope of AC 43.13-1, as revised.	**EVL**
• Change to, or addition of, permanent fuel tanks or fuel system components, including sealants.	**EVL**

FIGURE 1-3. (Continued)

(4) Changes in fixed fire extinguisher or detector systems that affect the system's effectiveness or reliability, such as:	
• Relocating discharge nozzles, detector units, or fixed fire extinguisher bottles.	**ENG**
• Using new or different detector components.	**ENG**
• Decreasing the amount or changing the type of extinguishing agents.	**ENG**
(5) Changes that include substituting airframe materials that affect structural integrity, lightning protection, or flight characteristics.	**ENG**
(6) Alterations or repairs that include:	
• Use of synthetic covering materials.	**EVL**
• New titanium applications.	**ENG**
• Ceramic coatings.	**ENG**
• Use of synthetic coatings.	**ENG**
• Use of new plated coatings.	**ENG**
F. Crashworthiness.	
(1) Changes to the aircraft structure, cabin interiors, or equipment relocation.	**EVL**
(2) Changes that affect emergency exits (i.e., emergency medical services, sport parachute jumping).	**ENG**
2. ROTORCRAFT.	
The following section applies to aircraft with a certification basis of 14 CFR parts 27, 29, or the earlier equivalents.	
A. Weight and Balance.	
(1) Changes that increase the certificated maximum weight limits affecting structural, performance, handling qualities, and so forth (for example, increases in the maximum gross weight, maximum takeoff weight, or landing weight).	**STC**
(2) Changes in the certificated center of gravity range limits (for example, decreasing the forward limit or increasing the aft limit).	**STC**
(3) Changes that increase the operational limits (maximum speed limits, such as V_A, V_{FE}, V_{NE}; minimum speed limitations, such as stall speed; increases in service ceiling; and so forth).	**STC**
B. Structural Strength.	
(1) Changing primary structures (structures that carry flight, ground, or pressure loads as defined in AC 25.571-1) as well as the following additional modifications or structural members:	
• Installation of significant structure and/or appliances to the exterior of the aircraft (i.e., Forward Looking Infrared (FLIR), cameras, firefighting, and spray/dusting equipment).	**ENG**
• Changes to landing gear and related system and structural components, including wheels, brakes, and tires.	**EVL**

FIGURE 1-3. (Continued)

• Internal frame, longeron, or structural members.	**STC**
• Consideration of flutter and vibration for any of the aforementioned changes.	**STC**
(2) Substituting engine, propeller, rotor, or airframe primary structure materials.	**STC**
(3) Substituting blind fasteners in primary load structures.	**ENG**
NOTE: All field approvals for blind fasteners (Cherry Max, or equivalent) in primary load structures must be coordinated with the ACO or supported by DER-approved data.	
(4) Changing the structural panels and load-bearing components that could affect service life.	**STC**
(5) Installing Health Usage Monitoring Systems (HUMS).	**STC**
(6) Installing systems that extract power from drive systems, such as air conditioning power drawn from the tail rotor driveshaft.	**STC**
C. Reliability.	
(1) Changes to manifolding, air induction systems or air intake doors, engine cowling, or baffle that affect the flow of engine cooling air and carburetor/fire ignition heat rises.	**STC**
(2) Change to the basic engine, rotor or propeller design, controls, or operating limitations.	**STC**
(3) Changes that include engine/propeller adjustments and setting limitations that affect power output.	**STC**
(4) Modifications to approved avionics equipment that affect reliability or airworthiness, such as changes:	
• Deviating from the design environment performance.	**STC**
• Deviating from the component manufacturer's operating limitations.	**STC**
• To software.	**STC**
• To wire shielding that may affect High Intensity Radiated Fields (HIRF) and Electromagnetic Interference (EMI).	**EVL**
D. Operational Characteristics.	
(1) Changes or relocation of systems (including hydraulic, oil, and fuel systems) and equipment that affect structural integrity, flight, ground handling characteristics, or noise/acoustics of the aircraft.	**STC**
(2) Changes that alter the movable control surfaces that affect the dynamic and/or static balance, alter the aerodynamic contour of movable control surfaces, or change the weight distribution.	**STC**
(3) Changes in control surface travel, control system mechanical advantage, location of control system components parts, or direction of motion.	**STC**
(4) Changes in basic dimensions or external aerodynamic contour/configuration of the aircraft such as wing and tail planform or incidence angles, canopy, cowlings, contour or radii, the location of wing and tail fairings, winglets, wing lift struts, tiptanks, windows, and doors.	**STC**
(5) Changes to flight-critical electrical/electronic systems such as electronic flight controls or the engine control system, FADEC, fly-by-wire, and so forth.	**STC**

FIGURE 1-3. (Continued)

(6) Installation of:	
• Avionics systems that perform critical functions or involve complex interfaces to other systems.	**STC**
• Heads up displays used for primary navigation.	**STC**
• Traffic Alert and Collision Avoidance Systems I (TCAS I).	**EVL**
• Traffic Alert and Collision Avoidance Systems II (TCAS II).	**STC**
• Autopilots.	**STC**
• Flight data recorders (FDR).	**STC**
• Ground proximity warning systems (GPWS).	**STC**
• Electronic flight instrument systems (EFIS) (see relevant bulletin(s)).	**EVL**
• Terrain Awareness and Warning Systems (TAWS-A).	**STC**
• Terrain Awareness and Warning Systems (TAWS-B).	**EVL**
• Emergency Vision Assurance Systems (EVAS).	**STC**
• GPS (see relevant bulletin(s)).	**EVL**
NOTE: ASIs should also review current guidance for specific types of installations that have been identified as candidates for field approval.	
(7) Changes that affect aircraft performance, drag, engine power, RPM, or exhaust muffler.	**EVL**
(8) Changes affecting noise.	**ENG**
(9) Changes affecting flight characteristics.	**ENG**
(10) Any alteration that requires flight testing to show compliance with the regulations (not applicable to operational flights conducted under § 91.407(b)).	**ENG**
(11) Anti-terrorism countermeasures, including flares.	**STC**
E. Airworthiness.	
(1) Changes to systems, such as:	
• Relocation of exterior fuel vents or battery vents.	**EVL**
• Crew or passenger liquid oxygen (LOX) or on-board generating systems.	**ENG**
• External critical access doors, APU ram air, nacelle blowout doors, and fuel drain.	**ENG**
(2) Changes to oil, hydraulic, pneumatic, and fuel lines, or systems or their components that affect their operation or installation and flammability requirements, such as:	
• New types of hoses and/or hose fittings that may not meet installation requirements, such as those of flow rate and flammability.	**ENG**
• Changes to fuel dump valves.	**EVL**

FIGURE 1-3. (Continued)

• New oil/fuel/hydraulic line materials.	**EVL**
• New fuel tanks or fuel system components, including sealants.	**EVL**
(3) Changes in fixed fire extinguisher or detector systems that affect the system's effectiveness or reliability, such as:	
• Relocating discharge nozzle, detector units, or fixed fire extinguisher bottles.	**ENG**
• Using new or different detectors.	**ENG**
• Decreasing the amount or changing the type of extinguishing agents.	**ENG**
(4) Changes that include substituting rotor/airframe materials that affect structural integrity, lightning protection, or flight characteristics.	**ENG**
(5) Changes that alter dynamic components of rotorcraft, such as loads, vibration, fatigue, damage tolerance, flaw tolerance, characteristics of main or tail rotor system, transmission system, gearbox, driveshafts, driveshaft support bearings, and main and tail rotor blades.	**STC**
(6) Installation of a new or modification of an existing icing protection system.	**ENG**
(7) Changes to a critical or life-limited part, including engine/APU rotating parts.	**STC**
(8) Alteration of passenger-carrying aircraft to an all-cargo or combination configuration.	**STC**
(9) Additional items include:	
• Changes that may require a human factors compliance finding (for example, in flight deck instrumentation and controls).	**STC**
• Flight deck lighting changes to support night vision goggle use, or any approvals related to night vision goggles.	**STC**
• Changing or substituting engine/aircraft instrumentation required by a unique characteristic of the particular type design.	**STC**
NOTE: RPM changes of main and tail rotor may affect handling performance characteristics and/or noise or acoustics.	
(10) Alterations or repairs that include:	
• Use of synthetic covering materials.	**EVL**
• New titanium applications.	**ENG**
• Ceramic coatings.	**ENG**
• Use of synthetic coatings.	**ENG**
• Use of new plating coatings.	**ENG**
F. Crashworthiness.	
(1) Changes to the aircraft structure, cabin interiors, or equipment relocation that affect crashworthiness and/or emergency evacuation. This includes initial installation or relocation of seats or litter systems.	**STC**

FIGURE 1-3. (Continued)

(2) Changes that affect emergency exits (e.g., emergency medical services, sport parachute jumping).	**ENG**
3. TRANSPORT AIRPLANES.	
The following list applies to airplanes certificated under 14 CFR part 25 (or the earlier equivalents).	
A. Weight and Balance.	
(1) Changes that increase the certificated maximum weight limits (maximum gross weight, maximum takeoff or landing weights, and maximum zero fuel weight).	**STC**
(2) Changes in the certificated center of gravity range limits (for example, decreasing the forward limit or increasing the aft limit).	**STC**
(3) Changes that increase the operational limits (e.g., maximum speed limits, such as V_A, V_{FE}, V_{NE}, $V_{MO,}$ and V_{MO}/M_{MO}; minimum speed limitations, such as stall speed; and increases in service ceiling).	**STC**
B. Structural Strength.	
(1) Changes to principal or primary structural elements (principal elements that carry flight, ground, or pressure loads) defined by AC 25.571-1, as amended.	**STC**
(2) Substitution of engine, propeller, or airframe primary structure materials.	**STC**
(3) Substitution of blind fasteners in primary load structures.	**ENG**
NOTE: All field approvals for blind fasteners (Cherry Max, or equivalent) in primary load structures must be coordinated with the ACO or supported by DER-approved data.	
(4) Alteration of passenger-carrying aircraft to an all-cargo or combination configuration.	**STC**
C. Reliability.	
(1) Significant changes to manifolding, air induction systems or intake doors, engine cowling, or baffle that affect the flow of engine cooling air.	**STC**
(2) Changes to the basic engine or propeller design, controls, and operating limitations.	**STC**
(3) Changes that include engine/propeller changes to the adjustments and setting limitations.	**STC**
(4) Modifications to approved avionics equipment that affect reliability or airworthiness, such as changes:	
• Deviating from the design environmental performance.	**STC**
• Deviating from the component manufacturer's operating limitations.	**STC**
• To software.	**STC**
• To wire shielding that may affect High Intensity Radiated Fields (HIRF) and Electromagnetic Interference (EMI).	**EVL**
D. Operational Characteristics.	
(1) Changes or relocation of systems (including hydraulic, oil, and fuel systems) and equipment that affect structural integrity, flight, and ground handling characteristics of the aircraft.	**STC**
(2) Significant changes to the movable control surfaces that affect the dynamic and/or static balance, alter the aerodynamic contour of movable control surfaces, or change the weight distribution.	**STC**

FIGURE 1-3. (Continued)

(3) Changes to control surface travel, method of control system mechanical advantage, or direction of motion.	**STC**
(4) Changes in basic dimensions or external aerodynamic contour/configuration of the aircraft, such as wing and tail planform or incidence angles, canopy, cowlings, contour or radii, the location of wing and tail fairings, winglets, wing lift struts, tiptanks, windows, and doors that would require flight or performance revalidation.	**STC**
(5) Installation of new flight-critical electrical/electronic systems, electronic flight controls, or engine control systems such as FADEC and fly-by-wire.	**STC**
(6) Changes that affect aircraft performance, drag, engine power, RPM, or exhaust muffler.	**STC**
(7) Changes that alter the aerodynamic contour that affect noise or flight characteristics.	**ENG**
(8) Installation of:	
• Avionics systems performing critical functions or involving complex interfaces to other systems.	**STC**
• Heads up displays used for primary navigation.	**STC**
• Traffic Alert and Collision Avoidance Systems I (TCAS I).	**EVL**
• Traffic Alert and Collision Avoidance Systems II (TCAS II).	**STC**
• Autopilots.	**STC**
• Flight data recorders (FDR).	**STC**
• Ground proximity warning systems (GPWS).	**STC**
• Electronic flight instrument systems (EFIS) (see relevant bulletin(s)).	**EVL**
• Terrain Awareness and Warning Systems (TAWS-A).	**STC**
• Terrain Awareness and Warning Systems (TAWS-B).	**EVL**
• Emergency Vision Assurance Systems (EVAS).	**STC**
• GPS (see relevant bulletin(s)).	**EVL**
NOTE: ASIs should also review current guidance for specific types of installations that have been identified as candidates for field approval.	
(9) Any alteration that requires flight testing to show compliance with the regulations (not applicable to operational flights conducted under § 91.407(b)).	**ENG**
(10) Anti-terrorism countermeasures, including flares.	**STC**
E. Airworthiness.	
(1) Changes to landing gear and related components, such as internal parts of shock struts, length, geometry of members, brake and brake systems, or additions.	**ENG**
(2) Changes to systems, such as:	
• Relocation of fuel vents or drains.	**EVL**

FIGURE 1-3. (Continued)

• Crew or passenger liquid oxygen (LOX) or on-board generating systems.	**ENG**
• External critical access doors, APU ram air, nacelle blowout doors, and fuel drain.	**ENG**
(3) Changes to oil, hydraulic, pneumatic, and fuel lines, or systems or their components that affect their operation or installation and flammability requirements, such as:	
• New types of hoses and/or hose fittings that may not meet the installation requirements, such as flow rate and flammability requirements.	**ENG**
• Changes to fuel dump valves.	**ENG**
• New oil/fuel/hydraulic line materials.	**ENG**
• New flammable fluid tanks or system components.	**STC**
• Change to, or addition of, permanent fuel tanks or fuel system components, including sealants.	**ENG**
(4) Changes in fixed fire extinguisher or detector systems that affect the system effectiveness or reliability, such as:	
• Relocation of discharge nozzle, detector units, or fixed fire extinguisher bottles.	**ENG**
• Using new or different detector components (including TSO-approved detectors in new or existing circuit arrangements).	**ENG**
• Decreasing the amount or changing the type of extinguishing agents.	**ENG**
(5) Changes that include the substitution of airframe materials that affect structural integrity, lightning protection, or flight characteristics.	**ENG**
(6) Installation of new systems that affect their operation or installation and flammability requirements, such as:	
• Changing or adding permanent fuel tanks or fuel system components.	**STC**
• Emergency backup electrical power sources.	**STC**
• Crew or passenger oxygen systems.	**STC**
• Auxiliary Power Unit (APU).	**STC**
• Installing new fire extinguisher or detector systems or changing the type of extinguisher agents.	**STC**
(7) Changes to critical or life-limited parts.	**STC**
(8) Installation of a new or modification of an existing icing protection system.	**STC**
(9) Changes that alter critical or life-limited parts, including engine/APU rotating parts.	**STC**
(10) Changes that increase the differential pressure limits of an atmospheric or climatic control system of the aircraft and aircraft interior compartments.	**STC**
(11) Alterations or repairs that include:	
• Use of synthetic covering materials.	**ENG**
• New titanium applications.	**ENG**

FIGURE 1-3. (Continued)

• Ceramic coatings.	**ENG**
• Use of synthetic coatings.	**ENG**
• Use of new plating coatings.	**ENG**
F. Crashworthiness.	
(1) Changes to the aircraft structure, cabin interiors, or equipment relocation that affect crashworthiness and/or emergency evacuation. This includes initial installation or relocation of seats.	**STC**
(2) Changes that affect emergency exits (i.e., emergency medical services, sport parachute jumping).	**ENG**
4. ENGINES, PROPELLERS, AND APUs.	
The following list applies to engines certificated under 14 CFR parts 33, 34, and 36 or JAR E, propellers certificated under 14 CFR part 35 or JAR P, or APUs approved under TSO-C77a or b.	
A. Weight and Balance. Changes that increase or decrease the certificated weight or center of gravity.	**STC**
B. Structural Strength. Changes to an engine, APU, or propeller's primary or critical structure.	**STC**
C. Reliability and Airworthiness.	
(1) Changes to the approved ratings or operational or installation limits.	**STC**
(2) Changes to the engine, propeller, or APU control system.	**STC**
(3) Changes to engine, propeller, or APU adjustments and setting limitations that have an affect on power output or control functions or operability.	**STC**
(4) Changes that alter the aerodynamic contour of any blades, vanes, or internal or external aerodynamic surfaces.	**STC**
(5) Changes affecting engine or propeller performance, power, or RPM.	**ENG**
(6) Changes to inlet induction or exhaust components.	**STC**
(7) Changes to components, assemblies, or systems, such as:	
• Relocation of fuel vents or drains.	**ENG**
• Using new or different alternators, generators, starters, vacuum pumps, or magnetos.	**EVL**
• Using new or different hydraulic components, pumps, or turbo or superchargers.	**STC**
• Pressure fuel lines and oil lines.	**ENG**
• External critical access doors, APU ram air, nacelle blowout doors, bleed ports and doors, and so forth.	**STC**
• Installing new or modifying existing icing protection systems.	**STC**
(8) Changes that include substituting engine/APU/propeller materials that affect structural integrity, lightning protection, operating characteristics, fire protection, or noise/acoustics.	**STC**
(9) Major alterations to propellers.	**STC**
(10) Changes to critical or life-limited parts.	**STC**

FIGURE 1-3. (Continued)

(11) New propeller and engine combinations (vibration approval).	**STC**
(12) Modification to approved electrical equipment, such as:	
• Deviating from the design environmental performance compliance requirements.	**STC**
• Deviating from the component manufacturer's operating limitations.	**STC**
• Changing wire shielding or components that may affect HIRF, EMI, or lightning compliance.	**STC**
• Changing flight-critical electrical/electronic systems, such as electronic controls or engine, propeller, or APU control systems such as FADEC.	**STC**
• Changing or substituting engine, propeller, or APU instrumentation.	**EVL**
• Changes that do not conform to the minimum standards in a TSO under which a particular component or appliance is manufactured.	**STC**
(13) Changes to or relocation of any systems (including hydraulic, oil, and fuel systems) and equipment that affect structural integrity, operating characteristics, noise/acoustics, fire protection, or emissions and fuel venting.	**STC**
(14) Changes affecting the Airworthiness Limitations section (i.e., Chapter 4 or 5) of the ICAs.	**STC**
D. Other Considerations.	
(1) Changes affecting exhaust emissions (14 CFR part 34).	**STC**
(2) Changes affecting engine noise (14 CFR part 36).	**STC**

CHAPTER 29. DESIGNATE/RENEW A WRITTEN TEST EXAMINER

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CHAPTER 62. EVALUATE PART 121/135 MANAGEMENT PERSONNEL QUALIFICATIONS

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3352

B. Avionics: 5352

3. OBJECTIVE. This chapter provides guidance on evaluating the qualifications of maintenance management personnel for operators/applicants conducting operations under Title 14 of the Code of Federal Regulations (14 CFR) parts 121 and 135.

5. GENERAL. Personnel responsible for the inspection and maintenance organizations should possess the qualifications required in 14 CFR part 119, §§ 119.67(c) and (d) and § 119.71. If an operator/applicant elects to contract out all maintenance, the positions defined by parts 121 and 135 are still required. The positions that the Federal Aviation Administration (FAA) requires include the following:

- The Director of Maintenance (parts 121 and 135) is responsible and accountable for administering the operator/applicant's maintenance program
- The Chief Inspector (part 121) is responsible and accountable for administering the operator/applicant's required inspection program

A. Consolidated Positions.

(1) Depending on the needs of the maintenance organization, management positions may be consolidated with other positions. When management positions are consolidated, the individual serving in the consolidated position must meet the qualifications of both positions.

(2) Before allowing an individual to serve as Director of Maintenance or Chief Inspector, the aviation safety inspector (ASI) must consider the other duties performed by that person. For example, if that person also plans to serve as a flight crewmember, the ASI must ensure that those duties will not interfere with the person's responsibilities as Director of Maintenance or Chief Inspector.

B. Separation of Maintenance and Inspection Functions.

(1) The FAA requires a Chief Inspector for part 121 operator/applicants, but not for part 135 operator/applicants.

(a) Part 121, § 121.365 requires an operator/applicant to have a maintenance organization that ensures separation of maintenance and inspection responsibilities and management personnel.

(b) If the operator/applicant will have a contractual agreement with another organization to perform its continuous airworthiness maintenance program, it may apply for deviation from the Chief Inspector requirement. However, the operator/applicant must have a Director of Maintenance or equivalent position to schedule maintenance and ensure proper administration of the continuous airworthiness maintenance program.

(2) For part 135 operator/applicants, a Director of Maintenance (or equivalent) is necessary to ensure separation of inspection and maintenance functions required by part 135, § 135.423. The Director of Maintenance serves as the administrative controller with overall responsibility for separating inspection and maintenance functions.

C. Part-Time and Full-Time Positions.

(1) Although the FAA requires part 121 operators/applicants to have full-time management personnel, part 135 operators/applicants may use part-time personnel. Both full-time and part-time maintenance management personnel must have the necessary prerequisite qualifications to fulfill the responsibilities of the position.

(2) The ASI should determine if the part 135 operator/applicant will use part-time management personnel. Each person employed on a part-time basis must be readily available to fulfill all responsibilities

of the position that are consistent with the certificate holder's operations.

7. DEVIATIONS. The manager of the regional Flight Standards Division is authorized to approve or deny management experience deviations for part 135 operators conducting commuter passenger nine or less operations only. The certificate-holding district office (CHDO) manager is authorized to approve or deny management experience deviation requests for a certificate holder with only a single pilot-in-command (PIC) or basic Part 135 On-Demand Only certificate holder conducting on-demand passenger and/or cargo operations. This authority would include any combined positions or numbers of management positions other than the management positions specified in part 119, § 119.69(a).

A. Information Needed in the Management Deviation Request.

(1) The deviation request element of the regulations is intended to provide the certificate holder the flexibility to employ individuals who may not possess the exact type or level of experience outlined in the regulations but have comparable experience. Except for the recency of experience requirements, the deviation request procedure is not intended to accommodate individuals who do not possess the length of experience required by the regulations.

(2) When certificate holders request a management experience deviation, or management positions or numbers of positions other than those required by 14 CFR part 119, § 119.65 through § 119.71, they must request it through their CHDO. A Management Deviation Request must contain at least the following information for evaluation:

- Full certificate name including doing business as (d.b.a.) names of the requesting entity (i.e., ABC Airlines, Inc. d.b.a. XYZ Air)
- Complete address and certificate number of certificate holder
- Full name and airman certificate number of the management applicant
- Number of aircraft by category, class, and type
- Number of employees/pilots/other crewmembers
- Areas and kinds of operations (continental United States (Conus), domestic, etc.) authorized
- Statement of operations authorized (single PIC, basic Part 135 On-Demand Only, part 121, etc.)
- Any other management deviations held by the certificate holder
- Statement of why the certificate holder requires a deviation from the management position experience requirements, management position(s) involved, and what comparable experience the individual has that would justify the deviation
- A résumé for the individual that specifically outlines his or her work experiences and duration of each work experience, to include, if appropriate, PIC, certified mechanic, and/or management experience for the kind of operations conducted

B. Information Needed for Evaluating Management Experience Deviation Requests.

(1) Lack of Airmen Certificates. The regulations do not permit the issuance of an airman certificate requirement deviation for individuals who do not hold the required airmen certificates or ratings. However, individuals may apply for an exemption under 14 CFR part 11.

(2) Comparable Experience. The CHDO may issue a management position experience deviation for individuals who lack the precise experience requirements (specified in § 119.67 and/or § 119.71), including recency of experience, if acceptable comparable experience is presented to and accepted by the Administrator.

(a) Director of Maintenance Position. Individuals considered for this position should have experience in any position where the normal duties and responsibilities included management oversight and/or control of the development, upkeep, and responsibility for one or more of the following elements of an aircraft maintenance or inspection program:

- The maintenance program manual
- Airworthiness
- Maintenance and inspection organization

- Performance and approval of maintenance, preventive maintenance, and alterations
- Approval of alterations performed by maintenance providers or contractors
- Continuing analysis and surveillance system
- Maintenance recordkeeping
- Maintenance personnel training

(b) Chief Inspector Position. Individuals considered for this position should have experience in any position where the normal duties and responsibilities included management oversight and/or control of the development, upkeep, and responsibility for one or more of the following elements of an aircraft maintenance inspection, quality control, or quality assurance functions within a maintenance or inspection program:

- The inspection program policy and procedures
- Airworthiness
- Inspection organization
- Quality assurance of the performance and approval of maintenance, preventive maintenance, and alterations
- Quality assurance and approval of alterations performed by maintenance providers or contractors
- Maintenance recordkeeping
- Inspection personnel training

C. Fewer, Combined, or Different Categories of Required Management Positions. Any certificate holder requesting approval to use fewer positions, combined positions, or different categories of management positions must demonstrate that the person(s) who will fill the position(s) meets the qualifications for or receives a deviation for each management position involved (e.g., chief pilot and director of operations), in addition to receiving an approval to combine the management positions. Requests to combine the positions of Director of Maintenance and Chief Inspector shall not be approved.

NOTE: Applicants who serve in a combined management position should not be assigned to any additional duties (e.g., check airman, aircraft instructor, etc.).

(1) The operator/applicant should submit a request to the CHDO. The request should contain the following information:

(a) The type and number of aircraft operated and the maintenance program(s) used by the certificate holder.

(b) Size, scope, any known expansion plans, and safety records of the certificate holder.

(c) Accident/enforcement history of the certificate holder and management applicant.

(d) A résumé of the individual for whom the deviation is requested, including:

- Dates of experience
- Types of aircraft
- Specific areas of experience
- Aeronautical experience
- Types of management positions previously held
- Mechanic's certificate number
- The dates the certificate and each rating was issued

(2) The principal maintenance inspector (PMI) is responsible for the following:

(a) Interviewing the individual involved to verify aeronautical experience and qualifications.

(b) Verifying the person's certificate through the Airmen Certification Branch to confirm the dates of original issuance and added ratings.

(c) Including the results of the data review, interview, and the PMI's recommendation or denial in the district office package. The district office will forward the complete package to the regional office for evaluation.

NOTE: Deviations may be granted from the minimum experience requirements in § 119.71. However, the applicant must hold the appropriate certificates and ratings.

9. AUTHORITY TO APPROVE OR DENY MANAGEMENT EXPERIENCE AND COMMUTER DEVIATION REQUESTS.

A. CHDO. As stated in paragraph 7, if the CHDO has the authority, it will approve or deny the request. The CHDO will respond to the operator in writing. If the CHDO does not have the authority, it will make a written recommendation for approval or denial and forward the request to the Regional Flight Standards Division (RFSD).

B. RFSD. The RFSD manager is authorized to approve or deny management experience deviations for all other part 135 certificate holders, except part 135 operators conducting commuter operations. This authority would include any combined positions or numbers of management positions other than the management positions specified in § 119.69(a). The RFSD will review the package from the CHDO. If the RFSD has the authority as stated above, it will approve or deny the request. The RFSD will reply in writing to the CHDO with a statement of approval or denial for the request. If the RFSD does not have the authority, the RFSD will attach their memo of recommendation for approval/denial and forward the request to the Aircraft Maintenance Division, AFS-300.

C. Aircraft Maintenance Division. AFS-300 will review the package forwarded from the RFSD.

(1) AFS-300 will authorize all required management position experience deviations for all part 135 commuter operators and all part 121 operators. The AFS-300 division manager will process and authorize or deny a deviation for fewer positions, combined positions, or different categories of required management positions.

(2) Each certificate holder who conducts operations under part 121 must have a Director of Safety. This person is responsible for keeping the certificate holder's highest management officials fully informed about the safety status of the company. An independent, full-time position is required; however, in a small part 121 operation, the Director of Safety's functions may be an additional function of a current manager. The Air Transportation Division, AFS-200, must approve any request for a management deviation involving a Director of Safety position.

NOTE: Requests for one individual to fill this position for more than one certificate holder concurrently will not be considered.

(3) AFS-300 will reply in writing to the CHDO through the RFSD with a statement of approval or denial of the request. AFS-300 will not act on requests received directly from certificate holders or CHDOs without CHDO manager and RFSD manager recommendations.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the requirements of parts 121 and 135, as applicable
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent

B. Coordination. Evaluating parts 121 and 135 management personnel qualifications requires coordination with the PMI and the principal avionics inspector (PAI). It may also require coordination with other regions, district offices, and regional specialists.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- Title 14 CFR parts 43, 65, 91, 119, 121, 135, and 145
- Advisory Circular (AC) 120-59, Air Carrier Internal Evaluation Programs
- ATOS Elements: 7.1.1, 7.1.2, 7.1.3

B. Forms. None.

C. Job Aids:

- JTA: 3.3.22

5. PROCEDURES.

A. Review Operator/Applicant's Submitted Candidate Data. Review the following:

(1) Mechanic's certificate for appropriate ratings and validity.

(2) Enforcement Investigation System (EIS) for previous violation history.

(3) Employment history (résumé) to ensure that:

- The applicant meets the necessary experience requirements
- The applicant has not held a similar position and contributed materially to a certificate revocation in a part 121, 125, or 135 operation

(4) References to other regions and Flight Standards District Offices (FSDO) indicated by the résumé to learn of past performance history.

B. Interview the Candidate. Determine the candidate's knowledge of the following:

- Maintenance sections of the operator/applicant's manual
- Operator's operations specifications (OpSpecs)
- Relative maintenance provisions of parts 43, 65, 91, 121, 135, and 145

C. Determine the Eligibility of the Candidate. Base the decision on the data review and interview.

D. Debrief the Operator/Applicant. Inform the operator/applicant of the inspection results.

7. PROCESS FOR REQUEST FOR DEVIATION AUTHORITY.

A. Review the Management Deviation Request. Certificate holders must request deviations through their principal inspector (PI) and CHDO. Evaluate the Management Deviation Request, which must contain the information listed in section 1, paragraph 7A(2). The PMI must verify the information contained in the résumé.

B. Evaluate Management Experience Deviation Requests to Verify Comparable Experience. If comparable experience is presented to and accepted by the Administrator, the CHDO may authorize a management position experience deviation for individuals who lack the precise experience requirements specified in part 119, § 119.67 and/or § 119.71, including recency of experience.

C. Evaluate Deviation Requests for Fewer, Combined, or Different Categories of Required Management Positions.

(1) Verify that a certificate holder requesting deviation authority to use fewer positions, combined positions, or different categories of management positions demonstrates that the person(s) who will serve in these positions meet the qualifications for or receive a deviation for each management position involved. When evaluating the requests, consider the size, scope, complexity, organizational dynamics, and work load of the operations that the applicant has

requested deviation(s) for. Ensure that the request contains the information listed in section 1, paragraph 7C.

NOTE: Applicants who serve in a combined management position should not be assigned to any additional duties (e.g., check airman, aircraft instructor, etc.).

(2) The PI is responsible for the following when evaluating the request:

- Interview the individual to verify comparable experience and qualifications
- Verify the individual's certificate and ratings through the Airmen Certification Branch to verify the dates of original issuance and added ratings
- Determine the size, scope, any known expansion plans, and safety record of the certificate holder
- Evaluate the accident/enforcement history of the certificate holder and management applicant
- Verify the applicant's résumé and experience
- Evaluate any significant justification or personal knowledge of the operator/ management candidate
- Recommend approval or denial of the request

9. TASK OUTCOMES.

A. File PTRS Data Sheets. PMIs must make a PTRS entry to record the actions with each of their operators as outlined in this chapter, as appropriate. The PTRS entry should be listed as activity code number 3352 or 5352, and the "National Use" field entry should be "119DEV." PMIs should use the comments section to record comments of interaction with the operators.

B. Complete the Task. Completing this task will result in one of the following:

(1) Acceptance of the candidate by approving OpSpec A006 and sending one of the following:

(a) A letter to the operator/applicant indicating acceptance of the candidate.

(b) A letter telling the operator/applicant to request a deviation through the CHDO if the candidate does not meet experience requirements or wishes approval of different positions. The candidate must have been found acceptable based on the interview.

(2) Rejection of the candidate by sending a letter to the operator/applicant listing the reasons for rejection.

C. Document Task. File all supporting paperwork in the operator/applicant's file.

11. FUTURE ACTIVITIES. Normal surveillance.

CHAPTER 69. EVALUATE PART 121/135 OUTSOURCE MAINTENANCE ARRANGEMENT

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3304, 3339, 3383

B. Avionics: 5339, 5383

3. OBJECTIVE. This chapter provides guidance for ensuring that maintenance providers used by air carriers to outsource maintenance are servicing and maintaining the aircraft and appliances IAW the air carrier's policies and procedures and current federal aviation regulations.

5. GENERAL.

A. Outsource Organization. When an air carrier uses a maintenance provider to provide all or part of the maintenance on its aircraft or its component parts, that maintenance provider's organization becomes, in effect, an extension of the air carrier's maintenance organization. The use of outsource maintenance providers to complete aircraft maintenance is becoming as fundamental to an air carrier's maintenance programs as its own internal maintenance facilities. Although air carriers have outsourced portions of their maintenance work for years, this practice has recently become more pronounced. As air carriers take aggressive steps to reduce operating costs, it is clear the trend toward increased use of outsource maintenance facilities is likely to continue.

(1) Any organization or person with whom the air carrier has made an arrangement and/or contract (informal/oral or formal/written) for the performance of any maintenance, preventive maintenance, or alterations involving their aircraft and/or components thereof is considered an outsource maintenance provider. Arrangements with persons or organizations that supply parts and/or components, other than new, on a lease, exchange, or sale basis are also considered.

(2) All parts and/or components used by an air carrier on its authorized aircraft must be maintained under the air carrier's continuous airworthiness maintenance program (CAMP). Leases, exchanges, or other arrangements that do not allow the air carrier to be in control of the maintenance of the leased/exchanged part/component while it is in a maintenance status are contrary to the regulations.

B. Maintenance Contracts.

(1) When possible, air carriers should have a written contract with anyone performing maintenance work for them on a continuing basis. This will help ensure that the air carriers' responsibilities are addressed. General clauses of a contract could address:

- The maintenance provider ensuring compliance with all applicable laws and regulations, or particular sections of the regulations
- The maintenance provider allowing an audit of the facilities, equipment, personnel, and records pertaining to the services provided to the air carrier, at any reasonable time

(2) The clauses would allow the air carrier to ensure compliance with its program requirements and to show the results of such compliance to the Federal Aviation Administration (FAA).

(3) In the case of major operations, such as engine, propeller, or airframe overhaul, the contract should include a specification for the work. Air carriers should include or reference that specification in their manual system. If a carrier's program is administered in such a way as to require specific assurances in a contract, the carrier must be ready to show that the contract covers the regulatory requirement.

C. Substantial Maintenance. On June 18, 1996, Administrator Hinson announced a program to improve the FAA Flight Standards' inspection policies. The Administrator outlined improvements to the air carrier inspection policy regarding substantial maintenance performed by persons other than the air carrier.

NOTE: The provisions of substantial maintenance provider guidance and the subsequent issuance of operations specifications (OpSpec) D091 are only applicable to Title 14 of the Code of Federal Regulations (14 CFR) part 121 operators.

(1) These part 121 air carrier inspection policy improvements are centered on the following:

- Pre-qualification of new maintenance providers before they can be authorized for use
- The evaluation of current maintenance providers being used by air carriers
- The listing, on OpSpecs, of all maintenance providers who perform substantial maintenance

(2) These inspection policy improvements are a result of a recent perceived trend among some air carriers to neglect their responsibility to effectively control and oversee maintenance performed by maintenance providers. The air carrier's responsibility for the airworthiness of its aircraft, along with the associated requirement to be responsible for the performance of all elements of its CAMP, is restated and emphasized.

(3) Within the intent of this guidance and OpSpecs D091, substantial maintenance is defined as any activity involving a "C" check or greater maintenance visit; any engine maintenance requiring case separation or tear down; and/or major alterations or major repairs performed on airframes, engines, or propellers. Examples of substantial maintenance include:

(a) Accomplishment of scheduled heavy maintenance inspections (e.g., "C" checks, "D" checks, or equivalent), which may include the accomplishment of Airworthiness Directives, Airworthiness Limitation Items, and Corrosion Prevention and Control Program tasks applicable to aircraft primary structure.

(b) Accomplishment of off-aircraft maintenance or alteration of engines that involves the separation of modules or propellers, Full Authority Digital Engine Controls, major engine repairs, and repairs to life-limited parts such as compressors, turbine disks, and engine cases, but excluding parts such as blades, vanes, and burner cans.

(c) Accomplishment of off-aircraft maintenance or alteration of required emergency equipment items such as slides and rafts, but excluding items such as medical kits, crash axes, life vests, and escape ropes.

(4) Therefore, any maintenance organization that an air carrier arranges to provide any of the above type services must be classified as a substantial maintenance provider. This section also applies to maintenance providers that maintain leased/exchanged parts/components which will be used by the carrier on its authorized aircraft.

D. Examples of Maintenance Outsourcing. The following paragraphs describe general examples of outsourcing maintenance.

(1) Operator Arranges for the Performance of Maintenance. This example includes arrangements with repair stations, certificated mechanics, or other certificated operators to repair, inspect, or overhaul engines, structures, airframes, and/or appliances that are not considered to be substantial maintenance as defined in OpSpec D091. These arrangements can be continuous or on an "on-call" basis. Air carriers commonly refer to these arrangements as contract maintenance, on-call maintenance, or subcontract mechanics. Work is accomplished in accordance with (IAW) the air carrier's approved program.

(2) Operator Contracts for an All-Encompassing Maintenance Program. In this category, all maintenance is performed IAW the contractor's programs, methods, procedures, and standards. The operator's equipment is considered part of the contractor's fleet for purposes of maintenance program content and maintenance intervals, including reliability control. The issuance of OpSpecs will authorize this type of contractual arrangement (see FAA Order 8300.10, Airworthiness Inspector's Handbook, vol. 2, ch. 84, FAR Part 121/135 OpSpecs).

(3) Operator Contracts Specific Functions Using the Contractor's Approved Maintenance Program. This example is similar to that in paragraph 5D(2) except that the contract covers specific functions rather than an all-encompassing program. For example, the contract may cover heavy maintenance on engines under the contractor's approved maintenance program. The issuance of OpSpecs will authorize this type of contractual arrangement (see vol. 2, ch. 84).

E. Responsibilities of the Air Carrier.

(1) Throughout the process of evaluating the outsourcing of maintenance, it is important to remember that the air carrier is primarily responsible for the airworthiness of its aircraft, including airframes, aircraft engines, propellers, appliances, and parts thereof (see part 121, § 121.363(a)(1) and 14 CFR part 135, § 135.413(a)). Compliance with this general requirement is ensured by each air carrier having a program covering inspections and all other maintenance, preventive maintenance, and alterations performed by it, or by other persons on its behalf, that requires that such work be performed IAW the certificate holder's manual (see part 121, § 121.367(a) and § 135.413(b)(2)).

(2) The operator must ensure the organization or person has the capabilities and facilities to perform the intended work.

(3) The operator may adopt the publications of an outsourced organization or person in part or in total as methods, techniques, and standards. The operator's manual must describe the applicability and authority of the affected publication.

(4) As part of its continuous analysis and surveillance program, the air carrier should establish a schedule for accomplishing continuing audits or inspections that are designed to determine the maintenance provider's level of compliance with its manual and its CAMP. The frequency of these audits or inspections will be dictated by a number of variables, such as the air carrier's level of confidence in the maintenance provider, the complexity and quantity of the work, the quality of the work produced, and the quality of the records and certifications produced. Because of these variables, air carriers will have audit schedules that differ from one another. Each air carrier should have an audit schedule based on its own unique set of circumstances and needs.

(5) Air carriers will not normally perform audits of organizations that certificated repair facilities contract with. They must, however, identify and document the means used by the repair facility to ensure the organizations it contracts with have the organizational structure, competent and trained personnel, and adequate facilities and equipment to perform the intended function(s). The repair stations should have an audit and surveillance system that will determine that work done is accomplished properly.

F. OpSpecs. Programs outlined in § 121.367 and part 135, § 135.425 and authorized by OpSpecs become an integral part of the operator's CAMP. Vol. 2, ch. 84 contains the guidance and instructions for preparing and issuing OpSpecs.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of parts 121 and 135
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent
- Previous experience with part 121 or 135 air carriers

B. Coordination. This task requires coordination with the principal maintenance inspector (PMI) and principal avionics inspector (PAI) and may also require coordination with the certificate-holding district office (CHDO) having responsibility for the organization with whom the air carrier has made maintenance arrangements.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Title 14 CFR parts 43, 91, 119, 121, and 135
- Advisory Circular (AC) 120-16, Air Carrier Maintenance Programs
- AC 120-79, Developing and Implementing a Continuing Analysis and Surveillance System
- Operator/contractor/manufacturer's manuals
- ATOS Element: 1.3.7

B. Forms:

- FAA Form 8400-8, Operations Specifications

C. Job Aids:

- Automated OpSpecs checklists and worksheets
- JTAs: 3.3.51, 3.3.52

5. PROCEDURES.

A. Evaluate the Air Carrier's Maintenance Program Regarding Outsourcing Maintenance.

(1) Aviation safety inspectors (ASI) with surveillance responsibilities for air carriers should review the carrier's maintenance program to determine whether the certificate holder's procedures adequately address all aspects of outsourcing maintenance.

(2) Under part 121, § 121.367 and part 135, § 135.425, the air carrier must have a system in place that ensures the maintenance provider will perform work IAW the carrier's manual and CAMP. That means the information necessary to ensure compliance with the program is made available to the maintenance provider and the maintenance provider follows the information provided. Further, the air carrier must be able to show that the maintenance provider has competent personnel and adequate equipment and facilities. By showing these requirements are covered, the carrier is able to ensure the aircraft are properly released to service in an airworthy condition under the carrier's specific maintenance program.

(3) The following specific areas must be included or referenced in the air carrier's program:

(a) Adequate Organization. Under §§ 121.365, 135.423, and 135.425, the air carrier must ensure that the person with whom it arranges to perform maintenance has an organization capable of handling the work. Further, if required inspection items (RII) will be maintained or altered by the maintenance provider, the inspection functions must be separated within the organization. If the carrier's maintenance program or procedures require specific compliance aspects, the carrier must be able to show that the maintenance provider is equally capable of following the manual and procedures.

(b) Manual Requirements.

i. Under § 121.369 and § 135.427, the air carrier must provide a manual covering the administration of its maintenance program. The manual must include specific methods for complying with the applicable sections of parts 121 and 135. If a maintenance provider must know these requirements, the air carrier must ensure that the information is provided.

ii. Sections 121.369 and 135.427 require an operator to list in its manual the persons with whom it contracts for maintenance and to include a description of the contracted work.

iii. The air carrier may choose to adopt the maintenance provider's maintenance manuals or portions thereof that are to be used for the performance

of maintenance. The adoption details must be stated in the operator's manual system.

(c) Required Inspection Personnel.

i. Under §§ 121.371 and 135.429, the air carrier must ensure its specified RIIs are known to the maintenance provider covering the work. The carrier must also ensure that the maintenance provider personnel are trained IAW its manual and the carrier's procedures.

ii. Each air carrier shall maintain, or determine that each person with whom it arranges to perform its required inspections maintains, a current listing of persons who have been trained, qualified, and authorized to conduct required inspections. The persons must be identified by name, occupational title, and the inspection that they are authorized to perform. The air carrier (or person with whom it arranges to perform its required inspections) shall give written information to each person so authorized, describing the extent of the person's responsibilities, authorities, and inspection limitations. The air carrier must provide this list for inspection upon FAA request.

(d) Continuing Analysis. Under §§ 121.373 and 135.431, the air carrier must continually survey its maintenance program and all persons acting under that program to ensure continuous compliance with the program and the regulations. The carrier must ensure corrective action is taken on any deficiencies or inadequacies found in its maintenance program. This generally requires the air carrier to perform audits of all its maintenance providers.

(e) Training Programs. Under §§ 121.375 and 135.433, the air carrier must ensure the maintenance provider's personnel are trained in a manner equivalent to the requirements of the carrier's manual. This may require the maintenance provider's personnel to attend specific courses or maintain specific levels of proficiency.

(f) Duty Time. Under § 121.377, the air carrier must ensure its maintenance providers follow the duty time requirements. If the air carrier's maintenance manual and procedures indicate the maintenance provider provides specific assurances, the contractor must provide those assurances.

(g) Certificate Requirements. Under §§ 121.378 and 135.435, the air carrier must ensure only certificated persons are directly in charge of maintenance and/or perform required inspections.

(h) Authority to Perform. Under §§ 121.379 and 135.437, the air carrier is authorized to perform, or arrange for the performance of, maintenance on its own aircraft as set forth in the maintenance program and manual(s). The center of the relationship between air carriers and maintenance providers is the procedures and assurances set forth in the carrier's manual. The inspector should continually ensure that the carrier is able to establish compliance with its own procedures, either through direct supervision, surveillance, and/or auditing, or through appropriate controls such as contractual relationships.

(i) Records. Under part 43, §§ 43.9 and 43.11; part 91, § 91.417; part 121, § 121.380; and part 135, § 135.439, aircraft owners and operators must maintain specific records. If the carrier's maintenance manual(s) and/or procedure(s) indicate that the responsibility of making regulatory records available is delegated to maintenance providers, the manual(s) and/or procedure(s) should clearly delineate the records required to be maintained, the length of time the records should be maintained, and the form and manner of maintaining such records.

(j) Other Areas of Consideration.

i. The source of major repair and major alteration data developed by or for the air carrier must be accomplished IAW the air carrier's manuals.

ii. The air carrier must ensure that all organizations with whom it arranges will adequately and promptly report to the air carrier per the requirements of §§ 121.703 and 121.705, or §§ 135.415 and 135.417.

iii. The air carrier must update the list required by §§ 121.369(a) and 135.427(a).

B. Evaluate the Written Maintenance Contract.

(1) ASIs with surveillance responsibilities for air carriers should review the carrier's contract (if applicable) with the maintenance provider to ensure that no contractual clauses will contradict the air carrier's manual policy and procedures and current regulations.

(2) If adherence to the carrier's maintenance manual(s) and procedure(s) make clear that regulatory requirements are guaranteed through the business transactions with maintenance providers, the contract should reflect that obligation. Therefore, the contract

may be used to show compliance with general as well as specific areas. For example:

(a) The description of work to be performed will dictate the depth of supervision, information exchange, and auditing needed to ensure compliance with the air carrier's maintenance and inspection program. The more extensive the work, the more training, information, and oversight the carrier will need.

(b) The need for information exchange will be dictated by the technical requirements of the work to be performed. The carrier should ensure information from the maintenance provider is obtained when needed for the carrier's reliability and/or continuing analysis and surveillance program.

(c) Because the maintenance provider is required to provide competent personnel and adequate facilities, the carrier may want to include a clause for the maintenance provider to notify it of changes in staffing, facilities, and ownership.

(d) Traceability of components and parts information may be included in the contract. This could include everything from new parts to the scrapping and/or returning of parts to the air carrier. It could also require parts exchanged being in the same configuration and complying with service bulletins and Airworthiness Directives.

C. Determine Qualification to Perform Substantial Maintenance for an Air Carrier.

NOTE: The provisions of substantial maintenance provider guidance and the subsequent issuance of OpSpecs D091 are only applicable to part 121 operators.

(1) Since September 1, 1996, all new substantial maintenance providers must be authorized and listed on OpSpecs prior to use. New substantial maintenance providers will not be authorized for use without the accomplishment of an onsite audit by the air carrier proposing the maintenance provider. The following items provide the standard for performance:

(a) Prior to using a maintenance provider for the first time, unless the air carrier can successfully demonstrate to the PMI other means of accurately determining the capability and adequacy of the proposed maintenance provider, the air carrier must conduct an onsite audit of the maintenance provider. The air carrier's onsite audit, or other means, must demonstrate to the PMI that the maintenance provider has the following:

i. Capability;

ii. Organizational structure;

iii. Competent and trained personnel;

iv. Relevant and current technical and administrative material from the air carrier manual for the work;

v. Adequate facilities and equipment to do the work arranged for IAW the air carrier's program; and

vi. The ability to transfer and receive data and information necessary to support the continuing analysis and surveillance program, reliability program, or other programs required by the carrier's manual.

(b) Air carriers may substitute a current Coordinating Agencies for Supplier's Evaluation (CASE) audit report for the required onsite audit if it can be determined that the CASE audit addresses all elements above. The air carrier must perform an onsite audit of those elements of the above paragraph 5C(1)(a) that are not accomplished by the auditing organization.

(2) The air carrier must submit a copy of the audit report to the PMI for review in a checklist or a summary analysis form. That report should show how the air carrier made its determination that all of the above-listed items are adequately addressed.

(3) The air carrier must have a system in place that detects, identifies, and provides timely corrective action, on a continuing basis, for all deficiencies or deviations in those portions of the CAMP accomplished by the substantial maintenance provider, including maintenance recordkeeping.

(4) The air carrier must have a system in place that tracks and evaluates, on a continuing basis, the standards of performance (quality) of the substantial maintenance work accomplished by the individual maintenance provider.

(5) The system shall also include provisions for timely corrective action if the quality of work becomes unsatisfactory and deficiencies are noted.

(6) An air carrier that elects to obtain the services of a substantial maintenance provider on an unscheduled and/or short notice basis must include specific procedures for doing so in its manual.

However, the circumstance of an unscheduled, short notice requirement for substantial maintenance does not void the requirements of §§ 121.365, 121.367, and 121.378, or any other applicable regulation.

7. TASK OUTCOMES.

A. File PTRS Data Sheet. Open PTRS Data Sheets for each outsource maintenance facility inspection performed by the CHDO team. Comments concerning the method of inspection used by the air carrier or operator, and any other possible findings identified during the inspection process, should be recorded in section IV of the PTRS Data Sheet.

B. Complete the Task. Completion of this task will result in one of the following:

(1) If the operator's manual and outsource agency are determined to be satisfactory, accept the manual and approve the OpSpecs per the guidance in vol. 2, ch. 84.

(2) If the operator's manual is determined to be unsatisfactory, return the manual for corrections.

(3) If the outsource provider is determined to be unsatisfactory, deny the operator the use of that provider.

C. Update the Vital Information Subsystem (VIS) and/or OpSpecs. If provider is accepted:

(1) Open the operator's VIS record and update the information on the VIS, page 4 of the air operator record in the field "Airworthiness Agreement." The PMI should determine whether or not revisions to OpSpecs for contracted maintenance are required. The VIS record field(s) should reflect the most appropriate choice. The two pertinent option codes for maintenance are:

A: Contracts out most/all maintenance

P: Contracts out a substantial maintenance function

(2) For part 121 operators, OpSpec D091 must be updated whenever substantial maintenance providers are added or deleted. OpSpecs paragraph A004a or A004b, as appropriate, must also be amended if necessary.

D. Document the Task. File all supporting paperwork in the operator/applicant's office file.

9. FUTURE ACTIVITIES. Normal surveillance.

CHAPTER 105. EVALUATE PART 125 AIRPLANE INSPECTION PROGRAM AND MAINTENANCE

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3341, 3342

B. Avionics: 5341, 5342

3. OBJECTIVE. This chapter provides guidance on how to evaluate and approve an operator/applicant submitted Airplane Inspection Program (AIP) and engine maintenance program or revision.

5. GENERAL. This job task provides for interaction between the applicant and the Federal Aviation Administration (FAA) from initial inquiry to approving the program/revision. It ensures that programs, systems, and intended methods of compliance are thoroughly reviewed, evaluated, and tested.

A. The FAA must approve an inspection program selected by an operator/applicant under Title 14 of the Code of Federal Regulations (14 CFR) part 125. Section 125.247(e) lists inspection programs that may be approved for use under this part. The FAA reviews the program to ensure that it meets regulatory requirements, is complete, and is appropriate for the intended operation.

B. Airworthiness aviation safety inspectors (ASI) should have as much knowledge of the operator/applicant's operation as possible. This includes areas of operation, type of equipment, operating history, and maintenance/inspection organization(s).

NOTE: An AIP is authorized for use in operations specifications (OpSpecs) and cannot be transferred.

7. AIRPLANE INSPECTION PROGRAM.

A. A part 125 operator may use a continuous inspection program that is a part of a current continuous airworthiness maintenance program (CAMP) approved for use under 14 CFR part 121 or 135.

(1) A CAMP is an all-encompassing program that includes maintenance, inspections, continuing analysis and surveillance, and so forth.

(2) All elements are closely related and may not be as effective as "stand-alone" programs. Lack of maintenance and quality control in the airworthiness maintenance program could have negative effects.

B. The operator may use inspection programs currently recommended by the manufacturer of the airplane, aircraft engines, propellers, appliances, or survival and emergency equipment. The manufacturer's inspection program might not cover survival equipment and avionics equipment. Additionally, the inspector should consider aircraft use before approving a manufacturer's program. Many manufacturers offer a low-use program if the normal aircraft use falls below certain parameters.

C. The operator/applicant may use an inspection program developed by a certificate holder operating under part 125.

9. ENGINE MAINTENANCE. The operator/applicant must maintain engines in accordance with (IAW) the overhaul intervals that the manufacturer recommends or a program that the Administrator approves.

NOTE: The current version of Advisory Circular (AC) 125-1, Operations of Large Airplanes Subject to Federal Aviation Regulation Part 125, defines proration as a procedure for determining the overhaul time expended under one maintenance system and to establish the time remaining to overhaul under a new program. Thus, proration permits further use of an affected item without need for immediate overhaul.

A. If the manufacturer does not have a recommended overhaul interval, the Administrator may approve a maintenance program that the

manufacturer recommends as an on-condition program/trend analysis program.

B. The operator/applicant may develop an on-condition or overhaul program for approval by the Administrator.

11. CHANGES TO APPROVED TIME INTERVALS.

A. Operator-Initiated Changes. The operator may request approval to amend inspection or overhaul intervals.

(1) The operator must justify the request using past operating experience, environmental conditions, airplane use, and other data necessary to substantiate changes.

(2) Teardown reports, manufacturer recommendations, and the operator's experience may justify engine maintenance programs and overhaul intervals.

(3) Operator-initiated time changes require revisions to both the AIP and OpSpecs.

NOTE: Limitations specified for life-limited items and Airworthiness Directives (AD) shall not be amended or extended unless authorized in writing by the appropriate FAA Aircraft Certification Office (ACO).

B. Manufacturer Escalations.

(1) If a manufacturer extends the recommended inspection or overhaul interval, the operator may request approval to use the extension by submitting a revision to the AIP. The manufacturer's recommendation must accompany the request.

(2) ASIs should not automatically approve a time escalation the manufacturer recommends, but should consider the operator's airplane use and experience to ensure that the escalation will not compromise safety. For example, the operator could consider sampling programs to justify time escalation requests.

13. POLICIES AND PROCEDURES MANUAL.

The operator's policies and procedures manual must include the AIP. The operator should submit a manual revision (IAW manual revision procedures) at the same time the AIP/revision is submitted for approval. This allows the FAA to approve the AIP/revision and accept the manual concurrently, thus expediting the implementation of the program.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of part 125
- Previous experience with complex maintenance/inspection programs
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent

B. Coordination. This task may require coordination with and/or assistance from Operations ASIs and/or regional specialists.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- 14 CFR parts 25, 39, 43, 45, 47, 65, and 91
- Aircraft maintenance inspection notes
- AC 20-42, Hand Fire Extinguishers for Use in Aircraft
- AC 20-53, Protection of Airplane Fuel Systems Against Fuel Vapor Ignition Due to Lightning
- AC 20-136, Protection of Aircraft Electrical/Electronic Systems Against the Indirect Effects of Lightning
- AC 91-56, Continuing Structural Integrity Program for Large Transport Category Airplanes
- AC 125-1, Operations of Large Airplanes Subject to Federal Aviation Regulation Part 125

B. Forms:

- FAA Form 8400-7, Operations Specifications

C. Job Aids:

- JTAs: 2.3.49, 3.3.83, 3.3.201

5. PROCEDURES.

A. Schedule and Conduct a Preliminary Meeting with Operator/Applicant, if Necessary.

(1) Advise the applicant of regulatory requirements and policies.

(2) For an existing operator, remind the operator that the policies and procedures manual must include the AIP/revision.

B. Plan and Coordinate the Task.

(1) Determine if the airplane meets eligibility requirements.

(2) Review the operator file to identify any information concerning the AIP/revision and to determine its effect on other programs or procedures that the operator/applicant uses.

(3) If this task is performed as part of an original certification, review the Schedule of Events to ensure that the task can be accomplished IAW the schedule.

NOTE: When evaluating the program, ensure that all information is clear and easy to understand. It must identify the scope of each task and provide detailed, step-by-step procedures.

C. Evaluate the Proposed Program/Revision.

(1) Evaluate the instructions, procedures, and standards for conducting inspections.

(a) The inspection program must include:

- Airframe
- Aircraft engines
- Propellers
- Appliances
- Survival and emergency equipment
- Component parts for the above items

(b) When establishing an inspection program, for an aircraft to comply with § 125.247, the program should include installed avionics and instrument systems (appliances). These systems are not always installed by the aircraft manufacturers and may not be included in their recommended inspection programs.

(c) Inspection standards, procedures, methods, instructions, or other technical data may be included in the program by reference, eliminating the need to reprint them. Such references may be either the airframe manufacturer's or the appliance manufacturer's service data. However, when both the airframe manufacturer and the appliance manufacturer provide inspection data, that of the airframe manufacturer should be used. In this case, the inspector should ensure that the airframe manufacturer's

inspection data is applicable to the actual systems and equipment (make and model) installed on the aircraft.

(d) The avionics and instrument systems inspection should include a visual and functional check. Therefore, these definitions should be included in the program:

i. Visual Check. Using acceptable methods, techniques, and practices to determine physical condition and safety items.

ii. Operational Check. An operational test to determine whether a system or component is functioning properly in all aspects, conforming with minimum acceptable manufacturer design specifications.

iii. Functional Check. This test may require the use of appropriate test equipment.

(e) The avionics and instrument systems inspections should be incorporated into the basic airframe program. The visual inspection of the avionics and instrument systems should be accomplished at an interval corresponding to the airframe inspection interval (e.g., inspect avionics and instrument equipment, wiring, connectors, bonding straps, circuit breakers, and switches forward of the instrument panel) at the same interval that flight controls and other structural inspections are performed in that area.

(f) Functional checks of the avionics and instrument systems, using appropriate ramp test equipment, should be performed at intervals as a function of the aircraft operating environment (i.e., one year of the manufacturer's design specifications). The term "avionics" means aviation electronics and includes the following systems:

- Communications
- Navigation
- Electrical
- Instrument
- Lights
- Autopilot/flight director system

(g) The program should include maintenance/inspection requirements for protection of applicable electric/electronic systems from High Intensity Radio Frequency (HIRF) and lightning hazards. Such systems include, but are not limited to, power distribution and generating equipment and electromechanical devices, systems that use data buses for critical functions, and electronic engine and flight controls (including Full Authority Digital Engine Control (FADEC)), as well as associated interconnecting wiring or cables.

(h) All required tests and checks recommended by the aircraft or equipment manufacturer must be addressed.

(2) Identify the individuals responsible for performing the work.

(3) Ensure that the instructions, procedures, and standards are clear and easily understood. They must identify the scope of each task and provide a detailed outline of each step that must be accomplished to perform the inspection and ensure that established standards are met.

D. Evaluate the Procedures for Controlling Life-Limited Parts. The program must contain provisions to ensure that records are current. Life limits must be expressed by one of the following measures:

- Length of time-in-service
- Number of cycles
- Number of landings
- Calendar time
- A combination of the above measures

E. Evaluate the Procedures for Scheduling Inspections. The program must list inspection intervals and describe personnel responsibilities for scheduling and performing inspections.

F. Evaluate the Procedures to Ensure that Inspections Are Performed by Properly Certificated Personnel. Procedures must ensure that inspections are performed by properly certificated, qualified, trained, current, and authorized personnel. The program must identify, by title, the person responsible for ensuring that inspection personnel meet FAA requirements. The manual must list those persons whom the operator has arranged for inspection performance under part 125. The list must include the names and addresses of these persons.

G. Evaluate Engine Maintenance/Overhaul Intervals. Ensure that engine overhaul periods correspond to the recommended overhaul intervals in the engine manufacturer's manuals and/or service bulletins.

H. Evaluate the Procedures for Reporting and Correcting Mechanical Irregularities. The program must include detailed instructions, procedures, and the necessary forms and documents for the recording and

repair of mechanical irregularities. These instructions, procedures, and forms may appear elsewhere in the company manual, but their location(s) must be referenced in the maintenance manual and AIP.

NOTE: Within its manual, the operator/applicant should establish procedures to address continued operation of an aircraft with interim repairs and Structural Repair Manual (SRM) allowable damage. These procedures should also include provisions for a continuous feedback loop of timely information between the operator, FAA's principal maintenance inspector (PMI), principal avionics inspector (PAI), Aircraft Certification Office (ACO), Designated Engineering Representative (DER), and the manufacturer.

I. Evaluate the Instructions for Using the AIP. Make sure the AIP includes instructions on its use.

J. Analyze the Findings. Evaluate findings to determine if program changes are required. Coordinate with other specialties before debriefing operator.

K. Conduct Debriefings.

(1) Before meeting with the operator/applicant, discuss initial findings with appropriate FAA personnel to determine content of the briefing. Depending on the findings, it may be necessary to coordinate with the certification team, principal ASIs, regional specialists, or other FAA personnel.

(2) Brief the operator/applicant on results of evaluation. Discuss any deficiencies.

7. TASK OUTCOMES.

A. File a PTRS Data Sheet.

B. Approve or Reject the AIP/Revision.

(1) Approval. If the program or revision meets all regulatory requirements, proceed as follows:

(a) Ensure that the AIP or revision has been fully coordinated between maintenance and avionics and any other appropriate personnel.

(b) Indicate "Approved" by the amended OpSpecs. See FAA Order 8300.10, Airworthiness Inspector's Handbook, vol. 2, ch. 107, Evaluate Part 125 Operations Specifications.

NOTE: The date the AIP and engine maintenance program are approved must be the same as the date the OpSpecs are approved.

(c) Initial and date each page of the AIP or revision unless another approval control is used.

(d) Send the approved AIP/revision and the original and one copy of the OpSpecs to the operator, as appropriate. Request that the operator retain the original and acknowledge receipt of the OpSpecs by signing and dating the copy and returning the copy to the district office.

(e) Update the district office file with copies of the acceptance letter, the signed and dated AIP/revision, and the receipted OpSpecs.

(2) Rejection. If the AIP/revision is not acceptable, advise the operator/applicant by letter that the program is rejected. Return it to the operator/applicant along with the reasons for the rejection. Ensure that the letter accomplishes the following:

- Confirms all agreements made during the debriefing
- Identifies the date the AIP/revision was submitted
- Shows the revision number and date
- Identifies and describes all deficiencies by chapter, section, page, etc.
- Refers each deficiency to the appropriate regulation
- Returns the original AIP
- Reminds the operator not to implement the revision until it is approved

NOTE: If this review is performed as part of a certification, inform the applicant in the letter that issuance of the certificate will be withheld until deficiencies are corrected. If necessary, advise the applicant to revise the Schedule of Events.

9. FUTURE ACTIVITIES.

A. Schedule of Events. In the case of original certification, review the Schedule of Events to determine if a revised schedule is necessary.

B. Policies and Procedures Manual. Ensure that the policies and procedures manual includes the approved AIP/revision.

CHAPTER 227. EVALUATE APPLICANT'S REFUELING PROCEDURES AND FACILITIES

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3356

B. Avionics: 5356

3. OBJECTIVE. This chapter provides guidance for evaluating an applicant's refueling procedures and facilities.

5. GENERAL.

A. An applicant must have procedures for handling and dispensing aircraft fuels (ref. Title 14 of the Code of Federal Regulations (14 CFR) part 121, § 121.135(b)(18); part 125, § 125.73(j); and part 135, § 135.23(j)). The following must be included as components of the applicant's manual:

- Dispensing equipment procedures
- Electrostatic protection procedures
- Contamination protection procedures
- Related recordkeeping procedures

B. The applicant's manuals must include procedures for vendors and contractors. Title 14 CFR does not establish standards for fueling facilities, but this does not relieve the applicant of overall responsibility for conducting those operations within established industry standards.

7. FUELS.

A. Aviation Gasoline (AVGAS). The naming system for the grades of aviation gasoline is derived from the general term "AVGAS" followed by the grade marking. The grades are identified by their performance numbers, as recognized by all military and commercial specifications, e.g., 80, 100LL, and 100.

(1) The naming system for AVGAS grades is printed on all containers in white letters and numbers on a red background.

(2) Storage containers are also marked with a circular band around the piping, the color of which matches the dye in the AVGAS flowing through the line. The dyes are red for AVGAS 80, blue for AVGAS 100LL, and green for AVGAS 100. A minimum 4-inch wide band is recommended. If the pipeline is painted the color of the AVGAS, then no banding is needed.

B. Jet Fuels. The classifications of aviation turbine fuels are universally referred to as "jet fuels."

(1) The naming system for the jet fuel is printed on all containers in white letters on a black background to distinguish it from aviation gasoline.

(2) Examples of jet fuel storage container markings include the following:

(a) Jet A fuel containers are marked with a single 4-inch wide (minimum) black band around the piping.

(b) Jet A-1 fuel containers are marked with two 4-inch wide (minimum) black bands.

(c) Jet B-1 fuel containers are marked with three 4-inch wide (minimum) yellow bands.

9. GEOGRAPHIC CONSIDERATIONS. Inspections of contract fueling facilities by the office having the geographic responsibility must be coordinated with the certificate-holding district office (CHDO).

11. REVIEWING THE MANUAL. Maintenance aviation safety inspectors (ASI) must determine whether the applicant's manual contains appropriate instructions for storage and dispensing of aviation fuels. The instructions must be in accordance with current industry standards, such as Air Transportation Association (ATA) Spec 103: Standards for Jet Fuel Quality Control at Airports.

13. INSPECTING THE FACILITIES. The Maintenance ASIs are responsible for ensuring that the applicant's facilities comply with the manual procedures and established industry standards. For contracted services, it is still the applicant's responsibility to ensure adherence to its manual procedures and standards.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 121, 125, and 135, as applicable
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent

B. Coordination. This task requires coordination with the applicant.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Title 49 of the Code of Federal Regulations (49 CFR) part 173
- Advisory Circular (AC) 20-125, Water in Aviation Fuels
- AC 150/5230-4, Aircraft Fuel Storage, Handling, and Dispensing on Airports
- National Fire Protection Association (NFPA) pamphlets 70 and 407
- ATA Spec 103
- Federal Aviation Administration (FAA) Order 8300.10, Airworthiness Inspector's Handbook, appropriate certification chapters
- ATOS Element: 1.3.16

B. Forms. None.

C. Job Aids:

- JTAs: 2.3.29, 3.3.56

5. PROCEDURES.

A. Review the Applicant's Manual. Ensure that the manual indicates whether services will be performed by the operator or contracted out.

(1) Review the applicant's manual to ensure that it defines the following:

- Lines of authority and responsibilities
- The applicant's training program
- The vendor's training program, if applicable

(2) Ensure that the manual contains procedures for the following:

- Inspection of incoming fuels
- Elimination of fuel contamination
- Use of dispensing equipment
- Refueling and defueling, by specific make and model of aircraft
- Protection from fire (including electrostatic protection)
- Supervising and protecting passengers during refueling

(3) Ensure that the manual includes procedures for record retention and ongoing inspections of the following:

- Fuel (millipore checks, etc.)
- Storage facilities and dispensing equipment
- Filters
- Safety equipment
- Training programs for servicing personnel
- Individual training records
- Vendors (in accordance with applicant's program)

(4) If the manual is acceptable at this point, continue on to the facilities inspection. If the manual is unacceptable, return it to the applicant for corrections and/or revisions.

B. Inspect the Facility.

(1) Ensure that:

(a) Personnel training requirements are documented and current;

(b) Training is conducted according to the manual curriculum;

(c) Piping is marked and color-coded to identify fuel type and grade; and

(d) Control/cutoff valves are clearly marked with instructions for emergency use, e.g., on/off.

(2) Ensure that the fuel farm/storage area provides for the following:

- Proper security (fenced and posted)

- Proper display of "Flammable" and "No-Smoking" signs
- Markings to identify type/grade of fuel

(3) Ensure that the equipment includes the following:

- A positive low point sump
- Adequate fire extinguishers

(4) Ensure that fuel filters/filter separators contain, at a minimum, the following:

- An inlet strainer
- Inflow and outflow filter/separators sized to match maximum pump flow capacity
- Differential pressure check system
- Positive water defense system
- Sump drain with outlet located to facilitate capture of outflow
- Fuel sampling (millipore or equivalent) fittings downstream of all filters and filter/separators

(5) Ensure that hoses, nozzles, and outflow connectors are:

(a) Specifically designed and tested for delivery of aviation fuels;

(b) Controlled by spring-loaded, non-bypassable automatic (deadman) fuel flow cutoff valves;

(c) Equipped with dust cap or other feature that will minimize contaminant introduction into fuel/system;

(d) Equipped with non-bypassable 100 mesh nozzle/connector screens; and

(e) Color-coded to identify fuel type.

(6) Ensure that electrical equipment, switches, and wiring are of a type or design approved for use in hazardous locations (explosion proof, e.g., free of exposed conductors, contacts, switches, connectors, motors, etc.).

(7) Verify that grounding and bonding equipment ensures that piping, filters, tanks, and electrical components are electrically bonded together and interconnected to an adequate electrical ground. The system should have ground wires, bonding wires, and clamps adequate to facilitate prompt, definite electrical ground connection between the fueler/pit/cabinet, grounding system, and aircraft being fueled.

(8) Ensure that fuel tenders and fueling pits have the following:

(a) Appropriate markings displayed (e.g., "DANGER," "FLAMMABLE," "NO SMOKING," fuel grade, standard hazardous material placard, filter due dates, and emergency fuel shutoff);

(b) Appropriately placed fire extinguishers; and

(c) Air filter/spark arrestor and a leak-free exhaust system terminating in a standard baffled original equipment type muffler, if equipped with internal combustion engine.

C. Debrief Applicant. If any deficiencies are noted, discuss possible corrective actions.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Certification Task. Successful completion of this task will result in continuation of the certification task in accordance with the appropriate certification process.

C. Document the Task. File all supporting paperwork in the applicant's office file.

9. FUTURE ACTIVITIES. Transfer from certification process to normal surveillance activities.

CHAPTER 237. EVALUATE AVIONICS EQUIPMENT APPROVAL

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

- Avionics: 5446

3. OBJECTIVE. This chapter provides guidance for evaluating the approval of avionics equipment and instruments.

5. GENERAL. Title 14 of the Code of Federal Regulations (14 CFR) requires that certain avionics instruments and equipment be approved regardless of whether the aircraft is operated as an air carrier or under general aviation.

A. Approval of Instruments and/or Equipment. The certification process for 14 CFR parts 121, 125, and 135 must include verification that the required instruments and equipment are approved. The instrument or equipment approval can be accomplished by the following:

- Use of a Technical Standard Order (TSO)
- Acceptance as part of the aircraft on the original Type Certificate (TC) or Supplemental Type Certificate (STC)
- Parts Manufacturing Approval (PMA)
- Field approval (FAA Form 337, Major Repair and Alteration)

B. Verification of Approval. Verification of approval can be accomplished by various means, such as visual inspection of the equipment manufacturer's data plate and/or review of applicable records, such as flight manual equipment lists or maintenance records.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 91, 121, 125, and 135, as applicable
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent
- Knowledge of the equipment/instruments to be approved

B. Coordination.

(1) Coordination with FAA ACO personnel and/or the equipment manufacturer may be required when previous equipment approval has not been issued or operating limitations cannot be determined (reference FAA Order 8300.10, Airworthiness Inspector's Handbook, vol. 2, ch. 1, Perform Field Approval of Major Repairs and Major Alterations).

(2) Equipment approvals for air carriers may require coordination with principal operations or principal maintenance inspectors in situations that involve lower landing minimums, long range navigation systems, flight control systems, etc.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- 14 CFR parts 21, 23, 25, 27, 29, and 43
- Advisory Circular (AC) 121-1, Standard Operations Specifications Aircraft Maintenance Handbook
- AC 135-4, Aviation Security: Air Taxi Commercial Operators (ATCO)

B. Forms. None.

C. Job Aids:

- JTAs: 2.3.32, 3.3.209

5. PROCEDURES.

A. Review the Applicable Regulations. Determine which instruments and/or equipment require approval.

B. Verify Approval.

(1) If the equipment data plate does not indicate the appropriate approval status, determine through the operator's records the method by which the equipment received approval.

(2) Ensure that all avionics equipment requiring FAA approval has the appropriate documentation for that approval. If FAA approval cannot be substantiated, the equipment and/or aircraft cannot be used until substantiated by the owner/operator.

(3) Ensure that the equipment is used only on the aircraft for which it is approved.

(4) Ensure that any spare instruments/equipment are approved. If substitutes (i.e., military) are to be used as spares, verify their approval and the authority to install them on the aircraft.

NOTE: Instruments and equipment that have not been maintained or altered in accordance with accepted practices and procedures could affect the approval basis. Changes to the basic design of avionics equipment may render the approval invalid.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Complete the Task. Completion of this task could result in a letter describing any limitation(s) on the use of the instrument or equipment until deficiencies are corrected or approval is obtained.

C. Document Task. File all supporting paperwork in the operator's office file.

9. FUTURE ACTIVITIES. Follow-up activity, as required.

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CHAPTER 3. CONDUCT RAMP INSPECTION OF OPERATOR'S AIRCRAFT

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3627

B. Avionics: 5627

3. OBJECTIVE. This chapter provides guidance for sampling the quality of maintenance and the degree of compliance with the operator's maintenance procedures on in-service aircraft operated under Title 14 of the Code of Federal Regulations (14 CFR) part 121, 125, 129 (§ 129.14), 133, 135, 137, 141, or 142.

5. GENERAL.

A. Inspector Training. It is important that aviation safety inspectors (ASI) become familiar with the type of aircraft to be inspected before performing the inspection. This can be accomplished by on-the-job training.

NOTE: Only ASIs who have received part 129 geographic inspector training or are permanently assigned to an International Field Office (IFO) may conduct foreign air carrier inspections.

B. Personnel Needed for Inspection. Due to the hub and spoke concept, many aircraft have less than 1 hour ground time. To ensure that the inspection is performed adequately, the Federal Aviation Administration (FAA) recommends that two inspectors perform this task in exterior and interior phases.

NOTE: ASIs don't have to give part 129 operators advance notice that a ramp inspection will be conducted. However, inspection activities must be timed so they do not delay or interfere with passenger boarding or deplaning or impede aircraft service or catering. The captain, his or her representative, or an appropriate airline representative should also be present.

C. Coordination.

(1) Airworthiness and Operations ASIs possess various degrees and types of expertise and experience. An ASI who needs additional information or guidance on a given subject should coordinate with personnel experienced in that particular specialty.

(2) Geographic units may need to coordinate with the certificate-holding district office (CHDO) for domestic operations and the IFO for part 129 operations, as they do not always have access to the air carrier maintenance procedures manual. In addition, when discrepancies are found, the geographic unit should communicate with the CHDO or the IFO.

D. Use of FAA ASI Credentials to Access Aircraft and Secure Areas of U.S. Airports. Proper use of identification credentials, checkpoint procedures, and resolution of misunderstandings with airlines and other government agencies are crucial for the creation of an environment where ASIs can conduct effective inspections and surveillance. Both the FAA Flight Standards Service and the Transportation Security Administration (TSA) have reaffirmed the necessity of ASI access to Security Identification Display Areas (SIDA) and Airport Operations Areas (AOA). However, because of TSA's enhanced screening process and other airport security measures, ASIs must undergo extra steps when entering a SIDA. FAA Order 8000.38, Aviation Safety Inspector Credential Program, as amended, provides guidance and policy for the use of FAA Form 110A, Aviation Safety Inspector's Credential. ASIs should reference this order for specific guidance and policy on access to aircraft and secure areas of U.S. airports.

7. INITIATION AND PLANNING.

A. This task is scheduled as part of the work program or special emphasis request. Additional inspections are initiated by national, regional, or district office special requirements.

B. The ramp inspection provides the ASI with an opportunity to ensure that the compliance dates and requirements of new Airworthiness Directives (AD)

and regulatory revisions have been met. ADs, Service Difficulty Report Summaries, Maintenance/ Airworthiness Bulletins, and PTRS entries should be reviewed, when available. (This is also applicable to U.S.-registered aircraft operated by foreign operators under § 129.14).

9. MAINTENANCE RECORDS.

A. Regulations require maintenance to be recorded whenever it is performed prior to an approval for return to service. The operator's maintenance procedures manual should describe the procedures for ensuring that these recording requirements are met, including the specific instructions on when an airworthiness release or appropriate maintenance log entry is required.

B. Operators/air carriers must either correct or defer all mechanical discrepancies entered in the maintenance log using the methods identified in their maintenance procedures manual.

C. The Minimum Equipment List (MEL) has certain procedures and conditions that operators/air carriers must meet prior to deferring the item(s).

(1) These procedures are identified by "O," "M," and "O/M" and are normally contained in the operator's FAA-approved MEL. Sometimes the MEL references these procedures to another document.

(2) When reviewing the records for MEL compliance, the ASI must determine what procedures are required for deferral and ensure that these procedures are accomplished.

(3) The ASI must ensure that all applicable repetitive MEL procedures are accomplished for those items that are deferred and are continuing to be deferred through the station. These repetitive maintenance procedures must be signed off in the maintenance log as evidence that the procedures were accomplished.

11. DEFERRED MAINTENANCE.

A. Minimum Equipment List — Deferred Maintenance. The operator's FAA-approved MEL allows the operator to continue a flight or series of flights with certain inoperative equipment. The continued operation must meet the requirements of the MEL deferral classification and the requirements for the equipment loss.

B. Other Deferred Maintenance.

(1) Operators frequently use a system to monitor items that have been inspected and found within serviceable limits. These items are still airworthy, yet warrant repair at a later time or when items no longer meet serviceable limits. This method of deferral may require repetitive inspections to ensure continuing airworthiness of the items. Examples of items that are commonly deferred in this manner are fuel leak classifications, dent limitations, and temporary (airworthy) repairs.

(2) Passenger convenience item (not safety/ airworthiness related) deferrals should be handled in accordance with (IAW) the operator's program.

C. Prompt Repairs. The maintenance program approved for an operator must provide for prompt and orderly repairs of inoperative items.

13. CABIN INSPECTION.

A. This inspection should be conducted immediately, when possible, without disturbing the loading and unloading of passengers. The inspection can be performed when some passengers are onboard during through-flights, but ASIs must exercise good judgment by inspecting areas away from the passengers.

B. Bring any discrepancy to the attention of the flightcrew or appropriate maintenance personnel immediately.

15. CARGO/PAX COMBINATION CONFIGURED AIRCRAFT.

A. Structural Damage. Inspection results have disclosed instances of significant aircraft structural damage resulting from careless loading of cargo, such as:

- Torn or punctured liners, indicating hidden damage to circumferential stringers, fuselage skin, and bulkheads
- Damaged rollers, ball mats, etc., causing significant structural damage to the floors
- Corrosion and structural damage caused by improper handling of some hazardous materials

NOTE: Observation of hazardous material handling is normally not a surveillance function of the ASI during a ramp inspection.

However, if discrepancies are noted during the ramp inspection, the ASI should contact the appropriate TSA office.

B. Cargo Containers, Pallets, and Netting. As part of their normal surveillance, principal inspectors (PI) should ensure that adequate procedures are in place in the operator's manual to ensure that cargo restraint equipment conform to proper standards and are in condition to perform their intended function.

(1) If maintenance is required on any of the type certificate (TC) or supplemental type certificate (STC) cargo containers or restraint devices, it must be accomplished IAW appropriate regulations.

(2) Geographic inspectors performing air carrier surveillance should follow handbook guidance and report discrepancies in cargo handling/restraint devices through PTRS for follow-up action by the PI.

17. PERFORMING THE RAMP INSPECTION.

A. This inspection must be accomplished without interfering with the turnaround of the aircraft. The following list includes some of the activities that could cause a delay in the turnaround time if interfered with:

- Boarding and deplaning of passengers
- Servicing
- Fueling
- Maintenance
- Baggage handling
- Any other operator activity

B. The ASI must immediately bring any discrepancies noted to the attention of appropriate personnel, to allow the operator the opportunity to take corrective action without interrupting the flight schedule. The ASI must verify that all corrective actions taken were IAW the requirements of the operator's maintenance procedures manual.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of parts 121, 125, 129 (§ 129.14), and 135, as applicable
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent
- Experience working with similar type aircraft
- Completion of the FAR 129 Inspections of Foreign Operated Aircraft course

B. Coordination:

- This task may require coordination between Maintenance, Avionics, Cabin Safety, and Operations ASIs
- Geographic units should coordinate with the CHDO or the IFO

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- Title 14 CFR parts 21, 23, 25, 27, 29, 43, 45, 47, and International Civil Aviation Organization (ICAO) annex 6 and 8
- FAA Order 8340.1, Maintenance Bulletins, as amended
- Operator's Maintenance Procedures Manual

B. Forms:

- FAA Form 110A

C. Job Aids:

- FAA Order 8300.10, Airworthiness Inspector's Handbook, vol. 3, ch. 1, Introduction to Aircraft and Equipment, figure 1-1, Interior Inspection Guidelines
- Order 8300.10, vol. 3, ch. 1, figure 1-2, Exterior Inspection Guidelines
- JTAs: 2.2.4, 2.2.5, 2.3.58

5. PROCEDURES.

A. Begin the Inspection. Begin the ramp inspection IAW the district office work program or other directives.

B. Prepare for the Inspection.

(1) Review the operator's schedule, select the flight to be inspected, and determine the type of equipment and ground time needed.

(2) Determine recent problem areas that were identified for that type of aircraft, if any.

(3) Determine if recent regulatory changes and AD requirements affect the aircraft to be inspected.

C. Conduct the Exterior Inspection, as Applicable. Perform this inspection IAW vol. 3, ch. 1, figure 1-2.

D. Interview the Flightcrew. Introduce yourself and describe the purpose and scope of the inspection.

E. Inspect the Aircraft Maintenance Records.

(1) Prior to departure of the aircraft, ensure that all open discrepancies from the previous flight are resolved IAW the operator's manual.

(2) Review the maintenance records to determine if repetitive maintenance problems exist, which might indicate a trend.

(3) Ensure that all MEL items are deferred IAW the provisions of the operator's FAA-approved MEL.

(a) Review the operator's FAA-approved MEL to determine if conditions, procedures, and placarding requirements were accomplished to defer specific items correctly.

(b) Note the date when an item was first deferred to determine if the maximum allowed length of deferral was exceeded. Accomplish this by examining maintenance record pages, the deferred maintenance list, or deferred maintenance placards or stickers.

(4) Ensure that an airworthiness release, maintenance record entry, or appropriate approval for return to service was made after the completion of maintenance.

(5) Ensure that the maintenance record contains the following for each discrepancy:

- Description of the work performed or a reference to acceptable data
- Name or other positive identification of the person approving the work

- Name of the person performing work, if outside the organization

F. Conduct the Interior Inspection, as Applicable. Perform this inspection IAW vol. 3, ch. 1, figure 1-1.

G. Debrief the Operator. Inform the flightcrew or appropriate personnel that the inspection has been completed. Discuss the discrepancies brought to the operator's attention during the inspection.

H. Examine the Maintenance Record Entries. Ensure that the operator has recorded all discrepancies noted during this inspection. If time is available, monitor the operator's corrective actions.

I. Analyze Findings. Analyze each finding to determine if the discrepancies are the result of improper maintenance and/or missing or inadequate maintenance/inspection procedures.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

(1) For Part 129 Only. The data reporting requirements for completing a part 129 aircraft ramp inspection using surveillance activity codes 3627 and 5627 have been revised. Section IV of the Data Sheet indicates each area that should be examined in the performance of 3627/5627 inspections. Comments are required only for those areas with findings or discrepancies noted during the inspection. For each discrepancy or finding, enter the appropriate primary area and key word on the Data Sheet. Next, enter either a potential (P) or unsatisfactory (U) for discrepancies and findings. In the PTRS comment field (section IV), enter the line item identification number shown on the Figure Sheet (1.1, 2.6, 3.4, etc.) and then enter a description of the discrepancy. If a positive comment is needed in a particular area for clarification, enter it using the appropriate primary area and key word shown on the PTRS form, using the information (I) opinion code. Only positive comments or comments provided for clarification purposes may use the I opinion code. All findings and discrepancies must use either the P or U opinion code.

(2) Other Inspections. All other ramp inspections should be entered into PTRS IAW the PTRS procedure manual (PPM).

B. Complete the Task. Completion of this task can result in the following:

(1) Appropriate enforcement action when analysis of the findings disclose improper maintenance.

(2) Written notification to the operator of the necessary changes to the manual, when analysis of the findings disclose missing or inadequate maintenance/inspection procedures.

(3) Communication with the CHDO/IFO by the geographic unit finding discrepancies.

9. FUTURE ACTIVITIES. Based on inspection findings, determine if closer surveillance, additional enforcement, other job tasks, and/or additional coordination between the CHDO/IFO and geographic units are required to regain compliance.

CHAPTER 19. INSPECT A COMPUTER TESTING CENTER

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3679

B. Avionics: 5678

3. OBJECTIVE. This chapter provides guidance on how to determine whether a computer-based airman knowledge testing center, hereafter referred to as computer testing center (CTC), continues to meet the qualifications for original certification. Detailed guidance for this job function is found in Federal Aviation Administration (FAA) Order 8080.6, Conduct of Airman Knowledge Tests, as amended. Order 8080.6 contains guidance for the testing centers on how to attain certification and maintain currency.

5. GENERAL.

A. Background. Computer testing designees (CTD) are designated to administer airman knowledge tests under the authority of Order 8080.6 and Title 49 of the United States Code (49 U.S.C.) § 44702(d). The Airman Testing Standards Branch, AFS-630, approves CTDs when the need arises. To ensure FAA jurisdictional and surveillance oversight, only U.S. companies, schools, universities, or other organizations that meet the requirements of this order may be eligible for designation. Currently there are two such companies, LaserGrade and Computer Assisted Testing Services (CATS).

B. Definitions.

(1) Computer Testing Manager (CTM). A person selected by the CTD, and approved by AFS-630, to serve as manager of the CTD's testing program.

(2) Testing Center Supervisor (TCS). A person selected by the CTM, and approved by AFS-630, to oversee the administration of airman knowledge tests. The TCS is responsible for the operation of an approved testing center.

(3) Alternate Testing Center Supervisor (ATCS). A person selected and authorized by the CTM and approved by AFS-630 to serve as TCS for a period not to exceed 90 days.

(4) Test Proctor. A properly trained and qualified individual appointed by a TCS and approved by the CTM to administer airman knowledge tests.

7. INSPECTION AND SURVEILLANCE.

A. Inspection. Aviation safety inspectors (ASI) should inspect each CTC base of operations at least as often as the National Work Program Guidelines (NPG) indicate. The ASI must be familiar with Order 8080.6.

(1) A CTC may be spot-checked any time performance indicates that such a check is desirable.

(2) Inspections of CTCs can consist of the following:

(a) Inspection of a new center;

(b) Reinspection of the testing facilities; and/or

(c) Observation of the CTC administering computerized tests.

(3) Should an inspection indicate a discrepancy in the CTC's performance, the assigned ASI must immediately contact AFS-630 to coordinate a resolution plan and/or suspension of testing privileges at the subject site. AFS-630 will coordinate resolution of discrepancies with the respective CTM.

B. Surveillance. Surveillance of a CTC may be accomplished in conjunction with another job task if the CTC is collocated with a Title 14 of the Code of Federal Regulations (14 CFR) part 61, 141, 147 school, or 142 training center.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites. This task requires knowledge of the regulatory requirements of 14 CFR parts 61, 65, and 91.

B. Coordination. This task requires coordination with AFS-630 and may require coordination with the Regional Flight Standards Division Manager.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- Title 14 CFR parts 1, 61, 65, and 91
- FAA Order 8080.6
- FAA Order 8700.1, General Aviation Operations Inspector's Handbook, vol. 2, ch. 25
- FAA Computerized Testing Supplements
- Knowledge Test Guides
- Practical Test Standards
- Advisory Circular (AC) 60-11, Test Aids and Materials That May Be Used by Airman Knowledge Testing Applicants
- AC 60-25, Reference Materials and Subject Matter Knowledge Codes for Airman Knowledge Testing
- AC 60-26, Announcement of Availability: Flight Standards Service Airman Training and Testing Information

B. Forms:

- FAA Form 8430-9, Certificate of Authority

C. Job Aids:

- FAA Airman Knowledge Testing Center Quality Assurance Inspection Checklist
- FAA Airman Knowledge Testing Authorization Requirements Matrix
- FAA Airman Knowledge Testing Center List
- FAA Recurrent Training Messages

NOTE: All of the above job aids are located on the AFS-600 Web site: http://afs600.faa.gov/AFS630.htm, at the link "Airman Knowledge Computer Testing" under AFS-630-Related Links.

5. PROCEDURES.

A. Determine the Need for Inspection. Conduct the inspection as a result of any of the following:

- At least as often as the NPG indicate
- Upon request by AFS-630
- As part of a certification process of a new CTC
- As a result of complaints about the CTC administration of tests
- While accomplishing another surveillance job task of a collocated part 61, 141, 147 school, 142 training center

B. Pre-Inspection Activity. Review the Vital Information Subsystem (VIS) office file on the CTC for the following:

- Previous inspection results
- Complaints (disregard complaints about the amount of the fee)
- Any correspondence between the CTC, AFS-630, and the Flight Standards District Office (FSDO)

C. Schedule Appointment. If possible, schedule the inspection to occur while tests are being administered. Unscheduled inspections can also be performed. Review the CTC "times of operation" and note that some centers are "closed campus" centers (this will help in the scheduling of the inspection).

D. Conduct Inspection. See the FAA Airman Knowledge Testing Center Inspection Checklist (available on the AFS-600 Web site) for guidance. CTC must meet all the requirements in Order 8080.6. These include the following areas:

- Testing Center Facility Requirements
- Testing Center Personnel and Training
- Surveillance and Security Procedures
- Testing Center Daily Log
- Reference and Testing Materials

E. Computer Testing Method. The computerized test results/reports are available immediately upon completion of the exam.

(1) When an applicant takes the Aviation Mechanic General (AMG), Aviation Mechanic Powerplant (AMP), Aviation Mechanic

Airframe (AMA), Inspection Authorization (IA), or other knowledge test, a test report is generated. This report does not contain any FAA form number and does not resemble previous written test results.

(a) Results are issued on plain bond computer printout indicating that it is an FAA knowledge test.

(b) The following will appear on the computerized Airman Knowledge Test Report:

i. Applicant's last name, first name, and middle name/initial.

ii. Social security number or date of birth (Applicant ID).

iii. Exam title.

iv. Exam number (ID).

v. Date of testing.

vi. Exam site.

vii. Score(s).

viii. Results (pass/fail).

ix. Take number.

x. Subject matters codes.

xi. Expiration date.

xii. "Do Not Lose This Report."

NOTE: See sample illustration of an airman knowledge test report in Order 8080.6, appendix 1, fig. 12.

(c) An embossed company seal is applied to the test report. The test report is valid only when the embossed seal is on an original copy and should be accepted for testing purposes or certification. Photocopies are not valid for retesting, oral and practical testing, or for the issuance of a certificate.

(d) An applicant may obtain a letter of confirmation or duplicate by contacting the Airman Certification Branch, AFS-760.

F. Identification and Processing of Applicants. The ASI must be aware of these requirements.

(1) Before the test administration, the proctor must ensure that each applicant provides positive proof of identification, a permanent mailing address, and documentary evidence of age. The identification presented must include a current photograph, signature, and mailing address. This information may be presented in more than one form of identification.

- Acceptable forms of photo identification for **U.S. citizens and resident aliens** include, but are not limited to, driver's licenses, government identification cards, passports, alien residency cards, and military identification cards.
- Acceptable forms of photo identification for **non-U.S. citizens must** include a passport, in addition to one or more of the following: driver's licenses, government identification cards, and/or military identification cards.
- Some applicants may not possess suitable identification as described above. In the case of an applicant under age 21, the applicant's parent or guardian may accompany the applicant and identify themselves as described above. The parent or guardian may then attest to the applicant's identity.

(2) The proctor must not administer a test to an applicant who does not present proper test authorization. By signing the testing center daily log, applicants are certifying that they meet the applicable eligibility requirements contained in Order 8080.6 and the appropriate part of 14 CFR. If applicant eligibility is in doubt, the proctor should confer with the CTM. The CTM may find it necessary to contact AFS-630 for further guidance.

(3) The proctor must make a legible photocopy of any identification and authorization documents presented at the time of applicant processing. These copies must be attached to the applicable daily log.

(4) The testing center must provide a daily log for applicant sign-in and sign-out. The sign-in/out logs must be maintained in an accurate and complete manner, including posting of the "IMPORTANT NOTICE FOR AIRMAN APPLICANTS" at the top of each log sheet. All applicants must be advised to read this notice before signing the log. The log sheet must be formatted to collect the following:

- Applicant's printed full legal name—in English
- Full legal signature—in English
- ID number or date of birth
- Type of test

- Date of test
- Time in for each test
- Time out for each test
- Initials of the proctor for each test administered for both login and logout

NOTE: Testing center daily logs must be retained for a period of 2 years, along with copies of the ID.

(5) The top of each log sheet must contain the following notice:

IMPORTANT NOTICE FOR AIRMAN APPLICANTS

By signing below, you are certifying that you do not already hold a valid, current certificate or rating in the area in which you are testing. Furthermore, you are certifying that you are in compliance with the appropriate FAA eligibility requirements; and, if this is a retest, you are also in compliance with the retesting requirements. Failure to meet these requirements may be grounds for enforcement action, which could result in suspension or revocation of any airman certificate or rating.

7. TASK OUTCOMES.

A. File a PTRS Data Sheet.

B. Complete the Task. Completion of this task will result in one of the following:

(1) Satisfactory Inspection. Upon accomplishing a testing center inspection, the ASI will use the PTRS work activity code to record the inspection, using the comment section of the report to state any concern or discrepancies and place it in the FSDO files.

(2) Unsatisfactory Inspection.

(a) Advise the proctor/examiner of all the discrepancies noted. Discuss any discrepancies that can be corrected immediately.

(b) The ASI must advise AFS-630 of all discrepancies, either through phone, fax, or e-mail. If the ASI feels the discrepancy or discrepancies are deserving of emergency action, AFS-630 must be contacted immediately to coordinate a resolution plan and/or suspension of testing privileges at the offending center.

NOTE: The ASI MUST NOT call Lasergrade or CATS directly.

(c) FAA contact points:

Airman Knowledge Testing Standards Branch, AFS-630
Airman Knowledge Testing Program Manager
P.O. Box 25082
Oklahoma City, OK 73125

Airman Knowledge Testing Program Manager–405-954-5313
FAA LaserGrade Program Analyst–405-954-6352
FAA CATS Program Analyst–405-954-6744

(d) AFS-630 will coordinate resolution of discrepancies with the respective CTM in accordance with Order 8080.6. The FSDO will be cc'd on all correspondence.

9. FUTURE ACTIVITIES.

A. Continued surveillance of the CTC.

B. Investigation of the CTC in response to a complaint.

CHAPTER 42. INSPECT PART 121/135 (TEN OR MORE) AND PART 129 OPERATOR'S MAINTENANCE RECORDS

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3634, 3649

B. Avionics: 5634, 5649

3. OBJECTIVE. This chapter provides guidance for inspecting an operator's aircraft maintenance records under Title 14 of the Code of Federal Regulations (14 CFR) part 121/135 (ten or more) and part 129, § 129.14 aircraft (U.S.-registered aircraft operated by a foreign operator).

5. GENERAL.

A. Records. Aircraft maintenance records include any records that document work performed on an aircraft. An operator's aircraft maintenance records must be inspected periodically to ensure that they meet the requirements of the operator's approved recordkeeping system.

B. Surveillance Criteria. While inspecting an operator's aircraft maintenance records, principal inspectors (PI) must determine if all the work is based on instructions, procedures, or information that was approved previously or accepted by the Federal Aviation Administration (FAA). Such data can be in the form of:

- Manufacturer's manuals
- Service bulletins
- Service letters
- Data included in the operator's approved inspection and/or maintenance programs
- Manufacturer/operator's approved engineering orders or authorizations
- Airworthiness Directives (AD)
- Other accepted documents

C. Personnel Identification Recording Requirements. The operator's manual must provide for a positive means of identification, such as an employee identification number, for any person performing or approving work.

7. RECORD REQUIREMENTS.

A. Retaining Airworthiness Releases.

(1) Airworthiness releases must be retained by the operator for 2 months.

(2) All of the records necessary to show that the requirements for the issuance of an airworthiness release are met must be retained until the work is repeated or superseded, or for 1 year.

B. Total Time-in-Service Records.

(1) Total time-in-service is a record starting from the date of manufacture and continuing for the life of the aircraft. Engine rebuilding and certifying to zero time-in-service must not be confused with a zero time-since-overhaul certification.

(2) Zero time-since-overhaul certification does not affect the calculation of total time-in-service. When an engine is rebuilt and certified to zero time, the total time-in-service is zero (14 CFR part 91, § 91.421).

NOTE: Only the manufacturer or the manufacturer's representative can zero time an engine.

C. Life-Limited Parts. Operators must have a current record of the status of life-limited items. This record indicates the present accumulated time-in-service of each life-limited item.

NOTE: Life-limited parts may not be rebuilt and certified to zero time.

D. Records of Overhaul. An operator must maintain overhaul records of any item required to be overhauled. These records must be maintained until the work is superseded by work of equivalent scope and detail.

E. Inspection Status. Inspection status defines the work that has been and is scheduled to be performed for the inspection or maintenance program. The inspection status records must show the following:

- Type of most recent inspection
- The time at which that inspection was performed, expressed in terms of hours, cycles, or calendar time
- The scheduled time and type of the next inspection

F. Status of ADs. The operator must maintain a record of the current status of all one-time/recurring ADs applicable to the operator's equipment. In addition to specific instructions provided in the AD, typical sources of procedures for compliance with ADs include:

- Service bulletins
- Service letters
- Approved operator/manufacturer's engineering orders or authorizations

NOTE: Only data specifically approved for AD accomplishment by the appropriate Aircraft Certification Office is authorized.

(1) The surveillance of ADs should be included in all work programs. AD verification can be accomplished by the following methods:

(a) Actual surveillance of the AD being accomplished. This would also include a review of all paperwork, such as Engineering Authorizations, Engineering Orders, workcards, maintenance manual references, and service bulletins, to ensure that the AD is properly complied with.

(b) Physical verification of previous AD accomplishment.

(2) The PTRS comment code should relate to the Air Transport Association of America's (ATA) aircraft codes (ATA Spec 100 codes) of ADs being inspected. Comments should contain the numbers of each AD verified, the type of AD verified, and the complete inspection results.

G. Major Repair and Major Alteration Record.

(1) An operator must prepare a report of each major repair and major alteration.

(a) A copy of the major alteration report must be sent to the certificate-holding district office (CHDO) for review.

(b) A copy of the major repair report must be available for inspection by the Administrator.

(2) Additionally, the operator must keep a list of all current major alterations.

9. REPAIR STATION RECORDS OF WORK PERFORMED ON OPERATOR'S AIRCRAFT. Since repair stations only have to retain records of work performed for 2 years, some operators have reported that maintenance records are not always available from repair stations beyond the 2-year retention period. Since the operator is always responsible for obtaining and retaining the records required by the Administrator, advise operators to require a copy of the work documentation from the repair station at the time that the work is performed.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR part 121, part 129, § 129.14, or part 135
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent
- Familiarity with the type of operation being inspected

B. Coordination:

(1) This task requires coordination between the PIs, the operator, and with the Regulatory Support Division, Aviation Data Systems Branch, AFS-620, as applicable.

(2) If the task is performed by the office with geographic responsibility, coordinate with the CHDO PIs.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- Title 14 CFR parts 39, 43, 65, 91, 135, and 145, and § 129.14

B. Forms. None.

C. Job Aids:

- JTA: 2.3.99

5. PROCEDURES.

A. Review the Office File.

B. Inspect the Maintenance Records. Ensure that the operator has retained the required maintenance/alteration/inspection records for each aircraft, including airframe, engine, propeller, and appliances. These records must include the following information:

(1) A description of the work performed (data acceptable to the Administrator), including the date of completion.

(2) The name of the person performing the work, if that person is not an employee of the operator.

(3) The name or other positive identification of the person approving the work.

C. Inspect the Operator's Record System. Inspect records to ensure that manual procedures are being followed. During inspection, document and photocopy any confusing areas, obvious omissions, or apparent discrepancies. Records checked should include the following:

(1) Airworthiness Releases.

(a) Ensure that the operator retains airworthiness releases for at least 2 months.

(b) Ensure that the airworthiness release signature is authorized by the operator.

(c) Review the signer's training record to ensure that the person is trained to the level identified in the operator's manual.

(2) Flight/Maintenance Logs. Obtain and review the flight/maintenance logs to determine the effectiveness of the airworthiness release procedures following scheduled inspections and nonroutine maintenance. Review the records to ensure the following:

(a) Flight discrepancies are entered after each flight.

(b) Corrective actions are related to the discrepancy.

(c) Corrective actions and sign-offs are entered in the maintenance record in accordance with (IAW) manual procedures.

(d) Repetitive discrepancies are handled according to the manual.

(e) Deferred maintenance, as authorized by the minimum equipment list (MEL), is deferred IAW the operator's MEL and manual instructions.

(f) Required Inspection Items (RII) are signed off IAW the manual instructions.

(g) The inspector was authorized by the operator to perform the inspection.

(3) Scheduled Inspections. Select or obtain work packages for scheduled inspections and ensure the following:

(a) Scheduled inspections are properly signed off;

(b) Generated nonroutine items are properly signed off;

(c) RII are properly identified and signed off by properly authorized, qualified, certificated, and trained personnel; and

(d) Repairs are categorized correctly (major or minor) and approved data is being used, as required.

(4) Total Time/Cycle-in-Service Records. Compare the manual procedures with the actual accomplishment of the total time/cycle-in-service records for the airframe, engine, propeller, and rotor.

NOTE: Although part 121 does not specifically call for time/cycle-in-service records of engines, propellers, and rotors, it is difficult for an operator to control the maintenance program without those records.

(a) Select and obtain a total time/cycle-in-service record for a sample number of aircraft to ensure that cumulative flight times/cycles are added to the record.

(b) Make a spot check of the cumulative total time/cycle-in-service against the flight logs to ensure that daily entries correspond to the flight log.

(c) If the operator maintains a handwritten maintenance record for engines, compare the record entries to the aircraft flight log entries to determine the following:

- Overall accuracy
- The possible transposition of flight time/cycle-in-service, numbers, etc.

(5) Life-Limited Parts Records. Compare the manual procedures for life-limited parts with the actual recording of the current status of life-limited parts. Select a random sample of records and ensure the following:

(a) All life-limited parts described on type certificate data sheets (TCDS) or in a manual referenced on the TCDS are noted.

(b) The current status of each part is provided, to include:

- Total operating hours/cycles accumulated
- Life limit (total service life)
- Remaining time/cycles
- Modifications

(c) The time/cycle limits on the operator's list are the same as those on the TCDS.

(d) Life limits have not been exceeded. Select a sample of life-limited items that have been installed within the last 12 months and review records to ensure that life-limited time was carried forward from the previous service record.

(e) If overhauled, the overhaul record is available.

(f) The life limit of an item has not been changed as a result of the overhaul.

(6) Overhaul Records. Compare the manual procedures for maintaining the overhaul record with the actual overhaul record content.

(a) Select a random sample of overhauled items to ensure the following:

- Overhaul records are available for items selected
- The records contain a description of the overhaul
- The records show the time since the last overhaul
- The item was overhauled IAW the overhaul specifications by a qualified and authorized person
- The component was approved for return to service by an authorized person

(b) Review removal/installation records of overhauled components to determine if the overhaul was done within the authorized time limits. Current regulations require these records to be maintained until the work is superseded by work of equivalent scope and detail.

(7) Inspection Status Records.

(a) Compare the manual procedures for maintaining the current aircraft inspection status with available records. Ensure that the recorded daily flight hours/cycles are used to obtain the current inspection status.

(b) Take a random sample of aircraft inspection records to ensure that scheduled inspection times/cycles were not exceeded (overflown).

(8) One-Time/Recurring ADs. Request a random sample of aircraft AD compliance records to ensure the following:

(a) The records contain all applicable ADs for the sampled aircraft.

(b) AD requirements were accomplished within the effective times of the AD.

NOTE: Put a special emphasis on checking recurring ADs.

(c) The AD record contains the current status and method of compliance. The current status must include the following:

- A list of all ADs applicable to the aircraft
- Date and time of compliance
- Time and/or date of next required action (if recurring AD)

(d) The record is being retained indefinitely.

NOTE: If any ADs have an alternative method of compliance, ensure that the operator has obtained prior approval for that alternative method.

(e) The method of compliance is the same as specified in the AD.

(f) The date of compliance is identical with the date on the current status list.

(g) The mechanic/inspector was properly trained and authorized to accomplish the work.

(h) The accomplishment was properly signed off.

(9) Major Alteration and Major Repair Records.

(a) Compare the manual procedures for maintaining a list of major alterations and the reports for major repairs with the actual work records.

(b) Compare a random sample of major repair and alteration records to the alteration and repair list and/or reports to ensure the following:

- Lists and/or reports contain the date of accomplishment and a brief description of the work
- The respective maintenance records show that the work was accomplished IAW approved data

NOTE: When major alterations or major repairs are identified but not recorded on the above-mentioned list or report, request the actual maintenance accomplishment record and the FAA-approved data from the operator.

D. Check the Operator's Procedures. Ensure the operator has procedures that detail how all maintenance records generated at line maintenance facilities or other off-site stations will be transferred to the facility where records are normally held.

E. Analyze the Findings. Evaluate all deficiencies to determine if corrective actions will be required.

7. TASK OUTCOMES.

A. File PTRS Data Sheet. PTRS comments should include the numbers of each AD verified, the type of AD verified, and the complete inspection results.

B. Complete the Task. Completion of this task may result in the following:

- A report of any deficiencies submitted to the CHDO if the inspection was performed by the office having geographic responsibility
- A letter from the CHDO informing the operator of the results of the inspection
- An Enforcement Investigation Report, as applicable

C. Document the Task. File all supporting paperwork in the operator's office file.

9. FUTURE ACTIVITIES. Normal surveillance.

CHAPTER 143. MONITOR COCKPIT VOICE RECORDERS

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance:

- Ramp Inspection: 3627
- Spot Inspection: 3628
- Cockpit En Route Inspection: 3629

B. Avionics:

- Ramp Inspection: 5627
- Spot Inspection: 5628
- Cockpit En Route Inspection: 5629

3. OBJECTIVE. This chapter provides guidance in monitoring cockpit voice recorders (CVR) during spot, ramp, and cockpit en route inspections.

5. GENERAL. The federal aviation regulations require that certain aircraft be equipped with a CVR that meets approved design and installation criteria. The regulations also stipulate that the data obtained from the CVR cannot be used in any civil penalty or certificate action.

NOTE: This does not negate the aviation safety inspector's (ASI) authority and responsibility to monitor the CVR during the performance of airworthiness surveillance functions.

A. Requirements of CVR Maintenance Procedures. The Avionics ASI is responsible for determining that the maintenance procedures ensure that tests are conducted according to procedures provided by the CVR manufacturer and shall include, at a minimum, listening to the recorded signals on each channel to verify that the audio is being recorded properly, is intelligible, and is free from electrical noise or other interference.

B. Monitoring the CVR. There are no restrictions in the regulations that prevent periodic monitoring of the CVR as a method of surveillance.

(1) ASIs are cautioned against monitoring CVR tapes for any purpose other than determining the quality of the recording.

(2) Monitoring should be done only to the extent necessary to determine that the quality of reproduction and maintenance of the CVR is adequate.

C. Acoustic Underwater Locator Beacon Maintenance.

(1) To ensure the timely activation of underwater acoustic beacons associated with CVRs, Avionics ASIs should evaluate their certificate holder's maintenance and inspection programs to ensure that procedures for testing beacons, conducted concurrently with battery replacement, provide for functionally testing the beacons before replacing the old battery.

(2) Operators' maintenance or inspection programs should also be evaluated to ensure that operational testing is being accomplished, consistent with the recorder or beacon manufacturer's recommended procedures, at specified intervals and, when possible, in conjunction with a numbered or phase inspection (e.g., "A," "B," or "C" check).

(3) These requirements must be reflected on work cards or other inspection cards to ensure system-wide compliance.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 121, 125, and 135, as applicable
- Experience with the equipment being inspected
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent

B. Coordination. This task requires coordination with the operator.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- Order 8300.10, Airworthiness Inspector's Handbook, vol. 3, ch. 2, Conduct Spot Inspection of Operator's Aircraft; ch. 3, Conduct Ramp Inspection of Operator's Aircraft; or ch. 4, Conduct Cockpit En Route Inspection, as applicable

B. Forms:

- FAA Form 8430-13, Request for Access to Aircraft

C. Job Aids:

- JTAs: 2.2.4, 2.3.1, 2.3.4

5. PROCEDURES.

A. Initiate the Inspection. Reference vol. 3, ch. 2, 3, or 4, as applicable.

B. Monitor the CVR.

(1) If this task is being done as part of an en route inspection, obtain permission from the pilot-in-command before plugging into the CVR system.

NOTE: Be aware that not all phone jacks on CVR cockpit monitors are wired for operation.

(2) If this task is being done as part of a spot or ramp inspection, accomplish the following:

(a) Coordinate with the maintenance supervisor before conducting the inspection.

(b) Monitor the in-progress maintenance to ensure that the CVR is being evaluated for performance of its intended function. Check all channels to ensure that the audio is being recorded properly, is intelligible, and is free from electrical noise or other interference.

(3) Monitor the Cockpit Area Microphone (CAM) to ensure that it satisfactorily picks up all cockpit audio.

NOTE: Be aware that the quality of reproduction of some CVRs can be affected by ground operation of auxiliary power units and ground power units.

(4) Review the certificate holder's maintenance procedures for acoustic underwater locator beacons to ensure that the manufacturer's recommendations are closely followed, including the procedures for the battery check.

C. Analyze Results. Refer to vol. 3, ch. 2, 3, or 4, as applicable.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Refer to Vol. 3, Ch. 2, 3, or 4, as applicable.

9. FUTURE ACTIVITIES. Follow-up activities, as required.

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CHAPTER 9. RESTRICTED CATEGORY AGRICULTURAL AIRPLANES

1. OBJECTIVE. This chapter contains general information concerning Title 14 of the Code of Federal Regulations (14 CFR) part 137 Agricultural Aircraft Operations.

3. DEFINITIONS.

A. Spreader. Systems attached to the fixed points of the airplane, under the hopper, which dispense dry agricultural chemicals and seed.

NOTE: The spreader includes its associated gatebox.

B. Hopper. Container within the airplane structure to hold the aerially dispensed products.

C. Spray Boom. Length of pipe or tubing of variable size or shape, depending upon the system and the particular application.

5. CIVIL AIR REGULATIONS (CAR)/CIVIL AERONAUTICS MANUAL (CAM) 8. Pertinent parts of the preamble to CAR/CAM 8 state that the CARs provide for the type and airworthiness certification of aircraft built or modified for special purposes (i.e., crop dusting, seeding, and spraying). As stated in the preamble to CAR 8, the requirements in effect at the time established an appropriate level of safety for passenger-carrying aircraft, but imposed an unnecessary economic burden and were unduly restrictive for the manufacture and operation of small agricultural aircraft. These aircraft are intended for use in rural, sparsely settled areas outside the usual lanes of air transportation. For restricted category operations, where public safety is not in danger, it appears unreasonable to require the same level of safety as that required for passenger-carrying aircraft. Therefore, a change to CAR/CAM 8 eliminated the "equivalent level of safety" provision for restricted category aircraft. It should be noted that nothing in CAR 8 was intended to contradict the statutory requirement that the Administrator must find that the airplane is of proper design, material specifications, construction, and performance for safe operation. CAR 8 is intended to provide the greatest possible flexibility of administration, and to place the minimum possible burden consistent with public safety on the applicant for certification in the restricted category.

NOTE: The part of CAR 8 which provided the procedures for the type certification of restricted category aircraft was recodified as 14 CFR part 21, § 21.25. That section currently provides type certification procedures for restricted category airplanes.

A. Small Agricultural Airplanes. Advisory Circular (AC) 20-33, Technical Information Regarding Civil Aeronautics Manuals 1, 3, 4a, 4b, 5, 6, 7, 8, 9, 13, and 14, as amended, states that CAM 8 may be used in conjunction with part 21, §§ 21.25, 21.185, and 21.187 for restricted category certification of small agricultural airplanes only. The material in CAM 8 may only be used for small agricultural airplanes in the following situations:

(1) For alterations made to small airplanes originally type-certificated under CAR 8. The guidance materials in CAM 8 are applicable, but only for those alterations where the CAM 8 guidance material is appropriate.

(2) For alterations made to small airplanes originally type-certificated under 14 CFR parts 21 and 23. The material in CAM 8 may be used as guidance material to assist in showing compliance with part 23, but only for those alterations where the CAM 8 material is appropriate and is not in conflict with the intent of part 23 requirements.

NOTE: The term "appropriate," when used in discussing requirements, means those requirements address a specific feature of a type design, and can be used to evaluate the safety aspect of that feature.

B. Gross Weight Increases. CAM 8 sets forth acceptable procedures and practices for guidance, including Appendixes A and B, for those airplanes which were certificated under CAR 8. Guidance in Federal Aviation Administration (FAA) Order 8130.2, Airworthiness Certification of Aircraft and Related Approvals, as amended, states that the use of CAM 8 in approving gross weight increases has only been appropriate for airplanes if CAR 8 was used as part of the certification basis. For airplanes certificated under parts 21 and 23, CAM 8 may be considered to contain acceptable methods of complying with the regulations

as the basis for a field approval, if the information is not contrary to the airplane's certification basis or the manufacturer's requirements.

C. Alterations. Alterations approved for an airplane can be installed on other airplanes of the same make and model, provided:

(1) The airplanes are owned by the individual that originally obtained the approval.

(2) The installer finds that the alteration does not interfere with any previously-approved alteration on that specific airplane.

NOTE: Subsequent alterations will be considered minor alterations when performed by the owner on his or her own aircraft. The owner must remove this system when the aircraft is sold or transferred and an appropriate entry must be made in the aircraft's records.

D. Spreader and Spray Boom Systems Installation and Removal. The initial installation of either a spreader or spray boom is considered a major change and requires FAA approval. That approval can be attained as part of the original type certificate (TC), an amended TC, a supplemental type certificate (STC), or a field approval. Spreader and spray boom systems removal and installation are not addressed in CAM 8 or in the 14 CFR part 43 appendixes. Once FAA approval has been obtained for more than one configuration, changing from one configuration to another is a service requirement; therefore, it does not constitute maintenance and does not require record entries. However, these system changes or reconfigurations should not include changes to structural attachments or the permanently installed equipment of the airplane.

E. Changing from One Configuration to Another. Changing from one configuration to another can be accomplished by the operator as long as it is done in accordance with conversion instructions covering the installation and removal of the components or equipment. These instructions are normally prepared during original approval of the installation, but must be developed by the operator if not accomplished at that time. The operator is also responsible for properly training those persons servicing the aircraft.

7. FIELD APPROVALS. The inspector should consider alterations to agricultural aircraft that require FAA approval on an individual basis. The inspector should consider the following information:

A. Acceptability of CAM 8. CAM 8 is acceptable only when the requirements are appropriate for alterations of small agricultural airplanes that used CAR 8 as the original certification basis. The CAM 8 and its appendixes A and B should be referenced by specific application to the requested modification. The CAM 8 guidance, along with any pertinent data, can be used to complete the field approval process.

NOTE: The guidance material in CAM 8 may be used to assist in showing compliance with part 23 for small agricultural airplanes only, but only when the guidance material is not in conflict with the requirements of part 23.

B. Eligibility Exceptions. Conversion from reciprocating to turbine/turboprop engines is not allowed under the field approval process.

9. RECORDKEEPING. With regard to all references to Form ACA 337 (now FAA Form 337) stated in the CAM 8, the standard procedures outlined in AC 43-9, Maintenance Records, as amended, should be used to fill out FAA Form 337. Other information, such as flight test and weight and balance, will be recorded in the aircraft maintenance records.

APPENDIX 1. ACRONYMS AND ABBREVIATIONS

This appendix contains many acronyms and abbreviations for both old as well as new Airworthiness terms that are used throughout this Handbook. Inspectors can refer to the following alphabetical listing of frequently used acronyms and abbreviations and their meanings when using this Handbook.

14 CFR	Title 14 of the Code of Federal Regulations
49 CFR	Title 49 of the Code of Federal Regulations
49 U.S.C.	Title 49 of the United States Code
A/FD	Airport/Facility Directory
A&P	Airframe and Powerplant
AAD	Automatic Activation Device
AAIP	Approved Aircraft Inspection Program
AC	Advisory Circular
ACAT	Air Carrier Assessment Tool
ACCSS	air carrier cabin safety specialists
ACE	aerobatic competency evaluator
ACO	Aircraft Certification Office
ACR	airman certification representative
AD	Airworthiness Directives
ADA	Airline Deregulation Act
ADF	automatic direction finding
AEE	Office of Environment and Energy
AEG	Aircraft Evaluation Groups
AEM	Area Equivalent Method
AES	Automated Exemption System
AFM	Approved Flight Manual
AFSC	Air Force Specialty Codes
AFSS	automated flight service station
AFTN	aeronautical fix telecommunication network
AH	alert height
AGL	above ground level
AIDS	Accident Incident Data Subsystem
Air Oper VIS	Air Operator Vital Information Subsystem
AIP	Airplane Inspection Program
ALS	Advance Life Support
AMA	Aviation Mechanic Airframe
AMC	acceptable means of compliance
AME	Aviation Medical Examiner
AMG	Aviation Mechanic General
AMO	Approved Maintenance Organization
AMP	Aviation Mechanic Powerplant
AMT	Aviation Maintenance Technician
AMTS	Aviation Maintenance Technician School
ANM	Seattle Aircraft Evaluation Group
AOA	Airport Operations Area
AOD	Automatic Opening Device
AOG	Aircraft on the Ground

APP	Accident Prevention Program
APPM	Accident Prevention Program Manager
APU	Auxiliary Power Unit
AR	Authorized Representative
ARA	Airborne Radar Approach
ARFF	Aircraft Rescue and Fire Fighting Equipment
ARINC	Aeronautical Radio, Inc.
ASAS	Aviation Safety Analysis System
ASI	aviation safety inspector
ASR	Airport Surveillance Radar
AST	aviation safety technician
ASTM	American Society for Testing and Materials
ATCS	Alternate Testing Center Supervisor
ASW	Southwest Aircraft Evaluation
AT	Air Traffic
ATA	Air Transport Association
ATC	air traffic control
ATE	Automatic Test Equipment
ATOS	Air Transportation Oversight System
ATP	airline transport pilot
ATPE	airline transport pilot examiner
AVGAS	Aviation Gasoline
BA	Bilateral Agreement
BASA	Bilateral Aviation Safety Agreement
BFA	Balloon Federation of America
BITE	Built-In Test Equipment
BLS	Basic Life Support
CAA	Civil Airworthiness Authority
CAB	Civil Aviation Board
CAIS	Comprehensive Airmen Information Subsystem
CAM	Civil Aeronautics Manual
CAMI	Civil Aero Medical Institute
CAMP	Continuous Airworthiness Maintenance Program
CAN	Center Area NOTAM
CAR	Civil Air Regulations
CASE	Coordinating Agencies for Supplier's Evaluation
CASFO	Civil Aviation Security Field Office
CASP	Continuous Analysis and Surveillance Program
CATS	Computer Assisted Testing Services
CBI	computer-based instruction
CDL	Configuration Deviation List
CE	commercial pilot examiner
CFI	certificated flight instructor
CFR	Code of Federal Regulations
CFRS	certificated foreign repair station
CG	center of gravity
CHDO	certificate-holding district office
CIRE	commercial and instrument rating examiner
CL	capabilities list
CM	Condition Monitoring
CMO	Certificate Management Office

CMP	Configuration Maintenance Procedures
CMR	Certification Maintenance Requirements
CMT	Certificate Management Team
COA	certificate of authority
COB	close of business
COMAT	company material
ConDOR	Constructed Dynamic Observation Reports
Conus	continental United States
CPL	commercial pilot license
CPM	certification project manager
CRW	canopy relative work
CSP	Comprehensive Surveillance Plan
CTA	control areas
CTC	computer testing center
CTD	computer testing designee
CTM	Computer Testing Manager
CVR	cockpit voice recorder
DAR	Designated Airworthiness Representative
DAS	Designated Alteration Station
DBA	Other Business Names
d.b.a.	doing business as
DCT	Data Collection Tool
DER	Designated Engineering Representative
DFDAU	digital flight data acquisition unit
DH	decision height
DME	Designated Mechanic Examiners
DME	distance measuring equipment
DNL	Decibel Noise Level
DOD	Department of Defense
DOT	Department of Transportation
DPE	designated pilot examiner
DPRE	Designated Parachute Rigger Examiners
DS	discard
EA	Environmental Assessment
EA/EO	Engineering Change Authorization/ Order
EAA	Experimental Aircraft Association
EFIS	electronic flight instrument systems
EIR	Enforcement Investigation Report
EIS	Enforcement Information Subsystem
EIS	Environmental Impact Statement
ELT	Emergency Locator Transmitter
EMI	electromagnetic interference
EP	Evaluation Panel
EPI	Element Performance Inspections
ETOPS	Extended-Range Operation With Two-Engine Airplanes
EVAS	Emergency Vision Assurance Systems
FAA	Federal Aviation Administration
FA Act	Federal Aviation Act of 1958
FADEC	Full Authority Digital Engine Control
FAR	Federal Aviation Regulations
FCAA	Foreign Civil Aviation Authority
FCC	Federal Communications Commission
FD	flight director

FDC	flight data center
FDR	Flight Data Recorder
FIE	flight instructor examiner
FIR	flight information regions
FIRC	flight instructor refresher clinic
FL	flight level
FLIR	Forward Looking Infrared
FM	flight manual
FMCS	flight management computer systems
FMS	flight management system
FOI	fundamentals of instructing
FOIA	Freedom of Information Act
FONSI	finding of no significant impact
FSAIC	Flight Standards Safety Analysis Information Center
FSAS	Flight Standards Automation System
FSDO	Flight Standards District Office
FSS	flight service station
FTD	flight training device
GM	General Manuals
GPS	global positioning system
GPWS	ground proximity warning systems
GSGC	Ground School Graduation Certificate
GTD	ground training device
HAZMAT	hazardous material
HEL	helicopter
HEMES	Helicopter Hospital Emergency Medical Evacuation
HF	high frequency
HIRF	High Intensity Radiated Fields
HT	Hard-Time
HUD	heads-up display
HUMS	Health Usage Monitoring Systems
IA	Inspection Authorization
IAP	instrument approach procedures
IAW	in accordance with
ICA	instructions for continued airworthiness
ICAO	International Civil Aviation Organization
ICAS	International Council of Air Shows
ICS	Intercom Systems
IEM	Interpretive Explanatory Material
IFO	International Field Office
IFP	Instrument Foreign Pilot
IFR	instrument flight rules
IFSD	in-flight shut down
IG	Interim Guidance
IGA	international general aviation
IIC	inspector-in-charge
ILS	instrument landing system
IMC	instrument meteorological conditions
IN/FC	Inspection/Functional check
INM	Integrated Noise Model
INS	inertial navigation system
IP	implementation procedures
IPM	Inspection Procedures Manual

IRA	Instrument Rating Airplane
IRS	inertial reference systems
ISC	Industry Steering Committee
ISIS	Integrated Safety Information Subsystem
ISO	International Standards Organization
ISS	inertial sensor system
JAA	Joint Aviation Authorities
JAD	Job Aid Disc
JAR	Joint Aviation Requirement
JTA	Job Task Analysis
LAHSO	land-and-hold-short operations
LEI	Letter of Investigation
LIBRA	Logical Information Based on Reliability
LOA	letter of authorization
LORAN	long-range navigation
LOX	liquid oxygen
LRN	long-range navigation
LRNS	long-range navigation system
LRU	Line Replaceable Units
LU/SV	Lubrication/Servicing
MAST	Maintenance Airworthiness Standardization Team
MC/FPE	military competency/foreign pilot examiner
MEL	minimum equipment list
MEL	Multiengine Land
MES	Multiengine Sea
MIDO	Manufacturing Inspection District Offices
MIP	maintenance implementation procedures
MIS	Mechanical Interruption Summary Reports
MISR	Mechanical Interruption Summary Reports
MIST	Maintenance International Standardization Team
MLS	microwave landing system
MME	maintenance management exposition
MMEL	Master Minimum Equipment List
MMF	Manufacturer Maintenance Facility
MNPS	Minimum Navigation Performance Specification
MOE	maintenance organization exposition
MOS	Military Occupational Speciality
MOU	memorandum of understanding
MRB	Maintenance Review Board
MRB	Material Review Board
MRR	Mechanical Reliability Reports
MSG	Maintenance Steering Group
MSL	mean sea level
MTBF	mean time between failure
NAA	National Aviation Authority
NAO	Noise Abatement Officer
NAS	National Airspace System
NASIP	National Aviation Safety Inspection Program
NAT	North Atlantic

NAT/MNPS North Atlantic Minimum Navigation Performance Specifications

NAVAID Navigational Aid

NEPA National Environmental Policy Act of 1969

NDB nondirectional beacon

NDI Non-destructive Inspection

NDPER National Designated Pilot Examiner Registry

NEB National Examiner Board

NFDC National Flight Data Center

NFPA National Fire Protection Association

NIST National Institute of Standards and Technology

NM nautical miles

NOPAC North Pacific

NOTAM Notice to Airmen

NPG National Work Program Guidelines

NTSB National Transportation Safety Board

OC On-Condition

OCA oceanic control areas

OEM Original Equipment Manufacturer

OJT on-the-job training

OMT Organization Management Team

OpSpecs operations specifications

OPSS Operations Specifications Subsystem

OP/VC Operational/Visual check

ORA Operations Research Analyst

OST Office of the Secretary of Transportation

OTAC Outside-the-Aircraft Check

PAI principal avionics inspector

PAR Precision Approach Radar

PASI Preapplication Statement of Intent

PC Production Certificate

PCA Positive Control Area

PCA primary category aircraft

PE private pilot examiner

PI principal inspector

PIC pilot-in-command

PMA Parts Manufacturer Approval

PMI principal maintenance inspector

POI principal operations inspector

PPE proficiency pilot examiner

PPH Policy Procedures Handbook

PPM PTRS Procedures Manual

PSRAB Propulsion System Reliability Assessment Board

PTRS Program Tracking and Reporting Subsystem

PTS practical test standards

QMS Quality Monitoring System

RAIM receiver autonomous integrity monitoring

RFSD Regional Flight Standards Division

RII Required Inspection Items

RNAV Area Navigation

ROC Regional Operations Center

rpm revolutions per minute

RS	restoration
RT	remedial training
RTCA	Radio Technical Commission of Aeronautics
RVR	runway visual range
RVSM	Reduced Vertical Separation Minimum
RWBC	Regional Whistleblower Coordinators
SA	selective availability
SAE	Society of Automotive Engineers
SAI	Safety Attribute Inspections
SAT	System Analysis Team
SB	Service Bulletin
SDR	Service Difficulty Report
SEAT	Surveillance and Evaluation Assessment Tool
SEL	Single-Engine Land
SEP	Surveillance and Evaluation Program
SES	Single-Engine Sea
SFAR	Special Federal Aviation Regulations
SIC	second-in-command
SIDA	Security Identification Display Area
SIGMET/ AIRMET	Significant Meteorological Information Airmen's Meteorological Information
SIP	simulator implementation procedures
SL	Service Letter
SODA	Statement of Demonstrated Ability
SOIR	simultaneous operations on intersecting runways (replaced by LAHSO)
SPAS	Safety Performance Analysis System
SPG	Special Planning Group
SRM	Structural Repair Manuals
SSID	Supplemental Structural Inspection Document
STC	supplemental type certificate
SUP	suspected unapproved parts
TAF	terminal weather forecasts
TALTAR	Tactical Landing Approach Radar
TAWS	Terrain Awareness and Warning Systems
TBO	time between overhauls
TC	type certificate
TCA	Appliance Type Approval
TCAS	Traffic Alert and Collision Avoidance Systems
TCDS	type certificate data sheet
TCS	Testing Center Supervisor
TCE	training center evaluator
TCO	training course outline
TGL	temporary guidance leaflet
TRSB	Time Reference Scanning Beam
TSA	Transportation Security Administration
TSO	technical standard order
TSOA	Technical Standard Order Authorization
UHF	ultrahigh frequency
ULD	unit load device
USNOF	United States NOTAM Office
USPA	United States Parachute Association
VFR	visual flight rules

VHF very high frequency

VIS Vital Information Subsystem

VLF very low frequency

V_{MC} minimum controllable airspeed

VMC visual meteorological conditions

VOR VHF omni-directional radio range

V_{REF} approach speed

WBPP Whistleblower Protection Program

WINDOWS Segmented Inspections and Built-In Inspection Tolerances

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