VOLUME 3 GENERAL TECHNICAL ADMINISTRATION

CHAPTER 32 MANUALS, PROCEDURES, AND CHECKLISTS FOR 14 CFR PARTS 91K, 121, 125, AND 135

Section 11 Safety Assurance System: Evaluate a Maintenance Manual/Revision for a Part 121 or § 135.411(a)(2) Program

3-3376 REPORTING SYSTEM(S). This section is applicable to the following Safety Assurance System (SAS) Elements:

- Element 1.3.1 (AW), Part 119 Required Personnel;
- Element 4.2.1 (AW), Maintenance/Inspection Requirements;
- Element 4.2.4 (AW), Recordkeeping;
- Element 4.3.1 (AW), Airworthiness Release/Maintenance Log Requirements; and
- Element 4.3.2 (AW), Required Inspection Items (RII).

3-3377 OBJECTIVE. This section provides guidance for evaluating an operator/applicant's company manual or revision to ensure that policies, procedures, and technical criteria meet regulatory requirements.

3-3378 GENERAL.

A. Company Manuals. A company manual should enable the operator's maintenance and servicing personnel to carry out their duties at a high level of safety. The complexity of the manual will vary with the complexity of the operation. The manual must cover specific items in accordance with Title 14 of the Code of Federal Regulations (14 CFR), but may include additional items at the discretion of the applicant. Therefore, the Federal Aviation Administration (FAA) accepts, rather than approves, a manual.

B. Manual Acceptance. Manual acceptance can cause a delay in the certification process. If the operator/applicant does not have experienced and qualified personnel to prepare an acceptable manual, the use of a consultant may be appropriate. The operator/applicant can only use a consultant in an advisory position. After the review, the aviation safety inspector (ASI) must return the manual to the operator/applicant with a list of any discrepancies found. The ASI must inform the operator/applicant that final certification will not be complete until the operator/applicant corrects the discrepancies. Inspectors should be concerned primarily with ensuring regulatory compliance.

3-3379 REVIEWING OPERATOR/APPLICANT'S MANUAL.

A. The Manual as an Administrative Tool. The manual is an administrative tool used to control and direct personnel. It should define all aspects of the maintenance operation.

1) The policies and procedures section should address organizational matters.

2) The maintenance section should address policies and procedures for administering the inspection and maintenance requirements, test flight requirements, and other subjects, as applicable.

B. What the Manual Should Include. The manual should include detailed instructions or specific references for accomplishing inspection and maintenance functions. It should also include forms, instructions, and references for recurring nonroutine requirements, such as engine changes and inspections following abnormal occurrences (hard landings, lightning strikes, severe turbulence, high brake energy stops, etc.).

C. What Manufacturers' Technical Manuals Provide. Manufacturers' technical manuals provide instructions for accomplishing specific tasks. These documents also establish methods, technical standards, measurements, and operational test procedures. The policy and procedures section of the operator's manual should describe areas of application for the pertinent technical documents. The following are examples of manual sections and titles:

- General Policy and Procedures,
- Inspection Procedures,
- Maintenance Procedures,
- Training,
- Wiring,
- Parts,
- Overhaul,
- Structural Repair,
- Manufacturers or Vendors,
- Weight and Balance (W&B) Control, and
- Servicing.

D. Manual Revision Requirements. Manuals must be easy to revise and must show the date of the last revision on each page. The manuals must have a page control system showing the number of pages, including the latest revision. The page control system is usually a List of Effective Pages (LEP).

E. Operator/Applicant Responsibilities. The operator/applicant is responsible for ensuring that manuals present adequate guidance to meet all regulatory requirements. The operator/applicant must understand and accept this responsibility early in the certification process.

F. ASI Revision Requests. An ASI may, when necessary, formally request revision to any part of the maintenance manual when such revision is in the interest of safety, or when the manual does not meet regulatory requirements. The ASI should only use this authority when:

1) Safety considerations or 14 CFR requirements adequately substantiate the need for revisions; and

2) Informal discussions with the operator fail to accomplish the necessary revision.

3-3380 COORDINATION REQUIREMENTS. This task requires close coordination between Airworthiness ASIs and, in some areas, Operations ASIs.

3-3381 REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Title 14 CFR Parts 43, 91, 121, and 135.
- Title 49 of the United States Code (49 U.S.C.) § 44705.
- Volume 10, Safety Assurance System Policy and Procedures.

B. Forms. None.

C. Job Aids. None.

3-3382 PROCEDURES.

A. Brief Operator/Applicant. Provide the operator/applicant with policies and regulatory requirements. Schedule and conduct a preliminary meeting, if necessary.

B. Review Schedule of Events (SOE). If this task is part of an original certification, review the SOE to ensure that the operator/applicant can accomplish the task according to the schedule.

C. Evaluate General Manual Requirements. Ensure that the operator/applicant's Policy and Procedures Manual (PPM) describes procedures, levels of authority, and information appropriate to part 121 or 135, as applicable.

1) The manual must include a description introducing its philosophy and goals. If it is in more than one volume, the manual must describe the division of contents between the volumes. The manual must also contain a list of effective dates.

2) Manual revision and distribution procedures for providing current information to all manual holders are required. The manual must include provisions to make it available to maintenance and ground personnel and to furnish a copy to the FAA certificate-holding district office (CHDO).

3) The manual must define significant terms, acronyms, or abbreviations unique to the manual. The manual does not need to define common industry terms, as long as it intends the common meaning. The manual's definitions section also does not need to include terms clearly defined in the text.

4) The manual must detail requirements for supplemental air carriers and commercial operators to carry the appropriate parts of the manual on the aircraft, if applicable. If manuals are in electronic form, there must be procedures to ensure there is adequate equipment aboard the aircraft.

D. Ensure that the Manual Contains Required Organizational Elements. Check for the following:

1) The names of all management personnel authorized to sign applicable operations specifications (OpSpecs) and act on behalf of the operator/applicant.

2) Organizational charts that must include lines of authority and maintenance organization and support structures.

3) Job descriptions for all elements noted above.

4) Procedures for, and a description of, a training program that:

- Informs all personnel, including inspection personnel, of procedures and techniques currently in use;
- Ensures that all personnel are competent to perform their duties; and
- Establishes a method of documenting and retaining training records.

E. Ensure that the Manual Contains Compliance Procedures. Check for the following:

1) Procedures to ensure compliance with aircraft W&B limitations, including:

- Preweighing and weighing requirements;
- Necessary equipment;
- Standards; and
- Forms and documents.

2) The operator/applicant's OpSpecs or appropriate extracted information (must retain identity as OpSpecs).

3) Procedures, policies, instructions, and controls for the use of the minimum equipment list (MEL), Configuration Deviation List (CDL), and nonessential equipment and furnishings (NEF), if applicable.

4) Procedures, standards, and limits for periodic inspection and calibration of precision tools, measuring devices, and test equipment.

F. Evaluate Manual Contents. The certificate holder's company manual must describe procedures and provide information appropriate to the applicable 14 CFR parts.

1) The inspector must ensure that the manual description and procedures meet the requirements of part 121, § 121.135(a) and part 135, § 135.23(a).

2) The certificate holder's manual must describe the revision control procedures and how it will control the distribution of manuals (refer to §§ 121.135(a) and (c), 121.137, 135.21(b)–(g), and 135.23).

a) Manuals must be easy to revise and have a page control system that shows the number of pages and ensures that the manual includes the latest revision. The page control system is usually an LEP (refer to §§ 121.135(a) and 135.23).

b) Manuals must have a distribution system that meets the requirements of § 121.137 or § 135.21, as appropriate.

3) The manual should define any terms contained in the manual that are unique to the operator's operation.

4) The organizational chart must describe, at a minimum, the management personnel and major functions. However, the FAA recommends that the chart cover the operator's entire organization (refer to §§ 121.369(a) and 135.427(a)).

5) This list must include persons with whom the certificate holder has arranged to perform any of its required inspections, other maintenance, preventive maintenance, or alterations, including a general description of the work (refer to §§ 121.369(a) and 135.427(a)).

6) The program must ensure the following (refer to §§ 121.369(b) and 135.427(b)):

a) The certificate holder's personnel perform maintenance, preventive maintenance, and alterations in accordance with the certificate holder's manual (refer to §§ 121.367(a) and 135.425(a)).

b) The certificate holder provides competent personnel, adequate facilities, and equipment for accomplishing maintenance, preventive maintenance, and alterations (refer to §§ 121.367(b) and 135.425(b)).

c) The certificate holder's personnel have properly maintained each aircraft released to service and ensured that it is Airworthy (refer to §§ 121.367(c) and 135.425(c)).

7) The manual must include the duties and responsibilities of appropriate members of the ground organization personnel (refer to §§ 121.135(b)(2) and 135.23(a)).

8) For supplemental air carriers, part 135 operators, and commercial operators, the manual must include the duties and responsibilities of management personnel, including the names and addresses of those required by 14 CFR part 119, §§ 119.65 and 119.69, and §§ 121.135(b)(2), and 135.23(a).

9) The manual is required to include programs that personnel must follow while performing maintenance, preventive maintenance, and alterations of the certificate holder's aircraft, including airframes, aircraft engines, propellers, rotors, appliances, and emergency equipment (refer to §§ 121.369(b) and 135.427(b)). These programs must include at least the following:

a) A method for performing routine and nonroutine maintenance (other than required inspections), preventive maintenance, and alterations (refer to §§ 121.369(b)(1) and 135.427(b)(1)).

b) A designation of items of maintenance and alteration that personnel must inspect (required inspections). The designations should include at least those items that, if personnel do not perform maintenance properly or use improper parts or materials, could result in a failure, malfunction, or defect endangering the safe operation of the aircraft (refer to §§ 121.369(b)(2) and 135.427(b)(2)).

c) A method of performing required inspections and the occupational title(s) of persons authorized to perform each required inspection (refer to §§ 121.369(b)(3) and 135.427(b)(3)).

d) Procedures for re-inspecting work performed under previous required inspection findings ("buy-back" procedures) (refer to §§ 121.369(b)(4) and 135.427(b)(4)).

e) Procedures, standards, and limits necessary for required inspections and acceptance or rejection of inspected items (refer to §§ 121.369(b)(5) and 135.427(b)(5)).

f) Procedures, standards, and limits necessary for periodic inspection and calibration of precision tools, measuring devices, and test equipment (refer to §§ 121.369(b)(5) and 135.427(b)(5)).

g) Procedures to ensure that personnel perform all required inspections (refer to §§ 121.369(b)(6) and 135.427(b)(6)).

h) Instructions to prevent any person who performs work on any item from performing required inspection of that work (refer to §§ 121.369(b)(7) and 135.427(b)(7)).

i) Per §§ 121.369(b)(8) and 135.427(b)(8), instructions and procedures to prevent anyone rescinding any decision of an inspector regarding a required inspection, other than those persons listed below:

- Supervisory personnel of the inspection unit; and
- A person at a supervisory level of administrative control who has overall responsibility for the management of both the required inspection functions and the other maintenance, preventive maintenance, and alterations functions.

j) Procedures to ensure that, before releasing the aircraft to service, employees complete required inspections, maintenance, preventive maintenance, and alterations not completed as a result of employee shift changes or similar work interruptions (refer to §§ 121.369(b)(9) and 135.427(b)(9)).

k) Instructions and procedures for maintenance, preventive maintenance, and servicing (refer to §§ 121.135(b)(17) and 135.23(h)).

l) Instructions and procedures for maintenance personnel to follow when swapping positions of compatible components within the same aircraft.

1. When a component must be operative in a required position in the aircraft, the operator may swap positions of compatible components from a non-required position to a required position in order to operate the aircraft in accordance with the MEL.

2. When not prohibited by manufacturer maintenance instructions, this procedure may be used.

3. Operators must verify component compatibility in order to swap component positions. Resources may include Illustrated Parts Catalogues (IPC) and delivery documents.

4. If the manufacturer does not publish maintenance instructions for this procedure, the operator must develop appropriate General Maintenance Manual (GMM) or equivalent instructions and procedures, and provide them to their principal inspector (PI) for review.

5. Instructions must include troubleshooting (to verify that a component failure and not a system failure caused the component to fail).

6. Operational checks, and/or deactivation and security of components must be performed to put the aircraft into an Airworthy condition for return to service.

NOTE: The FAA does not permit the use of this policy for the purpose of extending MEL deferral time.

m) Instructions and procedures for maintenance personnel to follow if confronted with errors or deficiencies in documented maintenance procedures (maintenance manual, work cards, etc.), especially while performing maintenance that requires immediate corrective action to ensure safe practices and Airworthy aircraft. The procedures must include instructions for documenting the error and ensuring the deviation or corrections are validated and acceptable to the FAA.

n) Time limitations (calendar time, operational hours, flight cycles) or standards for determining time limitations for overhauls, inspections, and checks of airframes, engines, propellers, appliances, and emergency equipment (refer to §§ 121.135(b)(18), 135.439(a)(2)(iii), and 119.49(a)(8) or § 119.49(c)(8)).

o) Procedures for aircraft refueling, elimination of fuel contamination, fire protection (including electrostatic protection), and supervision and protection of passengers during refueling (refer to §§ 121.135(b)(19) and 135.23(j)).

p) Airworthiness inspections, including instructions covering procedures, standards, responsibilities, and authority of inspection personnel (refer to §§ 121.135(b)(20), 121.369(b)(6)–(8), and 135.427(b)(6)–(8)).

q) Methods and procedures for maintaining the aircraft's weight and center of gravity (CG) within approved limits (refer to §§ 121.135(b)(21), 121.693(d), 135.23(b), 135.63(c), and 135.185).

r) A suitable system, which may include a coded system, providing for preservation and retrieval of information in a manner acceptable to the Administrator, and which provides the following (refer to §§ 121.369(c) and 135.427(c)):

- A description of the work performed or reference to data acceptable to the Administrator;
- The name of the person performing the work if the work is performed by a person outside the organization of the certificate holder; and
- The name or other positive identification of the individual approving the work.

10) Section 121.135(b)(3) requires references to the appropriate 14 CFR parts to be in the manual (not required for part 135).

11) The manual must include training programs to ensure that each person who determines the adequacy of the performance of maintenance and preventive maintenance is competent to perform the necessary duties and is fully informed about procedures, techniques, and new equipment in use (refer to §§ 121.375 and 135.433). Applicable training programs should include a training program description, maintenance training requirements, and information about the frequency of training.

12) The manual normally includes copies of Parts D and E OpSpecs. The operator may decide, however, to insert pertinent excerpts of its OpSpecs or to reference the OpSpecs. If it chooses the latter, the operator must reference the OpSpecs in such a manner that the OpSpecs retain their identity as OpSpecs (refer to §§ 119.43(b) and 135.23(c)).

13) The manual must provide procedures for the reporting and correction of mechanical irregularities. These procedures must address the following:

a) The recording of actions in the aircraft maintenance log (refer to §§ 121.563, 121.701, and 135.65).

b) The method of ensuring that the aircraft maintenance log is readily accessible to each flightcrew member (refer to §§ 121.701 and 135.65).

c) The MEL (refer to §§ 121.303(d), 121.627(b), 135.23(i), and 135.179).

d) The MEL placard system.

e) Deferred maintenance.

f) Airworthiness release procedures or maintenance record entries in the maintenance section of the manual that include a certification that:

- Maintenance personnel performed work in accordance with the requirements of the manual;
- Maintenance personnel inspected all items required to be inspected;
- No known condition exists that would make the airplane unairworthy; and
- So far as the work performed is concerned, the airplane is in condition for safe operation.

NOTE: Rather than restate the above requirements each time the operator executes an airworthiness release, the operator/applicant may provide a statement in the manual that the signature of a properly authorized person constitutes that certification.

g) The determination of qualifications and authorization of persons to perform airworthiness releases.

h) Definition of when an airworthiness release is required.

i) The form and manner in which the operator will document an airworthiness release.

j) Provision of a copy to the pilot in command (PIC).

k) A list of required maintenance-related forms and the requirements for preparation.

l) Distribution of required reports and forms (refer to §§ 121.703, 121.705, 121.707, 135.415, and 135.417). Refer to the current edition of Advisory Circular (AC) 20-109, Service Difficulty Program (General Aviation), for more information.

14) The manual must provide procedures to ensure that maintenance personnel use proper parts and materials, including (refer to §§ 121.105, 121.133, 121.369(b), and 135.427(b)):

- Receiving inspection;
- Shelf time;
- Preservation of parts;
- Parts identification system; and
- Disposition of failed parts.

15) The manual must provide the specifics of the operator's Continuing Analysis and Surveillance (CAS) program, including (refer to §§ 121.373 and 135.431):

- Audit system; and
- Mechanical performance.

16) The manual must contain maintenance functional evaluation flight requirements and limitations (refer to part 91, § 91.407). These include:

- Items requiring a maintenance functional evaluation flight, and
- Procedures for performing a maintenance functional evaluation flight.

17) The manual must include ferry flight limitations and procedures.

18) The manual must provide procedures for the following:

- Reporting the occurrence or detection of each difficulty, failure, defect, or malfunction that may affect the reliability of the aircraft (Service Difficulty Report (SDR));
- Reporting each interruption to a flight, unscheduled change of aircraft en route, or unscheduled stop or diversion from a route caused by known or suspected maintenance difficulties (Mechanical Interruption Summary (MIS));
- Ensuring that the operator submits all major alteration reports to the CHDO; and
- Ensuring that the operator prepares and maintains reports of major repairs (these may be in the form of Engineering Orders (EO), if the operator/applicant is so structured).

19) The manual must also contain other procedures, where appropriate, including (refer to §§ 121.135(b)(24), 121.369(b)(1), 135.23, and 135.427(b)(1)):

- Parking aircraft in high winds;
- Short-term storage;
- Long-term storage;
- Seasonal operation;
- Removing ice and snow from aircraft;
- Towing;
- Emergency procedures;
- Run-up/taxi personnel authorizations;
- Aircraft ground run-up;
- Taxiing aircraft;
- Ramp signals and procedures;
- Jacking, lifting, and hoisting;
- Use of landing gear down locks;
- Use of external gust locks;
- Aircraft cleaning, including materials used for cleaning and flame-proofing materials after dry cleaning (refer to part 43, § 43.13);
- Engine change;
- Propeller change;
- Cylinder change;
- Engine and propeller overspeed;
- High oil consumption;

- Oil leaks;
- Engine and propeller troubleshooting; and
- Oxygen and nitrogen servicing and storage.

20) The manual must include additional maintenance for Category (CAT) II or CAT III operations, if applicable (see Volume 4, Chapter 2, Section 11).

21) The manual must include procedures and information, as appropriate, concerning the control and handling of aircraft components or consumable materials that contain hazardous materials (hazmat), including:

a) Procedures and information designed to assist personnel (particularly maintenance, shipping, and stores personnel) in identifying or recognizing aircraft components or consumable materials that contain hazmats, if personnel will be moving, storing, or handling those aircraft components or consumable materials within the air carriers' or contract maintenance providers' facilities. The manual must also include procedures and instructions relating to the safe movement, storage, or handling of those aircraft components or consumable materials.

b) Procedures and information for determining the proper packaging, marking, labeling, and materials compatibility, including instructions for the safe movement, storage, and handling of aircraft components or consumable materials that contain hazmats while they are within the air carriers' facilities.

c) Information, guidance, and precautions regarding the specific hazards associated with aircraft components or consumable materials containing hazmats that personnel will move, store, or handle within the air carriers' facilities.

d) Information, instructions, and detailed procedures for the proper disposal of unserviceable aircraft components or consumable materials containing hazmats.

e) In addition, PIs should ensure that air carriers are aware that all of the regulations governing hazmat transportation by air contained in Title 49 of the Code of Federal Regulations (49 CFR) apply to the air carriers' shipment of hazmats to themselves (company materials) as well as the shipment of hazmats to or for other persons. With very rare exceptions, all air carriers are hazmat employers. The definitions of the terms "hazmat employer" and "hazmat employee" are in 49 CFR part 171, § 171.8.

f) In particular, air carriers should be aware that, as hazmat employers, their compliance with the hazmat employee training requirements contained in 49 CFR part 172 subpart H is mandatory. In addition, compliance with 49 CFR part 175 is also mandatory. Also, PIs should encourage air carriers to develop and implement a system that will allow them to remain current with the hazmat regulations as the Office of Security and Hazardous Materials Safety (ASH) updates and/or changes the regulations.

NOTE: The manual must include these procedures and information regardless of whether the carrier is a "will" or "will not" carry.

G. Analyze Results. Upon completion of review, analyze the results and determine whether the operator/applicant's manual meets all requirements.

NOTE: "The Evaluation of Hazmat or Dangerous Goods" manual sections will require coordination with the regional Hazardous Materials Branch Manager (HMBM).

H. Debrief Operator/Applicant. Discuss discrepancies and advise what areas need corrective action.

3-3383 TASK OUTCOMES.

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

B. Follow SAS Guidance Modules 4 and 5. Use SAS Data Collection Tools (DCT).

3-3384 FUTURE ACTIVITIES. Follow SAS guidance.

RESERVED. Paragraphs 3-3385 through 3-3400.