

CHAPTER 15. MANUALS, PROCEDURES, AND CHECKLISTS

SECTION 1. BACKGROUND AND DEFINITIONS

2075. INTRODUCTION. This chapter contains direction and guidance to be used by principal operations inspectors (POI) and inspectors for processing, reviewing, and accepting or approving manuals, procedures, and checklists.

A. Section 1 contains general background information and definitions of the terms used in this chapter.

B. Section 2 contains guidance to inspectors and POI's for approving or accepting an operator's manuals, procedures, and checklists.

C. Section 3 contains guidance for the review and evaluation of general operations manuals.

D. Section 4 contains guidance for the review and evaluation of flight manuals.

E. Section 5 contains guidance for the review and evaluation of aircraft checklists.

F. Section 6 contains guidance for the review and evaluation of flight attendant (F/A) manuals.

2077. OVERVIEW OF MANUAL REQUIREMENTS.

The Federal Aviation Regulations (FAR) require operators to prepare and keep current various manuals and checklists for the direction and guidance of flight and ground personnel conducting air transportation operations.

A. *Flight Manual.* FAR § 121.141 or FAR § 135.81(c) (as applicable), and FAR § 91.31(b) require that a Federal Aviation Administration (FAA)-approved flight manual be carried aboard each aircraft for the guidance of crewmembers when conducting flight operations. A flight manual is any manual approved by the FAA that an operator uses to comply with this requirement. A flight manual may be an approved Airplane Flight Manual (AFM), an approved Rotorcraft Flight Manual (RFM), or an approved Company Flight Manual (CFM) (see paragraph 2079 for definitions). If an operator carries a CFM aboard the aircraft, that operator is not required to carry an AFM in addition to the CFM.

B. *General Manual.* FAR § 121.133 and FAR § 135.21 require that each operator prepare and keep current a manual providing guidance for all categories of flight and ground personnel conducting air transportation operations. This requirement does not apply to FAR Part 135 single pilot operators and those operators granted a deviation from this requirement by paragraph A5 of the operations specifications (OpSpecs). For purposes of this handbook, the manual the operator prepares in compliance with FAR § 121.133 or FAR § 135.21 is termed a "general manual." The operator's general manual must include the duties and responsibilities of each category of employee. The manual must also include adequate policy, direction, and guidance for the safe and efficient performance of the duties assigned to each category of employee. The FAR only require an operator to produce a single manual. In practice, however, a system of manuals is usually necessary, even for relatively simple operations. Operators have wide latitude in structuring their manuals.

2079. DEFINITIONS. The following terms are defined according to their use in this handbook:

A. *Manual:* A collection of the information, policies, procedures, and guidance prepared by an operator to instruct company employees in the performance of their assigned duties.

B. *General Operations Manual (GOM):* That segment of the general manual that applies to flight operational activities as opposed to airworthiness activities. The GOM is one of two major segments of an operator's general manual.

C. *General Maintenance Manual (GMM):* That segment of an operator's general manual system that pertains to the airworthiness of aircraft. The GMM is one of two major segments of an operator's general manual.

D. *User Manual:* A segment of a GOM or a GMM that provides instruction, policies, procedures, and guidance to a specific category of employee. Examples of user manuals that are commonly used in the air transportation industry include the following:

- Flight operations policy manuals (FOPM)
- Airport analysis or data manuals
- Security manuals
- Flight attendant or cabin service manuals
- Flight dispatch manuals
- Station operations manuals
- Route and airport manuals
- Hazardous material handling manuals

NOTE: The user manual titles previously listed are only examples of common titles currently in use in industry. Inspectors should not interpret this as a list of required titles. Operators may choose to divide the GOM in any convenient way and may select different user manual titles.

E. Airplane Flight Manual (AFM): An approved airplane flight manual is prepared by the manufacturer and approved by the FAA Aircraft Certification Office (ACO) under the provisions of FAR § 21.5.

F. Rotorcraft Flight Manual (RFM): An approved rotorcraft flight manual is prepared by the manufacturer and approved by the FAA ACO under the provisions of FAR § 21.5.

G. Company Flight Manual (CFM): An approved aircraft flight manual that is developed by, or for, a specific operator for a specific aircraft type and that is approved by the POI, in accordance with the provisions of FAR § 121.141(b) or FAR § 135.81(c).

H. Policy: A written requirement established by an operator's management that is expected to be complied with by appropriate employee personnel. A policy may be within a procedure or stated separately. A written requirement such as "No flight may depart on a cross-country flight without a spare case of oil" is an example of a policy.

I. Recommendation: A preferred technique or action described by the operator that employees are expected to follow whenever practical. A recommendation is not a policy requirement.

J. Procedure: A logical progression of actions and/or decisions in a fixed sequence that is prescribed by an operator to achieve a specified objective. In short, a procedure is step-by-step guidance on how to do something.

K. Abbreviated Procedure: A list of sequential procedural steps without an amplified description or amplified set of instructions.

L. Amplified Procedure: A description of sequential procedural steps with detailed explanatory descriptions and/or instructions accompanying each step.

M. Technique: A method of accomplishing a procedural step or maneuver.

N. Checklist: A formal list used to identify, schedule, compare, or verify a group of elements or actions. Although a checklist may be published in a manual, it is usually intended to be used by itself, so that reference to a manual is made unnecessary. Checklists are usually formatted and presented on paper; however, they may be formatted on electronic or mechanical devices, or presented in an audio format. A checklist may or may not represent an abbreviated procedure. The items listed on a checklist may be unrelated and may not represent a procedure, such as most "normal" checklists. Abnormal and emergency checklists, however, do represent procedures.

NOTE: Checklists and procedures are often confused. Operators have sometimes titled procedures "expanded checklists" or titled checklists "abbreviated procedures." A procedure is a set of actions or decisions prescribed to achieve a specified objective. A checklist is a physical aid used to overcome the limitations of human memory.

O. "Normal": When normal is used to describe a procedure or checklist, it refers to a routine operation (without malfunctions).

P. "Emergency": When emergency is used to describe a procedure or checklist, it refers to a nonroutine operation in which certain procedures or actions must be taken to protect the crew and the passengers, or the aircraft, from a serious hazard or potential hazard.

Q. "Nonnormal" or "Abnormal": When nonnormal or abnormal is used to describe a procedure or checklist, it refers to a nonroutine operation in which certain procedures or actions must be taken to maintain an acceptable level of systems integrity or airworthiness.

R. "Alternate": When alternate is used to describe a procedure or checklist, it refers to a procedure that may be employed instead of another procedure. Alternate procedures may either be normal, nonnormal, or abnormal procedures.

S. "Supplemental": When supplemental is used to describe a procedure or checklist, it refers to a procedure that may be employed in addition to a normal, nonnormal, or abnormal procedure. Supplemental procedures may either be normal or nonnormal procedures.

T. Phase Checklist: A checklist used to establish and/or verify aircraft configuration during a specific phase of flight. An example of a phase checklist is an “after-takeoff checklist.”

U. Normal Checklist: A checklist comprised of all of the phase checklists used sequentially in routine flight operations.

V. “Approved”: When approved is used to describe a document, manual, or checklist, it means that a regulation requires FAA approval and that the FAA has evaluated and specifically approved the document, manual, or checklist.

W. “Accepted”: Accepted is used to describe a document, manual, or checklist that does not have, or is not required to have, FAA approval. Only a portion of an operator’s manuals are required to have FAA approval. The remaining portions are “accepted” by the FAA. Operators are required to submit the entire general manual to the FAA for review. If the FAA concludes that an accepted section of the general manual is not in compliance, the FAA must formally notify the operator of the deficiency. Upon notification, the operator must take action to resolve the deficiency.

X. “Document”: A written description of a system, a method, or a procedure; a written statement of authorizations, conditions, or limitations; or a file of information. A document serves as an official record of understanding and agreement between the FAA and the operator as to the means the operator will use to comply with regulatory requirements. An approved document is not a manual. Relevant information from a document, however, may be extracted and published in user manuals. For example, the OpSpecs are not a manual but an approved document from which information is extracted.

Y. Pilot-Flying (P-F): The pilot who is controlling the path of the aircraft at any given time, whether or not the aircraft is in flight or on the ground.

Z. Pilot-Not-Flying (P-N-F): The pilot who is not controlling the path of the aircraft.

AA. Immediate Action: An action that must be taken in response to a nonroutine event so quickly that reference to a checklist is not practical because of a potential loss of aircraft control, incapacitation of a crewmember, damage to or loss of an aircraft component or system--which would make continued safe flight improbable.

BB. High Workload Environment: Any environment in which multiple demands on the flightcrew necessitate the prioritizing of work functions. For example, instrument flight rules (IFR) operations

below 10,000 feet during arrival or departure from a terminal area (including taxiing) are considered to be high workload environments.

CC. Systems Management: The management of those systems that sustain the mechanical functions of the aircraft as opposed to the management of the aircraft’s thrust, flightpath, or aerodynamic configuration.

DD. Warning: An instruction about a hazard that if ignored could result in injury, loss of aircraft control, or loss of life.

EE. Caution: An instruction concerning a hazard that if ignored could result in damage to an aircraft component or system that would make continued safe flight improbable.

NOTE: That information or instruction of such significance that special emphasis is required.

2081. DISTRIBUTION AND AVAILABILITY OF MANUALS. Each operator is required to maintain a complete manual (or set of manuals) at its principal base of operations and to furnish a complete manual (or set of manuals) to the FAA certificate-holding district office (CHDO). In addition, each operator must make available or furnish applicable parts of the manual (user manuals) to flight and ground operations personnel who conduct or support flight operations. The manual may be in conventional paper format or in another form that is convenient for the user. Each employee to whom the manual or a user manual is furnished must keep it current. Each employee must have access to appropriate manuals or parts of manuals when performing assigned duties. FAR § 121.139 requires that each FAR Part 121 supplemental air carrier and commercial operator carry appropriate parts of the manual on each aircraft when away from the principal base of operations--for use by ground and flight personnel.

2083. REVIEW OF MANUALS. Manuals must be reviewed by POI’s and other qualified inspectors to ensure that they contain adequate content and are in compliance with applicable regulations, safe operating practices, and the operator’s OpSpecs. While POI’s are encouraged to provide guidance and advice to operators in the preparation of their manuals, the development and production of an acceptable manual is solely the responsibility of the operator.

A. Initial Review. Before the initial certification of an applicant, a comprehensive review of the applicant’s flight manuals and GOM must be conducted by the POI and other qualified inspectors. During the initial review of the GOM, POI’s must ensure that the operator has addressed the applicable topics

discussed in sections 3 and 4 of this chapter. In addition, those items in the operator's final compliance statement that require the operator to develop a policy statement, system, method, or procedure must be addressed. If user manuals are furnished, those topics that apply to the specific user must be addressed. Each topic must be presented with enough detail to ensure that the user can properly carry out the portion of the policy or procedure for which the user is responsible.

B. Review of Changes to Manuals. The POI should review each revision or proposed revision to a manual. Inspectors should not limit this review to a strict consideration of the change itself but should also consider the impact of the change on the operator's overall manual system, training program, and type of operation. Changes in the operator's OpSpecs should be accompanied by a review of applicable sections of the operator's manual.

C. En Route and Ramp Surveillance. Inspectors conducting en route and ramp inspections should review the flight manual and those portions of the GOM carried by the flightcrew for completeness and currency. When a flight is long enough to make it practical, inspectors should review these manuals more in depth, particularly those sections that are operationally relevant to the flight in progress.

D. Periodic Review of Manuals. The continual review of an operator's manuals is necessary because both the aviation environment and the operations conducted by the operator are constantly changing. Each POI is responsible for developing a surveillance plan for the operator's manual system. At least one portion of the operator's general manual should be reviewed annually, and the entire general manual should be reviewed over a period of 1 to 3 years (depending on the complexity of the operation). This periodic review should be planned as a distinct event so that every portion of the manual is systematically reviewed at some time over a 1- to 3-year cycle. This periodic review should be coordinated between principal airworthiness inspectors and other inspectors to ensure an appropriate exchange of information and to avoid redundant reviews.

2085. FORMAT AND STYLE OF MANUALS. Both FAR Parts 121 and 135 require that each page of a manual must include the most recent revision date. In general, manuals and checklists should be easy to use and understand, and in a format that can be easily revised. When evaluating manuals and checklists for ease of use and understanding, inspectors should consider the following guidance concerning format and style:

A. Form. All or part of a manual may be prepared and maintained in conventional paper format (book form) or in other forms, such as microfilm or computer-based storage with electronic image.

B. Preface Page. The first page of a user manual should be a preface page containing a brief statement about the manual's purpose and intended user. The preface page should also contain a statement that emphasizes that the procedures and policies in the user manual are expected to be used by company personnel.

C. Revision Control. Each manual should be easy to revise. Also, each manual should contain a revision control page or section from which the user can readily determine whether the manual is current. This page or section should preferably follow the preface page, but it can be organized in any logical manner. The control date of the most recent revision of each individual page must appear on each page. Complex operators should establish a bulletin system to bring temporary information or changes that should not be delayed by a formal revision process, to the attention of the user. The bulletin system should have a means of control that includes giving bulletins a limited life and systematically incorporating them into appropriate manuals in a timely manner. Users should be able to easily determine whether they possess all current bulletins.

D. Table of Contents. Each manual should have a table of contents containing lists of major topics with their respective page numbers.

E. References. Manuals must include references to specific regulations when appropriate. A reference to regulations or other manual material is appropriate when it is necessary to clarify the intent of the text or when it is useful to the user for looking up specific subject matter. References should not be made to advisory circulars and to preambles of FAR, as these sources are advisory and not binding in nature. Operators should use caution when adapting the text of advisory documents into their manuals. Advisory text may not translate into a directive context.

F. Definitions. Significant terms used in manuals should be defined. Any acronym or abbreviation not in common use should also be defined.

G. Elements of Style. Manuals and checklists should be composed in the style of general technical writing. This style should be clear, concise, and easy to understand. When evaluating manuals, inspectors should be knowledgeable of the following suggestions for accomplishing clarity in technical writing:

(1) Whenever possible, short, common words should be used. Examples of this include the following: using the words “keep” or “hold” instead of “maintain”; using the word “start” instead of “establish”; and using the word “stop” instead of “terminate.”

(2) When a word has more than one meaning, the most common meaning should be used. For example, the word “observe” should be used to mean “see and take notice of” rather than “obey and comply.”

(3) Operators should standardize terminology whenever practical. For example, since the terms “throttles” and “thrust levers” refer to the same item, the operator should choose one term and use it consistently throughout the manual. Once a particular term has been used in a specific sense it should not be used again in another sense.

(4) Terms that command actions should be clearly defined, such as “checked,” “set,” and “as required.” Since auxiliary verbs such as “may” and “should” are ambiguous and can create room for doubt, they should not be used when a definite action is commanded. Instead, verbs such as “shall” and “must” are preferable to use when an action is commanded because they are more definite.

(5) All “instructions” should be given in the imperative mood and the active voice. For example, “Hold the speed between V_{ref} and V_{ref} plus 10 knots” is preferable to “The speed needs to be held between V_{ref} and V_{ref} plus 10 knots.”

(6) To provide appropriate degrees of emphasis on specific points in the text, “cautions,” “warnings,” and “notes” should be in the operator’s manuals and checklists.

(7) Any instruction, particularly a warning or a caution, must begin with a simple directive in the imperative mood that informs the reader precisely what must be done. To avoid obscuring the directive in the background information, the directive must be stated first and then followed with an explanation. An example of how a directive can be obscured in background information is as follows: “Warning—To avoid the hazard of striking ground handling personnel with the free end of a swinging tow bar, do not place feet on rudder pedals until the captain takes the salute from the ground handler. The hydraulic nosewheel steering can sling the towbar with hazardous force.” In contrast the following is an example of the preferred method of placing the directive first: “Warning—Do not place feet on rudder pedals until the captain takes the salute from the ground handler. The hydraulic nosewheel steering can sling a towbar with sufficient

force to cause serious injury to ground handling personnel.”

(8) Descriptions in the manual should not be overloaded, but should be presented simply and sequentially. An example of an overloaded description is as follows: “A CSD per engine drives the AC generator at a constant speed of 8,000 RPM regardless of the speed of the engine or the load on the generator.” The following is an example of a clearer, more concise description: “A CSD is mounted between each engine and generator. The CSD holds the generator speed at a constant 8,000 RPM.”

(9) Long sentences should be avoided in the manual. The following example consists of subject matter put into a long sentence, which makes it difficult to understand: “During gear retraction, the door-operating bar located on the landing gear leg contacts and turns the latch, withdrawing the roller from the slot as a second roller entraps the door-operating bar.” The following example consists of the same subject matter used in the previous example; however, when it is broken down into shorter sentences, it is easier to understand: “During landing gear retraction, the door-operating bar on the landing gear leg is pressed against the door latch. The latch turns, thus freeing the door roller. The roller moves out of the slot. A second roller then traps and holds the door-operating bar.”

2087. ADEQUACY OF PROCEDURES. Specific guidance for the evaluation of flight manual procedures is in section 4 of this chapter. The following general guidance, however, is provided for inspectors to use when evaluating procedures in any manual, including flight manuals:

A. Objective. The objective of a procedure must be stated clearly unless it is so commonly understood that a statement of the objective is not necessary.

B. Logical Sequence. Procedures are to flow in a logical step-by-step sequence. The most effective procedures are usually simple and each contain only the information necessary for accomplishing that procedure. Preferably, procedures should be described in a sequential step-by-step format rather than a narrative format.

C. General Considerations.

(1) A procedure must be an acceptable method for accomplishing an intended objective.

(2) The individual responsible for each step of a procedure must be clearly identified.

(3) The acceptable standards of performance for a procedure are to be stated if those standards are not commonly understood or clearly obvious.

(4) Since a variety of personnel with differing degrees of expertise are involved in procedures, adequate information concerning the accomplishment of a procedure must be provided for the least experienced individual. A procedure may be described very briefly and concisely when the user is capable of achieving the objective without extensive direction or detail. When the user has limited training or experience, however, a procedure must be described in enough detail for the user to correctly accomplish it. When the user

has limited access to other sources of information and guidance while performing a procedure, enough detail should be provided to make the user independent of other sources of information.

(5) When a form, checklist, or tool is necessary to accomplish a procedure, the location of that item must be indicated in the procedure.

(6) Enough time should be available under normal circumstances for the user to accomplish a procedure. If sufficient time is not available to the user for accomplishing a procedure, either the procedure itself or the user's duties must be revised.

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