U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Air Carrier Maintenance Programs | **Date:** 9/11/08 | **AC No:** 120-16E
Initiated by: AFS-300 | **Change:**

FOREWORD

This advisory circular (AC) describes the scope and content of air carrier aircraft maintenance programs. It explains the background of these programs as well as the Federal Aviation Administration's (FAA) regulatory requirements. Each of the 10 elements of air carrier maintenance programs are also described and explained. In this AC, air carrier maintenance means inspection, overhaul, repair, preservation, and the replacement of parts, as well as preventive maintenance. When "must" or "will" are used in this AC, they reflect regulatory requirements. When "you" or "your" is used in this AC, it refers to the air carrier.

ORIGINAL SIGNED by

James J. Ballough
Director, Flight Standards Service

CONTENTS

CHAPTER 1. GENERAL INFORMATION

100. PURPOSE OF THIS AC.

a. This AC describes the 10 elements that comprise air carrier maintenance programs and what you should include in your air carrier maintenance program.

b. In this AC, maintenance means inspection, overhaul, repair, preservation, and the replacement of parts, as well as preventive maintenance. Consistent with regulations, inspection functions are part of the maintenance program; they are not separate.

c. Your maintenance manual is the part of your air carrier manual that describes your maintenance program.

101. WHO THIS AC AFFECTS. This AC applies to those Title 14 of the Code of Federal Regulations (14 CFR) part 119 air carriers conducting operations under 14 CFR parts 121 and 135. For part 135 operations, this AC applies only to those maintenance operations conducted under § 135.411(a)(2). This AC also applies to each person employed or used by an air carrier certificate holder for any maintenance, preventive maintenance, or alteration of its aircraft. Person is defined at 14 CFR § 1.1 as an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.

102. DOCUMENT THIS AC CANCELS. This AC cancels AC 120-16D, Air Carrier Maintenance Programs, dated March 20, 2003.

103. LEGAL BASIS OF AIR CARRIER MAINTENANCE PROGRAMS.

a. Title 49 of the United States Code (49 U.S.C.) § 44701 (formerly the Federal Aviation Act of 1958, § 604) is the primary authority for all air carrier Federal Aviation Regulations. Title 49 U.S.C. § 44701 instructs the FAA Administrator to promote the safe flight of civil aircraft in air commerce through regulations and standards prescribed in the interest of safety.

b. Section 44701 also obliges the Administrator to consider the duty of an air carrier to provide service with the highest possible degree of safety in the public interest, consider differences between air transportation and other air commerce, and classify a regulation or standard appropriate to the differences between air transportation and other air commerce when prescribing regulations and standards. The term “air commerce” is defined within 49 U.S.C. § 40102 as “foreign air commerce, interstate air commerce, the transportation of mail by aircraft, the operation of aircraft within the limits of a Federal airway, or the operation of aircraft that directly affects, or may endanger safety in, foreign or interstate air commerce.” Simply stated, operations in air commerce are almost everything but operations in air transportation.

c. Consistent with 49 U.S.C. § 44701, the FAA regulates aircraft operations at different levels of safety. Hence, the regulations that govern air carrier operations (air transportation) and the operations of other air commerce are structured differently to reflect the differences between these two segments of the aviation industry. Establishing appropriate standards and regulatory requirements is a risk management process and the underlying legal structure provides for more

than one level of acceptable risk. Air transportation regulations are all-inclusive and stand alone; whereas the regulations governing other air commerce do not. Similarly, the scope of responsibility for those in air transportation is very broad and not shared, whereas in other air commerce it is relatively narrow and is commonly shared. The regulations in parts 119, 121, and 135 relate directly to air carrier maintenance programs and reflect the highest possible degree of safety in the public interest. The regulations in parts 43, 65, 91, and 145 do not necessarily reflect the highest possible degree of safety in the public interest. More specific references to relevant regulations are included in subsequent paragraphs of this AC.

d. The FAA introduced the Continuous Airworthiness Program (CAP) in a final rule at 29 FR 6522 on May 20, 1964. Over the years since then, CAP has become known, in a colloquial sense, as a Continuous Airworthiness Maintenance Program (CAMP). The 1964 rulemaking was in response to safety concerns and discoveries of weaknesses in the maintenance programs of some air carriers, as revealed during accident investigations and FAA surveillance of operator maintenance activities. The air carrier CAP was designed to strengthen requirements for air carrier safety management activities. Each one of the air carrier maintenance program elements described in this AC were a part of this 1964 rulemaking.

104. MAINTENANCE PROGRAM AUTHORIZATION. Your maintenance program is not approved by the FAA. The FAA issues air carrier operations specifications (OpSpecs) authorizing you to use a maintenance program and the maintenance manual required by FAA regulations. This method for authorizing operations and maintenance in air transportation evolved from the Civil Aeronautics Board's earlier method of issuing operating certificates and temporary permits accompanied by competency letters issued by the Secretary of Commerce. These competency letters contained information that authorized the air carrier's services, routes, aircraft, maintenance, airmen, and weather procedures; they were considered part of the air carrier operating certificate and could be amended as the circumstances dictated. In 1953, the Civil Air Regulations were amended to require the issuance of air carrier OpSpecs that replaced, formalized, and standardized the competency letters being used at the time. The amended regulations also stated that OpSpecs were not part of an air carrier certificate. Tailored to your specific operating context and the requirements of your individual operations, OpSpecs convey the general terms of regulations into specific terms, conditions, and limitations. As with the predecessor competency letters, OpSpecs are amended as circumstances dictate. Issued by the FAA, OpSpecs are made legally binding through specific regulatory language. (See § 119.33 for the applicable language.)

105. AIR CARRIER MAINTENANCE PROGRAM OBJECTIVES.

a. Your maintenance program ensures your aircraft and all of its parts can perform their intended functions and should reflect three specific program objectives to provide the highest possible level of safety in air transportation:

(1) Each of your aircraft released to service is airworthy and has been properly maintained for operations in air transportation;

(2) Maintenance and alterations that you perform, or that other persons perform for you, are performed in accordance with your maintenance manual; and

(3) Competent personnel with adequate facilities and equipment perform maintenance and alterations on your aircraft.

b. You should also have a system of continuing cycles of surveillance, investigation, data collection, analysis, corrective action, and corrective action verification that ensures all parts of your maintenance program are effective and are being performed in accordance with your manual. Effective means that the desired results are being achieved according to the maintenance program objectives and the standards that you, the air carrier, set.

106. AIR CARRIER MAINTENANCE PROGRAM ELEMENTS. An air carrier maintenance program includes the following 10 elements. This AC explains each of these elements individually. In some cases, there is another AC that provides more detailed information about one or more of the maintenance program elements. Where such ACs exist, this AC does not explain that element in depth.

- Airworthiness responsibility,
- Air carrier maintenance manual,
- Air carrier maintenance organization,
- Accomplishment and approval of maintenance and alterations,
- Maintenance schedule,
- Required Inspection Items (RII),
- Maintenance recordkeeping system,
- Contract maintenance,
- Personnel training, and
- Continuing Analysis and Surveillance System (CASS).

CHAPTER 2. AIRWORTHINESS RESPONSIBILITY

200. RESPONSIBILITY FOR AIRCRAFT MAINTENANCE.

a. Consistent with §§ 121.363 and 135.413, you, as a part 119 certificate holder, are primarily responsible for (1) the airworthiness of your aircraft, and (2) the performance of all of the maintenance on your aircraft.. Your air carrier certificate makes you a maintenance entity. Under your air carrier certificate, you accomplish maintenance, preventive maintenance, or alterations, or you can use other persons who are not direct employees to accomplish that work. Consistent with the FAA's regulations at §§ 121.1(b) and 135.1(a)(2), the part 121 or 135 regulations govern each person that is employed or used by you for any maintenance, preventive maintenance, or alteration of your aircraft. Each of these persons who are used by you must be under your direction and control and must follow your maintenance program. You should note the definition of "person" in 14 CFR § 1.1

b. For any work done on your aircraft, you retain direct and primary responsibility for performing and approving all maintenance and alterations, whether that work is accomplished by you or by someone else (for example, a maintenance provider, such as a repair station). However, you retain primary responsibility for the performance and approval of the maintenance done by that maintenance provider.

201. THE DIFFERENCES BETWEEN AIR CARRIER MAINTENANCE PROGRAMS AND PART 91 GENERAL AVIATION INSPECTION PROGRAMS. The following table provides a comparison of the differences between air carrier maintenance programs and part 91 general aviation inspection programs.

Element	Part 121 and 135 Air Carriers	Part 91 Owners/Operators
Use of a maintenance or an inspection program.	Required to use a maintenance program for its aircraft.	Required to use an inspection program.
Responsibilities within the relevant program.	Responsible for the performance of maintenance in accordance with its maintenance program and manual, as well as the airworthiness of its aircraft, including airframes, aircraft engines, propellers, appliances, and parts thereof.	Responsible for maintaining the aircraft in an airworthy condition (§ 91.403).
	NOTE: The wording in part 91 is deliberately different from the wording in parts 121 and 135 and is consistent with the difference between air carriers and other air commerce described in 49 U.S.C. § 44701.	
	Responsible for the development and use of the maintenance program and manual, determining the method of performing maintenance, a required inspection list, a continuous analysis and surveillance system, a	Responsible for the selection of an existing inspection program and the scheduling of aircraft for the inspections, and; ensuring discrepancies that occur between scheduled inspections are repaired.

	maintenance organization that can exercise operational control over maintenance operations, and other items that collectively and systematically serve to ensure each aircraft has been properly maintained for operations in air transportation and is airworthy.	
	Must determine what maintenance is required, how to do it, when to do it, perform that maintenance, and approve its own aircraft for return to service. May authorize another person to accomplish the maintenance work, but the maintenance must be carried out according to the air carrier's maintenance program and manual. The air carrier still retains the responsibility for the proper completion of maintenance (§ 121.363 or § 135.413).	Must make the airplane available to authorized and certificated person(s) who accomplish inspections and other maintenance.
	Along with FAA oversight, is the primary authority with regard to its maintenance program. Holds the primary responsibility for the performance of maintenance in accordance with its maintenance program and manual, as well as the airworthiness of its aircraft, including airframes, aircraft engines, propellers, appliances, and parts thereof.	The authorized and certificated person(s) has the responsibility to perform the maintenance properly in accordance with the manufacturer's manual and to approve the aircraft for return to service. The owner/operator does not have this responsibility. However, the owner/operator is responsible for ensuring maintenance personnel make appropriate entries in the aircraft maintenance records indicating the aircraft has been approved for return to service.

CHAPTER 3. AIR CARRIER MAINTENANCE MANUAL

300. AIR CARRIER MAINTENANCE MANUAL REQUIREMENT.

a. The FAA regulations (14 CFR §§ 121.133, 121.369, 135.21, and 135.427) require you to have a maintenance manual. It is a required part of your air carrier manual system. Some air carriers call their manuals "specifications."

b. Your maintenance manual must be easy to revise, and have procedures for keeping all parts of your manual up to date. Your manual may be electronic.

c. You must make copies of your manual or appropriate portions of it (and changes or additions) available to those persons who are required to comply with it. You must also provide a copy to the representatives of the Administrator assigned to you. Each person who is furnished a manual, or appropriate parts, must keep it up to date.

d. Other regulations that relate to manual requirements are §§ 43.13(c), 121.135, 121.137, 135.23, and 135.427.

301. ROLE OF THE AIR CARRIER MAINTENANCE MANUAL.

a. Your maintenance manual is your key to standardized, consistent accomplishment and administration of your maintenance program.

b. Your maintenance manual:

(1) Identifies, describes, and defines your maintenance program.

(2) Provides instructions and procedures to administer, use, manage, and amend your program.

c. Your maintenance manual is a company publication, and you have sole responsibility for its organization and content, however, others may compile and publish it for you. Your maintenance manual may be electronic.

302. MAJOR SECTIONS OF THE TYPICAL AIR CARRIER MAINTENANCE MANUAL.

a. Organization of Your Maintenance Manual. Your maintenance manual should have a practical organization. Typically, it will have at least three sections: one covering administrative policies and procedures; a second covering detailed instructions for the administration, management, and accomplishment of the elements of the maintenance program; and a third covering technical data that describes maintenance standards, methods, techniques, and procedures.

(1) Administrative Policies and Procedures. It is a management and administrative tool for organizing, directing, amending, and controlling your maintenance program. Organizational charts delineating the functions, relationships, and lines of authority between

organizational elements and personnel usually are identified here. This part is where you list position descriptions, duties, responsibilities, and specific authority and responsibility attributes for each position within your maintenance organization. The authority and responsibility attributes should show who has overall authority and/or responsibility and who has direct authority and/or responsibility.

(2) Instructions for the Administration, Management, and Accomplishment of the Maintenance Program.

(a) This section contains detailed instructions for your management of the various functions and interrelationships of each maintenance program element, such as maintenance time limitations, recordkeeping, maintenance program management and oversight, contract maintenance management and oversight, and personnel training. This section usually includes a description of scheduled maintenance tasks, procedural information, and detailed instructions (or specific air carrier maintenance manual references) for accomplishing maintenance tasks. Additionally, you should describe criteria for initiating functional evaluation flights in this part of the maintenance manual, along with procedural requirements for them. In this portion of your manual, you should also include criteria and procedural information for unscheduled inspections, such as those associated with lightning strikes, tail strikes, engine temperature exceedance, hazardous material spills, hard or overweight landings, and any very high load event.

(b) You should have a comprehensive process in the unscheduled maintenance portion of your manual that addresses those rare, extremely high-load events that occur to aircraft. Specifically, you should have inspection processes that are used following certain high load events. These particular high load events are those for which the subsequent inspection process might benefit from the use of flight data. Listed below are the events deemed most significant:

1. Flight Events

- A severe turbulence encounter,
- Extreme maneuvers,
- Exceedance of speed limitations, and
- Heavy stall buffet.

2. Ground Events

- Hard landings,
- Over-weight landings, and
- Drift landings resulting in excessive side/drag load.

(c) These high load events typically have detailed inspection instructions specified in Original Equipment Manufacturer (OEM) maintenance manuals. The objective of these instructions is to detect aircraft damage following an in-service flight or ground event. These instructions are typically referred to as Unscheduled Maintenance or Special Inspections. While there are many conditions that can result in high loads on the airframe and subsequent structural damage, the use of flight data in your inspection process is considered particularly beneficial for the events identified above.

(d) Your processes for evaluating these events should address 1) appropriate indication that an event has occurred, 2) evaluation of the severity of the event, and 3) coordination with the manufacturer, as appropriate. Your special inspection procedures for high load events should be robust enough to:

- Identify that a very high load event had occurred,
- Assure that indications of structural damage would be found in an initial inspection,
- Involve the OEM if necessary,
- Provide a process for additional inspections that would identify all of the structural damage, and
- Provide a process for approval for return to service.

(3) Technical Data that Describe Maintenance Standards, Methods, Techniques, and Procedures. This section of your manual concerns detailed procedures for accomplishing specific tasks. You should describe methods, techniques, technical standards, measurements, calibration standards, operational tests, structural repairs, and the like in this section. You should also include procedures for aircraft weight and balance, jacking, lifting, and shoring, storage, cold weather operations, towing, aircraft taxi, and aircraft cleaning. You can derive your maintenance manual contents from the manufacturer's publications. However, based on your particular service experience, organization, and operating context, the FAA expects you to continuously modify and customize your maintenance manual as necessary for the continuing success of your maintenance program. This is one of the desired outcomes of a well-functioning CASS, which is explained in more detail in chapter 11 of this AC and in AC 120-79.

b. Work Cards. Work cards, while not a regulatory requirement, have evolved as a best practice. Work cards are considered part of your air carrier manual and the air carrier maintenance program. They are the "what to do" and the "how to do it" part of your airworthiness responsibility. Work cards are used as a simple means of complying with regulations for performing maintenance, as well as maintenance recordkeeping. Work cards provide detailed, concise procedural instructions that organize and control your maintenance activities while providing a means to ensure that your maintenance activities comply with your air carrier maintenance manual. It is an easy way to make sure maintenance, as well as other personnel are following your procedures. The second primary function is to document your maintenance activities, providing a means to comply with your air carrier maintenance

recordkeeping requirements. Work cards may also document the results of inspections, checks, and tests for data collection and analysis. Your work-in-progress audits of work card activity that you conduct under your CASS ensures that each person who accomplishes work on your aircraft is following your manual.

CHAPTER 4. AIR CARRIER MAINTENANCE ORGANIZATION

400. MAINTENANCE ORGANIZATION—GENERAL. You are required to have a maintenance organization that is able to perform, supervise, manage, and amend your program; manage and guide your maintenance personnel; and provide the direction necessary to achieve your maintenance program objectives. You are required to include a chart or a description of your maintenance organization in your manual. You can read about maintenance organization requirements in part 121, subpart L, part 135, subpart J and portions of part 119, subpart C. These organizational regulations apply to your organization, as well as any other organization that provides maintenance services for you. A chart is a good way to show your assignment of overall and direct authorities and responsibilities.

401. REQUIRED MAINTENANCE ORGANIZATION MANAGEMENT POSITIONS. 14 CFR § 119.65 includes specific requirements for maintenance management positions for operations under part 121. These are a Director of Maintenance (DOM) and a chief inspector, or equivalent positions. These are management positions required by the regulations; however, they are not all of the management positions that you will need to administer and manage your maintenance organization.

a. For operations conducted under part 121, § 119.65 requires you to have qualified individuals serving full-time in the DOM and chief inspector, or equivalent, positions. If necessary for your operation, you can ask the FAA for a deviation from the types and numbers of required part 121 or 135 management positions.

b. For operations that you conduct under part 135, § 119.69 requires you to have a qualified individual serving in the DOM management position; however, there is no regulatory requirement for a part 135 chief inspector management position. However, in a practical sense, you will have an individual in your part 135 maintenance organization who has direct responsibility for the RII function, as well as those other duties, responsibilities, and functions normally associated with a part 121 chief inspector.

c. In your manual, you are required to list the names and addresses, and to state the duties, responsibilities, and authority of each of your required management personnel. You should state in your manual who has overall authority and/or responsibility, and who has direct authority and/or responsibility for a given process. Also, you are required to notify the FAA when you make changes in your required management personnel or when you have a vacancy. In addition to these requirements for the part 119 required management personnel, you are also required to list the duties and responsibilities of all of your management personnel.

> **NOTE: Authority means the power to design or change fundamental policy or procedures without having to seek higher level approval. Authority is permission; it is a right coupled with an autonomous power to accomplish certain acts or order others to act. Often one person grants another authority to act, such as an employer to an employee, a corporation to its officers, or a governmental empowerment to perform certain functions.**

NOTE: Responsibility means the obligation to ensure a task or function is successfully carried out. Responsibility includes accountability for the action to carry out a task or function.

402. REQUIRED AIR CARRIER MAINTENANCE ORGANIZATIONAL STRUCTURE.

a. The regulations defining an air carrier maintenance organization are necessarily broad given the different types and sizes of air carriers. A single means of compliance or a single organizational chart that would apply to all air carrier organizations is not possible.

b. You must designate a single person or position as the accountable manager with the authority and the overall responsibility for managing and implementing your entire maintenance program, including all inspection functions. The inspection functions and the required inspection functions are part of your maintenance program. The FAA expects you to designate your DOM as the accountable manager for your maintenance program.

c. The FAA expects your maintenance organization to have three general organizational functions to ensure all operations are conducted to the highest possible degree of safety. If you are a larger organization, you may have different departments for each level, while in the smallest organizations these functions may be carried out by one or two individuals. Generally, these three organizational functional levels include:

(1) Mechanics and/or inspectors performing the work at the first level (operations);

(2) Middle managers and supervisors at the second level (tactics); and

(3) The maintenance program accountable manager at the third level (strategy).

d. The FAA expects to see clear authority and responsibility in your maintenance organization, including delegated responsibility, for the overall maintenance program and all of its elements and functions. You should include a description of each individual's duties and responsibilities in your manual so that there is not a fragmented organizational system with a high risk for confusion over who is responsible for a given element, process, or task.

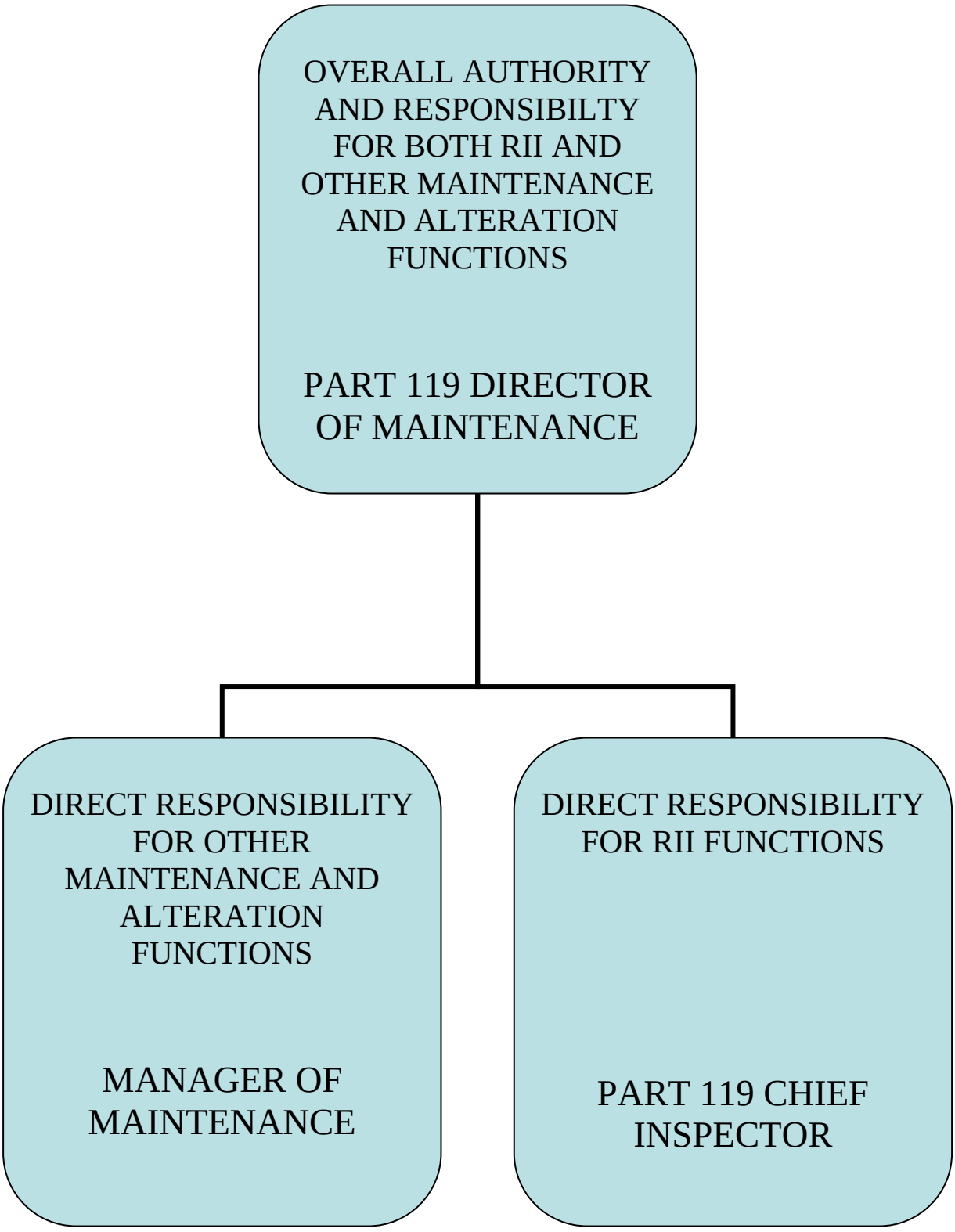
403. ORGANIZATIONAL SEPARATION OF THE INSPECTION AND MAINTENANCE DEPARTMENTS.

a. There is a clear regulatory requirement for a maintenance organization at §§ 121.365 and 135.423. Because inspection is an integral part of your maintenance organization, there is no regulatory requirement for an inspection organization. There is no regulatory requirement to separate your inspection department, if you have one, from the rest of your maintenance organization, because inspection is integral to maintenance. The FAA has defined maintenance in § 1.1 as "inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance." If you choose to have an inspection department, you must organize it as an integral part of your maintenance organization.

b. Regulations require you to organize the performance of all maintenance functions, including inspection, repair, overhaul, and the replacement of parts, to separate the function of

required inspections from the function of the other maintenance, preventive maintenance, and alteration activities. This organizational separation must be below the level of administrative control where overall responsibility for the required inspection functions as well as the other maintenance, preventive maintenance, and alteration functions is exercised. Consistent with paragraph 402(b) of this AC, your DOM exercises overall authority and responsibility over the required inspection functions, as well as the other maintenance (including inspection), preventive maintenance, and alteration functions. See Figure 4-1 for a representative organizational chart

FIGURE 4-1. TYPICAL ORGANIZATIONAL CHART SHOWING THE ORGANIZATIONAL SEPARATION OF THE RII FUNCTION AND THE OTHER MAINTENANCE, PREVENTIVE MAINTENANCE, AND ALTERATION FUNCTION



CHAPTER 5. ACCOMPLISHMENT AND APPROVAL OF MAINTENANCE AND ALTERATIONS

500. ACCOMPLISHMENT OF MAINTENANCE.

a. As a maintenance entity, you are authorized under 14 CFR §§ 43.3(f), 43.7(e), 121.379, and 135.437 to perform maintenance on your own air carrier aircraft and to approve them for return to service without obtaining any other maintenance certification. In addition, §§ 121.379 and 135.437 provide clear authority for you, under your air carrier certificate, to perform maintenance on behalf of other air carriers who conduct operations under the same part as you do. You may also perform maintenance for an air carrier or other operator conducting operations under a different part than you are. However, this maintenance is not included in your air carrier maintenance authority; therefore, any maintenance that you perform under this circumstance must be separated and independent of your authority and certification as an air carrier.

b. Each individual who makes an airworthiness determination on your behalf must hold an appropriate airman's certificate. Sections 121.378 and 135.435 require that any individual who you put directly in charge of performing maintenance hold an appropriate airman certificate, such as a mechanic certificate with ratings appropriate to the work being performed. Section 121.371 requires that any individual that you authorize to perform RII for you hold an appropriate airman certificate. Section 121.709 requires that anyone who you authorize to issue an approval for return to service hold an appropriate airman's certificate. Your DOM and chief inspector must hold an airman's certificate with airframe and powerplant ratings. These certificate requirements are air carrier qualification requirements, not requirements for an airman certificate that are needed or exercised to do maintenance. All maintenance on your aircraft and approval for return to service is accomplished under your air carrier certificate by your maintenance organization or persons authorized by you, not by any individual or organization under their certificate. One exception to the individual airman certificate requirement occurs if you arrange for a certificated repair station located outside the United States to perform maintenance. At such repair stations, individuals directly in charge of performing maintenance or required inspections are not required to hold FAA airman certificates.

501. MAJOR REPAIRS AND ALTERATIONS. Under §§ 121.379(b) and 135.437(b), major repairs and alterations must be done in accordance with technical data approved by the FAA. Appendix A to part 43 contains a list of repairs and alterations that are considered to be major. However, you should note that the Civil Aeronautics Agency published a list of repairs and alterations to specific parts, as well as specific types of repairs that were considered major repairs during 1953. This major repair and alteration list was later adopted, unchanged, as part of appendix A of part 43. Exclusive reliance on the part 43, appendix A list of major repairs and alterations to make the major/minor classification will result in the classification of some minor repairs as major and classification of some major repairs as minor simply because the appendix A list has not been updated to include evolving airplane design and construction techniques such as composite structures and the high speed, high altitude pressurized jet transport that did not exist when the list was developed. You should have detailed major/minor classification procedures in your manual to evaluate each repair or alteration on a case-by-case basis using such factors as the certification basis of the aircraft, classification of the structure as primary,

secondary, or a primary structural element, or classification as a fail-safe, safe-life, or damage-tolerant structure.

502. AIRWORTHINESS RELEASE FORM OR AIRCRAFT LOG ENTRY AND APPROVAL FOR RETURN TO SERVICE. After performing any maintenance on your airplane, you must approve it for return to service before you may operate it. As an air carrier, you must issue an approval for return to service under §§ 121.709 or 135.443 as appropriate. You can read additional, more detailed information about approving your airplanes for return to service in chapter 8 of this AC.

503. SCOPE OF MAINTENANCE. You must provide instructions in your maintenance program and maintenance manual for maintenance and alterations encompassing the four areas of "what to do," "when to do it," how to do it," and "was it done properly" in at least three major areas: scheduled maintenance, unscheduled maintenance, and specific maintenance requirements for major components of the aircraft.

a. Scheduled Maintenance. Scheduled maintenance consists of all the individual maintenance tasks performed according to the maintenance time limitations (maintenance schedule). Your scheduled maintenance activities should include procedural instructions for the maintenance tasks and requirements to record the results of the inspections, checks, tests, and other maintenance.

b. Unscheduled Maintenance.

(1) Unscheduled maintenance includes procedures, instructions, and standards for maintenance that occurs on an unscheduled or unforeseen basis. A need for unscheduled maintenance may result from scheduled maintenance tasks, pilot reports, or unforeseen events, such as high-load events, hard or overweight landings, tail strikes, ground damage, lightning strikes, or an engine over-temperature. In your maintenance manual, you should include instructions and standards for the accomplishment and recording of unscheduled maintenance and detailed procedures for recording all types of unscheduled maintenance.

(2) You should include a comprehensive process in the unscheduled maintenance portion of your manual that addresses those rare, very high-load events that occur to aircraft. These very high load events may result in structural damage, but unless you have comprehensive procedures to identify and evaluate such damage, you may not identify this damage before you approve your aircraft for return to service. Your manual should include very high load event special inspection procedures that address at least these four objectives:

(a) Identify that a very high load event has/has not occurred,

(b) Assure that indications of structural damage are found in an initial inspection,

(c) Involve the OEM if necessary, and

(d) Provide a process for additional inspections that would identify all of the structural damage.

c. Specific Maintenance Requirements for Major Aircraft Components.

(1) Engine Maintenance Program. Your engine maintenance program should cover the maintenance of installed engines and off-wing engines for each engine model you operate. If your aircraft has auxiliary power units (APU), you may want to include APU maintenance as part of your engine maintenance program. Usually, the installed engine or APU requirements will be contained in the maintenance time limitations. In addition to procedural information, the off-wing program described in your maintenance manual should provide shop scheduling information or intervals for cleaning, adjusting, inspecting, testing, and lubricating each part of the engine or APU requiring that maintenance. You should include in your maintenance manual the degree of inspection, the applicable wear tolerances, and the work required when the engine or APU is in the shop.

(2) Propeller Maintenance Program. If applicable, your propeller maintenance program should cover the maintenance of installed propellers and off-wing propellers for each model you operate. Usually, the installed propeller system scheduled maintenance requirements will be contained in the maintenance time limitations. In addition to procedural information, the off-wing program described in your manual should provide shop scheduling information or intervals for cleaning, inspecting, adjusting, testing, and lubricating each part of the propeller system requiring that maintenance. You should include in your maintenance manual the degree of inspection, the applicable wear tolerances, and the work required at these periods. Some modern propellers are constructed of composite materials and, therefore, may require unique tools, repair procedures, and specialized training for your maintenance personnel.

504. PARTS AND APPLIANCES MAINTENANCE PROGRAM. For the most part, this component of your maintenance program covers shop operations, which may include both scheduled and unscheduled tasks. You may conduct these shop operations at some location other than where you perform maintenance on your aircraft. Your parts and appliance maintenance program should cover both installed parts and appliances and off-wing maintenance for each part and appliance model that you operate. Usually, the installed part and appliance scheduled maintenance requirements will be contained in the maintenance time limitations. In addition to procedural information, the off-wing program described in your maintenance manual should provide shop scheduling information or intervals for cleaning, adjusting, inspecting, testing, and lubricating each component of the part and appliance requiring that maintenance. Include in your maintenance manual the degree of inspection, the applicable wear tolerances, and the work required when the part or appliance is in the shop.

CHAPTER 6. MAINTENANCE SCHEDULE

600. THE MAINTENANCE SCHEDULE. Sections 119.49 and 121.135(b) require you to have maintenance time limitations, also called a maintenance schedule. These same rules permit you to make standards for determining your maintenance time limitations. This language is the regulatory basis of FAA-approved reliability programs that were developed in the 1960s. The maintenance time limitations set out the what, how, and when of your scheduled maintenance effort. Although in the past the schedule included only basic overhaul limits and other general requirements, today it includes a specific list of each individual maintenance task and its associated time limit. The regulations are broad enough to permit you to organize all of these individual tasks into a series of integrated scheduled work packages of your own design that provide a continuous succession of necessary or desirable scheduled maintenance tasks for your entire airplane.

601. THE FAA's ROLE IN RELATION TO THE MAINTENANCE SCHEDULE. The FAA authorizes your maintenance schedule through your OpSpecs, and your CASS monitors that schedule to verify its effectiveness, i.e., producing the desired results. Your CASS will be your principal source of information that might indicate a needed change to your maintenance schedule. (CASS is described in chapter 11 of this AC and in much more detail in AC 120-79.) The FAA expects you to correct any deficiencies in your maintenance schedule. Under §§ 121.373(b) and 135.431(b), if you do not make needed changes, the FAA can require you to change your maintenance schedule or any other element of your maintenance program found deficient.

602. MAINTENANCE SCHEDULE CONTENTS.

a. Your maintenance schedule should contain at least the following information:

(1) What (Unique Identifier). This is the item that you are going to maintain. Your identifier should be specific enough to allow the item to be easily and accurately identified by the individual assigned to do the scheduled maintenance task.

(2) How (Task). How to maintain the item; the scheduled maintenance task to be done. A scheduled maintenance task is a maintenance action that you perform at regular, scheduled intervals so that you can ensure the item can continue to perform its intended function within its operating context, or so you can discover a hidden failure, or to ensure that a hidden function is available. You should not use terms such as hard time, on-condition, or condition monitored in your maintenance schedule. These terms represent obsolete 1960s methodology, are vague, and do not describe the maintenance task you are performing. If your maintenance schedule contains these terms, there is a risk that the scheduled maintenance you want and need may not be the maintenance that is being performed.

(3) When (Frequency). The time-in-service interval between the times when you accomplish a scheduled maintenance task. Your intervals are measured in time in service and may be measured by calendar time, operational hours, flight cycles, or any other appropriate parameter. In addition, for task management, inventory, and audit purposes, you should identify, on the maintenance schedule, the task or work card associated with each scheduled maintenance

task. This way, you can ensure that all of your scheduled maintenance tasks are being accomplished according to your schedule.

b. Your overall maintenance schedule objective is to correctly do the correct tasks at the correct interval. Keep in mind that more maintenance is not always a good idea, so if you decide to decrease intervals or add tasks, you should go through the same justification process as any other change to the maintenance schedule.

603. STANDARDS FOR DETERMINING MAINTENANCE TIME LIMITATIONS.

a. As we mentioned in paragraph 600 earlier, §§ 119.49 and 121.135 permit you to have standards for determining your maintenance time limitations. In the past, this language was used as the regulatory basis for FAA-approved reliability programs that evolved during the 1960s. These programs were based on the Air Transport Association of America's (ATA) now obsolete process-based Maintenance Steering Group – 2nd Task Force (MSG–2) decision logic that focused on failure rates and maintaining individual parts of the aircraft. Consistent with the continuous evolution of aviation, MSG–2 became obsolete in 1980 with the advent of ATA's task-based Maintenance Steering Group – 3rd Task Force (MSG–3) decision logic. MSG–3 focused on aircraft systems and a loss of function rather than an individual part failure. In any case, the management of these MSG–2 process-based programs was actuarial analysis. Air carriers used the failure rates of a part to determine, through a probability process, the likelihood that the part would have a similar failure rate in the future. The standard was the acceptable failure rate. Air carriers used a failure rate alert program with upper control limits (UCL) and lower control limits (LCL) to track part failure rates. The air carrier was obliged to take action only when the failure rate deviated from the probability-based prediction, i.e., exceeded the UCL or the LCL. If the part did not respond, the air carrier was authorized to move the UCL or LCL to make the failure rate within the alert program limits.

b. During the 1970s, after collecting a large amount of operational data over time, the industry came to the realization that using failure rates and alert programs was not the most effective way of managing scheduled maintenance. Using the vast amount of operational data that was available, United Airlines developed and published a report during 1978 under a U.S. Department of Defense contract entitled "Reliability Centered Maintenance (RCM)." This very significant document was in stark contrast to the previous part failure rate focus. RCM focused on the loss of function of an aircraft system. RCM determined that everything doesn't fail the same way; failures occur according to six different failure patterns. RCM also determined that everything doesn't require the same type of maintenance; there are four different types of scheduled maintenance. RCM also took into account the different consequences (safety, operational, and economic) of a loss of function, as well as system functional redundancy and inherent design safety when determining if scheduled maintenance was required. In some cases, RCM determined that no scheduled maintenance was required. This resulted in doing only required maintenance, and a much lower maintenance burden.

c. The RCM document was the major basis for the ATA's development of the MSG–3 decision logic in 1980. Since then, most aircraft manufacturers have used the Air Transport Association's MSG–3 decision logic to help them develop scheduled maintenance requirements for their new products. Besides providing organization and flow to the deliberative process, the

primary attribute of the MSG–3 process is that the user can develop initial scheduled maintenance requirements without the operational data that is required to determine the need for scheduled maintenance tasks. Using the techniques of the MSG–3 decision logic, it is fairly simple to decide what tasks are required to be included in an initial scheduled maintenance program. However, the MSG–3 decision logic does not contain task interval selection decision logic to help the user determine where to set the task intervals, or how to adjust them after service is initiated. Using the MSG–3 process, initial task intervals are set on the basis of knowledge of the design, and the best judgment of the working group members. Under MSG–3, initial intervals are, essentially, a best guess. As a result, validation of initial interval selections must occur when the aircraft begins service and starts generating the operational data that was not available when the initial intervals were set.

d. An inherent function of your CASS is to determine the effectiveness of your scheduled maintenance effort through operational data collection and analysis activity. You use this important function to determine the level of scheduled maintenance effectiveness and to make the changes necessary to achieve the standard of effectiveness that you have set. Effective means: “it is producing the desired results.” Thus, from an operational standpoint, an indicator of effectiveness of your scheduled maintenance effort is the availability of your aircraft for flight operations. If your aircraft are unavailable for flight operations due to maintenance reasons, then your scheduled maintenance program may not be as effective as it should be. There may be other elements of your maintenance program besides the scheduled maintenance element that may be deficient as well, but your CASS procedures will identify the root cause and help you identify and make the adjustments/changes necessary to achieve the level of flight operations availability (the result) that you have set.

CHAPTER 7. REQUIRED INSPECTION ITEMS

700. REQUIRED INSPECTION ITEMS.

a. Sections 121.369(b) and 135.427(b) require you to designate certain tasks as Required Inspection Items (RII). Your RIIs cover at least those maintenance tasks that, if not properly performed or if done with improper parts or materials, could result in a failure, malfunction, or defect that would endanger the continued safe flight and landing of your aircraft. In case maintenance tasks are performed for you by other persons, you may authorize them to accomplish your RII requirement. However, you must document the arrangement and control it through your maintenance manual. Consistent with the regulations, you remain primarily responsible for the performance of each RII accomplished by the other person.

b. RIIs relate directly to flight safety. Consider all your RIIs with the same safety of flight consideration and emphasis even if accomplishing an individual RII adversely impacts your flight schedule, or is related to a scheduled or an unscheduled task or arises at an awkward time or at an inconvenient location.

701. RII PROCEDURES, STANDARDS, AND LIMITS.

a. Your manual must include procedures for you to identify and authorize RII personnel, both within your organization and within other organizations that perform maintenance on your behalf (§§ 121.369(b)(3) and 135.427(b)(3)). Each individual that you grant an RII authorization to must hold an appropriate airman's certificate. This is an air carrier qualification requirement; the individual certificate is not exercised when accomplishing the RII. You must formally notify each of these individuals of their RII authorization as well as its scope (§§ 121.371(d) and 135.429(e)).

b. You should clearly identify your RII requirements on work forms, job cards, engineering orders, and the like, or by any other method consistent with your maintenance program. A primary concept of the RII function is that the person performing the item of work may not perform the required inspection on that item of work. Therefore, it is important that you identify RIIs whenever possible so that everyone knows that an RII is required.

c. You must have those procedures, standards, and limits necessary for the accomplishment of your required inspections. You must also have those procedures, standards, and limits necessary for the acceptance or rejection of each of your required inspection items. As you will not find required inspection items or procedures, standards, and limits for required inspection items in an OEM manual, you will have to develop these and put them in your manual.

d. You must have procedures in your manual to ensure that only a supervisor of an inspection unit or the person who has overall responsibility for both the RII function and other maintenance and alteration functions may countermand the decision of any RII inspector regarding an RII (§§ 121.369(b)(8) and 135.427(b)(8)). These requirements apply equally to an organization performing maintenance on your behalf, as well as your own maintenance organization. See Figure 4-1 for a representative organizational chart.

CHAPTER 8. MAINTENANCE RECORDKEEPING SYSTEM

800. REASONS FOR MAKING AND KEEPING MAINTENANCE RECORDS. Your primary reason to make and retain air carrier maintenance records is to show that the U.S. Standard Airworthiness Certificate on your aircraft is effective and that your aircraft is airworthy. A U.S. Standard Airworthiness Certificate is effective only as long as the maintenance and alterations are performed according to the requirements of the FAA's regulations. If your required aircraft maintenance records are incomplete or inaccurate, it can render your aircraft's Standard Airworthiness Certificate ineffective. Maintenance actions, in almost all cases, become intangible or abstract after the fact. Therefore, in order for you to make a maintenance action tangible, you must make a record of that maintenance action. Additionally, making a record of certain summary information supports identification of the current inspection and airworthiness status of your aircraft.

801. PART 43 REQUIREMENTS. You can find the basic requirement to make a maintenance record in § 43.9(a); however, § 43.9(b) indicates that the governing requirements for you, an air carrier, are found in part 121 or part 135. That is another way of saying that the recordkeeping requirements of part 43(a) do not apply to you. However, the requirements of § 43.9(b) are consistent with the air carrier maintenance recordkeeping requirements of §§ 121.369(c) and 121.380(a) and (c), or §§ 135.427(c) and 135.439.

802. WORK PERFORMED BY A PART 145 REPAIR STATION.

a. Section 145.219 sets forth requirements for a certificated repair station to retain certain records of maintenance that it performs. It also requires the repair station to make those records available to the FAA. However, these §§ 43.9(a) and 145.219 requirements do not apply when the repair station is accomplishing any work on your aircraft.

b. The wording of the § 145.205, regulations as well as §§ 119.1(c), 121.1(b) and 135.1(a)(2) compel a part 145 certificated repair station to follow the procedures and requirements of your maintenance program and applicable sections of your maintenance manual when accomplishing any maintenance or alterations on your aircraft. Consequently, a certificated repair station must use the performance standards of part 121 or part 135, including the recordkeeping requirements, instead of following the provisions in part 145 and the repair station's repair station manual. This is consistent with the requirements of The Paperwork Reduction Act which does not permit the government to require two separate, but identical sets of records. The responsibility for retaining records in accordance with the retention requirements of §§ 121.380(c) and 135.439(b) rests with you, the air carrier, not the repair station. However, if a part 145 repair station wants to retain a copy of those records generated by working on your aircraft, the FAA's regulations do not preclude them from doing so. Asking the part 145 repair station to keep your records for you is consistent with regulations, although you are responsible for retaining them and making them available to the FAA. This is consistent with the requirements of § 119.59(c).

803. PENALTIES FOR IMPROPER AIR CARRIER MAINTENANCE RECORDKEEPING.

a. Maintenance records are important for:

(1) You as operator to fulfill your responsibility to determine the airworthiness status of your aircraft.

(2) The FAA to use them for its continuing review of aircraft maintenance records as a direct means of determining the airworthiness and safety status of air carrier aircraft.

b. Because reviewing maintenance records is often the only direct means of determining the accomplishment of required maintenance, federal law treats the act of intentionally failing to make and keep, as well as the act of intentionally falsifying, mutilating, or altering air carrier aircraft records as a criminal act, subject to the imposition of substantial fines and/or imprisonment.

804. MAKING AND KEEPING REQUIRED RECORDS.

a. FAA regulations (§ 121.369(c) or § 135.427(c)) require you to have and use a recordkeeping system for the preparation, storage, and retention of required aircraft maintenance records. You must document your system in your maintenance manual. The primary objectives of these systems are the generation, storage, retention, and retrieval of accurate and complete air carrier aircraft maintenance records. As stated earlier, these records are primarily made to show that the U.S. Standard Airworthiness Certificate of your air carrier aircraft is effective, and your aircraft is airworthy and capable of safe flight.

b. FAA regulations (§ 119.59(b)(1)(ii)) also require you to make and keep a listing that identifies the location of each record, document, and report that you are required to make and keep, as well as a listing that identifies each person that is responsible for each of those records, documents, and reports.

805. REQUIRED AIR CARRIER MAINTENANCE RECORDS. Current requirements found in §§ 121.380 and 135.439 call for two types of records: a list of summary information and air carrier Airworthiness Release Form records.

806. WHEN TO MAKE RECORDS AVAILABLE TO THE FAA. Section 119.59(c) mandates you must make your air carrier maintenance records available to the FAA. The FAA can require you to make your records available to them at any time.

807. RESPONSIBILITY FOR MAKING RECORDS AVAILABLE TO THE FAA. Under § 119.59(b)(1), you must make a list of persons in your organization that you have designated to be responsible for making each required maintenance record, document, or report available to the FAA upon request. You must make a list of the location of each record, document, or report. You must keep this list current and make it available to the FAA at your principal base of operations.

808. REQUIRED RECORDS. You are required to make and keep certain summary status records. Summary current status recordkeeping requirements are listed in §§ 121.380 and 135.427 and explained as follows:

a. Total Time in Service. The total time in service of the airframe, each installed engine, and each installed propeller is a record that contains the time in service accrued since new or rebuilt, expressed in hours, landings, or cycles.

NOTE: It is important for you to know that rebuilt does not have the same meaning as overhauled.

b. Current Status of Each Life-Limited Part. The current status of each life-limited part of each airframe, engine, propeller, and appliance means a record that contains at least the following information:

(1) Time in service since new, expressed in the appropriate parameter (hours, cycles, calendar time);

(2) The time in service remaining to the specified life limit expressed in the appropriate parameter (hours, cycles, calendar time);

(3) The specified life limit expressed in the appropriate parameter (hours, cycles, calendar time); and

(4) A record of any action that alters the part's life limit or changes the parameter of the life limit.

NOTE: If you conduct operations under part 135, total time in service and the current status of life-limited parts also includes rotors.

c. Time Since Last Overhaul. The listing of the time since last overhaul means a record that contains at least the following information:

(1) An identification of the item that requires overhaul and its associated scheduled overhaul interval,

(2) The time in service since the last overhaul was accomplished,

(3) The time in service remaining until the next scheduled overhaul, and

(4) The time in service when the next scheduled overhaul is due.

NOTE: The listing of time since last overhaul refers to summary current status information. You must not confuse it with an overhaul record, which is a description of the work performed and the identification of the person who performed and/or issued the approval for return to service.

d. Current Inspection Status of the Aircraft. The current inspection status of the aircraft means a record that contains at least the following information:

(1) A listing identifying each of the scheduled inspection packages and each task and their associated intervals required by the maintenance program under which the aircraft is maintained;

(2) The time in service accrued since the last accomplishment of each of the scheduled inspection packages and tasks required by the maintenance program under which the aircraft is maintained;

(3) The time in service remaining until the next accomplishment of each of the scheduled inspection packages and tasks required by the maintenance program under which the aircraft is maintained; and

(4) The time in service when the next accomplishment of each of the scheduled inspection packages and tasks required by the maintenance program under which the aircraft is maintained is due.

e. Current Status of Applicable Airworthiness Directives (AD). The current status of applicable ADs means a record that contains at least the following information:

(1) Identification of the particular airframe, engine, propeller, appliance, or component to which the AD is applicable.

(2) The AD number (and/or regulatory amendment number).

(3) The date when the required action was accomplished and the time in service expressed in the appropriate parameter (hours, cycles, calendar time).

(4) If the requirement is recurring, the date when the next action is due, and the time in service expressed in the appropriate parameter (hours, cycles, calendar time).

(5) With regard to an AD, the method of compliance means a concise description of the action taken to comply with the requirements of the AD. If the AD or its referenced manufacturer's service bulletin permits the use of more than one method of compliance, the record must include a reference to the specific method of compliance used. If the operator uses an alternate method of compliance (AMOC) to comply with an AD, the method of compliance means a description of this AMOC and a copy of the FAA approval.

> **NOTE: The listing of current status of an AD or method of compliance must not be confused with an AD record of accomplishment, which is a description of the work and who performed it and/or issued the approval for return to service.**

f. The current major alterations of each airframe, engine, propeller, and appliance. A listing means a record that contains at least the following information:

(1) A listing identifying each major alteration, as well as the associated item to which the major alteration has been installed, and

(2) A description of, or reference to, the FAA-approved technical data used to make the major alteration.

NOTE: If you conduct operations under part 135, you must include in this listing, all current major repairs, as well as major alterations, and you must include major repairs and major alterations to each rotor.

NOTE: The listing of the current major alterations refers to summary current status information. You must not confuse this with a major alteration report, which is a description of the work performed, a description of the FAA-approved technical data used to make the major alteration, and the identification of the individual who performed and/or issued the approval for return to service. You must not confuse this listing with the requirement to submit a copy of each report of a major alteration to the FAA.

g. All the records necessary to show that all requirements for the issuance of an Airworthiness Release Form have been met. These records support the use of an Airworthiness Release Form, which is not part of the aircraft maintenance logbook. While the regulatory requirement for these records does not provide a detailed list of these records, this requirement is generally accepted to mean:

(1) Detailed records of all scheduled maintenance that has not been superseded by work of equivalent scope and detail,

(2) Detailed records of the last overhaul for items that required an overhaul,

NOTE: An overhaul record is not required to contain a record of AD accomplishment. The regulations require separate records of AD current status. The regulations also require that the record of AD accomplishment be kept, but for only one year.

(3) Detailed records of all unscheduled maintenance that has not been superseded by work of equivalent scope and detail, and

(4) Copies of the Airworthiness Release Form covering the last 60 days of operation.

809. OTHER REQUIRED RECORDS AND REPORTS. The FAA regulations require you to make other reports and records as discussed in this paragraph. You can use these records and reports to review your maintenance operations to determine the adequacy of the maintenance portion of your air carrier manual and the effectiveness of elements of your maintenance program. These records are one of the sources of information for your CASS. The FAA also uses these reports in its continuous oversight of your maintenance program activities.

a. Maintenance Log. Sections 121.701 and 135.65 require any person who takes action in response to a reported or observed failure or malfunction to make a record of that action in the

maintenance log of the aircraft. These air carrier maintenance log entries correspond to the maintenance recording requirements of § 43.9(b). You also must ensure that each pilot in command (PIC) ensures that all mechanical irregularities occurring during flight time are entered in the maintenance log at the end of that particular flight time, consistent with §§ 121.563 and 135.65.

b. Airworthiness Release Form or Log Entry.

(1) Your Airworthiness Release Form or Log Entry required by § 121.709 or § 135.443 corresponds to the approval for return to service requirements of §§ 43.5, 43.7(e), 121.379(b), and 135.437(b). Furthermore, parts 121 and 135 require you to prepare either an Airworthiness Release Form or Log Entry before you can operate your air carrier aircraft after any maintenance, preventive maintenance, or alterations are performed, whether the aircraft is operated in air transportation or not.

(2) Your approval for return to service certification and documentation required by § 121.709 or § 135.443 is a singular requirement, but you may execute it in one of two ways:

(a) You may complete an Airworthiness Release Form and give it to the PIC. If you use an Airworthiness Release Form, it must be kept separate and distinct from the aircraft log and is not included in the maintenance records. The separate and distinct requirement corresponds to the requirements in §§ 121.380(a)(1) and 121.709(d). In modern day environments, you are most likely to use the Log Entry method to comply with § 121.709 or § 135.443. Other than form or format, there is no legal or technical difference between an Airworthiness Release Form and a Log Entry.

(b) An Aircraft Log Entry. If you make a Log Entry, you do not have to issue an Airworthiness Release Form. To avoid confusion and to be consistent with the regulations, you should not identify this entry in the aircraft log as an airworthiness release. Few air carriers use a separate Airworthiness Release Form.

(3) Consistent with §§ 121.709(d) and 135.443(d), you may include a statement in your manual that the signature in the aircraft log of an authorized, appropriately certificated individual constitutes an approval for return to service under your air carrier maintenance program. Such an authorized signature constitutes the four air carrier approval for return to service certifications without restating each one of the certifications. You must prepare your Airworthiness Release Form or Log Entry in accordance with procedures in your manual and must include the following four certifications consistent with statutory considerations for operations with the highest degree of safety in the public interest.

(a) The work was performed in accordance with the requirements of your manual;

(b) All items required to be inspected were inspected by an authorized person who determined the work was satisfactorily completed;

(c) No known condition exists that would make the aircraft non-airworthy; and

(d) So far as the work performed is concerned, the aircraft is in condition for safe operation.

(4) The Airworthiness Release Form or Log Entry must be signed by an appropriately certificated individual who is authorized by you to make the Airworthiness Release Form or Log Entry on your behalf.

> **NOTE: The Airworthiness Release Form or Log Entry must be accomplished by an authorized mechanic or repairman on your behalf under your part 121 or part 135 certificate authorizations. This is consistent with the requirements and authorizations of § 43.7(e), § 121.379(b), or § 135.437(b), and § 121.709(b)(3) or § 135.443(b)(3).**
>
> **NOTE: Consistent with regulations no individual may issue an Airworthiness Release Form or make a maintenance Log Entry unless they have been authorized by you.**
>
> **NOTE: Because a part 145 repair station is not an individual, these same regulations preclude accomplishment of your Airworthiness Release Form or Log Entry by a part 145 certificated repair station. With one exception, the Airworthiness Release Form or Log Entry must be executed by an authorized, certificated individual as described in part 121 or part 135, and according to your procedures. The authorized individual may be employed by the repair station, but they are acting on your behalf, not on behalf of the repair station. This is consistent with §§ 119.1(c) and 121.1(b) or 135.1(a)(2).**

(5) Your maintenance manual should include detailed procedures for accomplishing the Airworthiness Release Form or Log Entry after any maintenance is accomplished. The procedures should include processes designed to ensure that your aircraft are not operated after any maintenance, preventive maintenance, or alteration is accomplished unless the Airworthiness Release Form or maintenance Log Entry is completed.

(6) Your maintenance manual should include detailed procedures for qualifying and authorizing each individual who is authorized to accomplish your § 121.709 or § 135.443 Airworthiness Release Form or Log Entry. These procedures should include a positive, readily available means of documenting and transmitting the authorization to the individual, including the scope and limitations of their authorization.

c. Service Difficulty Reports. You are required to make service difficulty reports by §§ 121.703 and 135.415. While these reports can identify deficiencies within your maintenance program, these reports are the FAA's primary means of gathering information for the FAA's Service Difficulty Reporting Subsystem (SDR).

d. Mechanical Interruption Reports. You are required by §§ 121.705 and 135.417 to make mechanical interruption reports. These reports document the inability of your aircraft to arrive at its scheduled destination because of mechanical difficulties. This is a prime indicator of deficiencies in the effectiveness of your maintenance program. Moreover, analysis of these

reports is one of the FAA's most useful means of oversight of the level of effectiveness of your maintenance program.

810. REQUIREMENTS FOR REPORTS OF MAJOR ALTERATIONS AND MAJOR REPAIRS.

a. If you are a part 121 air carrier, § 121.707 requires you to make a report of each major alteration and repair. The alteration report must be submitted to the FAA and the major repair report must be made available for inspection by the FAA. This falls under § 119.59 requirements. In addition, because you are an air carrier, you do not have to use FAA Form 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance) to report a major alteration or repair that you accomplished.

b. If you are a part 135 air carrier, there is no requirement to submit any reports of major alterations or repairs. However, as with any required record of aircraft maintenance or alteration, you must make them available to the FAA upon request.

> **NOTE: You should not confuse these alteration and repair reports with the current status listing of major alterations required under part 121 or the current status listing of major repairs and alterations required under part 135.**

811. REQUIREMENTS FOR HISTORICAL OR SOURCE RECORDS. You do not have to keep historical or source records to prove that your required records, such as current status records, that you must make, keep and make available to the FAA are, true and accurate. Inherent with the requirements and objectives of your air carrier maintenance program, you must have a system to prepare, store, and retain your required maintenance records; you must monitor that system under your CASS to ensure that your procedures are being followed and are effective. This ensures your required records are true and accurate. Records such as the in-service history of life-limited parts (traceability back to birth) or the record of accomplishment of an AD do not need to be kept indefinitely. Remember, there are severe criminal penalties for falsifying, or failing to make, or keep air carrier records. Consistent with the FAA regulations, unless there is evidence to the contrary, an aircraft maintenance record produced by your maintenance recordkeeping system should be acceptable by itself, without other historical or source records. The important consideration here is that you have a sound and properly working recordkeeping system. You may wish to archive certain source documentation records that you used to introduce parts or components into your maintenance system. These records may include documents such as the manufacturer's invoice for new parts, export certificates of airworthiness, documentation of a major repair or alteration, or other similar information that may be useful in the future. You may also have business reasons to maintain historical records, but business reasons would not relate to the absence of any FAA regulatory requirements for historical records. The only records that you are legally required to make and retain are those records that are clearly outlined in 14 CFR.

CHAPTER 9. CONTRACT MAINTENANCE

900. RESPONSIBILITY FOR MAINTENANCE PERFORMED BY OTHERS. Consistent with §§ 121.1(b), 135.1(b)(2) and others, when you use a maintenance provider to accomplish all or part of the maintenance activities on your airplane or its component parts, that maintenance provider becomes, in effect, part of your maintenance organization and under your control. However, §§ 121.363 and 135.413 make it clear that you remain primarily responsible for all of the maintenance performed by that maintenance provider on your aircraft. You must determine that the maintenance provider has the capability to do your work on your behalf, direct their work, and determine that their work was done satisfactorily according to your manual and your standards. Because all work on your aircraft must be performed in accordance with your maintenance manual and your maintenance program, you must also provide the maintenance provider with appropriate material from your maintenance manual for that work. You must ensure that the maintenance provider follows the procedures in your manual that you have provided. You should accomplish this through work-in-progress audits while the maintenance provider is accomplishing the work. Your manual system should accommodate work performed for you by each maintenance provider. The policy and procedures portion of your maintenance manual should assign clear authority and responsibilities and outline procedures for your personnel to administer, control, and direct all contracted work. The technical material that you provide should be arranged for the use and guidance of the maintenance provider. When possible, you should have a written contract with anyone performing maintenance work for you on a continuing basis. This will help ensure your responsibilities are addressed. In the case of major operations, such as engine, propeller, or airframe overhaul, the contract should include a specification for the work. You should include or reference that specification in your manual system.

901. UNSCHEDULED MAINTENANCE PERFORMED AWAY FROM REGULAR FACILITIES. Sometimes, you will need maintenance performed on your aircraft while it is away from your regular maintenance facilities. You also may need maintenance services on short notice. Your maintenance manual should include procedures for obtaining these services under these unanticipated conditions. You should never use the term “emergency maintenance” to describe short notice unscheduled maintenance, as such terms imply to your workforce that FAA’s regulations and your procedures do not have to be followed. Emergency means that a serious situation has occurred unexpectedly, involves a peril to life or property, and demands immediate action. An out of commission aircraft parked on an airport ramp could hardly constitute a peril to life or property. You should outline the procedural steps you will take to control and direct the unscheduled maintenance that is required. Unscheduled, short-notice requirements for maintenance do not void your responsibility to determine that your maintenance provider has the organization, adequate facilities and equipment, competent personnel, and appropriate portions of your manual for the work that needs to be done. These determinations must be made before any maintenance provider starts to work on your aircraft. These procedures and determinations should be in your manual.

902. AIRWORTHINESS RELEASE FORM OR AIRCRAFT LOG ENTRY. Sections 121.379(b) and 135.437(b) authorize you to approve your aircraft, airframes, aircraft engines, propellers, or appliances for return to service after you accomplish any maintenance, preventive maintenance, and alterations. These sections only authorize any person other than you

to approve your aircraft for return to service. §§ 121.709(b) and 135.443(b) outline requirements for those personnel making a Log Entry or issuing an air carrier Airworthiness Release Form under part 121 or part 135. These regulations require a certificated repairman, or certificated airframe and powerplant mechanic that you authorize to make the Log Entry or issue the Airworthiness Release Form for you. These regulations clearly do not authorize a repair station certificated under part 145 or any other entity to make an Airworthiness Release Form or Log Entry on your behalf. The regulations set forth clear personnel qualification requirements for each individual you so authorize. The approval for return to service authority remains solely with you. An individual may not issue an approval for return to service for your aircraft unless you authorize them to do so.

a. You must designate each individual authorized to execute the Log Entry or Airworthiness Release Form for you by name and occupational title. The individual making the Log Entry or Airworthiness Release Form acts as your authorized agent. He or she certifies that the maintenance was accomplished according to your maintenance manual and maintenance program procedures and that no known condition exists that would make the aircraft non-airworthy. This arrangement does not reduce the responsibility of maintenance personnel to accomplish maintenance functions or tasks in accordance with your manual.

b. Consistent with §§ 121.709(b)(1) and 135.443(b)(1), you must include in your maintenance manual the procedures for making an aircraft Airworthiness Release Form or Log Entry. A Log Entry or Airworthiness Release Form is required to be accomplished before you can operate your aircraft for any reason after you have accomplished any maintenance. You are required to make a Log Entry or an Airworthiness Release. Other than form or format, there is no legal or technical difference between an Airworthiness Release Form and a Log Entry.

903. EVALUATING NEW CONTRACT MAINTENANCE PROVIDERS. Before you can use a maintenance provider for the first time, you must determine that the maintenance provider candidate complies with pertinent requirements of part 121, subpart L, or part 135, subpart J. In most cases, you would conduct an onsite audit. You must demonstrate, through this audit or by some other means, that the maintenance provider has an adequate organization, adequate facilities and equipment, competent personnel and is capable of performing the work consistent with the requirements of your program. Your determination of whether to accomplish an on-site audit should be based on risk assessment. The risk assessment should take into account the aircraft part failure or system loss of function, and the consequence of the loss of function related to the work being accomplished.

904. CONTINUING MAINTENANCE PROVIDER OVERSIGHT. Ensuring that each one of your maintenance providers is in continuous compliance is a major function of your CASS. You should use your risk-based process for establishing a schedule for auditing and inspecting each of your maintenance providers. Inherent with a risk-based process, you may determine that some of your maintenance providers do not require an on-site audit. Consistent with the “performance” wording of § 121.373 or 135.431, the audits that you accomplish should be primarily work-in-progress audits that determine if the maintenance personnel are following your manual. The audits should be accomplished by trained auditors, and the results analyzed by trained analysts. The results of the analysis should permit you to determine each maintenance

provider's continuing compliance with part 121, subpart L, or part 135, subpart J, as appropriate, and your maintenance program.

905. USING A CERTIFICATED REPAIR STATION AS ONE OF YOUR MAINTENANCE PROVIDERS.

a. If you decide to exercise your authority under §§ 121.379 or 135.437 to make arrangements with other persons to perform maintenance, preventive maintenance, and alterations for you as provided in your manual, you may choose to make these arrangements with an FAA certificated repair station, but you are not required to do so. The scope of your authorization to make arrangements for maintenance is very broad; you can make these arrangements for maintenance with any "person" as that term is defined at 14 CFR § 1.1. Although the 14 CFR § 1.1 term "person" includes a certificated repair station, it also clearly does not exclude any other "person" who does not hold an FAA certification.

b. The air carrier regulatory and maintenance program requirements that you would use to qualify a maintenance provider that holds a current part 145 repair station certificate are exactly the same as those that you would use for a maintenance provider who does not hold a current part 145 repair station certificate; there is no difference. Consistent with §§ 119.1(c), 121.1(b) or 135(b)(1), each "person," whether certificated or not, that is employed or used by you for any maintenance, preventative maintenance or alteration of your aircraft is required to comply with the part 121 requirements and your maintenance program requirements, not part 65 or part 145 requirements.

c. Further, your §§ 121.379(b) or 135.437(b) authorization to approve your aircraft for return to service after maintenance extends to the work accomplished under your §§ 121.379(a) or 135.437(a) authorization to make arrangements with other "persons" for maintenance.

CHAPTER 10. PERSONNEL TRAINING

1000. MAINTENANCE PROGRAM TRAINING REQUIREMENTS. You can find your specific air carrier maintenance training requirements in certain sections of part 121, subpart L, and part 135, subpart J. Sections 121.375 and 135.433 require you to have a training program that ensures each person (including inspection personnel) who determines the adequacy of work done for you is fully informed about procedures and techniques and new equipment in use and is competent to perform his or her duties. There is an additional implied training requirement in part 121, subpart L, and part 135, subpart J based on your responsibility to provide competent personnel for the proper performance of your maintenance program. A training program is the logical means for ensuring maintenance personnel are competent. FAA regulations allow you to develop a training program fitting your particular needs.

1001. TYPES OF TRAINING. Some of the possible types of training in your training program are initial training, recurrent training, specialized training, competency-based training, and maintenance-provider training. You should select the appropriate training for your personnel, including your maintenance provider personnel, which is based on an assessment of training needs. This assessment is a reflection of the required knowledge, skills, and ability to properly accomplish a given task or function and the current capability of those who would be assigned the task or function.

1002. INITIAL TRAINING. You should provide initial training right after a person is hired, or when your personnel begin to work on new equipment or a new assignment. Your initial training program may include subjects such as employee indoctrination or orientation, maintenance department policies and procedures, maintenance recordkeeping and documentation, aircraft systems or ground equipment, specific skills (for example, avionics, composite repair, aircraft run-up and taxi), skills upgrade, human factors, task-specific training, hazardous materials, or Environmental Protection Agency and Occupational Safety and Health Administration regulations familiarization. Your initial training should also include a competence-based assessment of employees. This evaluates an employee’s previous training and experience and helps identify his or her specific individual training needs. The objective is to provide training that addresses the gap between required competence and the competence an individual already has.

1003. RECURRENT TRAINING. Recurrent training is education occurring on a repetitive basis. You must provide maintenance personnel with the information and skills necessary to maintain your standard of competence. This training also accommodates the introduction of new aircraft, aircraft modifications; new or different ground equipment; new procedures, techniques, and methods; or other new information. Your recurrent training, although occurring on a repetitive basis, may not adhere to a defined schedule. You should not provide repetitive information in recurrent training unless it is needed to maintain the desired degree of competence. Your recurrent training may include:

a. Continuing competency training designed to maintain regulatory and certificate currency requirements.

b. Refresher training on a seldom accomplished task or seldom used skill.

c. Update training for particular tasks or skills. Update training can include training bulletins, bulletin-board items, self-study tasks, and computer-based instruction.

d. Any other continuing education or training that may not be provided on a defined schedule.

1004. SPECIALIZED TRAINING. Your specialized training should focus on competence in specific tasks or areas of responsibility, such as RII, borescope, non-destructive testing, or flight control rigging. You might provide this training with initial or recurrent training. You do not need to limit it to maintenance subjects, but instead may include management skills training for new supervisors, computer skills, or other training necessary because of a change in an individual's duties and responsibilities.

1005. MAINTENANCE PROVIDER TRAINING. Your training program must provide appropriate information to each employee of a maintenance provider about your specific program. The training should include function-specific training appropriate to each person's job assignment or area of responsibility. You do not need to provide training to maintenance provider personnel in areas that do not concern them. For example, training on aircraft log procedures and minimum equipment list procedures would not be required for aircraft interior cleaners, but would be required for maintenance personnel assigned to on-call maintenance for you.

> **NOTE: If your maintenance provider has specific types of training for its personnel, you do not need to duplicate that training for those individuals. However, you must ensure your maintenance provider actually has provided the training and that the training meets your own needs and training standards. This could be a CASS work-in-progress audit.**

1006. COMPETENCY-BASED TRAINING. Although air carriers historically have provided a specified number of maintenance training hours to ensure employees have the competencies needed for their jobs, studies have shown that it may be better for you to train to a competency-based standard. You do not have to perform this type of training on a defined schedule or for a specific number of hours. Rather, you should test each individual to evaluate what training he or she needs, and then use these evaluations to identify those personnel who retain a high level of subject competence and who may not require a particular block of instruction. Conversely, you also should identify those individuals who require more training. Training to competence permits you to tailor training programs to the specific requirements of your individual maintenance personnel and maintenance providers.

a. Competency-based training can be used to raise an employee's level of competence to that level required by the individual's duties and responsibilities. You should have procedures to determine when an individual requires competency-based training. You may determine the need for this type of training through pre- or post-employment testing, or through the analysis and corrective action functions of your CASS. If you use competency-based training, it should specifically address the lack of competence. In some instances, competency-based training may consist of an appropriately knowledgeable person simply reviewing procedures with an employee through on-the-job training. You should design competency-based training to fix an

immediate knowledge or skill deficiency and the training may focus on one individual or a small group. You may include competency-based training in your initial or recurrent training requirements.

b. For those circumstances where you identify a competency deficiency through investigation of an event, your competency-based training should show an individual what happened, why it happened, and demonstrate, in a positive manner, how to prevent it from happening again.

c. Your competency improvement training should be oriented toward correcting personnel competence deficiencies that may be identified through your CASS.

CHAPTER 11. CONTINUING ANALYSIS AND SURVEILLANCE SYSTEM (CASS)

1100. BACKGROUND OF THE CASS. Introduction of the CASS requirement resulted from an FAA-industry study of a series of maintenance-related air carrier accidents occurring during the 1950s. The study found that, in many cases, the primary causal factor of an accident was a fundamental weakness or weaknesses in the maintenance program. The study found that in some cases maintenance personnel failed to accomplish required maintenance tasks or failed to accomplish the task correctly. They simply didn't follow the manual. In other cases, the study found that the maintenance program, even when followed as planned and documented, was not effective in preventing the situation that led to the accident. It did not produce the desired results.

a. Responding to this finding, the FAA introduced regulations (§§ 121.373 and 135.431) that require air carriers to establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of their inspection, maintenance, preventive maintenance, and alterations programs.

b. These regulations further require that the air carrier's CASS provide a process to correct any deficiency identified in those programs, regardless of whether the work was accomplished directly by the air carrier or by other persons.

1101. CASS IS A SAFETY MANAGEMENT TOOL. A CASS is your system for managing safety as it relates to maintenance functions. As a safety management tool, it is part of the overall structure of policies and procedures that you use to ensure operations are to the highest degree of safety. It is a structured, methodical process that helps you reach your maintenance program objectives. CASS is the only management system currently mandated by regulation. If you use it properly, your CASS becomes an inherent way of doing business for you, and helps you promote a culture of safety in your company by providing a formal process for employees to identify and correct safety discrepancies. As you will see in the following brief discussion of the structure of a CASS, the same objectives of measuring and continuously improving the performance (program execution) and effectiveness (program results) of a major function (maintenance) apply equally to all safety-related functions that must be managed by an air carrier.

1102. BASIC CASS PROCESSES.

a. Your CASS is a risk-based, closed-loop system that has four basic processes:

(1) Surveillance. An information gathering/audit process you use to collect data to measure your program execution and measure your program results.

(2) Analysis. An analysis process you use to identify any maintenance program deficiencies and any necessary corrective actions.

(3) Corrective Action. A planning process you use to ensure that your corrective actions and implementation steps are well-defined.

(4) Followup. A followup, performance measurement process you use to verify that your corrective actions are performed and are effective. This is also an information-gathering and analysis process, thereby, closing the loop.

b. During the first step, surveillance, you will gather and obtain data using an audit program to support measurement of performance (program execution). Your audit program should be well-structured, based on risk assessment, and accomplished by individuals trained and skilled specifically at auditing. Consistent with the wording of the regulation, your primary type of audit should be work-in-progress audits that evaluate if the worker is following the manual. Your auditors would also look at areas such as manuals and other maintenance technical data, aircraft condition, actual in-process maintenance practices, training, publications, and ground operations. In addition, information gathering to obtain data that will support the measurement of effectiveness (program results) is generally a collection of flight operational data such as accidents/incidents, mechanical delays and cancellations, in-flight engine shutdowns, unscheduled landings, engine performance, pilot log book write-ups, and unconfirmed components or parts removals.

c. In the second step, you will analyze the data to identify indications of maintenance program weaknesses. Your analysis should be accomplished by individuals experienced and/or trained as analysts. One of your key objectives here is to not only identify a weakness, but to determine its root cause. This is where your knowledge of human factors becomes critical.

d. Based on the results of your analysis, the third step is for you to develop a corrective action, if necessary, again taking into account human factors so that your corrective action is likely to be successful. Once you determine what the corrective action is, you will develop and implement a corrective action plan.

e. To close the loop, the fourth step of your CASS will have you conduct a followup measurement process using surveillance and analysis to verify that your corrective action was implemented properly and completely and that it has effectively corrected the deficiency you identified. You can design this followup data gathering process specifically for the issue of interest, or you can make it a part of your continuing surveillance that is the first step of your CASS. Determining if a special information gathering is needed is part of your analysis that you accomplished in step three.

f. Note that both the initial and followup surveillance can and should have proactive and reactive aspects to them. In the case of audits, by auditing systems and procedures, as well as specific transactions, the analysis of audit results can identify weaknesses in a process. Correcting these weaknesses before a problem results is a proactive approach. An audit also may uncover a missed or improper maintenance action. Investigating this finding and correcting the immediate problem is a reactive process. Developing and implementing a corrective action to prevent a similar future event is equally important for improving the maintenance program, and it is required by the regulations. Similarly, your analysis of operational performance data from a systems point of view can result in identification of a system's weakness before a specific unwanted event, such as a cancellation, occurs, which is a proactive process. Investigating and correcting an undesirable operational event related to the maintenance program after it has occurred, though reactive, also is a necessary and desirable procedure.

1103. RISK-BASED DECISIONS. All effective CASS take into account the need to manage risk to an acceptable level, as well as the practical limitations that must be faced when addressing deficiencies. Consequently, you must set priorities and make choices for planning audits and

other information gathering activities, analyzing data, and selecting and implementing corrective actions. You should tie setting such priorities directly to a risk assessment process, so the resulting maintenance program achieves its objectives.

1104. SCOPE OF CASS. CASS monitors all 10 elements of your maintenance program:

- Airworthiness responsibility,
- Air carrier maintenance manual,
- Air carrier maintenance organization,
- Accomplishment and approval of maintenance and alterations,
- Maintenance schedule,
- RII,
- Maintenance recordkeeping system,
- Contract maintenance,
- Personnel training, and
- CASS.

1105. CASS DESIGN PRINCIPLES.

a. The following are attributes of system safety:

(1) Clear authority,

(2) Clear responsibility,

(3) Specific written procedures,

(4) Effective controls,

(5) Performance measures, and

(6) Well-defined interfaces.

b. These six system safety attributes should be the starting point for the design of your CASS. It should be clear who in your organization is responsible for and who has authority over the CASS. You should not divide responsibility/ authority into two or more parts due to the likely possibility that activity such as auditing and operations data analysis are poorly coordinated. Typically, in addition to an individual with overall CASS responsibility, you should have a management board or committee to ensure good communications and coordination of all

CASS functions and to maintain regular senior level management involvement. This oversight group also can provide a form of control over critical aspects of your CASS operation and measure the performance and effectiveness of the CASS itself.

c. In addition to the many elements within your maintenance organization, there are many interfaces between the CASS and functions or organizational elements of a typical air carrier that are outside maintenance. Some of the more obvious examples are engineering, flight operations, purchasing, safety, and the FAA. It also is important to ensure the CASS relationships to your other programs (if they exist) such as internal evaluation programs, Flight Operations Quality Assurance programs, voluntary disclosures, and Aviation Safety Action Programs, are well-defined and coordinated

1106. CASS PERSONNEL REQUIREMENTS.

a. An effective CASS requires certain skills that may not be readily available within a maintenance organization. For example, auditing skills are not automatically inherent in those skilled in maintenance. Analysis capability, particularly related to root cause determination, risk analysis, and consideration of human factors is specialized and generally requires specific training and experience.

b. For all operators, but particularly for the smaller ones, required personnel can be shared, functions can be performed part-time, and some functions can be accomplished under contract. However, it is essential that you recognize the need for knowledge and skills that do not necessarily coincide with those resulting from many years of maintenance experience repairing airplanes.

> **NOTE: You can find more detailed information concerning developing and implementing a CASS in AC 120-79, Developing and Implementing a Continuing Analysis and Surveillance System.**

CHAPTER 12. ADMINISTRATIVE

1200. REGULATORY REFERENCES. The regulations that underlie this AC are found in 14 CFR. A summary of specific regulatory sections follows:

a. Scope of Regulatory Applicability, §§ 119.1(c), 121.1(b), 135.1(a)(2);

b. Air Carriers' Responsibility for Airworthiness, and for Performing Maintenance, §§ 121.363 and 135.413;

c. Air Carrier Maintenance Programs, §§ 119.5, 119.49, 121.133, 121.367, or 135.21;

d. Maintenance Program Manual, §§ 121.133, 121.137, 121.367, 121.369, 135.21, and 135.427;

e. Maintenance Organization, §§ 119.65, 119.67, 119.69, 119.71, 121.365, and 135.423;

f. Maintenance Time Limitations, §§ 119.49, 121.135, and 135.23;

g. Performance and Approval of Maintenance and Alterations, §§ 119.1(c), 121.1(b), 121.379, 135.1(a)(2), and 135.437;

h. Performance and Approval of Maintenance and Alterations Performed by Other Persons, §§ 119.1(c), 121.1(b), 121.379, 135.1(a)(2), and 135.437;

i. Continuing Analysis and Surveillance System, §§ 121.373 and 135.431;

j. Personnel Training, §§ 121.367(c), 121.375 and 135.433;

k. Maintenance Recordkeeping and Reports, part 121, subpart V; §§ 121.369, 121.380; 135.415, 135.417, 135.427, and 135.439(b);

l. Maintenance Log, §§ 121.563, 121.701, 121.709, and 135.65;

m. Service Difficulty Reports, §§ 121.703 and 135.415;

n. Required Inspection Items, §§ 121.365, 121.369, 121.371, 135.427, and 135.429;

o. Mechanical Interruption Reports, 14 CFR §§ 121.705 and 135.417; and

p. Alteration and Repair Reports, §§ 43.9(b), 121.707, and 135.439(a)(2)(vi).

1201. OTHER RELATED LEGAL AND GUIDANCE MATERIAL. For more information, consult current editions:

a. 14 CFR parts 43, 91, 119, 121, and 135;

b. 49 U.S.C. § 46310, Reporting and Recordkeeping Violations;

c. AC 120-79, Developing and Implementing a Continuing Analysis and Surveillance System;

d. FAA Order 8900.1, Flight Standards Information Management System (FSIMS);

e. Air Transport Association (ATA) MSG–3, Operator/Manufacturer Scheduled Maintenance Development; and

f. Report number AD-A066-579, Reliability-Centered Maintenance.

1202. OBTAINING REFERENCE MATERIAL.

a. You can get the CFRs and those ACs for which there is a fee from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. You can access current regulations online at http://www.access.gpo.gov/ecfr/. You can access the United States Code online at http://www.gpoaccess.gov/uscode/index.html.

b. You can be placed on FAA's mailing list for free ACs by contacting the U.S. Department of Transportation, SVC-121.21, Washington, DC 20590.

c. You can request free ACs from the U.S. Department of Transportation Subsequent Distribution Office, SVC-121.23, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

d. You can request MSG–3 information from the Air Transport Association of America; 1301 Pennsylvania Ave., NW, Suite 1100, Washington, D.C. 20004. You can also contact ATA online at http://www.airlines.org/products/pubs/.

e. You can get Report Number AD-A066-579, Reliability-Centered Maintenance, from the U.S. Department of Commerce, National Technical Information Service, Springfield, VA, 22161. http://www.ntis.gov/ Sales Desk: 1-800-553-6847 or 703-605-6000, 8 a.m.-6 p.m.; EST, Mon-Fri.