

NOTICE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

N 8900.410

National Policy

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3/31/17

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3/31/18

SUBJ: Clarification of Inspection and Overhaul Requirements Under Part 91

1. Purpose of This Notice. This notice clarifies the differences between overhaul processes and the inspections that make up required inspection programs under Title 14 of the Code of Federal Regulations (14 CFR) part 91.

2. Audience. The primary audience for this notice is Flight Standards District Offices (FSDO), certificate management offices (CMO), and Airworthiness aviation safety inspectors (ASI) with oversight responsibilities for certificate holders operating under part 91. The secondary audience includes Federal Aviation Administration (FAA) headquarters (HQ) and Flight Standards Service (AFS) divisions and branches in the regions.

3. Where You Can Find This Notice. You can find this notice on the MyFAA employee website at https://employees.faa.gov/tools_resources/orders_notices. Inspectors can access this notice through the Flight Standards Information Management System (FSIMS) at <http://fsims.avs.faa.gov>. Operators can find this notice on the FAA's website at <http://fsims.faa.gov>. This notice is available to the public at http://www.faa.gov/regulations_policies/orders_notices.

4. Background. There have been several recent issues surrounding the interpretation of whether compliance with the manufacturer's recommended time between overhaul (TBO) intervals are required under part 91.

5. Discussion. The term "maintenance" is defined in 14 CFR part 1, § 1.1 as "*Maintenance* means inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance." While this definition has been around for a very long time, differences between some of the elements that make up maintenance (such as inspection and overhaul) have not always been clearly understood. In this notice, we discuss the key differences between inspection and overhaul and the implications of those differences.

a. Inspections. Inspections are visual examinations and/or manual checks to determine the condition of an aircraft or component. An inspection can range from a routine visual examination to a detailed inspection involving complete disassembly and/or the use of complex inspection aids, such as X-ray, ultrasonic, eddy current, or magnetic particle equipment.

(1) Inspection Program Content. Not all tasks classified or described as “inspections” are part of the inspection “program.” Inspection programs refer to a list of scheduled inspection items and associated intervals whose main purpose is to determine the condition of the aircraft and its components (airframe, engines, propellers, rotors, appliances, survival equipment, and emergency equipment). In other words, they are scheduled items done at a defined interval to check for hidden damage and continued serviceability. Typically, unscheduled inspections constitute a maintenance action, such as when damage is known and a discrepancy must be cleared. These inspections are event-driven from a known malfunction or discrepancy, such as a hard landing or prop strike. The intent of these inspections is to determine the level of damage so that maintenance actions may be taken to restore the aircraft to a known good condition. Similarly, inspections that are part of a larger maintenance process, such as inspections performed during an overhaul, are also classified as a maintenance action and not a part of an inspection program for the reasons stated above.

(a) Inspection Programs vs. Maintenance Programs. Maintenance personnel should not confuse an inspection program with the elements that make up a more extensive maintenance program. An inspection program will only capture a list of scheduled inspections whereas a maintenance program will encompass many elements, to include inspections, overhaul requirements, repair schemes, Corrosion Prevention and Control Programs (CPCP), and the scheduled replacement of parts.

(b) Overhauls are Maintenance. By definition, overhauls are a form of maintenance, not inspection, and are not included in an inspection program. Overhauls are part of the maintenance program. Part 91 operators are not required to comply with a manufacturer’s entire maintenance program; as such, overhauls are not mandatory for part 91 operators.

(c) Part Replacements. Scheduled replacement of parts (such as filters, seals, etc.) are also maintenance. Part replacement is a part of the overall maintenance program and are not to be included in an inspection program. However, if an inspection of an item is destructive in nature and mandates the replacement of the part after the inspection, it is still appropriate to include these items in the inspection program.

(d) Type Certificate Data Sheet (TCDS) Notes. FAA legal interpretations state TCDS notes containing overhaul limits are not mandatory under our regulations. TCDS notes define the design of the aircraft and how that design meets the certification basis it is certificated under, not to define how it is maintained. Some manufacturers have attempted to put information into a TCDS that defines requirements for continuing maintenance of their aircraft; however, such information is not regulatory and is outside the purpose of the TCDS notes. Information not specifically referencing the design and configuration of an aircraft, such as ongoing maintenance requirements, is inappropriate and not binding on the owner/operator in a regulatory sense. The Aircraft Certification Service (AIR) has published FAA Order 8110.121, Type Certificate Data Sheet (TCDS) Notes, that explains the intent and design of TCDS notes in greater detail, including descriptions of appropriate content.

(e) Differences Between Operating Rules. Although we have focused on part 91 aircraft, it is prudent to mention that many other operating rules do require compliance with some form of a maintenance program (beyond the inspection program requirements).

Title 14 CFR part 135 (nine or fewer) requires compliance with at least the manufacturer's recommended maintenance program. (Refer to part 135, § 135.421.) Part 135 (10 or more) and 14 CFR part 121 require a Continuous Airworthiness Maintenance Program (CAMP), which includes a more extensive maintenance program. (Refer to §§ 135.411 and 135.423 through 135.443; and part 121, §§ 121.135, 121.367, and 121.369.) The only form of scheduled maintenance required under 14 CFR part 125 is compliance with the manufacturer's recommended overhaul periods. (Refer to part 125, § 125.247.) Part 91 subpart K (part 91K) operators are only required to comply with scheduled maintenance items if they elect to develop their own CAMP under part 91, § 91.1109(b)(5). (Refer to §§ 91.1411 through 91.1443.) Likewise, part 91K operators are only required to comply with overhaul limits if included in their CAMP program developed per § 91.1109(b)(5).

Note: Certain part replacements (life-limited parts, parts affected by Airworthiness Directives (AD), etc.) remain mandatory for aircraft operated under part 91 due to other regulatory requirements, even though they are not part of the inspection program.

Note: While scheduled items of maintenance (other than inspections) are not required to be included in the inspection program, they become mandatory if the operator chooses to include them in an Approved Inspection Program (AIP), such as one developed under § 91.409(f)(4). However, items of scheduled maintenance, that are not inspection tasks, which the manufacturer has inserted in its inspection programs are not mandatory to operators utilizing a program under § 91.409(f)(3).

(2) Manufacturer's Inspection Programs. Recently, there have been questions surrounding what is specifically required under § 91.409(f)(3) and what constitutes a program recommended by the manufacturer. First, consider what an aircraft manufacturer is required to provide as part of the certification process in the certification rules, which includes instructions for continued airworthiness (ICA). All certification rules have nearly identical wording, which specifies the ICA must be in the form of a manual or manuals that must provide for a practical arrangement. For example, 14 CFR part 23 appendix G specifies the requirements for the ICA, prepared by the aircraft manufacturer. Additionally, the ICA must contain the following information:

“(b) Maintenance instructions. (1) Scheduling information for each part of the airplane and its engines, auxiliary power units, propellers, accessories, instruments, and equipment that provides the recommended periods at which they should be cleaned, inspected, adjusted, tested, and lubricated, and the degree of inspection, the applicable wear tolerances, and work recommended at these periods. However, the applicant may refer to an accessory, instrument, or equipment manufacturer as the source of this information if the applicant shows that the item has an exceptionally high degree of complexity requiring specialized maintenance techniques, test equipment, or expertise. The recommended overhaul periods and necessary cross reference to the Airworthiness Limitations section of the manual must also be included. In addition, the applicant must include an inspection program that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the airplane.”

Being a program created by the aircraft manufacturer, an owner or operator does not need to research every engine, propeller, appliance, and equipment manual for potential inspection items. The certification rules requires the aircraft manufacturer provide ICA for their aircraft, which includes required inspection programs for those aircraft, including installed equipment. Additionally, modifying the aircraft, such as through a Supplemental Type Certificate (STC) or field approval, does not make a manufacturer's inspection program inappropriate. In such cases, the owner/operator must comply with the inspection program recommended by the manufacturer as well as any identified inspection program items from the ICA of aftermarket equipment and/or modifications. This is no different than compliance with additional inspections called out in applicable ADs.

(3) Approved Inspection Programs (AIP). There are several rules requiring aircraft to have an AIP, but the programs are basically identical in structure and required content. For example, we typically refer to an inspection approved under § 135.419 as an Approved Aircraft Inspection Program (AAIP), while we call an inspection program approved under § 91.409(f)(4) simply an AIP. While the terminology may vary slightly, the intent and design are the same. The same can be said for §§ 91.1109 and 125.247. If the rule requires the inspection program to be approved, it can all be generically referred to as the AIP for that aircraft. Note, though, some operating rules also require operators to comply with a maintenance program, which are either the manufacturer's recommended items or something developed by the operator (depending on the rule). This is in addition to the inspection program requirements. Finally, we have rules that allow, or require, a CAMP. These are all-inclusive programs that have even more requirements than the basic maintenance and inspection program requirements required elsewhere.

(4) Functional Checks. Functional checks are a form of an inspection and can be called for in a number of different situations, which can make classifying them difficult. They can be included in an inspection program, which would make them a mandatory inspection. Or they can be performed as part of the return to service after a specific maintenance activity, which makes them part of the maintenance procedure and excludes them from the inspection program. Additionally, they could be part of a pilot's pre- or post-flight procedure and not classified as maintenance items at all. Perhaps the best way to classify functional checks is to reference the source document. If it is listed in the inspection program, it is a Required Inspection Item (RII). If it is listed in an Aircraft Maintenance Manual (AMM), it is an item of maintenance; and if it is listed in an Aircraft Flight Manual (AFM) or pilot's operating handbook (POH), it is an operation item.

b. Overhaul. The term "overhaul" is mentioned in only a few places in the rules, and is not really defined. Title 14 CFR part 43, § 43.2(a) essentially states that an overhaul consists of disassembly, cleaning, inspection, repair, reassembly, and testing. However, several FAA legal interpretations have stated all of these steps are not necessarily required for a maintenance action to be an overhaul. In fact, the words "as necessary" appear after repair, and it is not clear in the text if that applies only to the word "repair," as it would seem, or to all previous list items. In any case, the FAA has taken the position that only the steps that can logically be performed would be required to call an item "overhauled." For example, a part that cannot be disassembled without destroying it, such as a turbine blade, can still be considered overhauled if following the manufacturer's overhaul instructions.

(1) Mandatory or Not. While the concept of part 91 operators not having to comply with manufacturer's TBO limits is well known, the reasons behind it have not been very well documented, although, Advisory Circular (AC) 20-105, Reciprocating Engine Power-Loss Accident Prevention and Trend Monitoring, has provided guidance since 1998. The regulations require that part 91 operators have an "inspection program" of some sort. The program could be a 100-hour, annual, manufacturer's recommended inspection program, or one of the operator's own design, depending on aircraft type. However, part 135 (nine or fewer) operators must have a "maintenance and inspection program." It is this extra mention of a "maintenance" program that makes TBOs required in part 135 (and some other operational rules), but not for part 91. Recall the definition of maintenance, "Maintenance means inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance." In the definition, "overhaul" and "inspection" are separate items, showing overhauls cannot be inspections, rather they are both unique forms of maintenance. Remember, overhauls are a maintenance process, not an inspection process.

(2) Overhaul vs. Inspection. The difference between an overhaul and the inspections performed as part of an inspection program is the purpose of the action.

(a) Inspection Program. The primary purpose of an inspection program is to perform examinations to determine the condition of an aircraft or component so any necessary repairs can be made. Essentially, inspection programs are focused on finding hidden problems that may impact airworthiness. In a typical inspection, items are not replaced unless they are actually defective.

(b) Overhaul. The primary purpose of an overhaul is to restore an article to a known good condition that will give a reasonable assurance of operation for a specified amount of time, referred to as the "time between overhauls (TBO)." While inspecting individual components is an integral part of the overhaul, this is just one part of the overall overhaul (maintenance) process. For example, during the inspection phase in an overhaul, a mechanic may be prompted to replace a part after inspecting it, even though it is not broken and is still performing its intended function. But, the wear might be such that the manufacturer has confidence the part would not make it to the next overhaul period. These tolerances are typically identified by the manufacturer as the "overhaul limits."

(3) Compliance with Manufacturer's Service Bulletins (SB). Manufacturers publish many forms of maintenance-related information, using varying names, such as Service Bulletins (SB), Service Instructions (SI), etc. We will refer to them hereafter as SBs for simplicity. These documents typically contain information that supplements a manufacturer's published maintenance manual or ICA. When determining whether a manufacturer's SB is mandatory or not, further explanation needs to be considered before answering. There are two parts to this issue; the timeframe that is sometimes prescribed, and the instructions themselves.

(a) Basic Part 91 (Excluding Part 91K). With some exceptions (as described in the following subparagraphs), compliance with manufacturer SBs is not required to be accomplished on any specific timetable for basic part 91 operators. However, once the operator chooses to perform an SB, they must follow the methods, techniques, and practices prescribed within, unless they are using some other methods, techniques, and practices acceptable to the FAA.

Recall that SBs often provide supplemental maintenance information, a topic addressed by § 43.13, which requires that each person *performing* maintenance, alterations, or preventive maintenance use the methods, techniques, and practices prescribed in the current manufacturer's maintenance manual or ICAs prepared by its manufacturer, or other methods, techniques, and practices acceptable to the Administrator. However, note that § 43.13 states that the "methods, techniques, and practices" must be followed, not the specific timeframes or schedules defined by the manufacturer. Also, the rule specifically addresses people who are "performing" maintenance, so the rule applies only once a maintenance activity has been initiated, and the rule does not require a certain maintenance activity to be "scheduled." Therefore, once a maintenance action is initiated, maintenance personnel must follow the manufacturer's instructions (or again, some other instructions acceptable to the FAA), but basic part 91 operators can choose not to perform the SB at their discretion, unless it has been mandated by an AD or other rule.

(b) Certificate Holders Other than Basic Part 91. When dealing with certificate holders, determining whether a manufacturer's SB is mandatory or not gets more complicated. For example, § 135.421 requires that operators comply with the manufacturer's recommended maintenance programs, or a program approved by the Administrator. Operators who are required to comply with a maintenance program of some type are required to comply with SBs that are explicitly defined as part of that program. Likewise, operators with a CAMP must have a program that covers maintenance, preventive maintenance, and alterations. However, with a CAMP, the certificate holder can customize the program, to include what they have to accomplish in that program, as long as what they propose is acceptable to the FAA. As a result, some SBs require compliance at defined intervals, while some do not; it depends on the purpose of the SB and whether it is referenced as part of the required maintenance program. The important distinction here is that a maintenance program is required, unlike under part 91, where only an inspection program is required. See the discussion in the inspection section for more on this distinction.

(c) Other Situations. The following describe situations when compliance with the prescribed intervals of an SB would be mandatory:

1. All or a portion of an SB is incorporated as part of an AD.
2. The SB is incorporated directly or by reference into an FAA-approved inspection program, such as an AIP or a CAMP.
3. The SB is listed as an additional maintenance requirement in the certificate holder's operations specifications (OpSpecs).
4. The SB is part of the FAA-approved Airworthiness Limitation Section (ALS) of the manufacturer's manual or the type certificate (TC). However, compliance with a new or revised ALS issued by a design approval holder (DAH) or other entity, as a type design change, is not mandatory for in-service aircraft operating, per part 91, unless it is mandated by one of the other situations above. Of course, operators can always elect to comply with the new or revised limits voluntarily.

6. Disposition. We will incorporate the information in this notice into FAA Order 8900.1 before this notice expires. Direct your questions or comments concerning this notice to the Aircraft Maintenance Division (AFS-300) at 202-267-1675.

A handwritten signature in black ink, appearing to read "John Barbagallo". The signature is stylized with a large initial "J" and "B".

John Barbagallo

Deputy Director, Flight Standards Service