

[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [66 FR 33170 6/21/2001]

[Docket No. 2000-NM-158-AD; Amendment 39-12277; AD 2001-12-21]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 747 Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment supersedes an existing airworthiness directive (AD), applicable to all Boeing Model 747 series airplanes, that currently requires revising the Airplane Flight Manual to include procedures to prevent dry operation of the center wing fuel tank override/jettison pumps and, for certain airplanes, to prohibit operation of the horizontal stabilizer tank transfer pumps in-flight. For certain airplanes, this amendment requires installation of improved fuel pumps, which terminates the requirements of the existing AD. This amendment is prompted by new information received from the fuel pump manufacturer. The actions specified by this AD are intended to prevent contact between the rotating paddle wheel and the stationary end plates within the center wing tank override/jettison fuel pumps or horizontal stabilizer tank transfer pumps, which could cause sparks and/or a hot surface condition and consequent ignition of fuel vapor in the center wing tank or horizontal stabilizer tank during dry pump operation (no fuel flowing).

DATES: Effective July 26, 2001.

ADDRESSES: Information pertaining to this AD may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington.

FOR FURTHER INFORMATION CONTACT: Sulmo Mariano, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-2686; fax (425) 227-1181.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) by superseding AD 98-25-52, amendment 39-10957 (63 FR 71214, December 24, 1998), which is applicable to all Boeing Model 747 series airplanes, was published in the Federal Register on November 20, 2000 (65 FR 69718). The action proposed to require, for certain airplanes, installation of improved fuel pumps, which would terminate the requirements of the existing AD.

Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Clarify Intent of Paragraph (b)

One commenter requests that the FAA revise paragraph (b) of the proposed rule to clarify that compliance with the requirements of that paragraph terminates the requirements of paragraph (a) of the proposed rule. The commenter points out that, while paragraph (b) states that no further action is required if it is determined that the correct thrust washer is installed under the guidelines in paragraphs (b)(1), (b)(2), and (b)(3) of the proposed rule, paragraph (b) does not state that the operational limitations in paragraph (a) are no longer necessary.

The FAA concurs with the commenter's request, and has revised paragraph (b) of this AD to state that accomplishment of that paragraph terminates the requirements of paragraph (a) of this AD.

Revise Paragraph (b) to Reference Acceptable Parts

One commenter requests that the FAA revise paragraph (b) to refer to the acceptable replacement parts identified in paragraph (c) of the proposed rule. The commenter states that Crane Hydro-Aire fuel pumps having thrust washers, part number 60-06561, with a date code of 9848 or higher etched on the outside diameter of the thrust washer, are acceptable. If such pumps are installed, no further action is required by this AD; thus, this guideline should be included with the others under paragraph (b). The commenter notes that this change will make the proposed rule easier to follow.

The FAA concurs, and has added a new paragraph (b)(4) to this final rule.

Revise Cost Impact

One commenter, the parts manufacturer, requests that the FAA revise the "Cost Impact" section of the proposed rule to remove the statement "Required parts would be provided by the manufacturer at no cost to the operators." The commenter states that there are certain restrictions on the cost of parts to the operators, based on the date of overhaul or repair of the pumps. The commenter suggests including a new statement such as, "Modification of the fuel pump by CRANE Hydro-Aire or required parts for modification by the operator will be provided by the manufacturer at no cost to the operator in accordance with the "Repair Options" and "Warranty" sections of the applicable CRANE Hydro-Aire Service Bulletin."

The FAA concurs with the intent of the commenter's request. The FAA has revised the "Cost Impact" section of this final rule to include the following statement, which is more general than the statement suggested by the commenter: "The parts manufacturer has committed previously to its customers that it may bear the cost of replacement parts with certain restrictions, based on the date of overhaul or repair of the pumps."

Limit Applicability

One commenter, the airplane manufacturer, requests that the FAA revise the proposed rule to limit the applicability to airplanes up to and including line number 1188. The commenter states that airplanes after line number 1188 have the correct thrust washers installed and, therefore, are not subject to the actions in the proposed rule. The commenter further notes that in-service pump replacements on airplanes after line number 1188 will be maintained by normal operator practices for parts control.

The FAA does not concur with the commenter's request to limit the applicability. Though only certain airplanes were produced with the incorrect thrust washer, the pump with the subject washer may easily be removed from one airplane and installed on another airplane. Thus, airplanes such as those with line numbers 1188 and subsequent, which were delivered with the correct thrust washer, may subsequently have had a pump with a discrepant thrust washer installed. No change to the final rule is necessary in this regard.

Request To Clarify Compliance Tracking

One commenter requests that paragraph (b) of the proposed rule be revised to specifically reference the accomplishment instructions of Boeing Service Bulletin 747-28-2225, dated December 3, 1998. Paragraph (b) defines conditions under which no action is required per this AD. The commenter states that including a reference to Boeing Service Bulletin 747-28-2225 would make it easier for operators to track compliance for the purposes of this proposed rule.

The FAA does not concur with the commenter's request. The FAA finds that compliance may be tracked by the part number of the override or override/jettison pump, or by review of maintenance records, methods which are allowed by paragraph (b) of this AD. The FAA finds that revising paragraph (b) of this AD in the manner suggested by the commenter would provide no improvement in the clarity of the AD. However, the original issue of Boeing Service Bulletin 747-28-2225, as well as Revision 3, dated March 3, 1999, were previously approved as alternative methods of compliance (AMOCs) for AD 98-25-52. Accordingly, paragraph (d)(2) of this AD, states that (with one exception) AMOCs approved previously in accordance with AD 98-25-52, amendment 39-10957, are approved as alternative methods of compliance with paragraph (a) of this AD. Airplanes on which the

intent of paragraph (a) of this AD has been accomplished are not subject to paragraph (b) of this AD. Thus, no change to the final rule is necessary in this regard.

Comment on Implied Life Limit of Thrust Washer

One commenter notes that the following statement, made in the "Actions Since Issuance of Previous Rule" section of the proposed rule, indicates that the life of the thrust washer on the improved pumps has been extended from 500 hours to "more than 15,000 hours." The commenter expresses concern that, while this may be a significant improvement in life limit, failure of the pump, whether at 15,000 hours or 500 hours, would still be catastrophic and, thus, is an unacceptable risk. The commenter states that, if the failure mode is still present in the improved pump, the commenter would not support the removal of the fuel quantity restrictions from the Airplane Flight Manual as allowed by the proposed rule.

The FAA infers that the commenter is requesting that the FAA remove the terminating action provided by paragraph (c) of this AD. The FAA does not concur with the commenter's request. The statement noted by the commenter was intended as a reference, not to indicate that the life of the thrust washer was 15,000 hours. Service experience has shown that the aluminum oxide coating applied to the thrust washer using a D-gun spray method lasts at least as long as the currently expected service life of the pump between overhauls. While no specific limit on the overhaul interval for the pump exists, the FAA has determined that an acceptable level of safety will be provided with respect to failure of the thrust bearing without continuing to require the AFM procedures for early pump shutoff. However, the FAA recognizes and agrees with the commenter's concern regarding the possible failure modes of fuel pumps and the current design practice of routinely allowing fuel pumps in auxiliary fuel tanks (including built-in auxiliary tanks such as the center wing tank and the horizontal stabilizer tank on Model 747-400 series airplanes) to run until the inlets are uncovered. The FAA is examining this issue and is considering issuing additional rulemaking to address fuel pump installations that are not fail-safe on existing transport airplane designs. No change to the final rule is necessary in this regard.

Conclusion

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes previously described. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Cost Impact

There are approximately 1,100 Model 747 series airplanes of the affected design in the worldwide fleet. The FAA estimates that 250 airplanes of U.S. registry will be affected by this AD.

The AFM revisions that are currently required by AD 98-25-52 take approximately 1 work hour per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the currently required actions on U.S. operators is estimated to be \$15,000, or \$60 per airplane.

The replacements required for certain airplanes by this new AD will take approximately 25 work hours per airplane to accomplish, at an average labor rate of \$60 per work hour. The parts manufacturer has committed previously to its customers that it may bear the cost of replacement parts with certain restrictions, based on the date of overhaul or repair of the pumps. Based on these figures, the cost impact of the requirements of this AD on U.S. operators is estimated to be \$375,000, or \$1,500 per airplane.

The cost impact figures discussed above are based on assumptions that no operator has yet accomplished any of the requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted. The cost impact figures discussed in AD rulemaking actions represent only the time necessary to perform the specific actions actually required by the AD. These figures typically do not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions.

Regulatory Impact

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39--AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

Sec. 39.13 [Amended]

2. Section 39.13 is amended by removing amendment 39-10957 (63 FR 71214, December 24, 1998), and by adding a new **airworthiness** directive (AD), amendment 39-12277, to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "av-info.faa.gov"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2001-12-21 Boeing: Amendment 39-12277. Docket 2000-NM-158-AD. Supersedes AD 98-25-52, Amendment 39-10957.

Applicability: All Model 747 series airplanes, certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (d)(1) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent contact between the rotating paddle wheel and the stationary end plates within the center wing tank override/jettison fuel pumps or horizontal stabilizer tank transfer pumps due to excessive wear of the pump shaft carbon thrust bearing, which can cause sparks and/or a hot surface condition and consequent ignition of fuel vapor in the center wing tank or horizontal stabilizer tank during dry pump operation (no fuel flowing), accomplish the following:

Restatement of Requirements of AD 98-25-52 Airplane Flight Manual (AFM) Revisions

(a) Within 7 days after December 29, 1998 (the effective date of AD 98-25-52, amendment 39-10957), revise the Limitations Section of the FAA-approved AFM to include the following procedures. This may be accomplished by inserting a copy of this AD into the AFM.

For Model 747-400 series airplanes equipped with a horizontal stabilizer tank, operation of the horizontal stabilizer tank transfer pumps is prohibited in flight.

A tripped circuit breaker of a center wing tank override/jettison pump or a tripped circuit breaker of a horizontal stabilizer tank transfer pump must not be reset until the associated fuel pump has been inspected for damage and any damage has been repaired.

The center wing tank override/jettison pumps must be operated in accordance with either option 1 or option 2 below.

Option 1

If the center wing tank override/jettison pumps are required for flight, the center tank must contain a minimum of 17,000 pounds (7,700 kilograms) at engine start. The fuel quantity indicating system of the center wing tank must be operative to dispatch with center wing tank fuel intended for use in the flight.

Select both center wing tank override/jettison pump switches off at or before the fuel quantity of the center wing tank reaches 7,000 pounds (3,200 kilograms). Note: On Model 747-400 series airplanes, the "FUEL OVRD CTR L" and "FUEL OVRD CTR R" engine indication and crew alerting system (EICAS) messages will be displayed with the switches off.

The center wing tank override/jettison pumps may be operated with less than 7,000 pounds of fuel in the center wing tank if required to address an emergency (such as fuel jettison or low fuel quantity).

Option 2

If the center wing tank override/jettison pumps are required for flight, the center tank must contain a minimum of 50,000 pounds (22,700 kilograms) at engine start. The fuel quantity indicating system of the center wing tank must be operative to dispatch with center wing tank fuel intended for use in the flight.

Select both center wing tank override/jettison pump switches off at or before center wing tank fuel quantity reaches 3,000 pounds (1,400 kilograms).

The center wing tank override/jettison pumps may be operated with less than 3,000 pounds of fuel in the center wing tank if required to address an emergency (such as fuel jettison or low fuel quantity)."

New Requirements of This AD Determination of Correct Thrust Washer

(b) For airplanes having center wing fuel tank override/jettison pumps and, if installed, horizontal stabilizer tank transfer pumps: If all pumps meet the criteria specified in paragraph (b)(1), (b)(2), (b)(3), or (b)(4) of this AD (i.e., the correct thrust washer is installed), no further action is required by this AD. Accomplishment of this paragraph terminates the requirements of paragraph (a) of this AD.

(1) Verify the serial number on the pump data plate. The first four digits of the pump serial number represent the month and year of manufacture (e.g., 0697 indicates a pump manufactured in June 1997). If the serial number date code indicates that the pump was manufactured prior to July 1996, or after November 1998, and if the operator can determine that the pump was not overhauled or repaired after July 31, 1996, then the pump has the correct thrust washer installed. If the pump was overhauled or repaired after July 31, 1996, and the operator has maintenance/overhaul records showing that the thrust washer was not replaced, or was replaced with the correct thrust washer, as specified in paragraph (c) of this AD, then the pump has the correct thrust washer installed.

(2) For airplanes having a date of manufacture prior to July 1996, if the operator can determine that the pump was not overhauled or repaired after July 31, 1996; and the pump was not replaced with a new pump manufactured between July 1996 and November 1998, then the pump has the correct thrust washer installed. If the pump was overhauled or repaired after July 31, 1996, and the operator has maintenance/overhaul records showing that the thrust washer was not replaced, or was replaced with the correct thrust washer, as specified in paragraph (c) of this AD, then the pump has the correct thrust washer installed.

(3) For airplanes having pumps installed containing a serial number on the pump data plate with the suffix "P," the pump has the correct thrust washer installed.

(4) For airplanes having Crane Hydro-Aire fuel pumps having a thrust washer, part number 60-06561, with a date code of 9848 ("98" indicates the year 1998, and "48" indicates the 48th week in 1998), or higher, etched on the outside diameter of the thrust washer, the pump has the correct thrust washer installed.

Terminating Action

(c) For airplanes that do not meet the requirements specified in paragraph (b)(1), (b)(2), (b)(3), or (b)(4) of this AD; or if the serial number on the pump data plate of any fuel pump cannot be determined: Within 24 months after the effective date of this AD, replace the applicable center wing

fuel tank override/jettison pumps and horizontal stabilizer tank transfer pumps with Crane Hydro-Aire fuel pumps having a thrust washer, part number 60-06561, with a date code of 9848 ("98" indicates the year 1998, and "48" indicates the 48th week in 1998), or higher, etched on the outside diameter of the thrust washer. Accomplishment of this paragraph terminates the requirements of paragraph (a) of this AD.

Alternative Methods of Compliance

(d) (1) An alternative method of compliance (AMOC) or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA. Operators shall submit their requests through an appropriate FAA Principal Operations Inspector or Principal Maintenance Inspector, as applicable, who may add comments and then send it to the Manager, Seattle ACO.

(2) With the exception of FAA AMOC letter to Boeing (No. 98-140-437, dated December 9, 1998), AMOCs approved previously in accordance with AD 98-25-52, amendment 39-10957, are approved as alternative methods of compliance with paragraph (a) of this AD.

Note 2: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

Special Flight Permits

(e) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

Effective Date

(f) This amendment becomes effective on July 26, 2001.

Issued in Renton, Washington, on June 14, 2001.

Vi L. Lipski, Manager, Transport Airplane Directorate, Aircraft Certification Service