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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2009-0454; Directorate Identifier 2008-NM-156-AD; Amendment 39-16353; AD 2010-14-08]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Model 747-400, 747-400D, and 747-400F Series Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain Model 747-400, 747-400D, and 747-400F series airplanes. For all airplanes, this AD requires installing new pump control and time delay relays, doing related investigative and corrective actions if necessary, and changing the wiring for the center and main fuel tank override/jettison fuel pumps; and, for certain airplanes, installing new relays and wiring for the horizontal stabilizer override/jettison fuel pumps. This AD also requires a revision to the maintenance program to incorporate Airworthiness Limitation No. 28-AWL-24 and No. 28-AWL-26. For certain airplanes, this AD also requires installing an automatic shutoff system for the horizontal stabilizer tank fuel pumps and installing new integrated display system software. This AD results from fuel system reviews conducted by the manufacturer. We are issuing this AD to prevent uncommanded operation of certain override/jettison pumps which could cause overheating, electrical arcs, or frictional sparks, and could lead to an ignition source inside a fuel tank. This condition, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss of the airplane.

DATES: This AD is effective August 6, 2010.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of August 6, 2010.

ADDRESSES: For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P.O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1, fax 206-766-5680; e-mail me.boecom@boeing.com; Internet <https://www.myboeingfleet.com>.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (telephone 800-647-5527) is the Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Douglas Bryant, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6505; fax (425) 917-6590.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an airworthiness directive (AD) that would apply to certain Model 747-400, 747-400D, and 747-400F series airplanes. That NPRM was published in the Federal Register on June 2, 2009 (74 FR 26317). That NPRM proposed to require installing new pump control and time delay relays, doing related investigative and corrective actions if necessary, and changing the wiring for the center and main fuel tank override/jettison fuel pumps; and, for certain airplanes, installing new relays and wiring for the horizontal stabilizer override/jettison fuel pumps. That NPRM also proposed to require a revision to the maintenance program to incorporate Airworthiness Limitation No. 28-AWL-24 and No. 28-AWL-26. For certain airplanes that NPRM proposed to require installing an automatic shutoff system for the horizontal stabilizer tank fuel pumps and installing new integrated display system software.

Explanation of Revised Service Information

Boeing has published Boeing Service Bulletins 747-28A2280 and 747-28A2281, both Revision 1, both dated November 25, 2009. In the NPRM, we referred to the original issues of Boeing Alert Service Bulletin 747-28A2280, dated August 7, 2008; and Boeing Alert Service Bulletin 747-28A2281, dated December 13, 2007. We referred to the original versions of these service bulletins as the appropriate sources of service information for accomplishing certain proposed actions. The procedures in Revision 1 of these service bulletins are essentially the same as those in the original issue of these service bulletins. Revision 1 clarifies certain work instructions and specifies that no further work is necessary for airplanes on which the actions in the original issue were performed. Boeing Service Bulletin 747-28A2281, Revision 1, dated November 25, 2009, also removes airplanes having variable numbers RT966 and RT967 from the effectivity. These airplanes are not equipped with horizontal stabilizer tanks and therefore are not affected by the identified unsafe condition.

Boeing has also published Boeing Service Bulletin 747-28A2262, Revision 2, dated August 13, 2009. In the NPRM, we referred to Boeing Service Bulletin 747-28A2262, Revision 1, dated May 8, 2008, for accomplishing the installation of a new automatic shutoff system for the horizontal stabilizer tank (HST) fuel pumps, before or at the same time as the actions in Boeing Service Bulletin 747-28A2281. The procedures in Boeing Service Bulletin 747-28A2262, Revision 2, dated August 13, 2009, are essentially the same as those in Boeing Service Bulletin 747-28A2262, Revision 1, dated May 8, 2008. Revision 2 clarifies certain work instructions and specifies that no further work is necessary for airplanes on which the actions in Revision 1 were performed.

Therefore, we have changed this AD to refer to these revised service bulletins as the appropriate sources of service information for the applicable actions. We have also added a new paragraph (i) to this AD that specifies that actions done before the effective date of this AD in accordance with the

previous issues of these service bulletins are acceptable for compliance with the corresponding requirements of this AD.

Comments

We gave the public the opportunity to participate in developing this AD. We considered the comments received.

Request to Clarify Certain Language

Boeing asks that the term "Integrated Display System (IDS)" be changed to "IDS software" in all applicable sections of the NPRM. Boeing states that this change clarifies that the actions in the NPRM are for a software change to the IDS and not a change to the IDS hardware.

We agree with the Boeing comment for the reason given. We have added the word "software" after all references to the IDS in this AD.

Request To Remove Certain Airplanes

Boeing asks that Model 747-400D and -400F airplanes be removed from paragraph (l) of the NPRM. Boeing states that Model 747-400D and -400F airplanes are not affected by the horizontal stabilizer tank (HST) changes because those airplanes do not have a HST.

We agree with the Boeing comment for the reason provided. We have removed Model 747-400D and -400F airplanes from paragraph (m) of this AD (paragraph (m) was referred to as paragraph (l) in the NPRM).

Request To Remove Airplane Flight Manual (AFM) Limitation

Boeing asks that we remove the reference to the following AFM limitations: "The 17,000-lb center wing tank (CWT) minimum fuel amount to select the CWT override/jettison pumps ON during takeoff" and "There is no change to the maximum zero fuel gross weight found in the airplane flight manual." Boeing states that the NPRM should be consistent with the AFM certificate limitations contained in AD 2007-13-04, Amendment 39-15108 (72 FR 33859, June 20, 2007). Boeing adds that in discussions regarding AFM limitations in this AD it was agreed that AFM limitations were not required for an obvious pilot action driven by engine indicating and crew alerting system (EICAS) messages.

We agree with the Boeing comment for the reasons provided and because the certification limitation for CWT minimum fuel is covered by EICAS messages, which makes it redundant. We have removed the subject limitations and changed the FAA letter concerning these limitations referred to in Note 3 of this AD.

Request To Remove Airworthiness Limitation (AWL) 28-AWL-26

Boeing asks that we remove the requirement to revise the maintenance program by incorporating AWL No. 28-AWL-26 of Section 9, "Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs)" of the Boeing 747-400 Maintenance Planning Data Document D621U400-9. Boeing states that, with the introduction of IDS-506 software, it has implemented a status level EICAS message for the relays that control the Uncommanded-ON state of the main 2 and main 3 tank fuel override/jettison pumps. Boeing adds that these messages are now consistent with the center tank Uncommanded-ON messages. Boeing notes that the EICAS message will detect a relay that remains latched when in the un-powered condition. Boeing concludes that for this reason, the need to perform the operational test found in Section 28-31-00 of the Boeing 747-400 airplane maintenance manual (AMM), and called out in AWL No. 28-AWL-26, is not necessary.

We disagree with the Boeing comment. The AWL is part of the airplane type design, and a design change has not been proposed to change the AWL. However, under the provisions of paragraph (p)(1) of the AD, we will consider removing the requirement if sufficient data are submitted to substantiate that a project has been completed showing that removing the requirement would provide an acceptable level of safety. We have made no change to the AD in this regard.

Request To Clarify the Requirements for Airplanes With a Deactivated HST

Japan Airlines (JAL) asks that we clarify the NPRM requirements for airplanes with a deactivated HST. JAL states that it decided to deactivate the HST system in accordance with Boeing Service Bulletins 747-28-2310, dated December 18, 2008; and 747-28-2314, dated December 9, 2008. JAL adds that the service bulletins specify removing components, including the pumps on horizontal stabilizer fuel tank (HSFT), and reworking the system wiring. JAL notes that after the service bulletins have been incorporated, paragraphs (g)(2), (h)(2), and (l) of the NPRM will not apply. JAL asks that an additional description be included in the AD which clarifies that the requirements in those paragraphs are only for airplanes with an active HSFT. JAL suggests clarifying the applicability as follows: "For Model 747-400 series airplanes with the active horizontal stabilizer tank." In lieu of that sentence, JAL suggests a note that specifies the following: "The airplanes with the horizontal stabilizer tank deactivated in accordance with Boeing Service Bulletin are not applicable." JAL concludes that this additional description will save on superfluous paperwork.

We partially agree with the JAL comments. We agree that the applicability should be clarified for airplanes with a deactivated HST because those airplanes have adequately addressed the unsafe condition. However, we do not agree with using the language JAL provided because it leaves "active" open to interpretation. Deactivation of a HST according to the applicable Boeing service bulletin referred to in Table 3 of this AD is the only acceptable method of compliance. We have added new paragraphs (n) and (o) to this AD (and reidentified subsequent paragraphs) to provide optional terminating action if the HST is deactivated and to reinstate the requirements if the HST is later reactivated.

Request for Analytical Justification of the Compliance Time

Lufthansa German Airlines (Lufthansa) asks that we provide justification (including statistical and probabilistic background) for the compliance time in the NPRM. Lufthansa reiterates the NPRM requirements and notes that it assumes that the failure probability is part of the determination of the proposed compliance time of 60 months for the installations and wiring changes.

We acknowledge the commenter's request and provide the following explanation. As stated in the preamble of the NPRM, "The pump is normally commanded off if the fuel level goes below the pump inlet, but if a single failure in the pump control circuitry occurs, a pump can continue to run after it is commanded off. Uncommanded operation of certain override/jettison pumps could cause overheating, electrical arcs, or frictional sparks, and could lead to an ignition source inside a fuel tank." This ignition source can come from several sources seen in service that were not originally anticipated in the airplane design. Examples of those are friction in the pump which could lead to very high internal surface temperatures caused by mechanical failures or ingestion of debris into the pump, and electrical faults leading to internal arcs or pump case burn-through. Since there are several pumps in multiple fuel tanks, depending on the configuration of the airplane, there are several possible single failures on a given airplane. This is a single failure which cannot be reliably predicted with statistical and probabilistic methods.

Currently, we are reliant on crew procedures to shut off the pumps early to mitigate the single failure risk. We are aware of accounts of pilots failing to turn pumps off due to the relatively short time between the points when the tank reaches the desired shutoff level and the pump runs dry. Given

the multiple sources of a single failure that can cause ignition, and acknowledging the limited effectiveness of the current mitigating actions, we consider that this is an issue that requires action to return to the failsafe intent of the design.

When we determine that a safety issue warrants AD action, we ascertain how quickly that issue can be eliminated based on the actions proposed by the manufacturer and other related factors. This determination includes the safety issue, the time necessary to perform the work on an airplane, the number of affected operators, and parts availability. For major modification involving large fleets, and requiring specialized facilities, we consider the overall industry ability to perform the modification on all affected airplanes in a timely manner. Based on these considerations, we determine a compliance time that minimizes risk, as well as the impact on commercial airlines. We try to align compliance times with the majority of operators' maintenance schedules, but that is dependent on the severity of the unsafe condition. In light of this analysis, we have determined that a 60-month compliance time is appropriate for this AD. We have made no change to the AD in this regard.

Requests To Extend Compliance Time

Lufthansa also states that the 60-month compliance time is not in line with its heavy maintenance overlay schedule, which is based on the latest approved maintenance review board document, and asks for an extension to 72 months. Air Transport Association (ATA), on behalf of its member United Airlines (United), asks that the compliance time be extended to 72 months in order to allow accomplishment of the proposed modifications during heavy maintenance visits. KLM Royal Dutch Airlines (KLM) asks that the compliance time be extended to 8 years, which enables KLM to schedule the modification during a D-check without additional downtime requirements. JAL also asks that the compliance time be extended to 8 years because accomplishing the modification is extensive work which can only be done during an M check for heavy maintenance. Cargolux also asks that the compliance time be extended to 8 years to coincide with its D-check heavy maintenance interval.

We do not agree with the commenters' requests. In developing an appropriate compliance time for the modification, we considered the safety implications and the practical aspect of accomplishing the modification within a period of time that corresponds to the normal scheduled maintenance for most affected operators. In consideration of these items, and as noted under the Request for Analytical Justification of the Compliance Time, we have determined that a 60-month compliance time will ensure an acceptable level of safety and allow the modification to be done during scheduled maintenance intervals for most affected operators. However, under the provisions of paragraph (p)(1) of the AD, we will consider requests to adjust the compliance time if sufficient data are submitted to substantiate that the new compliance time would provide an acceptable level of safety. We have made no change to the AD in this regard.

Cargolux adds that if the compliance time is extended to 8 years, in the interim, it proposes to have the override jettison pump push buttons replaced with switches having a configuration "D" master module within 6 months after the effective date of the forthcoming AD. Cargolux states that this will prevent the "cap pop-up" or "jamming" condition of the switch.

We disagree with the Cargolux proposal to replace push buttons as mitigating action to allow for extending the compliance time to 8 years, because its replacement is insufficient to mitigate the unsafe condition caused by possible single failures. We are aware of the problems with the push buttons and we are considering a separate rulemaking action. The faulty pressure switches are not related to this unsafe condition because they are not part of the pump power control circuit. We have made no change to the AD in this regard.

Request To Increase Work Hours and Include Parts Cost in the Costs of Compliance

ATA, on behalf of United, states that the estimate for labor and parts in the NPRM is understated. United notes that Boeing Alert Service Bulletin 747-28A2281, dated December 13, 2007, estimates that it would take 101 to 107 work hours per product to install relays and wiring for the HST. United adds that this service bulletin also includes the kits of parts necessary for the modification, and indicates that the pricing for the kits can be obtained from Boeing spares. United also states that the work hours are underestimated for Boeing Alert Service Bulletin 747-28A2280, dated August 7, 2008; and Boeing Service Bulletin 747-28A2262, Revision 1, dated May 8, 2008.

We infer that the commenter is asking to increase the work hours and include the cost of certain parts. We do not agree that the work hours are underestimated. The cost information in an AD describes only the direct costs of the specific actions required by this AD. Based on the best data available, the manufacturer provided the number of work hours necessary to do the required actions. This number represents the time necessary to perform only the actions actually required by this AD. We agree that the parts cost, which was inadvertently omitted from the Costs of Compliance table in the service bulletin, should be included because all three of these service bulletins have been revised. We have changed the Estimated Costs table to reduce certain work hours and increase the parts cost in the first row of the table to match Boeing Service Bulletins 747-28A2280 and 747-28A2281, both Revision 1, both dated November 25, 2009; and Boeing Service Bulletin 747-28A2262, Revision 2, dated August 13, 2009. We have also included the parts cost in the third row of the table, and changed the costs per product and fleet costs in the table accordingly.

Explanation of Change to Applicability

We have changed the applicability in this AD to identify model designations as published in the most recent type certificate data sheet for the affected models.

Explanation of Additional Change to "Certificate Limitations" Section

We have removed the fourth note under "Certificate Limitations" in this AD for consistency with prior FAA approvals. The note specified the following: "The CWT and the HST may be emptied normally during an emergency."

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We also determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

Explanation of Additional Change to Costs of Compliance

Since issuance of the NPRM, we have increased the labor rate used in the Costs of Compliance from \$80 per work hour to \$85 per work hour. The Costs of Compliance information, below, reflects this increase in the specified hourly labor rate.

Costs of Compliance

We estimate that this AD would affect 102 airplanes of U.S. registry. The following table provides the estimated costs for U.S. operators to comply with this AD. The average labor rate is \$85 per work hour.

Estimated Costs

Action	Work hours	Parts	Cost per product	Number of U.S.-registered airplanes	Fleet cost
Installing relays/changing wiring for center and main fuel tanks	369 to 389	\$75,007 to \$75,894	\$106,372 to \$108,959	102	\$10,849,944 to \$11,113,818
Installing new IDS software and revising the AFM when done (prior/concurrent action)	2 to 3	\$0	Up to \$255	Up to 102	Up to \$26,010
Installing relays and wiring for horizontal stabilizer tank (HST)	73 to 79	\$5,778 to \$6,486	\$11,983 to \$13,201	74	\$886,742 to \$976,874
Installing a new automatic shutoff for the HST	44	\$4,112	\$7,852	74	\$581,048
Revising the maintenance program	1	\$0	\$85	102	\$8,670

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs," describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in "Subtitle VII, Part A, Subpart III, Section 44701: General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD 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.

For the reasons discussed above, I certify that this AD:

- (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.

You can find our regulatory evaluation and the estimated costs of compliance in the AD Docket.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 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.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new AD:



2010-14-08 The Boeing Company: Amendment 39-16353. Docket No. FAA-2009-0454; Directorate Identifier 2008-NM-156-AD.

Effective Date

- (a) This airworthiness directive (AD) is effective August 6, 2010.

Affected ADs

- (b) None.

Applicability

(c) This AD applies to The Boeing Company Model 747-400, 747-400D, and 747-400F series airplanes, certificated in any category; as identified in Boeing Service Bulletins 747-28A2280, Revision 1, dated November 25, 2009, and 747-28A2281, Revision 1, dated November 25, 2009.

Note 1: This AD requires revisions to certain operator maintenance documents to include a new inspection. Compliance with this inspection is required by 14 CFR 91.403(c). For airplanes that have been previously modified, altered, or repaired in the areas addressed by this inspection, the operator may not be able to accomplish the inspections described in the revisions. In this situation, to comply with 14 CFR 91.403(c), the operator must request approval for an alternative method of compliance (AMOC) according to paragraph (p)(1) of this AD. The request should include a description of changes to the required inspection that will ensure the continued operational safety of the airplane.

Subject

- (d) Air Transport Association (ATA) of America Code 28: Fuel.

Unsafe Condition

(e) This AD results from fuel system reviews conducted by the manufacturer. We are issuing this AD to prevent uncommanded operation of certain override/jettison pumps which could cause overheating, electrical arcs, or frictional sparks, and could lead to an ignition source inside a fuel tank. This condition, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss of the airplane.

Compliance

- (f) Comply with this AD within the compliance times specified, unless already done.

Installations and Wiring Changes

(g) Within 60 months after the effective date of this AD, do the actions in paragraphs (g)(1) and (g)(2) of this AD, as applicable.

(1) For Model 747-400, 747-400D, and 747-400F series airplanes: Install new pump control and time delay relays and do related investigative and all applicable corrective actions, and change the wiring for the center and main fuel tanks override/jettison fuel pumps, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-28A2280, Revision 1, dated November 25, 2009. Do all related investigative and applicable corrective actions before further flight.

(2) For Model 747-400 series airplanes: Install new relays and wiring for the horizontal stabilizer override/jettison fuel pumps in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-28A2281, Revision 1, dated November 25, 2009.

Prior/Concurrent Requirements

(h) Prior to or concurrently with the actions required by paragraph (g) of this AD, do the applicable actions in paragraphs (h)(1) and (h)(2) of this AD.

(1) For Model 747-400, 747-400D, and 747-400F series airplanes identified in paragraphs (h)(1)(i), (h)(1)(ii), and (h)(1)(iii) of this AD: Install new integrated display system (IDS) software in accordance with the Accomplishment Instructions of the applicable service bulletin listed in paragraph (h)(1)(i), (h)(1)(ii), or (h)(1)(iii) of this AD.

(i) For Model 747-400, 747-400D, and 747-400F series airplanes that have General Electric engines, except airplanes having variable numbers (V/Ns) RL429, RL430, RL473, RL511, and RL521: Boeing Service Bulletin 747-31-2376, dated September 5, 2006.

(ii) For Model 747-400 and 747-400F series airplanes that have Pratt & Whitney engines except airplanes having V/Ns RL456, RL492, and RL502: Boeing Service Bulletin 747-31-2377, dated September 5, 2006.

(iii) For Model 747-400 and 747-400F series airplanes that have Rolls Royce engines: Boeing Service Bulletin 747-31-2378, dated September 5, 2006.

(2) For Model 747-400 series airplanes except V/Ns RM403, RM441 through RM443 inclusive, and RM445: Install a new automatic shutoff system for the horizontal stabilizer tank (HST) fuel pumps in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-28A2262, Revision 2, dated August 13, 2009.

Credit for Actions Done According to Previous Issues of Service Bulletins

(i) Actions done before the effective date of this AD in accordance with the applicable service information contained in Table 1 of this AD are acceptable for compliance with the corresponding actions required by paragraphs (g) and (h) of this AD.

Table 1 – Credit Service Information

Document	Revision	Date
Boeing Alert Service Bulletin 747-28A2280	Original	August 7, 2008
Boeing Alert Service Bulletin 747-28A2281	Original	December 13, 2007
Boeing Service Bulletin 747-28A2262	Original	March 15, 2007
Boeing Service Bulletin 747-28A2262	1	May 8, 2008

Maintenance Program Revision

(j) Concurrently with accomplishing the actions required by paragraph (g) of this AD, revise the maintenance program by incorporating Airworthiness Limitation (AWL) No. 28-AWL-24 and No. 28-AWL-26 of Section 9, "Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs)," of the Boeing 747-400 Maintenance Planning Data (MPD) Document

D621U400-9, Revision April 2008. The inspection interval for AWL No. 28-AWL-24 and AWL No. 28-AWL-26 starts on the date the modification is incorporated.

No Alternative Inspections or Inspection Intervals

(k) After accomplishing the action specified in paragraph (j) of this AD, no alternative actions or intervals may be used unless the inspections or inspection intervals are approved as an AMOC in accordance with the procedures specified in paragraph (p)(1) of this AD.

Acceptable Action for Certain ADs

(l) For Model 747-400, -400D, and -400F series airplanes: Installing new IDS software in accordance with paragraph (h)(1) of this AD is an acceptable method of compliance for the action in the applicable AD paragraph listed in Table 2 of this AD.

Table 2 – Actions for which paragraph (h)(1) of this AD is an acceptable method of compliance (no certificate limitations)

The action in –	Of –
(1) Paragraph E.	AD 90-09-06, amendment 39-6581
(2) Paragraph (b)	AD 91-13-10 R1, amendment 39-8158
(3) Paragraph (d)(1)	AD 96-07-09, amendment 39-9558
(4) Paragraph (a)(3)(iii)	AD 2000-02-22, amendment 39-11540
(5) Paragraph (a)(2)(ii)	AD 2000-12-21, amendment 39-11799
(6) Paragraph (d)(2)(iv)	AD 2003-16-16, amendment 39-13269
(7) Paragraph (d)(1)	AD 2004-10-05, amendment 39-13635

(m) For Model 747-400 series airplanes with a horizontal stabilizer fuel tank and with horizontal stabilizer tank fuel pump auto-shutoff installed: Installing new IDS software in accordance with paragraph (h)(1) of this AD is an acceptable method of compliance for the action in the applicable AD paragraph listed in Table 3 of this AD, provided the certificate limitations included in the following statement are incorporated into the Limitations Section of the applicable airplane flight manual (AFM) in place of the certificate limitation required by the AFM revision specified in the applicable AD listed in Table 3 of this AD. This may be done by inserting a copy of this AD in the AFM.

CERTIFICATE LIMITATIONS

Center Wing Tank:

The center wing tank (CWT) fuel quantity indication system must be operative to dispatch with CWT mission fuel.

If the FUEL LOW CTR L or R message is displayed, both CWT override/jettison pump(s) must be selected OFF.

If the FUEL PRESS CTR L or R message is displayed, the corresponding CWT override/jettison pump must be selected OFF.

Horizontal Stabilizer Tank:

The following additional limitations must be followed if the horizontal stabilizer tank (HST) is fueled and used:

The HST fuel quantity indication system must be operative to dispatch with HST mission fuel.

If either the FUEL PMP STB L or R message is displayed while on the ground, both HST pumps must be selected OFF.

If either the FUEL PRES STB L or R message is displayed, both HST pumps must be selected OFF.

Defueling:

Prior to defueling any fuel tanks, perform a lamp test of the respective Fuel Pump Low Pressure indication lights. When defueling, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. When defueling with passengers on board, fuel pump switches must be selected OFF at or above approximately 7,000 pounds (3,200 kilograms) for the CWT, 3,000 pounds (1,400 kilograms) for main tanks, and 2,100 pounds (1,000 kilograms) for the HST. (These requirements apply for defueling or transferring between tanks.)

Warnings and Notes Applicable to All Fuel Operations

Warning

Do not reset a tripped fuel pump circuit breaker.

Warning

Do not cycle CWT and HST pump switches from ON to OFF to ON with any continuous low pressure indication present.

Note

In a low fuel situation, both CWT override/jettison pumps may be selected ON and all CWT fuel may be used.

Note

In a low fuel situation, both HST transfer pumps may be selected ON and all HST fuel may be used.

Note

The limitations contained in these certificate limitations supersede any conflicting basic airplane flight manual limitations."

Note 2: When a statement identical to that in paragraph (m) of this AD has been included in the general revisions of the AFM, the general revisions may be inserted into the AFM, and the copy of this AD may be removed from the AFM.

Note 3: The certificate limitations in paragraph (m) of this AD are also included as an enclosure to FAA Letter 140S-09-191, dated June 23, 2009.

Table 3 – Actions for which paragraph (h)(1) of this AD is an acceptable method of compliance (with certificate limitations)

The action in –	Of –
(1) Paragraph (a)	AD 2001-12-21, amendment 39-12277
(2) Paragraph (a)	AD 2001-21-07, amendment 39-12478
(3) Paragraph (c)(2)	AD 2002-19-52, amendment 39-12900
(4) Paragraph (a)	AD 2002-24-52, amendment 39-12993

Optional Terminating Action for Paragraphs (g)(2), (h)(2), and (m) of this AD: Deactivation of the HST

(n) Deactivation of the HST, in accordance with the applicable Boeing service information in Table 4 of this AD, terminates the requirements of paragraphs (g)(2), (h)(2), and (m) of this AD, except as provided by paragraph (o) of this AD. Deactivation of the HST before the effective date of this AD in accordance with the applicable service information in Table 5 of this AD also terminates the requirements of paragraphs (g)(2), (h)(2), and (m) of this AD, except as provided by paragraph (o) of this AD.

Table 4 – Deactivation Service Information

Boeing Service Information	Revision	Date
Service Bulletin 747-28-2247	Original	November 26, 2002
Service Bulletin 747-28-2265	Original	February 22, 2006
Service Bulletin 747-28-2272	Original	February 21, 2006
Service Bulletin 747-28-2274	1	May 21, 2008
Service Bulletin 747-28-2275	4	February 2, 2009
Service Bulletin 747-28-2279	2	October 16, 2007
Service Bulletin 747-28-2285	3	August 30, 2007
Service Bulletin 747-28-2293	2	March 4, 2008
Service Bulletin 747-28-2295	2	January 19, 2009
Service Bulletin 747-28-2296	Original	July 13, 2007
Service Bulletin 747-28-2300	1	June 2, 2008
Service Bulletin 747-28-2310	Original	December 18, 2008
Service Bulletin 747-28-2314	Original	December 9, 2008

Table 5 – Deactivation Credit Service Information

Boeing Service Information	Revision	Date
Service Bulletin 747-28-2274	Original	March 13, 2006

Service Bulletin 747-28-2275	Original	June 12, 2006
Service Bulletin 747-28-2275	1	March 16, 2007
Service Bulletin 747-28-2275	2	July 2, 2007
Service Bulletin 747-28-2275	3	March 11, 2008
Service Bulletin 747-28-2279	Original	June 12, 2006
Service Bulletin 747-28-2279	1	May 25, 2007
Service Bulletin 747-28-2285	Original	January 23, 2007
Service Bulletin 747-28-2285	1	May 9, 2007
Service Bulletin 747-28-2285	2	August 3, 2007
Service Bulletin 747-28-2293	Original	May 9, 2007
Service Bulletin 747-28-2293	1	August 29, 2007
Service Bulletin 747-28-2295	Original	November 17, 2006
Service Bulletin 747-28-2295	1	March 20, 2008
Service Bulletin 747-28-2300	Original	January 16, 2008

Reactivation of the HST

(o) For any airplane on which the HST is reactivated, the HST must be reactivated in accordance with a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA. For any airplane on which the HST is reactivated, the requirements of paragraphs (g)(2), (h)(2), and (m) of this AD must be done before further flight following the reactivation, or within 60 months after the effective date of this AD, whichever occurs later. For a reactivation method to be approved, the reactivation method must meet the certification basis of the airplane, and the approval must specifically reference this AD.

Alternative Methods of Compliance (AMOCs)

(p)(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to Attn: Douglas Bryant, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6505; fax (425) 917-6590. Or, e-mail information to 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Before using any approved AMOC on any airplane to which the AMOC applies, notify your principal maintenance inspector (PMI) or principal avionics inspector (PAI), as appropriate, or lacking a principal inspector, your local Flight Standards District Office. The AMOC approval letter must specifically reference this AD.

Material Incorporated by Reference

(q) You must use the service information contained in Table 6 of this AD, as applicable, to do the actions required by this AD, unless the AD specifies otherwise.

Table 6 – Required Material Incorporated by Reference

Boeing Service Information	Revision	Date
Service Bulletin 747-28A2280	1	November 25, 2009
Service Bulletin 747-28A2281	1	November 25, 2009
Section 9, “Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs),” of the 747-400 Maintenance Planning Data (MPD) Document D621U400-9	April 2008	April 2008
Service Bulletin 747-28A2262	2	August 13, 2009
Service Bulletin 747-31-2376	Original	September 5, 2006
Service Bulletin 747-31-2377	Original	September 5, 2006
Service Bulletin 747-31-2378	Original	September 5, 2006

If you accomplish the optional actions specified in this AD, you must use the service information specified in Table 7 of this AD, as applicable, to perform those actions unless the AD specifies otherwise.

Table 7 – Optional Material Incorporated by Reference

Boeing Service Information	Revision	Date
Service Bulletin 747-28-2247	Original	November 26, 2002
Service Bulletin 747-28-2265	Original	February 22, 2006
Service Bulletin 747-28-2272	Original	February 21, 2006
Service Bulletin 747-28-2274	1	May 21, 2008
Service Bulletin 747-28-2275	4	February 2, 2009
Service Bulletin 747-28-2279	2	October 16, 2007
Service Bulletin 747-28-2285	3	August 30, 2007
Service Bulletin 747-28-2293	2	March 4, 2008
Service Bulletin 747-28-2295	2	January 19, 2009
Service Bulletin 747-28-2296	Original	July 13, 2007
Service Bulletin 747-28-2300	1	June 2, 2008
Service Bulletin 747-28-2310	Original	December 18, 2008
Service Bulletin 747-28-2314	Original	December 9, 2008

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P.O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1, fax 206-766-5680; e-mail me.boecom@boeing.com; Internet <https://www.myboeingfleet.com>.

(3) You may review copies of the service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221.

(4) You may also review copies of the service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

Issued in Renton, Washington, on June 17, 2010.

Robert D. Breneman,
Acting Manager, Transport Airplane Directorate,
Aircraft Certification Service.