

$$V_{\max} = X_1 \sum_{i=1}^n [(V_i \times L) \times TUF_i] + X_2 [TUF_w \times S_H]$$

where:

- $V_i$ =Reported hot water consumption in gallons per-cycle at maximum fill for each wash/rinse temperature selection, as recorded in 3.3.2. (For clothes washers that lock out certain wash/rinse temperature combinations, there will be "V<sub>i</sub>'s" for wash/rinse temperature combination settings available in the normal cycle and "V<sub>i</sub>'s" for wash/rinse temperature combination settings in the most energy intensive cycles.)
- $L$ =Lock out factor to be applied to the reported hot water consumption.
  - $L=1$ , used for the wash/rinse temperature combination settings that do not lock out temperature selections in the normal cycle.
  - $L=0.20$ , used for the locked out wash/rinse temperature combination settings of the normal cycle. (This is used only for clothes washers that lock out one or

- more wash/rinse temperature selections in the normal cycle.)
- $L=0.80$ , used for the locked out wash/rinse temperature combination settings of the most energy intensive cycles. (This is used only for clothes washers that lock out one or more wash/rinse temperatures selections in the normal cycle.)
- $TUF_i$ =Applicable temperature use factor corresponding to wash/rinse temperature selection as shown in 5 or 6.
- $n$ =For clothes washers that do not lock out any wash/rinse temperature combinations in the normal cycle,  $n$ =the number of wash/rinse temperature combination settings available to the user. For clothes washers that lock out one or more temperature selections in the normal cycle,  $n$ =the number of wash/rinse temperature combination settings on the washers plus the number of wash/rinse temperature combination settings that are locked out in the normal cycle.

- $TUF_w$ =Temperature use factor for warm wash setting.
- For clothes washers equipped with suds-saver feature:
  - $X_1$ =Frequency of use without suds-saver feature=.86.
  - $X_2$ =Frequency of use with suds-saver feature=.14.
- For clothes washers not equipped with suds-saver feature:
  - $X_1=1.0$
  - $X_2=0.0$
- $S_H$ =Fresh make-up water measured during suds-return cycle at maximum water fill level.
- Calculate the per-cycle temperature-weighted hot water consumption for the minimum water fill level,  $V_{\min}$ , expressed in gallons per cycle and defined as:

$$V_{\min} = X_1 \sum_{j=1}^n [(V_j \times L) \times TUF_j] + X_2 [TUF_w \times S_L]$$

where:

- $V_j$ =Reported hot water consumption in gallons per cycle at minimum fill for each wash/rinse temperature selection, as recorded in 3.3.3. (For clothes washers that lock out certain wash/rinse temperature combinations, there will be "V<sub>j</sub>'s" for wash/rinse temperature combination settings available in the normal cycle and "V<sub>j</sub>'s" for wash/rinse temperature combination settings in the most energy intensive cycle.)
- $L$ =As defined above.
- $TUF_j$ =Applicable temperature factor corresponding to wash/rinse temperature selection as shown in 5 or 6.
- $S_L$ =Fresh make-up water measured during suds-return cycle at minimum water fill level.
- $n$ =As defined above.
- $TUF_w$ =As defined above.
- $X_1$ =As defined above.
- $X_2$ =As defined above.

\* \* \* \* \*

6. The headings in paragraphs 5.1, 5.2, and 5.3 of appendix J to subpart B of part 430 are amended by removing the expressions (n=5), (n=4), and (n=3), respectively.

[FR Doc. 95-12622 Filed 5-23-95; 8:45 am]

BILLING CODE 6450-01-P

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

[Docket No. 94-NM-140-AD]

**Airworthiness Directives; Boeing Model 747-400, 757, and 767 Series Airplanes**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** This document proposes the adoption of a new airworthiness directive (AD) that is applicable to Boeing Model 747-400, 757, and 767 series airplanes. This proposal would require a revision to the Airplane Flight Manual that would advise flight crews to monitor the engine indication and crew alerting system (EICAS) for "status" level messages pertaining to impending engine fuel filter bypass. This proposal also would require the installation of upgraded EICAS computers that provide "advisory" level messages to indicate such bypass conditions. This proposal is prompted by a finding that EICAS computers currently installed on these airplanes do not provide an appropriate indication to the flight crew of an impending engine fuel filter bypass condition. The actions

specified by the proposed AD are intended to ensure that the flight crew is appropriately aware of conditions involving a severely contaminated airplane fuel system and the associated increased potential for engine power loss.

**DATES:** Comments must be received by July 19, 1995.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-103, Attention: Rules Docket No. 94-NM-140-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056. Comments may be inspected at this location between 9 a.m. and 3 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Jeff Duven, Aerospace Engineer, Propulsion Branch, ANM-140S, Seattle Aircraft Certification Office, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (206) 227-2688; fax (206) 227-1181.

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as

they may desire. Communications shall identify the Rules Docket number and be submitted in triplicate to the address specified above. All communications received on or before the closing date for comments, specified above, will be considered before taking action on the proposed rule. The proposals contained in this notice may be changed in light of the comments received.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 94-NM-140-AD." The postcard will be date stamped and returned to the commenter.

#### Availability of NPRMs

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Transport Airplane Directorate, ANM-103, Attention: Rules Docket No. 94-NM-140-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056.

#### Discussion

The FAA recently has learned that appropriate indication to the flight crew of an impending engine fuel filter bypass condition is not provided on Boeing Models 747-400 and 757 series airplanes, and on Model 767 series airplanes powered by General Electric CF6-80A and CF6-80C2 engines, Pratt & Whitney PW 4000 engines, and Rolls-Royce RB211-524 engines. Such indication to the flight crew is required by part 25 of the Federal Aviation Regulations (14 CFR part 25), which establishes the certification requirements for all transport category airplanes, including the Models 747-400, 757, and 767.

Service experience has demonstrated that severe fuel contamination can lead to fuel filter bypass, engine power loss, engine flameout, and consequent airplane diversions. Fuel contaminants have been known to adversely affect entire fuel systems on airplanes and, therefore, pose a threat of complete loss of power on all engines. Clear indication to the flight crew of an impending fuel filter bypass condition is necessary in

order to ensure that the flight crew is warned promptly of conditions that could lead to a loss of power from one or more engines.

The engine indication and crew alerting system (EICAS) computers installed on Model 747-400, 757, and 767 series airplanes use a multi-level message system to provide indications of various conditions to the flight crew. The levels of messages, in increasing order of importance to the flight crew, are indicated as "status," "advisory," "caution," and "warning." In general, "status" messages are used to ensure an acceptable airplane condition prior to dispatch of the airplane. A "status" level message on the EICAS computer is not considered to be an item that flight crews need to be aware of during flight, or an item that would have any effect on the flight planning considerations made by the flight crew.

The EICAS computers currently installed on all Model 747-400 and 757 series airplanes, and on certain Model 767 series airplanes, use a "status" level message to indicate impending engine fuel filter bypass conditions. The FAA considers that this use of a "status" level message to indicate these conditions is an unsafe condition, since such messages do not provide information to the flight crew at an appropriate awareness level. Using a "status" level message to indicate an impending engine fuel filter bypass condition could result in the flight crew being unaware of a severely contaminated airplane fuel system and the associated increased potential for engine power loss. This condition, if not corrected, could result in the airplane landing with reduced engine power, or the total loss of engine power before the airplane is able to reach a suitable landing site.

It should be noted that the addressed unsafe condition pertains only to situations involving gross fuel contaminants. Such contaminants exceed the particulate size or concentration capabilities of what the engine fuel filters are certified to handle. Additionally, the type of gross fuel contaminants that are of concern do not include ice, which can be eliminated by fuel heating. Contamination of airplane fuel systems has occurred in the past and will likely occur in the future, despite the many industry standards intended to maintain cleanliness of the airplane fuel supply. Examples of such contamination found in service include microbial growth, sealant, lint, metal particles, fuel tank cleaning chemicals, and liquid fertilizer. There also have been data indicating the existence of other contaminants in the

fuel system that, although unidentified, were severe enough to cause engine power loss.

Since an unsafe condition has been identified that is likely to exist on other products of this same type design, the proposed AD would require, initially, a revision to the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) of affected airplanes that would require the flight crew to respond to EICAS "status" level messages that indicate impending engine fuel filter bypass conditions. Information addressing the presence of multiple engine fuel filter bypass messages would be contained in this AFM revision.

This proposed AD also would require the installation, on certain airplanes, of upgraded EICAS computers that display an "advisory" level message to the flight crew to indicate that an impending engine fuel filter bypass condition exists for each engine. Following installation of the upgraded EICAS computers, the AFM information would be required to be revised to be consistent with the displayed information.

The upgraded EICAS installation would not be required for Model 767 airplanes powered by Pratt & Whitney JT9D engines, since those airplanes are currently equipped with EICAS computers that provide the level of indications that are otherwise proposed in this notice. However, the AFM for those airplanes does not contain appropriate information addressing these messages. Therefore, this proposed AD would require revising the Limitations Section of that AFM to include information addressing the situation where multiple advisory level messages are present, indicating that multiple engine fuel filters are in an impending bypass condition.

There are approximately 1,378 Model 747-400, 757, and 767 series airplanes of the affected design in the worldwide fleet. The FAA estimates that 588 airplanes of U.S. registry would be affected by this proposed AD.

The proposed initial revision to the AFM would take approximately 1 work hour per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the total cost impact of this proposed action on U.S. operators is estimated to be \$35,280, or \$60 per airplane.

The FAA currently has no specific cost estimates associated with the proposed installation of upgraded EICAS computers, since the upgrade has not been developed yet. The FAA has been advised, however, that the manufacturer is planning other changes to these EICAS computers that are

necessary to provide for global positioning system (GPS) navigation capability and other enhanced features. The proposed compliance time of four years for the EICAS installation requirements of this AD will allow a portion of the EICAS computers installed on airplanes affected by this AD to have the required EICAS message upgrade made coincidentally with those other planned EICAS changes, thereby reducing the costs and scheduling impact of such changes on operators. As indicated earlier in this preamble, the FAA specifically invites the submission of comments and other data regarding the economic aspect of this proposal.

The proposed revision to the AFM that would be required subsequent to the installation of the upgraded EICAS computers would take approximately 1 work hour per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the total cost impact of this proposed action on U.S. operators is estimated to be \$35,280, or \$60 per airplane.

The regulations proposed herein would not have substantial direct effects 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, in accordance with Executive Order 12612, it is determined that this proposal would not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

For the reasons discussed above, I certify that this proposed regulation (1) Is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) if promulgated, 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 copy of the draft regulatory evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting 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.

#### The Proposed Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration proposes to amend 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. App. 1354(a), 1421 and 1423; 49 U.S.C. 106(g); and 14 CFR 11.89.

#### § 39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

**Boeing:** Docket 94-NM-140-AD.

*Applicability:* All Model 747-400, 757, and 767 series airplanes; certificated in any category.

*Compliance:* Required as indicated, unless accomplished previously.

To ensure that the flight crew is appropriately aware of conditions involving a severely contaminated airplane fuel system and the associated increased potential for engine power loss, accomplish the following:

(a) For all Model 747-400 series airplanes: Within 60 days after the effective date of this AD, revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following statement. This may be accomplished by inserting a copy of this AD in the AFM.

"Respond to the EICAS STATUS CUE by checking for the following status level messages(s):

ENG 1 FUEL FILT  
ENG 2 FUEL FILT  
ENG 3 FUEL FILT  
ENG 4 FUEL FILT

If more than one of these impending fuel filter bypass messages is displayed, airplane fuel system contamination may be present, which can result in erratic engine operation and engine flameout."

(b) For all Model 757 series airplanes, and Model 767 series airplanes powered by General Electric CF6-80A and CF6-80C2 engines, Pratt & Whitney PW 4000 engines, and Rolls-Royce RB211-524 engines: Within 60 days after the effective date of this AD, revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following statement. This may be accomplished by inserting a copy of this AD in the AFM.

"Respond to the EICAS STATUS CUE by checking for the following status level messages(s):

R ENG FUEL FILT  
L ENG FUEL FILT

If more than one of these impending fuel filter bypass messages is displayed, airplane fuel system contamination may be present, which can result in erratic engine operation and engine flameout."

(c) For Model 767 series airplanes powered by Pratt & Whitney JT9D engines: Within 60 days after the effective date of this AD, revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following statement. This may be accomplished by inserting a copy of this AD in the AFM.

"If both of the following EICAS advisory level messages for impending fuel filter

bypass are displayed, and engine fuel icing is not suspected (based on the fuel temperature being too high or because engine fuel heat has been selected "on"), airplane fuel system contamination may be present, which can result in erratic engine operation and engine flameout:

R ENG FUEL FILT  
L ENG FUEL FILT"

(d) For all Model 747-400 series airplanes; all Model 757 series airplanes; and Model 767 series airplanes powered by General Electric CF6-80A and CF6-80C2 engines, Pratt & Whitney PW 4000 engines, and Rolls-Royce RB211-524 engines: Accomplish the requirements of paragraph (d)(1) and (d)(2) of this AD:

(1) Within 4 years after the effective date of this AD, install an upgraded engine indication and crew alerting system (EICAS) computer that will provide "advisory" level messages to the flight crew to indicate an impending engine fuel filter bypass condition for each engine. The installation shall be accomplished in accordance with a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA, Transport Airplane Directorate.

(2) Coincidental with the installation required by paragraph (d)(1) of this AD, remove the AFM revisions required by paragraphs (a) and (b) of this AD, and revise the Limitations Section of the AFM to advise the flight crew that impending engine fuel filter bypass advisory level messages for multiple engines may indicate contamination of the airplane fuel system, which can result in erratic engine operation and engine flameout. The revision to the Limitations Section must be approved by the Manager, Seattle ACO, FAA, Transport Airplane Directorate.

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle ACO, FAA, Transport Airplane Directorate. Operators shall submit their requests through an appropriate FAA Principal Operations Inspector, who may add comments and then send it to the Manager, Seattle ACO.

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

(f) 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. Issued in Renton, Washington, on May 18, 1995. Original Signed By:

**Darrell M. Pederson,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.*

[FR Doc. 95-12710 Filed 5-23-95; 8:45 am]

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