[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2012-0187; Directorate Identifier 2011-NM-094-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental notice of proposed rulemaking (NPRM); reopening of comment period.

SUMMARY: We are revising an earlier proposed airworthiness directive (AD) for certain The Boeing Company Model 757 airplanes. The NPRM proposed to require modifying the fuel quantity indication system (FQIS) wiring or fuel tank systems to prevent development of an ignition source inside the center fuel tank. The NPRM was prompted by fuel system reviews conducted by the manufacturer. This action revises the NPRM by revising the applicability, including optional actions for cargo airplanes, and extending the compliance time. We are proposing this supplemental NPRM (SNPRM) to prevent ignition sources inside the center fuel tank, which, in combination with flammable fuel vapors, could result in fuel tank explosions and consequent loss of the airplane. Since these actions significantly change the corrective action options for cargo airplanes relative to the proposal in the NPRM, and because the cost estimate is significantly revised, we are reopening the comment period to allow the public the chance to comment on these proposed changes.

DATES: We must receive comments on this SNPRM by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

• Federal eRulemaking Portal: Go to http://www.regulations.gov. Follow the instructions for submitting comments.

• Fax: 202-493-2251.

• Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

• Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet https://www.myboeingfleet.com. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at http://www.regulations.gov by searching for and locating Docket No. FAA-2012-0187.

Examining the AD Docket

You may examine the AD docket on the Internet at http://www.regulations.gov by searching for and locating Docket No. FAA-2012-0187; 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 proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Jon Regimbal, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6506; fax: 425-917-6590; email: jon.regimbal@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2012-0187; Directorate Identifier 2011-NM-094-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to http://www.regulations.gov, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

We issued an NPRM to amend 14 CFR part 39 by adding an AD that would apply to certain The Boeing Company Model 757 airplanes. The NPRM published in the Federal Register on March 1, 2012 (77 FR 12506). The NPRM proposed to require modifying the fuel quantity indication system (FQIS) wiring or fuel tank systems to prevent development of an ignition source inside the center fuel tank. We subsequently issued an NPRM (77 FR 33129, June 5, 2012) to reopen and extend the comment period for an additional 2 months.

Related Service Information under 1 CFR part 51

We have reviewed Boeing Service Bulletin 757-28-0136, dated June 5, 2014. This service information describes procedures for the built-in test equipment test/procedure (BITE check) specified in paragraph (h)(1) of this supplemental NPRM. For information on the procedures and compliance times, refer to this service information. This service information is reasonably available; see ADDRESSES for ways to access this service information.

Comments

We gave the public the opportunity to comment on the NPRM (77 FR 12506, March 1, 2012). The following presents the comments received on the NPRM and the FAA's response to each comment.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Unjustified by Risk

Boeing and Airbus requested that we withdraw the NPRM (77 FR 12506, March 1, 2012). Airbus requested that we consider risk levels before pursuing anticipated ADs for similar models. Boeing's request was based on a determination that the risk posed by the FQIS is not high enough to warrant AD action. Boeing described the detailed design features that it considers make the failures contributing to the unsafe condition unlikely. Boeing added that its own numerical probability analysis of the average risk level due to the combination of failures required to cause a fuel tank explosion is on the order of one catastrophic event per billion flight hours. Boeing pointed out that this probability level would meet the certification standard for systems contained in section 25.1309(b) of the Federal Aviation Regulations (14 CFR 25.1309(b)). Boeing also pointed out that, because the Model 757 is out of production and has a limited remaining fleet life, the total risk of a catastrophic event occurring in the remaining fleet life is approximately 0.5 percent. Boeing also noted that if a conductive condition were to exist between the probes or wiring and structure, it would be identified by FQIS faults and therefore would not be latent for multiple flights.

We disagree with the request to withdraw the NPRM (77 FR 12506, March 1, 2012). Average risk per flight hour and total fleet risk were not the safety criteria that drove the FAA to propose the AD. In addition to examining average risk and total fleet risk, the FAA examines the individual flight risk on the worst reasonably anticipated flights. FAA Transport Airplane Risk Assessment Methodology (TARAM) Policy Statement PS-ANM-25-05 (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/0/4E5AE8707164674A862579510061F96B?OpenDocument&Highlight=ps-anm-25-05) calls for the FAA to assess individual flight safety risk in consideration of pre-existing hidden failure conditions and accounts for dispatch with inoperative equipment. The TARAM policy classifies a flight dispatch condition as "reasonably anticipated" if, in absence of corrective action, ten or more flights are expected to occur.

Average risk is an arithmetic average of the risk of a given event during all operation of an aircraft fleet, regardless of whether the risk actually varies during the operation of the fleet. We use average risk analysis to assess whether a risk is acceptable when there is little or no variation in risk from flight to flight. Total fleet risk is the aggregate sum of all risk throughout a fleet during the remaining fleet life. Total fleet risk analysis is meaningful in assessing total societal risk, but it does not assess the variation in risk between flights or the risk on the worst anticipated flights. Individual flight risk as used by the FAA is an assessment of the specific safety risk that exists or will exist on the worst reasonably anticipated individual flights due to a given issue.

Individual risk analysis is used by the FAA to determine whether the public's expectation for a reasonable level of safety on each transport airplane flight is met. An acceptable average risk level and acceptable total fleet risk do not ensure that all reasonably anticipated flights (flights with known inoperative equipment, flights with undetected failures, flights in less-than-ideal but approved and expected weather or

operational conditions, etc.) will provide the minimum level of safety expected by the public. When the safety risk is concentrated on flights with a given pre-existing dispatch condition or expected operational condition, it is possible to have an unacceptable individual flight safety risk on the worst reasonably anticipated flights even when the average risk and total fleet risk are acceptable.

In the case of this SNPRM, the risk due to the current Model 757 FQIS design architecture is not spread equally among all of the flights conducted on the affected airplanes. Instead, the risk is concentrated almost entirely on the small subset of flights that occur with a latent failure condition pre-existing in the fuel tank. Flights with such a latent failure condition and flammable conditions in the center fuel tank have been judged by the FAA to be reasonably anticipated to occur based on the numerical probability analysis submitted by the manufacturer in response to Special Federal Aviation Regulation No. 88 ("SFAR 88," Amendment 21-78, and subsequent Amendments 21-82 and 21-83) (http://rgl.faa.gov/Regulatory_and_Guidance_Library%5CrgFAR.nsf/0/EEFB3F94451DC06286256C93004F5E07?OpenDocument) and the flammability analysis submitted to support certification of Boeing's flammability reduction means (FRM), which Boeing refers to as a nitrogen generation system (NGS). For those reasonably anticipated flights, the probability of a catastrophic event (or individual flight safety risk) is the probability of an additional single failure in the related aircraft wiring or equipment sending a high energy signal onto the already compromised in-tank circuit(s). The individual flight safety risk of a catastrophic event on these flights is in excess of the FAA's threshold for an unsafe condition determination contained in the published TARAM Policy Statement PS-ANM-25-05 (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/0/4E5AE8707164674A862579510061F96B?OpenDocument&Highlight=ps-anm-25-05).

As discussed above, this risk of a catastrophic event on those flights is due to a single additional failure condition. The risk on those flights due to a single failure violates the FAA's general fail-safe design requirements philosophy for transport airplanes. In general, we issue ADs in cases where reasonably anticipated flights with pre-existing failures (either due to latent failure conditions or allowable dispatch configurations) are vulnerable to a catastrophic event due to an additional foreseeable single failure condition. This is because the FAA considers operation of flights vulnerable to a potentially catastrophic single failure condition to be an excessive safety risk to the passengers on those flights. This SNPRM is consistent with that continued operational safety philosophy.

In its comment, Boeing stated that the existing design meets the numerical probability requirements of section 25.1309(b) of the Federal Aviation Regulations (14 CFR 25.1309(b)), which requires safety analysis of systems. Boeing concluded that the existing system would need no further risk reduction to meet the requirements of that rule. We disagree with this conclusion. First, the existence of a general safety standard, even if met by a design, does not in and of itself preclude a determination that there is a specific unsafe condition. The recognition that compliance with an existing regulation may not be sufficient to ensure safety is specifically addressed in type certification by section 21.21(b)(2) of the Federal Aviation Regulations (14 CFR 21.21.(b)(2)) and has often led to changes in regulations to address newly recognized unsafe conditions. Second, because Boeing mentioned only that rule, we infer that Boeing may be suggesting that section 25.1309(b) of the Federal Aviation Regulations (14 CFR 25.1309(b)) is the most relevant safety analysis standard applicable to the FQIS. As discussed above, even if later changes to section 25.981 of the Federal Aviation Regulations (14 CFR 25.981) are not considered and only the original certification basis for the Model 757 is applied, there are safety standards more specific to powerplant

installations including fuel tanks and FQIS than section 25.1309(b) of the Federal Aviation Regulations (14 CFR 25.1309(b)).

The original certification basis for Model 757 airplanes included section 25.901(c) of the Federal Aviation Regulations (14 CFR 25.901(c)) (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgFar.nsf/FARSBySectLookup/25.901) at Amendment 25-40. According to that subsection, "For each powerplant and auxiliary power unit installation, it must be shown that no single failure or malfunction or probable combination of failures will jeopardize the safe operation of the airplane …." (The FQIS is considered to be part of the powerplant installation in accordance with the definition in section 25.901(a) of the Federal Aviation Regulations (14 CFR 25.901(a)).) Section 25.901(c) of the Federal Aviation Regulations (14 CFR 25.901(c)) sets a more stringent applicable standard than that of section 25.1309(b) of the Federal Aviation Regulations (14 CFR 25.1309(b)) for catastrophic failure conditions that are due to latent failure conditions combined with a subsequent single failure condition (referred to as "latent-plus-one" conditions).

The more stringent intent of section 25.901(c) of the Federal Aviation Regulations (14 CFR 25.901(c)) (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgFar.nsf/FARSBySectLookup/25.901) is discussed in further detail in the notice of proposed rulemaking and the preamble that were published for Amendment 25-102. The FAA's long-standing practice in applying the "no single failure or malfunction" clause of section 25.901(c) of the Federal Aviation Regulations (14 CFR 25.901(c)) has been to apply that standard to all reasonably anticipated flights – not simply to an average flight or an ideal flight. As such, we examine all conditions: flights with reasonably anticipated pre-existing failure conditions, flights with inoperative equipment allowed for dispatch, and flights in adverse environmental conditions or other operational conditions for which the airplane is

approved. If single failure conditions that jeopardize safe operation of the airplane (catastrophic or hazardous conditions) are identified as part of this examination, the design is considered to be non-compliant with section 25.901(c) of the Federal Aviation Regulations (14 CFR 25.901(c)).

Finally, the SFAR 88 AD-decision policy (Policy Memo ANM-100-2003-112-15) (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/0/DC94C3A46396950386256D5E006AED11?OpenDocument&Highlight=anm-100-2003-112-15) classifies a "latent-plus-one" condition in a high flammability fuel tank as an unsafe condition requiring corrective action. That policy actually provides some relief from the latent-plus-one criteria contained in the airworthiness regulations.

We have not changed this SNPRM regarding this issue.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Not Supported by Risk Analysis

Airlines for America (A4A) proposed that we re-evaluate the NPRM (77 FR 12506, March 1, 2012) because it is "not founded on a data-based risk analysis." A4A stated that the FAA determined that an unsafe condition exists based only on non-compliance with one SFAR 88 criterion. A4A noted that the design approval holder, Boeing, has performed a numerical probability analysis and has calculated that the probability of a fuel tank explosion due to the FQIS issue is approximately one event per billion flight hours, with cargo airplanes being slightly better due to a lower average tank flammability. A4A also stated that existing ignition-prevention ADs have reduced the overall risk of an ignition event to a level that questions the need for FQIS modification. We infer that the commenter is requesting that we withdraw the NPRM.

We disagree to withdraw the NPRM (77 FR 12506, March 1, 2012). We performed a qualitative risk assessment in accordance with our published SFAR 88 unsafe condition determination policy based on Boeing's submitted SFAR 88 design review, and determined that the FQIS design on the Model 757 series airplanes presents

an unsafe condition and that AD action was warranted under that policy. We also performed a data-based numerical risk analysis using data provided by the manufacturer, and assessed the risk under the transport airplane unsafe condition criteria in the TARAM policy currently used by the FAA. Our risk analysis determined that the risk of an explosion event due to an FQIS latent-plus-one failure condition is not evenly shared by all flights of airplanes of the affected design. Instead, the risk of an FQIS-related fuel tank ignition event is largely concentrated on the subset of flights that occur with a pre-existing latent failure condition and that operate with flammable conditions in the center fuel tank. Based on Boeing's data, such flights are reasonably anticipated to occur.

For those flights, the risk exceeds the allowable threshold for individual flight safety risk in the TARAM policy. In addition, that risk on those flights is due to a single additional failure, which is inconsistent with the fail-safe design philosophy; that philosophy is fundamental to the excellent safety record of transport airplanes. (See FAA Advisory Circular (AC) 25.1309-1A, "System Design and Analysis," dated June 21, 1998 (http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%2025.1309-1.pdf), for a discussion of the fail-safe design philosophy.) We would normally classify either of those conditions as an unsafe condition. Based on this risk analysis, we have determined that the individual flight safety risk due to this issue on the worst anticipated flights does not meet the minimum level of safety required by the FAA and expected by the public. We have not changed this SNPRM regarding this issue.

Request to Withdraw or Delay NPRM (77 FR 12506, March 1, 2012): Need Detailed Risk Assessment

FedEx requested that we revise the NPRM (77 FR 12506, March 1, 2012) to provide a numerical risk assessment justifying the proposed action. UPS made a similar comment. UPS stated that, if the FAA has gathered new data since the issuance of the "Reduction of Fuel Tank Flammability in Transport Category Airplanes" rule (73 FR 42444, July 21, 2008) (http://www.gpo.gov/fdsys/pkg/FR-2008-07-21/pdf/E8-

16084.pdf), referred to as the Fuel Tank Flammability Reduction (FTFR) rule, the FTFR working group should be reconvened in order to collaborate and discuss the proposed safety risk, assess the risk statistically, evaluate solutions and options, and establish accurate cost and economic impact for the options. FedEx provided an analysis showing that the total risk of a tank explosion due to this issue on the fleet of Model 757 cargo airplanes is relatively low. We infer that the commenters are requesting that we withdraw or delay the NPRM.

We disagree with the request to withdraw the NPRM (77 FR 12506, March 1, 2012), pending review of the FAA's numerical risk assessment by the "FTFR working group." The Aviation Rulemaking Advisory Committee (ARAC) Fuel Tank Harmonization Working Group (FTHWG) was tasked to recommend new rulemaking to eliminate or significantly reduce the risk of exposure to flammable fuel-air mixtures in fuel tanks. The ARAC FTHWG issued its final report in 1998. The subsequent ARAC Fuel Tank Inerting Harmonization Working Group (FTIHWG) was tasked to provide data needed for the FAA to evaluate the feasibility of implementing regulations that would require eliminating or significantly reducing the development of flammable vapors in fuel tanks on transport-category airplanes. This effort was an extension of the previous work performed by the FTHWG. The ARAC FTIHWG issued its final report in 2002. The FAA's work in developing the SFAR 88 corrective action decision policy and in determining specific unsafe conditions was outside the scope and charter of these working groups that contributed to the FTFR rule (73 FR 42444, July 21, 2008). We determined that an unsafe condition exists in accordance with the SFAR 88 corrective action decision policy and TARAM policy. We have provided a summary of our risk assessment as discussed in the responses to "Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Unjustified by Risk" and "Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Not Supported by Risk Analysis" in this SNPRM. As explained

previously (see "Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Unjustified by Risk" in this SNPRM), the FAA determined the unsafe condition based on the unacceptable risk on anticipated flights with a latent FQIS failure and flammable fuel tank conditions, not the total fleet risk. We have not changed this SNPRM regarding this issue.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012): No Unsafe Condition

UPS stated that an SFAR 88 working group analyzed potential fuel tank ignition sources and that maintenance programs were revised using MSG3 methodology to meet the revised criteria in "14 CFR 25.981(3)." (We assume UPS intended to refer to section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3))) (http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/73716).) UPS stated that the unsafe condition identified in the NPRM is inconsistent with the working group analysis and lacks new data or evidence indicating that "excessive flammability or other known unsafe condition exists, or is likely to develop." Finally, UPS made the following observation about the NPRM:

> The NPRM fails to consider the beneficial effects of the timing and effects of the maintenance action in response to a single in-tank or out-of-tank failure mode, or the beneficial effects of previous airworthiness directives and other SFAR 88 related actions taken to mitigate the proposed risk and reduce the probability.

We infer that the commenter is requesting that we withdraw the NPRM (77 FR 12506, March 1, 2012). We disagree with the request to withdraw the NPRM. The FAA has performed a risk assessment and has determined that an unsafe condition does exist, both from a design architectural standpoint and a numerical risk standpoint. The basis for that determination is discussed in detail in the responses to "Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Unjustified by Risk" and "Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Not Supported by Risk Analysis" in this SNPRM.

The requirements of section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3)) cannot be met with an approved maintenance program only. While an appropriate maintenance program is required, section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3)) has the effect of setting minimum requirements for the design architecture and the reliability of system elements. The Model 757 FQIS as originally designed does not meet all of those requirements. Previous AD actions, other than the required maintenance program revisions included in AD 2012-12-15, Amendment 39-17095 (77 FR 42964, July 23, 2012) (which superseded AD 2008-10-11, Amendment 39-15517 (73 FR 25974, May 8, 2008)), have no effect on the level of individual flight risk that has been determined to be an unsafe condition. Some of the airworthiness limitations (AWLs) introduced by AD 2012-12-15 will reduce the rate of introduction of additional risks due to future maintenance errors or modifications compromising required design features, but are not expected to prevent all errors. Those AWLs do not address problems that may already exist or develop on in-service airplanes separate from maintenance activity, and they do not address the basic non-compliant aspects of the original FQIS design architecture. Those AWLs therefore would not have a significant effect on either the number of flights that occur with a latent failure condition or the FQIS-related fuel tank explosion risk level on those flights estimated in the FAA's risk assessment. We have not changed this SNPRM regarding this issue.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012): No Unsafe Condition

Airbus acknowledged that the latent-plus-one scenarios that prompted the unsafe condition determination are a technical possibility, but stated that the failure combinations that can create an ignition source are extremely improbable. Airbus also stated that AD-required airworthiness limitations related to FQIS have significantly reduced the likelihood of an FQIS-related fuel tank ignition event. We infer that Airbus is

requesting that we withdraw the NPRM (77 FR 12506, March 1, 2012) based on Airbus's contention that no unsafe condition exists.

We agree to clarify the likelihood that the unsafe condition could occur. The FAA's unsafe condition determination was not based on an assessment of average risk. We agree that the average risk of a fuel tank explosion on the Model 757 is likely to be lower than the numerical guidance for "extremely improbable" of 1.0x10E-9 per flight hour. We also agree that the average risk was likely reduced by AD-required airworthiness limitations that specify extra checks after in-tank work, and adequate separation of newly installed out-of-tank wiring from FQIS wiring.

As discussed in "Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Unjustified by Risk" in this SNPRM, however, the FAA's unsafe condition determination was driven by the identification of an unacceptable level of individual risk that exists on flights that are anticipated to occur with a pre-existing latent in-tank failure condition and with a flammable center fuel tank. In the remaining life of the affected airplanes, a significant number of such flights are reasonably anticipated to occur – even with the improvements expected under the AWLs required by AD 2012-12-15, Amendment 39-17095 (77 FR 42964, July 23, 2012). For those flights, a fuel tank explosion can be caused by an additional single wiring failure. In addition, the manufacturer's estimated probability of such a failure (the additional single wiring failure) significantly exceeds the FAA's unsafe condition numerical threshold for individual flight risk. The probability of a fuel tank explosion on those flights is not reduced by the existence of the above-mentioned AWLs. The AWL that requires extra checks after in-tank work has been done has the potential to reduce the number of flights with a pre-existing in-tank failure condition. The AWL that requires newly installed wiring to meet separation standards should prevent a significant increase in the risk on those flights that would have resulted from the installation of additional, inadequately separated wiring.

We have not changed this SNPRM regarding this issue.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012) Based on Similar Rulemaking for Cargo Airplanes

ASTAR Air Cargo (ASTAR) requested that we withdraw the NPRM (77 FR 12506, March 1, 2012). In support of its request, ASTAR cited the TWA Flight 800 accident investigation and its finding that the most probable cause of the accident was a fuel tank explosion due to a latent-plus-one failure of the FQIS. ASTAR stated that the FAA had proposed the FTFR rule (73 FR 42444, July 21, 2008) to mitigate the risk of fuel tank explosions, and that cargo airplanes had been exempted from that requirement based on a cost-benefit analysis. ASTAR argued that, because the basis for exclusion of all cargo aircraft from the FTFR rule has not changed, all cargo aircraft should be exempt from any corrective action for the FQIS latent-plus-one issues, and the NPRM (77 FR 12506, March 1, 2012) should be withdrawn.

We disagree with the request. We have determined that an unsafe condition requiring corrective action exists in the Model 757 FQIS. The FTFR rule (73 FR 42444, July 21, 2008) was proposed not because of FQIS issues specifically, but because of the history of fuel tank explosions in the transport airplane fleet due to various causes, and an acknowledgement that industry and the FAA may not be able to anticipate and prevent all of the fuel tank ignition sources that may arise due to design and maintenance issues in the life of a fleet of airplanes.

The intent of the FTFR rule (73 FR 42444, July 21, 2008) was to reduce the overall exposure to flammable fuel tank conditions in the fleet by approximately one order of magnitude with the expectation that this would have a significant impact on the rate of fuel tank explosions in the future due to unanticipated causes. In promulgating this improvement in the safety standards, the FAA acknowledged that installation of FRM or ignition mitigation means on a given airplane in accordance with the FTFR rule would be sufficient to address the FQIS latent-plus-one unsafe condition. The FTFR rule was not

intended to prevent the FAA from addressing that unsafe condition on airplanes that would not be affected by the FTFR rule. This was clearly stated in the preamble to the FTFR rule. We have not changed this SNPRM regarding this issue.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Underestimated Economic Impact

Several commenters requested that we withdraw the NPRM (77 FR 12506, March 1, 2012) because the FAA's cost estimate was too low. A4A estimated that the costs associated with the NPRM would be up to 3 times the $100,000 to $200,000 estimated by the FAA, and would be comparable with the cost of Boeing's NGS installation. Goodrich pointed out that any redesigned FQIS would likely be subject to the current requirements of section 25.981 of the Federal Aviation Regulations (14 CFR 25.981), resulting in higher costs than estimated by the FAA. A4A speculated that these higher costs were the reason the NGS was acknowledged as a method of compliance in the NPRM. A4A and UPS stated that the FAA appears to be using the NPRM as a method to require the installation of Boeing's NGS (or equivalent actions) on airplanes that were not included in the applicability of the FTFR rule (73 FR 42444, July 21, 2008) based on a cost-benefit analysis.

Although we disagree to withdraw the NPRM, we agree with some of the commenters' assertions. We agree that our original cost estimate was low. We agree to adjust the cost estimate, based on the information provided by the commenters, as discussed below under "Request to Revise Cost Estimate Based on New Data." Our original estimate was based on information provided previously by manufacturers of original equipment FQIS, retrofit FQIS, and both original equipment and aftermarket transient suppression and isolation devices. Our current estimate has been increased to reflect the written comments from and further discussions with Boeing and Goodrich. There is no change to our determination that an unsafe condition exists. We are therefore

proceeding with this AD action based on the identified corrective actions that will address the unsafe condition.

We disagree with the characterization that we are using the AD process to require an FRM to be installed on airplanes that were excluded from the FTFR rule (73 FR 42444, July 21, 2008) because inclusion could not be justified in a cost-benefit analysis. The FTFR rule was intended to enhance the airworthiness standards in a manner that would increase the level of safety for affected airplanes over that ensured by the existing regulations. That enhancement was expected to result from an increased level of protection from ignition sources that had not been identified by manufacturers in their safety analyses. That enhancement of the airworthiness standards was required to be justified by a cost-benefit analysis. Cargo airplanes were excluded because the FTFR rule safety enhancement could not be justified for those airplanes from a cost-benefit standpoint.

This SNPRM would not require a safety enhancement over the level of safety required by previous standards. Instead, this SNPRM addresses an unsafe condition that was identified from the manufacturer's SFAR 88 safety analysis using the FAA's published corrective action decision criteria for SFAR 88 identified design issues (see section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3) (http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/73716). We deferred taking action on this unsafe condition until after the FTFR rulemaking activity because the installation of an FRM would sufficiently address the FQIS latent-plus-one unsafe condition. Now that the FTFR rulemaking process is complete, we are resuming our activity to address these unsafe conditions via AD actions. The Boeing NGS has been acknowledged as a method of compliance in this SNPRM because the Boeing NGS is an available design that the FAA knows would

address the unsafe condition. No additional change was made to this SNPRM as a result of this comment.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012) Due to its Hidden Effects

A4A requested that we withdraw the NPRM (77 FR 12506, March 1, 2012) because of certain hidden effects that may not have been anticipated by the FAA. A4A pointed out that some operators are already anticipating difficulty in meeting the deadlines for compliance with the FTFR rule (73 FR 42444, July 21, 2008). Based on A4A's assumption that airlines would comply with the NPRM by incorporating Boeing's current NGS design, A4A expressed concern that using Boeing's NGS for these additional airplanes would potentially exceed the rate at which industry can modify the fleet affected by the planned ADs and the FTFR rule. A4A also noted that the compliance time for the NPRM would overlap the compliance period for the FTFR rule.

While we disagree with the request to withdraw the NPRM, we agree with some of the assertions made by the commenter. We agree with the concern that this AD action has the potential to further burden the operators and modifiers that are working to meet the FRM operating rule deadlines, because some additional airplanes are likely to be modified by installing FRM such as Boeing's NGS. But since we issued the NPRM (77 FR 12506, March 1, 2012), two factors have changed that reduce A4A's concern. First, we have identified a less costly option for cargo airplanes, which most cargo operators are expected to prefer over installation of FRM. This is expected to result in significantly fewer airplanes competing for FRM modification resources. Second, this AD action has been delayed due to numerous factors, including the number of comments, the development of a different corrective action option, and the resultant need to extend the comment period to allow the public the chance to comment on these proposed changes.

Also, as discussed below under "Request to Extend Compliance Time Pending Issuance of Service Information," we have extended the proposed compliance time by 12

months. These delays and changes will result in the AD compliance deadline being at least 3 years beyond the final compliance deadline of the FTFR rule (73 FR 42444, July 21, 2008). Similar planned ADs for other models have been similarly delayed. We have determined that the industry modification capacity will be sufficient to support the modification of the expected additional airplanes receiving FRM within the new proposed compliance time. We have not changed this SNPRM further regarding this issue.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Potential Significant Rule

A4A stated that the combined costs of the NPRM (77 FR 12506, March 1, 2012) and other anticipated ADs for U.S. airplane models with an FQIS latent-plus-one issue would exceed $177 million and would require a cost-benefit analysis. We infer that the commenter is requesting we withdraw the NPRM (77 FR 12506, March 1, 2012) on the basis that the planned ADs for various models, if combined, would qualify as a significant rule that would require a cost-benefit analysis.

We disagree with the request. First, in assessing whether an AD is a significant rule in accordance with FAA policy, we do not combine the cost of multiple planned ADs for different airplanes, even when the design issues and unsafe conditions addressed are similar. Second, the changes discussed previously in this SNPRM will significantly reduce the cost impact. We have made no further changes to this SNPRM regarding this issue.

Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Inadequate Notice to Public

A4A recommended that we provide information on any other designs that have been reviewed under SFAR 88, and provide industry with information regarding their planned disposition. A4A asserted that, during the FTFR rulemaking activity, we did not provide notice to the industry that we still intended to address the FQIS issues identified

via SFAR 88. We infer that A4A is requesting that we withdraw the NPRM (77 FR 12506, March 1, 2012) based on inadequate notice to the public and the chance to comment on the proposal. The commenter stated that the preamble of the FTFR rule (73 FR 42444, July 21, 2008) was unclear regarding whether AD actions would be taken to address the FQIS issues on airplanes that were not required to incorporate FRM.

We disagree with the request to withdraw the NPRM (77 FR 12506, March 1, 2012). We determined that an unsafe condition exists. FTFR rulemaking was done because the FAA recognized the benefit for the specific design changes involving incorporation of FRM required by the FTFR rule (73 FR 42444, July 21, 2008) to enhance fuel tank safety. Because the FTFR final rule requires action on only a subset of the airplanes that have the FQIS unsafe condition, we are taking action to address the remaining airplanes that will continue to have the unsafe condition if no further corrective action is taken.

The commenter has taken the statement from the FTFR preamble out of context. In fact, the paragraph from which the commenter quoted specifically states that the FAA expected to take AD action to address FQIS issues identified through SFAR 88 analyses. The paragraph simply states that the proposed FRM has the potential to reduce the industry cost associated with those expected ADs because the installation of an FRM likely would eliminate the need for action to further address the FQIS issue with AD actions. The purpose of that statement was to note that there would be some cost savings to industry resulting from the elimination of other actions required to address an unsafe condition for the airplanes affected by the proposed rules, and to point out that the FAA did not take credit for those potential cost reductions in assessing the cost of the FTFR rule (73 FR 42444, July 21, 2008) because the costs were not well understood at the time. That statement was not a commitment by the FAA to reverse its intentions to address an

identified unsafe condition on the airplanes that are not required to incorporate FRM. We have not changed this SNPRM regarding this issue.

Request for Cost-Benefit Analysis

Boeing, FedEx, Airbus, ASTAR Air Cargo, and A4A requested that we perform a cost-benefit analysis for the NPRM (77 FR 12506, March 1, 2012) and publish the results. Airbus stated that its own cost estimates exceed those used by the FAA for the FTFR rule (73 FR 42444, July 21, 2008) cost-benefit analysis that ended up excluding cargo airplanes. A4A and ASTAR Air Cargo requested that the NPRM be withdrawn until a cost-benefit analysis is performed. The commenters suggested that a cost-benefit analysis would show that the NPRM cannot be justified because the costs of the proposed actions would exceed the monetary value of the AD's safety benefits. The commenters cited the cost-benefit analysis that was performed to justify the FTFR rule, and pointed out that a requirement for FRM could not be justified for the airplanes that would be affected by the proposed AD.

We infer that, pending a full cost-benefit analysis, these commenters are requesting that we either withdraw the NPRM or delay this action further until a cost-benefit analysis demonstrates that an AD is justified in this case. We disagree. The FAA's process and legal obligations for introducing new airworthiness standards are different from those for initiating an AD to address an unsafe condition in an existing product. In addition, the commenters' assertions were based on the assumption that the only design solution that would be made available to address the solution would be an FRM, or another solution of similarly high cost.

When we propose a new airworthiness standard, as in the case of the FTFR rule (73 FR 42444, July 21, 2008), we are required to perform a cost-versus-benefit comparison to justify the application of the new standard. The decision in that rulemaking action – to not require FRM installation on cargo airplanes – was based in significant part

on cost estimates that industry provided to show that AD-required FQIS design changes would be far less costly than installing FRM on cargo airplanes. We specifically considered the option to not require retrofit of cargo airplanes with FRM because of the expectation that alternative design solutions to address the specific, known unsafe condition of FQIS latent-plus-one vulnerability would still be required through AD actions. For this AD action, however, industry submitted written comments and made verbal statements that the cost of an FQIS design solution would be comparable to, and possibly greater than, the cost of its FRM modification.

In general, a full cost-benefit analysis is rarely required for an AD. As a matter of regulation, in order to be airworthy, an aircraft must conform to its type design and be in a condition for safe operation. The type design is approved only after the FAA makes a determination that the design complies with all applicable airworthiness requirements. In adopting and maintaining those requirements, the FAA has already made the determination that those requirements establish a level of safety that is cost beneficial. A finding of an unsafe condition that warrants AD action means that this cost-beneficial level of safety is no longer being achieved, and the required AD actions are necessary to restore that level of safety. Because this level of safety has already been determined to be cost beneficial and does not add an additional regulatory requirement, a full cost-benefit analysis for each AD would be redundant and unnecessary.

We have not changed this SNPRM regarding this issue.

Request to Revise Applicability Statement to Clarify the Intent of the Rule for Non-U.S.-Registered Airplanes

The European Aviation Safety Agency (EASA), the Technical Agent for the Member States of the European Community, requested that we revise the proposed applicability. Specifically, EASA requested that we add Model 757 airplanes that did not have FRM installed in production. EASA further requested that we exclude airplanes equipped with FRM that meet the FAA's FTFR rule (73 FR 42444, July 21, 2008).

EASA stated that it has not issued an operating regulation corresponding to the FAA's requirements for retrofitting FRM in the FTFR rule. EASA noted that, at least for European operators, the unsafe condition would not be required to be addressed for airplanes that would have been subject to the FTFR rule in the U.S., and suggested that EASA might have to issue an AD (instead of adopting the FAA AD), with similar technical content, but extending the applicability to the entire Model 757 fleet in Europe.

We agree to revise the applicability. EASA is correct that the unsafe condition potentially affects all Model 757 airplanes, whereas the applicability statement in the NPRM (77 FR 12506, March 1, 2012) could be interpreted as not covering airplanes in passenger service that are not operated under parts 121, 125, or 129 of the Federal Aviation Regulations (14 CFR part 121, 125, or 129). The EASA comment makes it apparent that the proposed applicability statement may be unclear to some operators and regulatory authorities. While the applicability statement in the NPRM is technically correct (e.g., an EASA operator is not operating under those FAA operating rules and therefore would have been subject to the AD), we now agree that there is a potential for confusion that can be eliminated by more directly stating the requirement and applicability in a manner similar to that proposed by EASA in their comment. We have changed the applicability in this SNPRM to all Model 757 airplanes except for airplanes equipped with an FRM approved by the FAA as compliant with the FTFR requirements of section 26.33(c)(1) of the Federal Aviation Regulations (14 CFR 26.33(c)(1)), as discussed below. As with any required equipment, the FRM must be operational with the exception of any relief granted under master minimum equipment list (MMEL) provisions.

With the clarification in paragraph (c), "Applicability," of this SNPRM, we have determined that paragraph (h), "Optional Installation of Flammability Reduction Means,"

of the NPRM would be superfluous and is no longer necessary. Paragraph (c) of this supplemental NPRM, as revised, would not apply to airplanes equipped with FRM.

Requests to Withdraw NPRM (77 FR 12506, March 1, 2012) Based on Applicability

Boeing and ASTAR Air Cargo requested that we withraw the NPRM (77 FR 12506, March 1, 2012) because cargo airplanes on average have a lower flammability exposure due to a larger portion of night operations (with resultant cooler outside air temperatures) and a lower rate of utilization of the cabin air conditioning system on the ground. Boeing stated that operation of the air conditioning system on the ground significantly contributes to the heating of the center fuel tank. Boeing's analysis estimated a fleet average flammability for the center fuel tanks of the cargo airplane fleet of 50 percent of the level for the passenger fleet. Boeing also noted that cargo airplanes generally accumulate flight hours at a lower rate than passenger airplanes.

We disagree with the request to withdraw the NPRM (77 FR 12506, March 1, 2012).

We acknowledge that the increased night operation and reduced use of the air conditioning system on the ground reduce the average flammability exposure for the fleet of cargo airplanes relative to the fleet of passenger airplanes. That reduction in fleet average flammability, however, is not sufficient to allow the center fuel tanks on those airplanes to be classified as low flammability fuel tanks. The FAA's determination that an unsafe condition exists for the cargo airplanes as well as passenger airplanes was driven by the FAA's individual risk safety decision criteria rather than an average risk or fleet risk criterion. There is no difference in the individual flight risk on the worst anticipated flights between passenger airplanes and cargo airplanes due to this issue. The worst anticipated flights in either case involve a pre-existing latent in-tank failure and operation with flammable conditions in the center fuel tank. Flights with that combination of conditions are anticipated to occur in both the passenger fleets and cargo

fleets (although at a somewhat lower relative rate on cargo airplanes, for the reasons cited by the commenters).

For those flights, a fuel tank explosion could occur due to a single failure in the airplane wiring or the FQIS processor that conducts a high level of electrical energy onto circuits that enter the fuel tank. As discussed previously in the response to "Request to Withdraw NPRM (77 FR 12506, March 1, 2012): Unjustified by Risk," this is not consistent with the FAA's fail-safe design philosophy for transport airplanes. In addition, the numerical probability of the single failure as estimated by the manufacturer and the FAA significantly exceeds the unsafe condition threshold for individual flight risk in the FAA's TARAM) Policy Statement PS-ANM-25-05 (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/0/4E5AE8707164674A862579510061F96B?OpenDocument&Highlight=ps-anm-25-05). We have therefore determined that an unsafe condition does exist on cargo airplanes even in consideration of the lower fleet exposure factors cited by the commenters.

While we have determined that this unsafe condition requires corrective action, we have identified additional corrective action options that we expect will be significantly less costly to incorporate than the originally proposed requirement. We have determined that this additional corrective action option is not suitable for passenger airplanes because it does not provide a sufficient level of risk reduction for passenger operations. The FAA normally does not differentiate between the safety requirements or corrective action requirements for cargo airplanes and passenger airplanes. However, after reviewing all of the comments on the estimated high cost of the corrective action and the uncertainty in those estimates, we examined other options for less costly risk reduction on cargo airplanes. We identified an option that provides significant risk reduction at a per-airplane cost that is estimated to be less than one-quarter of the cost of the original proposal (77 FR 12506, March 1, 2012). The amount of risk reduction from

this option is not at this time considered to be adequate to address the unsafe condition for passenger airplanes.

In this case, the FAA is proposing to accept a higher level of individual flight risk exposure for cargo flights that are not fail-safe due to the absence of passengers and the resulting significant reduction in occupant exposure on a cargo airplane versus a passenger airplane, and due to relatively low estimated individual flight risk that would exist on a cargo airplane after the corrective actions are taken. The FAA has allowed a higher risk level to exist on cargo airplanes due to other issues, and applies a slightly less stringent numerical fleet risk threshold standard for unsafe conditions in the published TARAM policy. Because this is an unusual determination, we have reopened the comment period to give affected operators, pilots, and the public the opportunity to comment on this proposal.

We expect that the optional wire separation design change to support compliance with the proposed AD for cargo airplanes will involve the manufacturer or any other modifier petitioning for a partial exemption from the "latent-plus-one" requirements of sections 25.901(c) and 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.901(c) and 14 CFR 25.981(a)(3)). We have informed the manufacturer that we are open to granting such an exemption, and they indicated their willingness to make such a petition.

We have added new paragraph (h) in this SNPRM to allow repetitive FQIS built-in test equipment (BITE) checks and modification of the airplane by separating FQIS wiring from other aircraft wiring that is not intrinsically safe (in a manner acceptable to the FAA) as an additional option for airplanes used exclusively for cargo operations. We have redesignated subsequent paragraphs of this SNPRM accordingly.

Request to Change Applicability to Address Unsafe Condition on Airplanes with FRM

National Air Traffic Controllers Association (NATCA) requested that we revise the NPRM (77 FR 12506, March 1, 2012) to include airplanes on which FRMs were incorporated either voluntarily or to comply with the FTFR rule (73 FR 42444, July 21, 2008). NATCA noted that the introduction of FRM on such airplanes only reduces the fraction of time the airplane is operated with flammable conditions in its fuel tanks, but does not eliminate flammable operation. NATCA further noted that FAA operating rules allow limited operation of the airplane with the FRM inoperative. NATCA added that the likelihood of a fuel tank explosion during operation with flammable tanks is similar regardless of whether an FRM is installed.

We disagree with the request. We have developed and published policy for determination of unsafe conditions and the need for corrective actions during the evaluation of SFAR 88 fuel tank safety review findings. The decision to allow FRM as an acceptable mitigating action for the identified unsafe condition is consistent with that policy. We acknowledge NATCA's point that, if no actions are taken on an airplane to correct the FQIS latent-plus-one issue other than installation of an FRM, flights on that airplane where FRM is inoperative or ineffective would have the same risk of a fuel tank explosion due to the FQIS latent-plus-one issue as flights on an airplane with no FRM installed. However, the published unsafe condition criteria (section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3)) (http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/73716) differentiate between low- and high-flammability fuel tanks, with a higher level of conservatism applied to high-flammability tanks.

The criteria recognize that low-flammability tanks are still flammable for a portion of their operating time, and the criteria include ignition prevention thresholds commensurate with that level of flammability. The regulatory performance standard for

FRMs is equivalent to the flammability of a conventional aluminum wing tank, which is the benchmark for the definition of a low-flammability tank. We have therefore determined that it is appropriate to treat ignition sources in center fuel tanks with compliant FRMs the same way they would be treated for a tank that has inherent low flammability. Because the FQIS latent-plus-one vulnerability for Model 757 airplanes was classified as a theoretical vulnerability and not as a condition known to have occurred, the SFAR 88 corrective action policy does not require corrective action for that condition in low-flammability fuel tanks. The installation of an FRM causes the center fuel tank to meet the criteria for classification as a low-flammablity fuel tank, and therefore FRM installation was considered to be acceptable mitigating action. We have not changed this SNPRM regarding this issue.

Request to Remove Requirement for Goodrich FQIS

Goodrich stated that its FQIS fuel height and dielectric sensor interface circuitry presently meets the energy, voltage, and current limits specified in FAA AC 25.981-1C, "Fuel Tank Ignition Source Prevention Guidelines," dated September 19, 2008 (http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/73716). Goodrich stated that the system design would require multiple serial failures to enable a fault to propagate to the tank, resulting in the combination of those failures being extremely improbable on average. Goodrich added that the system built-in test detects open circuits and short circuits in the sensors and aircraft wiring, including shorts to structure. Goodrich stated that there have been no failures in service in which the Goodrich FQIS exposed the fuel tank to an unsafe condition. Goodrich asked whether the actual system operation and service life have been considered in the evaluation of the probability of an unsafe condition and the mitigation provided by the present Goodrich FQIS.

We infer that the commenter is requesting that we revise the NPRM (77 FR 12506, March 1, 2012) to eliminate any requirement for corrective action for airplanes equipped with a Goodrich FQIS. We partially agree. The Goodrich system is recognized as having significant improvements relative to the original 757 system developed by another manufacturer. We recognize that the Goodrich FQIS has the ability to identify a significant portion of the potential latent in-tank failure conditions that can occur inside the fuel tanks. Those conditions, however, are detected and corrected only when the built-in test capability is activated during maintenance. Currently, activating the built-in test features is required only when troubleshooting an FQIS problem that has become apparent to flight or maintenance crew. This still potentially leaves significant latency periods for those failures.

We have agreed that the Goodrich processor has sufficient circuit isolation such that the processor itself is not expected to create hot short conditions in tank circuits, and is not expected to pass energy from non-tank-side low-voltage hot shorts onto tank-side circuits. There remains, however, a significant potential for a single failure causing a hot short onto tank-side circuits, or a single failure causing a high-voltage hot short onto non-tank-side circuits to cause non-intrinsically safe energy, voltage, or current levels to be conducted into the fuel tanks. The latent-plus-one concern therefore still exists even with the additional detection capabilities that exist in the Goodrich FQIS. We have determined this concern requires corrective action in accordance with the SFAR 88 corrective action decision policy discussed previously. We disagree with the request to revise this SNPRM to eliminate any requirement for corrective action for airplanes equipped with a Goodrich FQIS because we have determined that an unsafe condition requiring corrective action exists on the Goodrich FQIS-equipped airplanes even after considering the differences between the Goodrich FQIS and the original 757 system developed by another manufacturer. We have not changed this SNPRM regarding this issue.

Request to Clarify Affected Tanks

FedEx requested that we revise the NPRM (77 FR 12506, March 1, 2012) to clarify that only the center fuel tank is affected. FedEx stated that the proposed wording could be interpreted as applying to all tanks.

We agree to clarify the intent of this SNPRM. The FQIS wiring and related system components are to be modified to the extent necessary to prevent the development of an ignition source in the center fuel tank due to FQIS failure conditions. If modification of wing tank-related components is necessary to prevent an ignition source in the center fuel tank (for example, because of common wiring between the tanks), then that modification would be required. Paragraph (g) of this SNPRM already states this ("modify the FQIS wiring or fuel tank systems to prevent development of an ignition source inside the center fuel tank"). A change to this SNPRM itself therefore is not necessary.

Request to Revise Proposed AD Requirements to Apply to All Fuel Tanks

NATCA noted that action similar to the proposed requirements of the NPRM (77 FR 12506, March 1, 2012) was required for all fuel tanks on early Model 747 and 737 airplanes via AD 98-20-40, Amendment 39-10808 (63 FR 52147, September 30, 1998); and AD 99-03-04, Amendment 39-11018 (64 FR 4959, February 2, 1999). The commenter also noted that the FAA's published SFAR 88 unsafe condition criteria (section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3)) (http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/73716)) require corrective action for "known latent-plus-one conditions" in both low- and high-flammability tanks.

We infer the commenter is requesting that we revise the proposed actions of the NPRM (77 FR 12506, March 1, 2012) to apply to all fuel tanks. We disagree. NATCA's interpretation of the word "known" appears to be different from that intended by the FAA when the SFAR 88 decision criteria were developed and implemented. For low-

flammability fuel tanks, the FAA has proposed that corrective action for "latent-plus-one" issues be required only in cases where the particular latent-plus-one scenario is known to have occurred on that particular design. Where relevant design details are significantly different, a condition that has occurred with one design is not considered to be a "known" latent-plus-one condition on another design simply because the same architectural vulnerability theoretically exists.

In the case of AD 98-20-40, Amendment 39-10808 (63 FR 52147, September 30, 1998); and AD 99-03-04, Amendment 39-11018 (64 FR 4959, February 2, 1999); we required corrective action for all fuel tanks because the details of those designs were identical or very similar to the details of the design that were considered to be the most likely cause of the 1996 Model 747-100 accident. The actions of AD 98-20-40 and AD 99-03-04 are consistent with the intent of the later-developed SFAR 88 unsafe condition criteria. We have not changed this SNPRM regarding this issue.

Request for Specific Corrective Action

EASA noted that the NPRM (77 FR 12506, March 1, 2012) did not cite service information for a specific design solution other than acknowledging FRM as an acceptable method of compliance. We infer that EASA is requesting that the NPRM propose to require a specific corrective action for the unsafe condition. EASA pointed out that, under its regulations and policies, EASA issues ADs based on specific solutions provided by the responsible manufacturer. EASA stated that, in the absence of a specific solution, EASA will not be in a position to simply adopt the FAA AD, and may need to develop its own AD or find another solution.

We disagree with the request to require a specific corrective action in this SNPRM. In this case, the manufacturer has not provided a corrective action specific to FQIS in time to support the NPRM, noting that they have provided service instructions to install FRM that the FAA has defined as one method of compliance within the NPRM

(77 FR 12506, March 1, 2012). While the FAA has the authority to compel the manufacturer to provide a solution specifically providing FQIS protection, in this case the FAA decided to seek public comment on the NPRM (77 FR 12506, March 1, 2012) before deciding whether to take that action. The FAA already requires the vast majority of passenger airplanes registered in the U.S. to be equipped with FRM, and since we defined incorporation of FRM as one method of compliance within the NPRM (77 FR 12506, March 1, 2012), and because Boeing and Goodrich provided information to show that a specific FQIS protection solution would have a per-airplane cost similar that of Boeing's FRM design solution, we have determined there is no practical reason to require the manufacturer to provide a corrective action specific to FQIS for passenger airplanes. Consideration of the many comments on the NPRM (77 FR 12506, March 1, 2012) has resulted in a revision of the FAA's approach for cargo airplanes, leading to a significantly different proposed AD. At this point we do expect the manufacturer to provide service information for the proposed optional solution for cargo airplanes. We have, however, decided not to further delay action on this issue by waiting for that service information. The service information is expected to be released shortly after the issuance of a final rule. No change to this SNPRM is necessary for this issue. If service information becomes available before the final rule is issued, we might consider incorporating it into the AD.

Request for Information on Modifications

Icelandair requested more detailed information on the specific modifications that would need to be performed to comply with the proposed requirements specified in the NPRM (77 FR 12506, March 1, 2012), and asked if a related service bulletin was available.

Service information is available for incorporation of FRM approved by the FAA as compliant with the FTFR rule (73 FR 42444, July 21, 2008) requirements of section 26.33(c)(1) of the Federal Aviation Regulations (14 CFR 26.33(c)(1)).

As stated previously, we have revised the NPRM (77 FR 12506, March 1, 2012) to provide more specific information about a less costly optional modification for cargo airplanes. Service information related to this modification is not currently available. We have not changed this SNPRM further regarding this issue.

Request for Optional Modification

Goodrich requested that we revise the NPRM (77 FR 12506, March 1, 2012) to require or allow a modification to separate and shield the FQIS tank-side circuits from other wiring as corrective action for the identified unsafe condition. Goodrich referred to its discussion regarding the capability of the Goodrich FQIS processor to isolate the tank-side circuits from the non-tank-side circuits.

We partially agree with the request. We considered that method of compliance and determined that the benefit from that corrective action would be sufficient for cargo airplanes when combined with regular FQIS checks using the previously mentioned built-in test capability. We disagree with allowing the proposed alternative for passenger airplanes that are not equipped with FRM because the level of risk reduction achieved from that alternative corrective action would not provide a sufficient risk reduction for those airplanes. Even when the built-in test capability is periodically exercised, there will still be a significant latency period for some in-tank failures. The risk on the flights where those failures exist and where flammable conditions exist in the fuel tank is considered to be excessive for passenger airplanes, because it results from a single additional failure (those flights would not be fail-safe). Even if it did not result from an additional single failure, it would still exceed the TARAM-allowable risk level for individual flight risk. This determination is consistent with the SFAR 88 corrective action decision policy and

TARAM policy. As discussed previously, we have added new paragraph (h) in this SNPRM to allow the option of a periodic BITE check and partial wire separation for cargo airplanes.

Request for Repetitive Inspections or Replacement

Oy Air Finland Ltd. stated that wires within the fuel tank must remain in an undamaged condition and therefore requested that we revise the NPRM (77 FR 12506, March 1, 2012) to specify their repetitive inspection or replacement. The commenter provided no justification.

We disagree with including specific requirements to periodically inspect or replace the wiring within the fuel tanks because airworthiness limitations and existing maintenance practices are already in place to monitor the condition of in-tank wiring. This SNPRM would require installation of flammability reduction means or a combination of periodic system checks (which would detect many types of wiring defects or damage) and wire separation improvements, either of which would significantly reduce the probability of a fuel tank explosion on a given airplane flight to an acceptable level. We have not changed this SNPRM regarding this issue.

Request to Compel Issuance of Service Information

NATCA requested that we enforce sections 21.99 and 183.63(d) of the Federal Aviation Regulations (14 CFR 21.99 and 183.63(d)) and SFAR 88, Amendment 21-78, and subsequent Amendments 21-82 and 21-83) (http://rgl.faa.gov/Regulatory_and_Guidance_Library%5CrgFAR.nsf/0/EEFB3F94451DC06286256C93004F5E07?OpenDocument) to obtain necessary service information from design approval holders. NATCA noted that EASA cannot "issue ADs" (that is, EASA may not be able to adopt the FAA AD per se) if specific service information is not identified. NATCA expressed concerned that other civil aviation authorities may take a similar position.

We partially agree with the request. We agree that the cited regulations are relevant in setting requirements for action by design approval holders when we have identified an unsafe condition. We also recognize that issuance of an AD without service information creates significant issues for regulatory agencies and for operators that must comply with the AD. This SNPRM, however, is not the appropriate forum to discuss potential enforcement action. We have not changed this SNPRM regarding this issue.

Boeing's Planned Service Information

Boeing stated that it will offer only the Boeing FRM as a solution, if the AD is issued as proposed. Boeing added that it does not develop detailed cost estimates for design changes they do not intend to provide. Further, Boeing stated that it does not advocate FRM installation on airplanes for which FRM is not required under the FTFR rule ("Reduction of Fuel Tank Flammability in Transport Category Airplanes" (73 FR 42444, July 21, 2008)). Boeing proposed no change to the NPRM (77 FR 12506, March 1, 2012). Boeing noted that a requirement to install an FRM on the affected airplanes could not be justified in the cost-versus-benefit analysis performed for the new FTFR rule, and therefore cannot be justified to address the unsafe condition identified by the FAA.

We have provided the basis for this SNPRM in response to "Request for Cost-Benefit Analysis" in this SNPRM. We emphasize, however, that this SNPRM does not require installation of a nitrogen generation system or other FRM. The actions specified in this SNPRM will correct a specific, known unsafe condition with the FQIS. We decided to propose this AD action without specific service information for the expected design solution specifically because Boeing has not to date provided a design solution specific to FQIS. As a result of considering the comments to the NPRM (77 FR 12506, March 1, 2012), the FAA has identified a less costly option for Model 757 cargo airplanes. We have asked Boeing to develop service information for that option, and

Boeing has agreed. Since the FAA already requires the vast majority of passenger airplanes registered in the U.S. to be equipped with FRM and we defined incorporation of FRM as one method of compliance within the NPRM (77 FR 12506, March 1, 2012), and because Boeing and Goodrich provided information to show that a specific FQIS protection solution would have a per-airplane cost similar that of Boeing's FRM design solution, we have determined there is no practical reason to require the manufacturer to provide a corrective action specific to FQIS for passenger airplanes. We have not further changed this SNPRM regarding this issue.

Request to Extend Compliance Time Pending Issuance of Service Information

A4A requested that we revise the NPRM (77 FR 12506, March 1, 2012) to extend the compliance time from 60 months to "a 96-month compliance period that commences one year after the effective date of the AD" – for a total compliance time of 9 years. A4A noted that SFAR 88 (Special Federal Aviation Regulation No. 88 ("SFAR 88," Amendment 21-78, and subsequent Amendments 21-82 and 21-83) (http://rgl.faa.gov/Regulatory_and_Guidance_Library%5CrgFAR.nsf/0/EEFB3F94451DC06286256C93004F5E07?OpenDocument)) required design solutions for non-compliant designs to be provided by December 6, 2002, and considered that the absence of service information reflects a failure of communication and coordination, presumably between the FAA and Boeing. A4A was concerned that Boeing's declaration that it does not intend to develop a design solution other than its existing nitrogen generation system indicates that the development of any other design solution would be technically challenging and time consuming. A4A also cited the implementation of the requirements of part 26 of the Federal Aviation Regulations (14 CFR part 26) as an example of the FAA underestimating the costs and time required to develop design solutions.

We partially agree with the request to extend the compliance time. While we agree to provide additional time for manufacturers to develop service information, we

acknowledge that service information is not likely to be available until several months after the final rule is issued. We disagree with the assertion that the delay in proposing an AD to address the FQIS latent-plus-one unsafe conditions on several transport airplane models reflects a failure to communicate and coordinate with design approval holders.

In 2003, the FAA held a series of AD board meetings to decide which of the design areas identified in SFAR 88 design reviews as non-compliant on Boeing airplanes would be classified as unsafe conditions requiring AD action. The FQIS latent-plus-one issue was identified as an unsafe condition for high flammability fuel tanks at that time for several models, including the Model 757. Several airplane models from other manufacturers were identified as having similar issues. However, during that same time period, the National Transportation Safety Board (NTSB) had recommended FAA action to require inerting systems for center fuel tanks, and the FAA was working with industry to develop a practical nitrogen generation system for new production and retrofit installations on transport airplanes. The FAA was also planning to propose a new rule requiring those systems to be installed on new and existing airplanes, as recommended by the NTSB. The FAA recognized that, if such a system was installed on a given set of airplanes, the unsafe condition determination for the center fuel tank latent-plus-one would be addressed due to the modified center fuel tank meeting the conditions for a low flammability fuel tank after installation of a nitrogen generation system.

The FAA therefore decided to defer addressing the FQIS latent-plus-one issue on the affected airplanes until after the outcome of the FTFR rulemaking process. Now that the rulemaking process is complete and the safety enhancement provided by the FTFR rule (73 FR 42444, July 21, 2008) has been limited to certain airplanes (14 CFR part 121, 125, and 129 passenger airplanes), the FAA is addressing the FQIS latent-plus-one unsafe conditions on the airplanes that are not required to receive the safety enhancement of the

FTFR rule. This history was discussed in detail in the NPRM (77 FR 12506, March 1, 2012) and in the preamble for the FTFR rule.

We disagree with extending the compliance time to 9 years. Service information to support the modification portion of the option for cargo airplanes is expected to be available shortly after the final rule is issued. The service information for the inspection portion of that option and the FRM option is already released. We have determined that a compliance time extension to 72 months for the modification will give adequate time for manufacturers to complete the remaining service information and for operators to complete the modification.

We have revised the compliance time in this SNPRM to 72 months after the effective date of the AD.

Request to Reduce Compliance Time

NATCA requested that we reduce the compliance time from 60 months to 36 months because of the time that has already passed to address this unsafe condition since its identification in 2003.

While we acknowledge the time that has passed since the identification of the unsafe condition identified in this SNPRM, the FAA delayed taking action for this issue while we developed the FTFR rule (73 FR 42444, July 21, 2008), determined its applicability, which directly affected the applicability of this SNPRM, and implemented the FTFR rule. Now that we are proposing action for the affected airplanes, we must consider the ability of industry to develop an appropriate design change and incorporate it on all affected airplanes; we find that it is not practical for industry to respond to this AD in only 3 years. We have therefore not reduced the compliance time in this SNPRM.

Request to Revise Cost Estimate Based on New Data

Boeing requested that we revise the cost estimate specified in the NPRM (77 FR 12506, March 1, 2012) because the actual cost to develop and implement a design change

to fully address the FQIS latent-plus-one failure conditions would be significantly higher. Boeing estimated in their comment that the cost to develop and implement a transient suppression unit design for Model 757 airplanes would be about the same as the cost of Boeing's FRM provided for the airplanes affected by the FTFR rule (73 FR 42444, July 21, 2008): in excess of $300,000 per airplane for airplanes equipped with the early FQIS design, and in excess of $200,000 per airplane for airplanes equipped with a Goodrich FQIS.

In a subsequent meeting initiated by the FAA to obtain more detail on this cost estimate, Boeing provided a higher cost estimate than they provided in their written comment. However, in subsequent discussions with Boeing as part of developing this SNPRM, Boeing indicated that they were working on an isolation-based design alternative to the FAA's proposed modification option for the cargo airplanes that would likely be significantly less costly than the FAA's proposed cargo airplane option of partial wire separation.

We partially agree with the commenter. We agree to revise the cost estimate because both Boeing and one of Boeing's affected FQIS vendors provided similar cost estimates that were higher than the estimates made in the NPRM (77 FR 12506, March 1, 2012) by the FAA. We disagree to revise the cost estimate as Boeing proposed. We have received several inconsistent cost estimates from industry during the development of the FTFR rule (73 FR 42444, July 21, 2008), in their written comments to the NPRM, and during discussions of the FAA's proposed alternative for cargo airplanes. We have therefore provided a revised cost estimate for the originally proposed action based on input from Boeing's written comment and from the FQIS vendor. We also have considered that it is likely that aftermarket vendors may develop competing design solutions, as has occurred for other similar ADs, and those solutions will likely cost less than the original manufacturer's solutions.

In addition, we have identified an additional compliance option – with a different cost – for cargo airplanes. That cost estimate is based on Model 757 service information that described a very similar modification. We have used the work-hour estimate from that service bulletin, increased the work-hour estimate by 20 percent to account for any unforeseen increases in the work, and increased the parts prices to account for inflation and the potential that additional parts may be needed.

Request to Revise Cost Estimate Based on AD Scope

Goodrich requested that, if the intent of the NPRM (77 FR 12506, March 1, 2012) is to protect all fuel tanks rather than just the center fuel tank, we revise the cost estimate of the NPRM accordingly. Goodrich stated that the cost estimate is based on three assumptions: (1) that current technology circuit isolation devices similar to those previously approved for other models would be acceptable, (2) that no further changes to airplane wiring would be required, and (3) that the design change would be required to protect only the center fuel tank. Goodrich noted that protection for all fuel tanks is required for the two similar ADs: AD 99-03-04, Amendment 39-11018 (64 FR 4959, February 2, 1999), for Model 737 airplanes; and AD 98-20-40, Amendment 39-10808 (63 FR 52147, September 30, 1998), for Model 747 airplanes. Goodrich requested that we revise the cost estimate if the AD's intent is to require protection for fuel tanks other than the center fuel tank or if other wiring change requirements are anticipated. Goodrich stated that the cost specified in the NPRM should be estimated based on the actual design changes expected, rather than on previous AD actions.

We provide the following clarification of the intended scope of the NPRM (77 FR 12506, March 1, 2012) and the associated cost estimate regarding which fuel tanks are subject to the proposed requirements. AD 99-03-04, Amendment 39-11018 (64 FR 4959, February 2, 1999), and AD 98-20-40, Amendment 39-10808 (63 FR 52147, September 30, 1998), affect FQIS designs that are considered to have a higher level of

risk of a fuel tank ignition source than the systems used on Model 757 airplanes. In addition, those systems were identical or nearly identical to the FQIS that was determined by the NTSB to be the most likely cause of the 1996 Model 747-100 accident described in the NPRM. Because the latent-plus-one failure scenario was suspected of actually having occurred on that system type, we determined that corrective action for all fuel tanks was appropriate. This decision was consistent with the subsequently published FAA policy on SFAR 88 AD decision criteria (section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3))) (http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/73716)). Also, it was our understanding that the design of that FQIS was such that, due to wiring interconnections between fuel tanks, it was necessary to protect the circuits for all fuel tanks in order to achieve effective protection for any one fuel tank.

We have determined that the FQIS used on earlier production Model 757 airplanes has the same fuel tank interconnection issue, but that the Goodrich system used on later production Model 757 airplanes does not have that issue. Since the cost estimates provided by both Boeing and Goodrich were based on design solutions that included upgrading to a Goodrich FQIS, we assume that the level of circuit protection for the center fuel tank can be significantly increased relative to the existing Goodrich design without having to further alter circuits or wiring for the main fuel tanks (beyond the alterations necessary to replace the FQIS with the Goodrich FQIS).

Because the latent-plus-one scenarios for Model 757 airplanes equipped with the Goodrich FQIS are classified as “theoretical” rather than “known to have occurred” under the FAA policy on SFAR 88 AD decision criteria (section 25.981(a)(3) of the Federal Aviation Regulations (14 CFR 25.981(a)(3))) (http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.info

rmation/documentID/73716)), we have determined in accordance with that policy that the corrective action for passenger airplanes must eliminate the potential for all theoretical latent-plus-one scenarios to create an ignition source in the center fuel tank, which is classified under that policy as a high flammability fuel tank. The need to modify the circuits or wiring for the main fuel tanks to achieve that intent will depend on the proposed design solution and the existing configuration of the airplane.

As stated previously, we have revised the cost estimate in this SNPRM. For the purpose of the cost estimate for passenger airplanes, we have assumed that the airplane will be upgraded to the Goodrich FQIS if necessary, and any further modifications will be to only the center fuel tank circuits or wiring. For the purpose of the additional proposed cargo airplane option, we have provided separate estimates for each design. For cargo airplanes equipped with the early 757 FQIS design, we have assumed that additional isolation of some main fuel tank wiring will be required. It is not necessary to change the proposed requirement itself in paragraph (g) of this SNPRM, which is very specific that protection is required for the center fuel tank.

Request to Revise Cost Estimate to Consider Long-Term Effect of AD

Goodrich asked whether the cost estimate specified in the NPRM (77 FR 12506, March 1, 2012) considers the expectation that the affected fleet will be in operation for at least 20 more years, and that a complete redesign of the FQIS would need to be considered to ensure the availability of key FQIS electrical components. Goodrich stated this concern could drive potential development costs higher.

We agree with the commenter's assertion. We did consider that the affected fleet will be in service for a considerable period of time. In the cost estimate in the NPRM (77 FR 12506, March 1, 2012), we assumed that the existing FQIS could be modified to meet the intent of the AD. However, comments from Boeing and Goodrich led us to recognize that it was likely that operators of airplanes with the early 757 FQIS design will likely

need to be upgraded to the later Goodrich FQIS. The cost estimates used in this SNPRM for the fully compliant FQIS option (as opposed to the newly added cargo airplane option) are based on the estimates provided by Boeing and Goodrich. We previously described changes to the cost estimate in this SNPRM, but no further change is necessary regarding this issue.

Request to Explain Delay in Rulemaking and Identify Planned SFAR 88 ADs

A4A requested that we explain the delay in rulemaking for this issue, and identify any further planned SFAR 88 ADs. A4A asked why the NPRM (77 FR 12506, March 1, 2012) was issued approximately 10 years after the identification of the unsafe conditions and development of design solutions was required to be completed under SFAR 88. A4A further asked that the FAA provide information on any other designs that were already reviewed under SFAR 88, and provide industry with information regarding their planned disposition.

We have specifically discussed these issues in the preamble to the FTFR rule (73 FR 42444, July 21, 2008) and the NPRM (77 FR 12506, March 1, 2012), and explained the reasons for the delay in the response to "Request to Extend Compliance Time Pending Issuance of Service Information" in this SNPRM. We cannot provide additional information on the results of design reviews and the planned disposition of issues identified in those design reviews because that information is proprietary. The FAA has not made available to the public an overall list of the specific product issues identified and the plans to address those issues, but operators can request the design review results from the manufacturers. We will likely propose additional AD rulemaking, and the public will be notified of those proposals via NPRMs. We have not changed this SNPRM regarding this issue.

Request to Explain Timing of NPRM (77 FR 12506, March 1, 2012) and Deficiencies of Affected Design

FedEx requested that we explain what is non-compliant about the affected design and why we are proposing this design change at this late date. FedEx stated that Boeing and Goodrich determined in their safety reviews that only the FQIS densitometer was non-compliant.

We agree to provide further explanation. This SNPRM addresses the question about the timing of this proposal under "Request to Extend Compliance Time Pending Issuance of Service Information" in this SNPRM. Boeing and Goodrich did identify that the densitometer of the Goodrich system had the potential for a single failure to cause an ignition source in a fuel tank. That issue was addressed by AD 2009-06-20, Amendment 39-15857 (74 FR 12236, March 24, 2009). However, the Boeing safety review and the FAA SFAR 88 AD Board also identified the potential for a failure in airplane wiring outside the fuel tank or in the FQIS processor unit that, combined with a pre-existing latent failure of wiring or certain types of probe contamination inside the fuel tank, could cause an ignition source. These identified failure combinations were considered to be non-compliant with section 25.901(c) of the Federal Aviation Regulations (14 CFR 25.901(c)) and section 25.981 of the Federal Aviation Regulations (14 CFR 25.981). We have not changed this SNPRM regarding this issue.

Request for Independent Review Regarding Timeliness of AD

NATCA requested an independent review to identify and document how this issue was allowed to go unaddressed for 16 years since the TWA accident and 9 years since SFAR 88 required the development of service information. The commenter requested that the findings from that review be published.

We acknowledge that there have been significant delays in addressing the issue that is the subject of this SNPRM. We are also fully aware of the events and factors that have led to those delays. We infer that NATCA made the request to ensure that the public

is aware of those events and factors. We have described those events and factors in the NPRM (77 FR 12506, March 1, 2012) and in the other comment responses included in this SNPRM, and therefore the FAA does not plan to conduct the proposed review. We have not changed this SNPRM regarding this issue.

Request to Clarify Compliance Times

A4A requested that we revise the NPRM (77 FR 12506, March 1, 2012) to clarify that the compliance deadlines in the AD prevail over the compliance deadlines in section 121.1117 of the Federal Aviation Regulations (14 CFR 121.1117) for any airplane for which the operator has chosen to comply with the AD by installing FRM.

The proposed compliance times reflect the desired interpretation of the commenter as they pertain to cargo airplanes and airplanes that are not operated per part 121, part 125, or part 129 of the Federal Aviation Regulations (14 CFR part 121, 14 CFR part 125, or 14 CFR part 129). Passenger airplanes operating under part 121, part 125, or part 129 of the Federal Aviation Regulations (14 CFR part 121, 14 CFR part 125, or 14 CFR part 129) must meet the compliance deadlines established in those operating rules. No change to this SNPRM is necessary regarding this issue.

Request to Clarify Master Minimum Equipment List (MMEL) Relief

A4A requested that we revise the NPRM (77 FR 12506, March 1, 2012) to clarify that the MMEL relief provided for the Boeing NGS also applies to airplanes for which the operator has chosen to comply with the AD by installing an FRM such as the Boeing NGS.

We acknowledge the commenter's concern. The revised applicability statement in paragraph (c) of this SNPRM excludes airplanes that are "equipped with a flammability reduction means (FRM) approved by the FAA …." That exclusion does not state that the installed equipment must be operative. However, installed equipment is required to be operative by sections 121.628, 125.201, and 129.14 of the Federal Aviation Regulations

(14 CFR 121.628, 14 CFR 125.201, and 14 CFR 129.14) except as allowed by the MMEL and the operator's approved minimum equipment list (MEL). Dispatch with an inoperative FRM under the MMEL is not prohibited by the AD, and our intent is to allow such operation. We have not further changed this SNPRM regarding this issue.

Request to Clarify Airplanes Excluded from Applicability

A4A requested that we revise the NPRM (77 FR 12506, March 1, 2012) to clarify that airplanes equipped with FRM before conversion to all-cargo operations are excluded from the proposed requirement to modify the FQIS.

We agree to provide clarification. The revised applicability of this SNPRM excludes airplanes for which operators have installed FRM. No further change is necessary to this SNPRM regarding this issue. As noted above, the FRM must be operational with the exception of any relief granted under MMEL provisions.

Additional Change to NPRM (77 FR 12506, March 1, 2012)

We have removed NOTE 1 of the NPRM (77 FR 12506, March 1, 2012). The note was included only as reminder that maintenance and/or preventive maintenance under 14 CFR part 43 is permitted provided the maintenance does not result in changing the AD-mandated configuration (reference 14 CFR 39.7).

FAA's Determination

We are proposing this SNPRM because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design. Certain changes described above expand the scope of the NPRM (77 FR 12506, March 1, 2012). As a result, we have determined that it is necessary to reopen the comment period to provide additional opportunity for the public to comment on this SNPRM.

Proposed Requirements of the SNPRM

This SNPRM would require modifying the FQIS wiring or fuel tank systems to prevent development of an ignition source inside the center fuel tank.

Costs of Compliance

We estimate that this proposed AD affects 167 airplanes of U.S. registry. This estimate includes 148 cargo airplanes and 19 non-air-carrier passenger airplanes. We estimate the following costs to comply with this proposed AD:

Estimated Costs: Basic Proposed Requirement for All Airplanes

Action	Labor cost	Parts cost	Cost per product
Fully correct FQIS vulnerability to latent-plus-one failure conditions	1,200 work-hours X $85 per hour = $102,000	$200,000	$302,000

Estimated Costs: Optional Actions for All Airplanes

Action	Labor cost	Parts cost	Cost per product
Install FRM	720 work-hours X $85 per hour = $61,200	$323,000	$384,200

Estimated Costs: Optional Actions for Cargo Airplanes

Action	Labor cost	Parts cost	Cost per product
Wire separation	230 work-hours X $85 per hour = $19,550	$10,000	$29,550
FQIS BITE check (required with wire separation option)	1 work-hour X $85 per hour = $85	$0	$85 per check (4 checks per year)

Existing regulations already require that air-carrier passenger airplanes be equipped with FRM by December 26, 2017. We therefore assume that the FRM installation specified in paragraph (g) of this SNPRM would be done on only the 19 affected non-air-carrier passenger airplanes, for an estimated passenger fleet cost of

$5,738,000. We also assume that the operators of the 148 affected cargo airplanes would choose the less costly actions specified in paragraph (h) of this AD, at an estimated cost of $4,373,400 for the wire separation modification, plus $50,320 annually for the BITE checks.

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

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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 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),

(3) Will not affect intrastate aviation in Alaska, and

(4) 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.

List of Subjects in 14 CFR Part 39

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

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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 airworthiness directive (AD):

The Boeing Company: Docket No. FAA-2012-0187; Directorate Identifier 2011-NM-094-AD**.**

(a) Comments Due Date

We must receive comments by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 757-200, -200PF, -200CB, and -300 series airplanes; certificated in any category; except airplanes equipped with a flammability reduction means (FRM) approved by the FAA as compliant with the Fuel Tank Flammability Reduction (FTFR) rule (73 FR 42444, July 21, 2008) requirements of

section 25.981(b) or section 26.33(c)(1) of the Federal Aviation Regulations (14 CFR 25.981(b) or 14 CFR 26.33(c)(1)).

(d) Subject

Joint Aircraft System Component (JASC) Code 7397: Engine fuel system wiring.

(e) Unsafe Condition

This AD was prompted by fuel system reviews conducted by the manufacturer. We are issuing this AD to prevent development of an ignition source inside the center fuel tank caused by a latent in-tank failure combined with electrical energy transmitted into the center fuel tank via the fuel quantity indicating system (FQIS) wiring due to a single out-tank failure.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Modification

Within 72 months after the effective date of this AD, modify the FQIS wiring or fuel tank systems to prevent development of an ignition source inside the center fuel tank, using a method approved in accordance with the procedures specified in paragraph (i) of this AD.

(h) Optional Actions for Cargo Airplanes

For airplanes used exclusively for cargo operations: As an option to the requirements of paragraph (g) of this AD, do the actions specified in paragraphs (h)(1) and (h)(2) of this AD, using methods approved in accordance with the procedures specified in paragraph (i) of this AD.

(1) Within 6 months after the effective date of this AD, record the existing fault codes stored in the FQIS processor and then do a BITE check (check of built-in test equipment) of the FQIS, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 757-28-0136, dated June 5, 2014. If any fault codes are recorded prior to

the BITE check or as a result of the BITE check, before further flight, do all applicable repairs and repeat the BITE check until a successful test is performed with no faults found, in accordance with Boeing Service Bulletin 757-28-0136, dated June 5, 2014. Repeat these actions thereafter at intervals not to exceed 750 flight hours.

(2) Within 72 months after the effective date of this AD, modify the airplane by separating FQIS wiring that runs between the FQIS processor and the center fuel tank, including any circuits that might pass through a main fuel tank, from other airplane wiring that is not intrinsically safe.

(i) Alternative Methods of Compliance (AMOCs)

(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. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (j) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

For more information about this AD, contact Jon Regimbal, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6506; fax: 425-917-6590; email: jon.regimbal@faa.gov.

Issued in Renton, Washington, on December 18, 2014.

Jeffrey E. Duven,
Manager,
Transport Airplane Directorate,
Aircraft Certification Service.

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