TABLE 5

Component of short-term wholesale funding	Remaining maturity of 30 days of less or no maturity (percent)	Remaining maturity of 31 to 90 days (percent)	Remaining maturity of 91 to 180 days (percent)	Remaining maturity of 181 to 365 days (percent)
Secured funding transaction secured by a level 1 liquid asset	25	10	0	0
(1) Secured funding transaction secured by a level 2A liquid asset; (2) Unsecured wholesale funding where the customer or counterparty is not a financial sector entity or a consolidated subsidiary thereof; (3) Brokered deposits and brokered sweep deposits provided by a retail customer or counterparty; (4) Covered asset exchanges involving the future exchange of a Level 1 asset for a Level 2A asset; and (5) Short positions where the borrowed security is either a Level 1 or Level 2A asset	50	25	10	0
(1) Secured funding transaction secured by a level 2B liquid asset (2) Covered asset exchanges and short positions (other than those described in the category above)	75	50	25	10
(1) Unsecured wholesale funding where the customer or counterparty is a financial sector entity or a consolidated subsidiary thereof; and (2) Any other component of short-term wholesale funding	100	75	50	25

(iii) *Short-term wholesale funding definitions.* The following definitions apply for purposes of paragraph (c)(5)(ii)(B) of this section.

(A) *Brokered deposit* means any deposit held at a bank holding company that is obtained, directly or indirectly, from or through the mediation or assistance of a deposit broker as that term is defined in section 29 of the Federal Deposit Insurance Act (12 U.S.C. 1831f(g)), and includes a reciprocal brokered deposit and a brokered sweep deposit.

(B) *Brokered sweep deposit* means a deposit held at a bank holding company by a customer or counterparty through a contractual feature that automatically transfers to the bank holding company from another regulated financial company at the close of each business day amounts identified under the agreement governing the account from which the amount is being transferred.

(C) *Covered asset exchange* means a transaction in which a bank holding company has provided assets of a given liquidity category to a counterparty in exchange for assets of a higher liquidity category, and the bank holding company and the counterparty agreed to return such assets to each other at a future date. Categories of assets, in descending order of liquidity, are level 1 liquid assets, level 2A liquid assets, level 2B liquid assets, and assets that are not HQLA. Covered asset exchanges do not include secured funding transactions.

(D) *Consolidated subsidiary* means a company that is consolidated on the balance sheet of a bank holding company or other company under GAAP.

(E) *Deposit insurance* means deposit insurance provided by the Federal Deposit Insurance Corporation under the Federal Deposit Insurance Act (12 U.S.C. 1811 *et seq.*).

(F) *Financial sector entity* has the meaning set forth in 12 CFR 249.3.

(G) *GAAP* means generally accepted accounting principles as used in the United States.

(H) *High-quality liquid asset (HQLA)* has the meaning set forth in 12 CFR 249.3.

(I) *Level 1 liquid asset* is an asset that qualifies as a level 1 liquid asset pursuant to 12 CFR 249.20(a).

(J) *Level 2A liquid asset* is an asset that qualifies as a level 2A liquid asset pursuant to 12 CFR 249.20(b).

(K) *Level 2B liquid asset* is an asset that qualifies as a level 2B liquid asset pursuant to 12 CFR 249.20(c).

(L) *Operational deposit* has the meaning set forth in 12 CFR 249.3.

(M) *Retail customer or counterparty* has the meaning set forth in 12 CFR 249.3.

(N) *Secured funding transaction* means any funding transaction that is subject to a legally binding agreement and gives rise to a cash obligation of the bank holding company to a counterparty that is secured under applicable law by a lien on assets owned by the bank holding company, which gives the counterparty, as holder of the lien, priority over the assets in the event the bank holding company enters into receivership, bankruptcy, insolvency, liquidation, resolution, or similar proceeding. Secured funding transactions include repurchase transactions, loans of collateral to the bank holding company's customers to effect short positions, other secured loans, and borrowings from a Federal Reserve Bank.

(O) *Short position* means a transaction in which a bank holding company has borrowed or otherwise obtained a security from a counterparty and sold that security to sell to another counterparty, and the bank holding company must return the security to the initial counterparty in the future.

(P) *Unsecured wholesale funding* means a liability or general obligation, including a wholesale deposit, of the bank holding company to a wholesale customer or counterparty that is not secured under applicable law by a lien on assets owned by the bank holding company.

(Q) *Wholesale customer or counterparty* means a customer or counterparty that is not a retail customer or counterparty.

By order of the Board of Governors of the Federal Reserve System, December 10, 2014.

Robert deV. Frierson,

Secretary of the Board.

[FR Doc. 2014–29330 Filed 12–17–14; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No.: FAA–2014–1027; Notice No. 14–09]

RIN 2120–AK24

Transport Airplane Fuel Tank and System Lightning Protection

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to amend certain airworthiness regulations for transport category airplanes regarding lightning protection of fuel tanks and

systems. This action would establish design requirements for both normal conditions and possible failures of fuel tank structure and systems that could lead to fuel tank explosions, add new maintenance requirements related to lightning protection features, and impose specific requirements for airworthiness limitations in the instructions for continued airworthiness. We would create performance-based standards for prevention of catastrophic fuel vapor ignition caused by lightning by regulating the risk due to both ignition sources and fuel tank flammability. This change would allow designers to take advantage of flammability reduction technologies whose effectiveness was not foreseen when earlier revisions to these rules were written. This change would also relieve some of the administrative burdens created by the current regulations. These proposed amendments are based on recommendations from the Large Airplane Fuel System Lightning Protection Aviation Rulemaking Committee (Lightning ARC).

DATES: Send comments on or before March 18, 2015.

ADDRESSES: Send comments identified by docket number FAA–2014–1027 using any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov* and follow the online instructions for sending your comments electronically.
- *Mail:* Send comments to Docket Operations, M–30; U.S. Department of Transportation (DOT), 1200 New Jersey Avenue SE., Room W12–140, West Building Ground Floor, Washington, DC 20590–0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202–493–2251.

Privacy: The FAA will post all comments it receives, without change, to *http://www.regulations.gov,* including any personal information the commenter provides. Using the search function of the docket Web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the **Federal Register** published on April 11, 2000 (65 FR 19477–19478), as well as at *http://DocketsInfo.dot.gov*.

Docket: Background documents or comments received may be read at *http://www.regulations.gov* at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except federal holidays.

FOR FURTHER INFORMATION CONTACT: For technical questions concerning this action, contact Massoud Sadeghi, Airplane and Flight Crew Interface Branch, ANM–111, Transport Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, 1601 Lind Avenue SW., Renton, WA 98057–3356; telephone (425) 227–2117; facsimile (425) 227–1149; email *massoud.sadeghi@faa.gov*.

For legal questions concerning this action, contact Sean Howe, Office of the Regional Counsel, ANM–7, Federal Aviation Administration, 1601 Lind Avenue SW., Renton, Washington 98057–3356; telephone (425) 227–2591; facsimile (425) 227–1007; email *Sean.Howe@faa.gov*.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code. 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.

This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, ''General Requirements.'' Under that section, the FAA is charged with promoting safe flight of civil aircraft in air commerce by prescribing regulations and minimum standards for the design and performance of aircraft that the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority. It prescribes new safety standards for the design and operation of transport category airplanes.

I. Overview of Proposed Rule

The FAA proposes to amend the airworthiness regulations in Title 14, Code of Federal Regulations (14 CFR) part 25 related to lightning protection for fuel systems [1] (including fuel tank structure [2] and systems.[3]) This action would remove the requirement for the prevention of lightning ignition sources from § 25.981(a)(3) at Amendment 25–102 and add a new requirement to § 25.954 for the prevention of ignition due to lightning.

We propose to revise § 25.954 to expand and clarify its objective and to modify it to meet current knowledge about lightning and state-of-the-art airplane design. This new requirement would reduce the risk of fuel tank ignition by requiring applicants to account for both ignition sources and fuel tank flammability limits established by existing regulations. The proposed amendments would adopt a performance-based standard to prevent catastrophic fuel tank vapor ignition due to lightning, rather than focus solely on the prevention of ignition sources.

We propose to insert an exception into § 25.981(a)(3) to remove its applicability to lightning protection. Inclusion of lightning in that section has resulted in recurring cases where applicants showed that compliance was impractical, leading them to seek exemptions to compliance with § 25.981 for fuel tank structural aspects. We have not issued exemptions for systems-related lightning protection, but we believe common treatment of structure- and systems-related lightning protection in the fuel system is appropriate.

To maintain the integrity of lightning protection features of airplanes certificated under the amended rules, we propose to amend part 25 appendix H to create a new requirement for applicants to establish airworthiness limitations specific to the airworthiness of fuel tank structure and systems lightning protection features.

This proposed rule would affect manufacturers who apply for type certification of new or significantly modified transport category airplanes, specifically, the airplanes' fuel tank structures and systems. It would also apply to applicants for supplemental type certificates for such modifications. This proposal would revise the part 25 regulations for design and maintenance of lightning protection features for fuel tank structure and systems.

[1] Fuel system, in the context of this NPRM, includes any component within either the fuel tank structure or the fuel tank systems and any other airplane structure or system components that are penetrating, located within, or connected to the fuel tanks.

[2] Fuel tank structure, in the context of this NPRM, includes structural members of the fuel tank such as airplane skins, access panels, joints, ribs, spars, stringers, and associated fasteners, brackets, coatings and sealant.

[3] Fuel tank systems, or systems, in the context of this NPRM, include tubing, components, and wiring that are penetrating, located within, or connected to the fuel tanks.

II. Background

A. Statement of the Problem

We have found that compliance with § 25.981(a)(3), as it is currently written, is not always practical. The impracticality has led applicants to petition for exemptions and the FAA to impose special conditions to achieve the intended level of safety of the rule, which has created an administrative burden on industry and the FAA.

B. History of Lightning-Related Fuel Tank Explosion Events

Lightning strikes to airplanes do occur, particularly when operating in instrument meteorological conditions. When lightning strikes an airplane, high transient current is conducted in the airplane structure. The transient current can melt, burn, and deform airplane parts and structure where the lightning attaches to the airplane. This current is also conducted through the airplane structure between the lightning attachment points on the airplane. The conducted lightning transient current can also induce voltage and current on airplane wiring, tubes, and control mechanisms. Melting, burning, arcing, or sparking due to conducted lightning current or voltage can result in fuel vapor ignition if they occur in a flammable environment.

On June 26, 1959, a Lockheed L–1649A Constellation was struck by lightning, which caused explosions in two of its fuel tanks, resulting in a crash. This airplane was fueled with aviation gasoline. Prior to this accident, government and industry had conducted research into the possible effects of lightning on airplane fuel tanks, but the scope of this research had been limited to the melting of integral fuel tank skin, and hot-spot formation.

Fuel vapor ignition due to lightning was the probable cause of a Boeing 707 accident that occurred near Elkton, Maryland on December 8, 1963. At the time of its certification, the 707 was not required to demonstrate effective lightning protection for fuel systems. Following the 707 accident, government and industry performed substantial research to determine the factors that could result in lightning-related fuel vapor ignition. However, most of this research focused on lightning burn-through for metal fuel tank structure, and lightning-related ignition of fuel vapor in fuel vents.

On December 23, 1971, lightning struck a Lockheed L–188A Electra, which led to a fire and separation of the right wing. Since the L–188A was certified by the FAA in 1958, the type did not benefit from the additional attention given to airplane fuel tanks after § 25.954 was published in 1967.

On May 9, 1976, a Boeing 747 crashed during descent into Madrid, Spain following a lightning strike to the airplane. The investigation of this accident found evidence that fuel vapor ignition could have been caused by lightning-induced sparking at a motor-driven fuel valve.

In three of the four accidents noted above, investigations found that the airplane fuel tanks contained either aviation gasoline or a mixture of Jet A kerosene-type fuels and higher volatility Jet B/JP–4 fuels. The fuel type involved in the 1971 Electra accident was not identified. The investigations for the other three accidents determined that the fuel mixtures would be flammable at the temperatures and altitudes that the airplanes were flying at the time of the lightning strikes. During the 1980s the use of Jet B/JP–4 fuels began to decline and those fuels became nearly obsolete in the 1990s.

Since the last lightning-related airplane fuel tank explosion (1976), the understanding of lightning effects on airplane fuel tanks and systems has increased significantly, and no further events have occurred even though the number of flight hours since the 1976 accident (approaching 1 billion) is more than 8 times that which preceded that event (less than 120 million).

Methods for preventing ignition sources due to lightning strikes are mature and are based on years of research into natural lightning characteristics and effects on airplane structure and systems. The results have been documented in a large body of literature and formalized into SAE standards such as ARP5412,[4] ARP5414,[5] and ARP5416.[6] The FAA has accepted use of these standards through Advisory Circulars (AC) 20–53B, *Protection of Aircraft Fuel Systems Against Fuel Vapor Ignition Caused by Lightning,* and AC 20–155, *SAE Documents to Support Aircraft Lightning Protection Certifications.* The International Conference on Lightning and Static Electricity (ICOLSE), National Aeronautics and Space Administration (NASA), the European Organization on Commercial Aircraft Equipment (EUROCAE), and other industry forums have published much of the supporting research. A high level of communication among airplane lightning specialists worldwide ensures that designers and certification authorities are continually informed of advances in lightning protection technology and application of this technology to new designs.

C. Advancement of Current Regulations and Associated Guidance

Following the 1963 Boeing 707 Elkton accident, the FAA adopted new fuel system lightning protection regulations. These regulations were implemented for transport category airplanes in § 25.954 at Amendment 25–14, *Fuel system lightning protection.* Section 25.954 states:

The fuel system must be designed and arranged to prevent the ignition of fuel vapor within the system by—

(a) Direct lightning strikes to areas having a high probability of stroke attachment;

(b) Swept lightning strokes to areas where swept strokes are highly probable; and

(c) Corona and streamering at fuel vent outlets.

This regulation requires lightning protection regardless of the likelihood that lightning would strike the airplane. This regulation does not acknowledge that lightning protection features could fail or become ineffective. The regulation contains no requirement for fault-tolerant fuel system lightning protection or for any evaluation of probabilities of failures related to the lightning protection features.

Following the 1976 Madrid Boeing 747 accident, the FAA issued a number of airworthiness directives to address possible sources of ignition that were found during the investigation. The FAA subsequently developed further guidance for airplane fuel system lightning protection. Specifically, the FAA revised AC 20–53, *Protection of Airplane Fuel Systems Against Fuel Vapor Ignition Due to Lightning.* This AC has been revised twice since its original issue. These documents added emphasis regarding lightning protection of fuel system components such as fuel tubes, fuel quantity systems, and fuel filler caps.

On July 17, 1996, a Boeing 747 operating as TWA Flight 800 was involved in an in-flight breakup after takeoff. The ensuing investigation determined that the center wing fuel tank exploded due to an unknown ignition source. Following the Flight 800 accident, the FAA reviewed the transport airplane fleet history and determined that fail-safe design principles had not been properly applied to prevent ignition sources in fuel tanks and application of the existing rules had not been adequate to

[4] ARP5412, *Aircraft Lightning Environment and Related Test Waveforms,* SAE International, November 1999.

[5] ARP5414, *Aircraft Lightning Zoning,* SAE International, December 1999.

[6] ARP5416, *Aircraft Lightning Test Methods,* SAE International, March 2005.

prevent fuel tank explosions. The FAA also found that preventing ignition sources throughout the life cycle of a transport category airplane was an extremely difficult task and agreed with National Transportation Safety Board (NTSB) recommendations to also reduce or eliminate fuel tank flammability.

1. Amendment 25–102

In January 1998 the FAA tasked [7] an Aviation Rulemaking Advisory Committee (ARAC) to provide specific recommendations and propose regulatory text that would eliminate or significantly reduce the hazards associated with explosive vapors in transport category airplane fuel tanks. Under the tasking, the proposed regulatory text was to ensure that new type designs of transport category airplanes are designed and operated so that during normal operation (up to maximum certified operating temperatures) the presence of explosive fuel vapor in all tanks is eliminated, significantly reduced, or controlled to the extent that there could not be a catastrophic event. The ARAC concluded [8] it was not practical to eliminate fuel tank flammability. They determined that the safety level of unheated aluminum main fuel tanks on airplanes using Jet A type fuel was adequate, and recommended that fuel tank flammability be limited to that level.

In May 2001 the FAA adopted Amendment 25–102 (66 FR 23086–23131) revising § 25.981, *Fuel tank ignition prevention,* which was intended to prevent future fuel tank explosions. This amendment adopted a new § 25.981(a)(3), which eliminated ambiguity as to the necessary methods of compliance with the previously established requirements of §§ 25.901 and 25.1309. As stated in AC 25.981–1C, ''. . . in order to eliminate any ambiguity as to the restrictions on latent failures, § 25.981(a)(3) explicitly requires that any anticipated latent failure condition not result in the airplane being one failure away from a catastrophic fuel tank ignition.''

This new paragraph added the requirement that the fuel tank design address potential failures that could cause ignition sources within the fuel system. Section 25.981(a)(3) requires consideration of factors such as aging, wear, and maintenance errors as well as the existence of single failures, combinations of failures not shown to be extremely improbable, and single failures in combination with latent failures to account for the cause of many ignition sources in fuel tanks and deficiencies in the existing regulations.

Section 25.981(a)(3) states that no ignition source may be present at each point in the fuel tank or fuel tank system where catastrophic failure could occur due to ignition of fuel or vapors. This must be shown by demonstrating that an ignition source could not result from each single failure, from each single failure in combination with each latent failure condition not shown to be extremely remote, and from all combinations of failures not shown to be extremely improbable. The effects of manufacturing variability, aging, wear, corrosion, and likely damage must be considered.

While lightning was not listed as a probable cause of the Flight 800 accident, the FAA's accident and incident historical review of fuel tank explosions resulted in our finding that improving fuel tank safety required preventing ignition from all sources, including lightning. Potential ignition sources due to lightning must be considered as part of compliance with this regulation, as discussed in the rulemaking preamble for § 25.981(a)(3) and the associated AC 25.981–1. This regulation effectively requires fail-safe ignition prevention means, like redundant features, or monitoring and indication of failures, be provided. However, in applying this rule to recent certification programs, we found that for the purpose of lightning protection, providing redundant features is not always practical. For example, failures of lightning protection features could remain latent for years between inspections, thereby exposing the fuel tank to the risk of ignition due to lightning. Typically these latent failures cannot be shown to be extremely remote considering the long inspection intervals.

The preamble to Amendment 25–102 stated the FAA's assumption that environmental conditions such as lightning are present when failures of systems occur. Consistent with this approach, AC 25.981–1C also states that applicants should assume that a lightning attachment could occur at any time (probability of lightning = 1). In addition, industry and FAA practice had been to assume that a defined set of severe lightning current components would be associated with every lightning strike to the aircraft. AC 25.981–1C, as well as the user's manual [9] associated with AC 20–53 that defines guidance for compliance to § 25.954, also states that applicants should assume that the fuel tank is always flammable (probability = 1).

Amendment 25–102 also introduced § 25.981(b) requirements to identify critical design configuration control limitations (CDCCLs) to prevent development of ignition sources within the fuel tank systems.

When Amendment 25–102 was adopted, the FAA considered it practical to limit fuel tank flammability to that of an unheated aluminum fuel tank. As recommended by the ARAC, the amendment adopted § 25.981(c) that required minimizing the flammability of airplane fuel tanks, or mitigating the effects of an explosion such that any damage from a fire or explosion would not prevent continued safe flight and landing. The FAA considered flammability control, through the use of fuel tank designs that provided cooling of the tanks using ventilation, as well as locating heat sources away from fuel tanks, to be practical means of minimizing fuel tank flammability. The FAA explained in the preamble to the rule that the intent was to limit fuel tank flammability to that of an unheated aluminum wing fuel tank. This regulation did not specifically require fuel tank inerting, nor did the regulation state specific fuel tank flammability limits. The preamble to Amendment 25–102 stated:

> As noted previously in this preamble, we tasked the ARAC on July 14, 2000 (65 FR 43800), to evaluate both on-board and ground-based fuel tank inerting systems. If further improvement is found to be practicable, we may consider initiating further rulemaking to address such improvements.

At the time we developed Amendment 25–102 (*i.e.,* 1998–2001), the FAA and industry were still exploring the dynamics of tank flammability and the fleet average flammability exposure for transport airplane fuel tanks. Evaluation of the technical and economic viability of fuel tank inerting systems for commercial transport airplanes was also in its early stages at that time. After promulgation of Amendment 25–102, the FAA and industry continued research and discussion of the measurement and modeling of fuel tank flammability and development of practical means to reduce or eliminate flammability in transport airplane fuel tanks. This

[7] Aviation Rulemaking Advisory Committee—New Task: ''Prevention of Fuel Tank Explosions;'' published in the **Federal Register** January 23, 1998 (63 FR 3614–3615).

[8] Aviation Rulemaking Advisory Committee: ''Fuel Tank Harmonization Working Group—Final Report;'' July 1998. Available in the docket.

[9] DOT/FAA/CT–83/3. *User's manual for AC–20–53A Protection of Airplane Fuel Systems Against Fuel Vapor Ignition Due to Lightning;* FAA Technical Center and SAE–AE4L Lightning Subcommittee, October 1984.

eventually led to the certification of practical retrofit designs for center wing fuel tank nitrogen generating systems on existing transport airplane models.[10] Those systems use nitrogen-enriched air that is generated onboard the airplane to displace oxygen in the fuel tank. This results in inerting the fuel tank throughout most of the flight and ground operations. Some applicants for new type certificates involving composite wing structure have included flammability reduction means, such as an ullage inerting system, for all fuel tanks, including the main fuel tanks located in the wing.

2. Amendment 25–125

Amendment 25–125 (73 FR 42444–42504), which was part of the fuel tank flammability reduction (FTFR) rule adopted in 2008, revised § 25.981(b) and (c) to introduce specific performance-based standards for the maximum flammability allowed in various fuel tanks. Amendment 25–125 maintained the alternative adopted by Amendment 25–102 allowing ignition mitigation means. Amendment 25–125 established a new fleet average flammability exposure limit of 3 percent for all fuel tanks, or that of an equivalent conventional unheated aluminum fuel tank. Fuel tanks that are not main fuel tanks and that have any portion located within the fuselage contour must be limited to 3 percent fleet average exposure and 3 percent warm day exposure. Amendment 25–125 did not change the ignition prevention standards of § 25.981(a), and it moved the CDCCL requirements created by Amendment 25–102 to § 25.981(d).

Introduction of airplane designs with composite fuel tanks that cannot be shown to meet the flammability requirements of § 25.981 has resulted in the need to provide active fuel tank flammability control systems in all fuel tanks. For main tanks that were only required to be equivalent to unheated aluminum wing tanks, these systems reduce fuel tank flammability well below that required by § 25.981(c). The FAA has issued special conditions for new airplane designs that allow consideration of these fuel tank flammability control systems when showing that fuel tank ignition will not result from structural ignition sources following a lightning strike.

[10] Inerting systems are approved for Boeing Models 737, 747, 757, 767, and 777 and for Airbus Models A320, A330, and A340.

D. Related Actions Following the Adoption of Amendment 25–102

Several applicants found that it was impractical to achieve dual fault tolerance for fuel tank structure lightning protection. The FAA agreed that applying § 25.981(a)(3) for fuel tank structure was impractical in certain cases. The FAA required the safety assessment associated with the fuel tank system to include the assumptions that the fuel tank was always flammable and lightning was continuously present. However, when evaluating where lightning attaches to the airplane and considering the lightning protection features, the probability of strikes that could cause an ignition source is significantly less than the required assumptions. We have defined strikes that could cause an ignition source as ''critical lightning strikes.'' Critical lightning strikes occur on the order of once every 100,000 hours of airplane operation. In addition, for airplanes with the fuel tank flammability reduction means required by § 25.981, the likelihood of a fuel tank being flammable is less than one hour for every hundred hours of operation. For airplanes without fuel tank flammability reduction means (*i.e.,* with unheated aluminum wing tanks), the flammability range is one to five hours for every one hundred hours of operation. Consideration of these factors in combination with fail-safe ignition required by § 25.981, which typically resulted in the need for triple-redundant lightning ignition prevention features, led the FAA to conclude that the required assumptions were overly conservative.

As a result, on May 26, 2009, the FAA issued a policy memorandum to standardize the process for granting exemptions and issuing special conditions for fuel tank structure lightning protection. FAA Policy Memorandum ANM–112–08–002, *Policy on Issuance of Special Conditions and Exemptions Related to Lightning Protection of Fuel Tank Structure,* defined requirements that were to be applied through special conditions or exemptions. This policy allowed the consideration of the likelihood of both the occurrence of a critical lightning strike and the tank being flammable. The policy contained detailed information that explained the design goal of § 25.981(a)(3) for fuel tank structure and provided guidance for alternatives to compliance that still achieved that design goal.

In 2009 the FAA chartered the Lightning ARC to re-examine §§ 25.954 and 25.981 at Amendments 25–102 and 25–125 for fuel tank lightning protection. The Lightning ARC included industry members that were the leading aircraft lightning protection design experts in the world, along with the leading regulatory experts working in the lightning area. To address structure-specific issues, such as the occurrence of cracks and fastener failures, the Lightning ARC established a subcommittee made up of airplane manufacturer structural experts. The ARC also commissioned a specific study of lightning current distribution at structural cracks and fasteners, including the evaluation of lightning-related sparks at these cracks and fasteners. In May 2011 the Lightning ARC issued a final report [11] that included the results of these special studies and their findings and recommendations. They proposed new rulemaking on the following topics:

1. Lightning-specific requirements that focused on ignition source prevention;
2. Inclusion of both structure and systems in the same fuel system lightning protection rule with the same requirements;
3. Single fault-tolerant designs, or if impractical, a qualitative assessment to ensure the combination of non-fault-tolerant failures resulting in an ignition source, is remote;
4. Design, manufacturing processes, and instructions for continued airworthiness (ICA) to address manufacturing variability, aging, wear, corrosion, and likely damage;
5. ICA to include caution information for critical lightning protection features to minimize accidental damage during maintenance, alteration, or repairs;
6. Inclusion of inspections and procedures required for non-fault-tolerant designs in the Airworthiness Limitations Section of the ICA;
7. Addition of a new section in the ICA specific to fuel tank lightning protection;
8. No requirement for lower flammability in the lightning regulations (*i.e.,* retain existing flammability requirements); and
9. Development of new guidance material and revision of existing guidance material to ensure a consistent approach to fuel system lightning protection.

To address these recommendations, the FAA issued a new policy statement that superseded Policy Memorandum ANM–112–08–002 as an interim

[11] FAA Large Airplane Fuel System Lightning Protection ARC, Final Report, May 2011. *http://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/LAFSLP.ARC.RR.20110518.pdf.*

approach until new rulemaking could be accomplished. Policy Statement PS–ANM–25.981–02, *Policy on Issuance of Special Conditions and Exemptions Related to Lightning Protection of Fuel Tank Structure and Systems,* issued June 24, 2014, expands the scope of the previous policy to include systems and provides guidance for special conditions and exemptions that are applicable to the design of lightning protection features in fuel tank structure and systems with respect to compliance with § 25.981(a)(3).

The proposed revisions to § 25.981(a)(3) would eliminate the need to issue special conditions and exemptions; however, the detailed information provided in that policy statement addresses the design goal of the proposed § 25.954 for fuel tank structure and systems and provides valuable information about means of compliance. Therefore, a copy of that policy statement has been added to the docket for this rule.

III. Discussion of the Proposal

A. General

In order to comply with the latent failure criterion of § 25.981(a)(3), systems with potentially catastrophic failure conditions resulting from a lightning strike typically need at least triple-redundancy in their protective features, or dual-redundancy with continuous system monitoring to reduce the latency period. Dual-redundant designs could only be shown to comply with § 25.981(a)(3) when combined with either regular inspections at very short intervals or with a monitoring device to verify the functionality of the protective features. Inspection of the various design features might be difficult or impossible if, for example, the feature is covered by airframe structure. This level of redundancy has been shown to be impractical for certain areas of airplane structure, such as airplane skins, joints, ribs, spars, stringers, and associated fasteners, brackets, and coatings.

Lightning protection features are typically an integral part of the fuel tank structure or inside the fuel tanks. Due to the frequency of inspections that would be required to sufficiently limit exposure to latent failures, it would be impractical to use inspections of lightning protection features by themselves to eliminate the requirement for triple redundancy. Therefore, the FAA proposes to amend the requirements of §§ 25.954 and 25.981(a)(3) to address these and other issues related to fuel tank lightning protection design. The FAA's intent is to establish a balanced approach to ensure that airplane designs provide an acceptable level of safety, while allowing manufacturers to develop an economically viable design, economical manufacturing methods, and effective maintenance programs considering the limitations in preventing or managing failures inside the fuel tanks. To preclude a catastrophic event, the proposed standards would require the applicant to develop structural and system component designs that are free of ignition sources. In addition, the applicant must still account for fuel vapor flammability as required in § 25.981(b). This proposal would also allow applicants to take credit for providing reduced flammability exposure below what is required by § 25.981(b).

Practicality is a balance of available means, economic viability, and proportional benefit to safety. A means to provide fault tolerance against potential ignition sources that is possible with little economic impact is practical even if the potential ignition source conditions would be remote without them. In general, applicants have found fault tolerance to be practical for systems lightning protection features. However, in several cases, applicants found that providing fault tolerance was impractical because the means had a significant economic impact on production, operational, or maintenance costs. In these cases, it is not necessary that the applicants use these means if it can be determined that the probability of a potential ignition source, combined with a critical lightning strike and flammable fuel tank conditions is such that catastrophic failure is not anticipated over the life of the fleet.

B. ''Fuel System Lightning Protection'' (§ 25.954)

The current rule specifies the primary lightning threats to the fuel system and requires designs that prevent ignition of fuel vapor within the system. The original intent was to prevent ignition of fuel vapor in the fuel tank structure and system due to lightning.

As written, the current rule does not address failures or deterioration of the lightning protection features.

In lieu of regulating fuel tank lightning protection by §§ 25.954 and 25.981, we propose to consolidate requirements for the prevention of fuel vapor ignition solely in § 25.954. We propose to retain (and renumber) the existing rule text of § 25.954, add a clarification of the existing requirements regarding lightning-induced or conducted electrical transients, and add two new performance-based requirements to regulate the risk of failures and to maintain the integrity of the lightning protection features during the airplane service life.

The addition of a clarification regarding lightning-induced or conducted electrical transients is needed to make it clear that this regulation addresses these effects. Lightning strikes to airplanes result in significant current conducted through airplane structure and equipment, and can induce voltage and current on wires, tubes, and equipment. The use of composite structure can increase these induced and conducted electrical transients. Therefore, this proposed rule would require that the design and arrangement of the fuel system prevent the ignition of fuel vapor within the system by lightning-induced and conducted electrical transients.

A new paragraph (b) would require that catastrophic ignition caused by lightning be extremely improbable, placing that risk in line with that of all other potentially catastrophic hazards. The proposed rule would require the type design to take into account the likelihood of a critical lightning strike, the fuel tank being flammable, and creation of an ignition source due to the failure of fuel system or structural lightning protection features. The purpose of the proposed rule is to ensure that a catastrophic fuel vapor ignition will not occur due to any single failure when lightning attaches to the airplane. In addition, the combination of the probabilities of a critical lightning strike, a flammable fuel tank condition, and the exposure time of all specified failures of structural features that are not fault-tolerant (and that can occur within the fuel tank) must, under the proposed rule, be such that catastrophic failure from ignition due to lightning would not be anticipated over the life of that airplane fleet. For example, for each structural discrepancy identified, the applicant would be required to demonstrate that mandated structural inspection procedures would reliably detect cracks or failed fasteners/cap-seals (where the gap size required to create arcing is exceeded) before the combined probability of the occurrence of a flammable fuel tank condition and a critical lightning strike was exceeded.

The proposed rule would also require that the type design take into account the failure of other system components that may run into and/or through the fuel tank and can be an ignition source in the event of a critical lightning strike. Lightning-related ignition of flammable fluids and vapors due to leakage outside the fuel system and the resultant

hazards will continue to be covered in § 25.863.

The proposed rule would use ''taking into account,'' rather than ''consider,'' [12] a term the FAA has previously used. We intend no substantive effect by this change.

We propose to add a new paragraph (c) that would require applicants to develop CDCCLs that identify lightning protection design features, instructions on how to protect them, and inspection and test procedures specific to lightning protection features within fuel tank structure and systems to detect and correct any anomalies or failures during the life of the airplane. Section 25.954 as written in 1967 required applicants to design lightning protection features into fuel tank structure and systems, but it does not account for the deterioration of those features during the life of the airplane. During inspections and accident investigations, we found damage and deterioration of fuel tank lightning protection features such as bonding straps, brackets, and sealants that could present gaps or other electrical discontinuities that could become ignition sources in the presence of lightning strikes.

CDCCLs are one type of fuel system airworthiness limitation that define critical features of the design that must be maintained. CDCCLs were originally required by the fuel tank explosion prevention standards of § 25.981 and appendix H to 14 CFR part 25 at Amendment 25–102. Fuel system airworthiness limitations include mandatory replacement times, inspection intervals, related inspection procedures, and CDCCLs. As explained in the FTFR final rule, Amendment 25–125, ''The intent of the CDCCL requirement is to define the critical features of the design that could be unintentionally altered in a way that could cause reduction in fuel system safety.'' CDCCLs are distinct from mandatory replacement times, inspection intervals, and inspections and other procedures.

This proposed new paragraph will require applicants to identify the lightning protection design features of the airplane, as well as to prepare instructions on how to protect those features. Identification of a feature refers to listing the feature in the CDCCL. The FAA has determined that during airplane operations, modifications, and unrelated maintenance actions, these features can be unintentionally damaged or inappropriately repaired or altered. Instructions on protection are meant to address this safety concern. An example of a common design feature to prevent catastrophic ignition caused by lightning is wire separation so that wires cannot chafe against one another. An example of an instruction on how to protect this design feature would be, ''When performing maintenance or alterations in the vicinity of these wires, ensure a minimum of 6-inch wire separation is maintained.''

Addressing the effects of aging, wear, and corrosion as both a design and continuing airworthiness consideration is necessary to ensure reliable protection over the life of the airplane. The proposed rule would require applicants to establish necessary inspection and test procedures to prevent development of lightning-related ignition sources within the fuel tank structure and systems. One example of an inspection procedure would be to examine a structural element for cracks. An example of a test procedure would be a functional test to ensure a ground fault interrupter continues to function. The FAA would require these inspection and test procedures to include airworthiness limitations for non-fault-tolerant features and caution information for lightning protection features that may be altered by maintenance and repairs. For non-fault-tolerant lightning protection features that are identified in support of certification, the rule would require applicants to develop and identify inspection and test procedures as airworthiness limitations in the instructions for continued airworthiness, approved by the FAA, in order to preclude the development of unsafe conditions.

We also propose to add a new paragraph (d) to define ''critical lightning strike'' and ''fuel system'' for the purpose of this section.

C. ''Fuel Tank Ignition Prevention'' (§ 25.981(a)(3))

Section 25.954 provides requirements for protection from ignition due to lightning, and § 25.981 provides requirements for protection against ignition from all sources, including lightning. The redundancy of the rule coverage has caused confusion regarding which regulation applies to fuel tank lightning protection.

To consolidate lightning protection requirements into one rule, § 25.954, we propose to add an exception to § 25.981(a)(3) removing lightning as an ignition source from the scope of this section and referring applicants to § 25.954 for lightning protection requirements.

Section 25.981(d) at Amendment 25–125 requires CDCCLs, inspections, or other procedures to be established to ensure fuel tank safety. The FAA intended that CDCCLs would be required to identify critical design features, and that inspections or other procedures would also be provided where it was determined necessary. However, some have misunderstood the wording to allow inspections or other procedures, for example adhering to component maintenance manuals alone, instead of maintaining the original design details of the critical feature. We are proposing to revise this rule text to clarify that CDCCLs must be provided to identify critical design features, in addition to inspections or other procedures.

Note: The title of § 25.981 would be corrected in this rulemaking from ''Fuel Tank Ignition Prevention'' to ''Fuel Tank Explosion Prevention.'' We intended this change with Amendment 25–125, but the change was not accomplished.

D. Instructions for Continued Airworthiness (Appendix H to Part 25)

1. Airworthiness Limitations Section (H25.4)

Currently, section H25.4 does not expressly mention instructions about lightning protection features. We propose to add a new paragraph H25.4(5) that will make mandatory any inspection and test procedures that are needed to sustain the integrity of the lightning protection features that are used to show compliance with § 25.954.

2. Lightning Protection Features Instructions for Continued Airworthiness (H25.X)

We propose to add a new section to appendix H to require applicants to develop instructions for continued airworthiness that are approved by the FAA, and that are specific to the lightning protection features for fuel tank structure and systems required by § 25.954.

E. Advisory Circular

The FAA would develop one new proposed AC and would propose revisions to two other ACs to be published concurrently with the proposed regulations contained in this NPRM. The proposed new AC would provide guidance material for acceptable means, but not the only means, of demonstrating compliance with proposed § 25.954. The revisions to the existing ACs would update them to reflect the revised rules.

[12] See Legal Interpretation to William Szendrey from Rebecca MacPherson (Apr. 28, 2005).

IV. Regulatory Notices and Analyses

A. Regulatory Evaluation

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 and Executive Order 13563 direct that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by state, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation with base year of 1995). This portion of the preamble summarizes the FAA's analysis of the economic impacts of this proposed rule. We suggest readers seeking greater detail read the full regulatory evaluation, a copy of which we have placed in the docket for this rulemaking.

In conducting these analyses, FAA has determined that this proposed rule: (1) Has benefits that justify its costs; (2) is not an economically ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866; (3) is not ''significant'' as defined in DOT's Regulatory Policies and Procedures; (4) would not have a significant economic impact on a substantial number of small entities; (5) would not create unnecessary obstacles to the foreign commerce of the United States; and (6) would not impose an unfunded mandate on state, local, or tribal governments, or on the private sector by exceeding the threshold identified above. These analyses are summarized below.

1. Total Benefits and Costs of This Rule

This rule is a retrospective regulatory review rulemaking under Executive Order 13563. This rule would be relieving for both government and industries with the estimated net benefits. We assess regulatory benefits based on resources saved for reducing regulatory burden on both industry and the FAA. The total combined savings would be about $610 million or $450 million present value at a 7% discount rate. The lower and the higher estimates of the total combined regulatory savings range from $384 million to $836 million (see table). The proposed rule would maintain a level of safety for fuel tank structure and system lightning protection consistent with that provided for other airplane hazards.

Benefits (1 × million dollar)	Value in 2014 dollar			Present value at 7%		
	Average	Lower bound	Upper bound	Average	Lower bound	Upper bound
Government benefits (sub-total)	$0.1	$0.1	$0.2	$0.1	$0.1	$0.1
Industries benefits (sub-total)	610	384	836	450	283	618
Exemptions and special conditions	30	17	44	21	12	30
Productions	570	361	779	423	267	579
Operations	10	6	13	6	4	9
Total Societal Benefits	610	384	836	451	283	618

2. Parties Potentially Affected by This Rulemaking

- Part 25 airplane manufacturers.
- Operators of part 25 airplanes.
- The Federal Aviation Administration.

3. Assumptions and Data Sources

- Data related to industry savings mainly come from airplane manufacturers.
- Data related to requests for exemptions and special conditions come from FAA internal data source and the agency's experts judgments.
- The FAA would process four special conditions and seven exemptions in the next ten years in the absence of this rule.
- Domestic airplane manufacturers would petition for two special conditions and three exemptions before reaching their cost-benefit steady-state.[13]
- Approximately 184 airplanes would be produced per year for ten years based on airplane models being approved for exemptions and special conditions for lightning protection.[14]
- Computational weights of composite wing airplanes would change from current approximate 15%–25% level linearly increasing to 50% level for a ten-year production cycle.[15]
- Airplanes have service life-span for 30 years.[16]
- Projected impacts on manufacturers and the government are for a ten-year period from 2015 to 2024.
- All monetary values are expressed in 2014 dollars.

B. Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Pub. L. 96–354) (RFA) establishes ''as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation.'' To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration.'' The RFA covers a wide range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is

[13] Ibid.

[14] ''Fleet Discovery'' 2000–2004 Penton, provided by Aviation Week Intelligence Network, data through the end of April 2014 Ibid.

[15] Ibid.

[16] Ibid 1 and 2.

not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The proposed rule would amend certain airworthiness regulations that are not always practical for transport category airplanes regarding lightning protection of fuel tanks and systems. While the largest benefiters of this proposed rule would be airplane manufacturers, who are large entities, many small airline operators would also benefit from this proposed rule due to fuel savings. Therefore, as provided in section 605(b), the Administrator of the FAA certifies that the proposed rule would not have a significant economic impact on a substantial number of small entities and also certify that a regulatory flexibility analysis is not required.

C. International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards, and where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this proposed rule and determined that it could result in the same benefits or costs to domestic and international entities in accord with the Trade Agreements Act.

D. Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (in 1995 dollars) in any one year by state, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ''significant regulatory action.'' The FAA currently uses an inflation-adjusted value of $151 million in lieu of $100 million. This proposed rule does not contain such a mandate; therefore, the requirements of Title II of the Act do not apply.

E. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. The FAA has determined that there would be no new requirement for information collection associated with this proposed rule.

F. International Compatibility and Cooperation

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified no differences with these proposed regulations.

G. Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in Section 312f of Order 1050.1E and involves no extraordinary circumstances.

V. Executive Order Determinations

A. Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. The agency has determined that this action would not have a substantial direct effect on the States, or the relationship between the Federal government and the States, or on the distribution of power and responsibilities among the various levels of government, and therefore, would not have Federalism implications.

B. Executive Order 13211, Regulations That Significantly Affect Energy Supply, Distribution, or Use

The FAA analyzed this proposed rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). The agency has determined that it would not be a ''significant energy action'' under the executive order and would not be likely to have a significant adverse effect on the supply, distribution, or use of energy.

VI. Additional Information

A. Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. The agency also invites comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should send only one copy of written comments, or if comments are filed electronically, commenters should submit only one time.

The FAA will file in the docket all comments it receives, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. Before acting on this proposal, the FAA will consider all comments it receives on or before the closing date for comments. The FAA will consider comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. The agency may change this proposal in light of the comments it receives.

Proprietary or Confidential Business Information: Commenters should not file proprietary or confidential business information in the docket. Such information must be sent or delivered directly to the person identified in the **FOR FURTHER INFORMATION CONTACT** section of this document and marked as proprietary or confidential. If submitting information on a disk or CD ROM, mark the outside of the disk or CD ROM and identify electronically within the disk or CD ROM the specific information that is proprietary or confidential.

Under 14 CFR 11.35(b), if the FAA is aware of proprietary information filed with a comment, the agency does not place it in the docket. It is held in a separate file to which the public does not have access, and the FAA places a note in the docket that it has received it. If the FAA receives a request to examine or copy this information, it treats it as any other request under the Freedom of Information Act (5 U.S.C. 552). The FAA processes such a request under Department of Transportation procedures found in 49 CFR part 7.

B. Availability of Rulemaking Documents

An electronic copy of rulemaking documents may be obtained from the Internet by—

1. Searching the Federal eRulemaking Portal (*http://www.regulations.gov*);

2. Visiting the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies* or

3. Accessing the Government Printing Office's Web page at *http://www.gpo.gov/fdsys/.*

Copies may also be obtained by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267–9680. Commenters must identify the docket or notice number of this rulemaking.

All documents the FAA considered in developing this proposed rule, including economic analyses and technical reports, may be accessed from the Internet through the Federal eRulemaking Portal referenced in item (1) above.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Life-limited parts, Reporting and record keeping requirements.

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend chapter I of title 14, Code of Federal Regulations as follows:

PART 25—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

■ 1. The authority citation for part 25 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702 and 44704.

■ 2. Revise § 25.954 to read as follows:

§ 25.954 Fuel system lightning protection.

(a) The design and arrangement of a fuel system must prevent the ignition of fuel vapor within the system by—

(1) Direct lightning strikes to areas having a high probability of stroke attachment;

(2) Swept lightning strokes to areas where swept strokes are highly probable;

(3) Lightning-induced or conducted electrical transients; and

(4) Corona and streamering at fuel vent outlets.

(b) The design and arrangement of a fuel system must ensure that catastrophic fuel vapor ignition is extremely improbable, taking into account flammability, critical lightning strikes, and failures within the fuel system.

(c) To protect design features that prevent catastrophic fuel vapor ignition caused by lightning, the type design must include critical design configuration control limitations (CDCCLs) identifying those features and providing information on how to protect them. To ensure the continued effectiveness of those design features, the type design must also include inspection and test procedures, intervals between repetitive inspections and tests, and mandatory replacement times for those design features. The applicant must include the information required by this paragraph in the Airworthiness Limitations section of the instructions for continued airworthiness required by §§ 25.1529 and 25.1729.

(d) For purposes of this section, a critical lightning strike is a lightning strike that attaches to the airplane in a location that affects a failed feature or a structural failure, and the amplitude of the strike is sufficient to create an ignition source when combined with that failure. A fuel system includes any component within either the fuel tank structure or the fuel tank systems, and any other airplane structure or system components that penetrate, connect to, or are located within a fuel tank.

■ 3. Amend § 25.981 by revising the title of the section and paragraphs (a)(3) and (d) to read as follows:

§ 25.981 Fuel tank explosion prevention.

(a) * * *

* * * * *

(3) Except for ignition sources due to lightning addressed by § 25.954, demonstrating that an ignition source could not result from each single failure, from each single failure in combination with each latent failure condition not shown to be extremely remote, and from all combinations of failures not shown to be extremely improbable, taking into account the effects of manufacturing variability, aging, wear, corrosion, and likely damage.

* * * * *

(d) To protect design features that prevent catastrophic ignition sources within the fuel tank, and to prevent increasing the flammability exposure of the tanks above that permitted in paragraph (b) of this section, the type design must include critical design configuration control limitations (CDCCLs) identifying those features and providing instructions on how to protect them. To ensure the continued effectiveness of those features, and prevent degradation of the performance and reliability of any means provided according to paragraphs (a) or (c) of this section, the type design must also include necessary inspection and test procedures, intervals between repetitive inspections and tests, and mandatory replacement times for those features. The applicant must include information required by this paragraph in the Airworthiness Limitations section of the Instructions for Continued Airworthiness required by §§ 25.1529 and 25.1729. The type design must also include the placement of visible means of identifying critical features of the design in areas of the airplane where foreseeable maintenance actions, repairs, or alterations may compromise the CDCCLs (*e.g.,* color-coding of wire to identify separation limitation). The type design must identify these visible means as CDCCLs.

■ 4. In appendix H to part 25, section H25.4, add new paragraph (a)(5) and new section H25.X to read as follows:

Appendix H to Part 25—Instructions for Continued Airworthiness

H25.4 *Airworthiness Limitations section.*

(a) * * *

* * * * *

(5) Mandatory replacement times, inspection intervals, and related inspection and test procedures for each lightning protection feature approved under § 25.954.

* * * * *

H25.X *Lightning Protection Features Instructions for Continued Airworthiness.*

The applicant must prepare instructions for continued airworthiness (ICA) applicable to lightning protection features for fuel tank structure and systems as required by § 25.954 that are approved by the FAA and include sampling programs, maintenance, or inspections necessary for lightning protection features.

Issued under authority provided by 49 U.S.C. 106(f) and 44701(a) in Washington, DC, on December 9, 2014.

Chris Carter,

Acting Deputy Director, Aircraft Certification Office.

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