[4910-13-U]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 121, 125, 129 and 135

[Docket No. _____; Notice No. _____]

RIN: 2120-

Aging Aircraft Program (Widespread Fatigue Damage)

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: The FAA proposes to require incorporation of a program to preclude widespread fatigue damage (WFD) into the FAA-approved maintenance or inspection program of each operator of large transport category airplanes. This action is the result of concern for the continued operational safety of airplanes that are approaching or have exceeded their design service goal. This proposed rulemaking would require a limit of validity (in flight cycles or hours) of the structural maintenance program, where additional inspections and/or modification/replacement actions must be incorporated into the operator's maintenance or inspection programs in order to allow continued operation.

DATES: Send your comments on or before [Insert date 90 days after date of publication in the Federal Register.]

ADDRESSES: Address your comments to the Docket Management System, U.S. Department of Transportation, Room Plaza 401, 400 Seventh Street, SW., Washington, DC 20590-0001. You must identify the docket number _____ at the beginning of your comments, and you should submit two copies of your comments. If you wish to receive confirmation that FAA received your comments, include a self-addressed, stamped postcard.

You may also submit comments through the Internet to http://dms.dot.gov. You may review the public docket containing comments to these proposed regulations in

person in the Dockets Office between 9:00 a.m. and 5:00 p.m., Monday through Friday, except Federal holidays. The Dockets Office is on the plaza level of the NASSIF Building at the Department of Transportation at the above address. Also, you may review public dockets on the Internet at http://dms.dot.gov.

FOR FURTHER INFORMATION CONTACT: Brent Bandley, FAA, Transport Airplane Directorate, Los Angeles Aircraft Certification Office, ANM-120L, 3960 Paramount Boulevard, Lakewood, California 90712-4137; telephone (562) 627-5237, fax (562) 627-5210.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed action by submitting such written data, views, or arguments as they may desire. Comments relating to the environmental, energy, federalism, or economic impact that might result from adopting the proposals in this document also are invited. Substantive comments should be accompanied by cost estimates. Comments must identify the regulatory docket or notice number and be submitted in duplicate to the DOT Rules Docket address specified above.

All comments received, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking, will be filed in the docket. The docket is available for public inspection before and after the comment closing date.

All comments received on or before the closing date will be considered by the Administrator before taking action on this proposed rulemaking. Comments filed late will be considered as far as possible without incurring expense or delay. The proposals in this document may be changed in light of the comments received.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this document must include a pre-addressed, stamped postcard

with those comments on which the following statement is made: "Comments to Docket No. _____." The postcard will be date-stamped and mailed to the commenter.

Availability of NPRM

You can get an electronic copy using the Internet by taking the following steps:

(1) Go to the search function of the Department of Transportation's electronic Docket Management System (DMS) web page (http://dms.dot.gov/search).

(2) On the search page type in the last four digits of the Docket number shown at the beginning of this notice. Click on "search."

(3) On the next page, which contains the Docket summary information for the Docket you selected, click on the document number of the item you wish to view.

You can also get an electronic copy using the Internet through the Office of Rulemaking's web page at http://www.faa.gov/avr/armhome.htm or the Federal Register's web page at http://www.access.gpo.gov/su_docs/aces/aces140.html.

You can also get a copy by submitting 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. Make sure to identify the docket number, notice number, or amendment number of this rulemaking.

BACKGROUND

List of Acronyms Used in this Document

For the reader's reference and ease of reading, the following list defines the acronyms that are used throughout this document:

ACRONYM	DEFINITION
AAWG	Airworthiness Assurance Working Group
ACO	Aircraft Certification Office
AD	Airworthiness Directive
ALS	Airworthiness Limitations Section

AMM	Airplane Maintenance Manuals
ARAC	Aviation Rulemaking Advisory Committee
ART	Authority Review Team
CPCP	Corrosion Prevention and Control Program
DER	Designated Engineering Representative
DSD	Discrete source damage
DSG	Design service goal
ESG	Extended service goal
FAA	Federal Aviation Administration
ICA	Instructions for Continued Airworthiness
ISP	Inspection start point
JAA	Joint Airworthiness Authorities
LOV	Limit of Validity
MED	Multiple element damage
MRB	Maintenance Review Board
MSD	Multiple site damage
MSG	Maintenance Steering Group
NDI	Non-destructive inspection
NTSB	National Transportation Safety Board
PMI	Principal Maintenance Inspector
PSE	Principal structural element
RAP	Repairs Assessment Program
SSID	Structural Supplemental Inspection Document
SMP	Structural modification point
SSIP	Supplemental Structural Inspection Program
STC	Supplemental Type Certificate
STG	Structural Task Group
TAD	Transport Airplane Directorate
TC	Type certificate
TCH	Type certificate holder
TOGAA	Technical Oversight Group re: Aging Aircraft
WFD	Widespread fatigue damage

Events Leading to Proposed Rule

In April 1988, a high-cycle transport airplane enroute from Hilo to Honolulu, Hawaii, suffered major structural damage to its pressurized fuselage during flight. The airplane managed to land after a structural failure caused the separation of an 18-foot

section of upper fuselage. The National Transportation Safety Board (NTSB) determined that widespread fatigue damage (WFD) was a contributing cause of this accident.

Widespread fatigue damage is characterized by simultaneous presence of cracks at multiple structural details that are of sufficient size and density such that the structure will no longer meet its damage-tolerance requirement and could catastrophically fail. Uniformly loaded structure may develop cracks in adjacent fasteners, or in adjacent similar structural details. These cracks can interact to reduce the damage tolerance of the structure in a manner that may not be readily detectable. Sources of WFD include:

- Multiple site damage (MSD) is a source of WFD characterized by the simultaneous presence of fatigue cracks in the same element (i.e., fatigue cracks that may coalesce with or without other damage, leading to a loss of required residual strength).
- Multiple element damage (MED) is a source of WFD characterized by the simultaneous presence of fatigue cracks in similar adjacent structural elements.

Regulatory and industry experts agree that, as the transport airplane fleet continues to age, eventually WFD is inevitable. Long-term reliance on existing maintenance programs, even those that incorporate the latest mandatory changes introduced to combat aging, creates an unacceptable risk of age-related accidents. Even with the existing aging aircraft program for large transports in place, WFD can and does occur in the fleet. Therefore, the FAA has determined that, at a certain point of an airplane's life, the existing aging aircraft program is not sufficient to ensure the continued airworthiness of that fleet of airplanes.

Since the 1988 accident in Hawaii, the FAA has identified several cases of WFD occurring in the fleet of large transport airplanes, although there has not been a catastrophic accident directly attributable to WFD. Some examples are:

- in-flight failure of aft pressure bulkhead stringer attach fittings on the Lockheed Model L-1011;
- aft pressure bulkhead cracks found on the McDonnell Douglas Model DC-9;
- lap splice cracking found in the Boeing Models 727 and 737; and
- frame cracking found in the Boeing Model 747.

The FAA, the European Joint Airworthiness Authorities (JAA), and representatives of the Airworthiness Assurance Working Group (AAWG), working under the auspices of the Aviation Rulemaking Advisory Committee (ARAC), have reviewed available service difficulty reports for the transport airplane fleet. They also have evaluated the certification and design practices applied to these previously certificated airplanes, including fatigue test results. The review revealed that all airplanes in the fleet are susceptible to some sort of MSD or MED. Based on this review, many areas were identified as those most susceptible to MSD or MED, for example:

AREA	SUSCEPTIBLE TO:
Longitudinal skin joints, frames, and tear straps	MSD/MED
Circumferential joints and stringers	MSD/MED
Fuselage Frames	MED
Lap joints with milled, chem-milled, or bonded radius	MSD
Stringer-to-frame attachments	MED
Shear clip end fasteners on shear tied fuselage frames	MSD/MED
Aft pressure dome outer ring and dome web splices	MSD/MED
Skin splice at aft pressure bulkhead	MSD
Abrupt changes in web or skin thickness — pressurized or unpressurized structure	MSD/MED
Window surround structure	MSD/MED
Overwing fuselage attachments	MED

Latches and hinges of non-plug doors	MSD/MED
Skin at runout of large doubler (MSD)—fuselage, wing or empennage	MSD
Rib to skin attachments	MSD/MED
Typical Wing/Empennage Structure	MSD/MED
Wing and empennage chordwise splices	MSD/MED

NOTE: The FAA has developed a proposed Advisory Circular (AC) 91-56B, "Continuing Structural Integrity Program for Large Transport Category Airplanes," which contains illustrations of the areas susceptible to MSD and/or MED. The availability of that proposed AC is announced elsewhere in this Federal Register.

The FAA has been addressing these safety issues on a case-by-case basis by issuing airworthiness directives (AD) requiring corrective action. The ADs address the immediate problem, but they do not address potential WFD problems that may exist on other components of the aircraft in question, and they are not a proactive means to deal with aging aircraft overall. They also frequently impose added costs on operators because of the necessity of implementing corrective action outside of normal maintenance schedules, and they consume significant regulatory resources on a continuing basis.

ARAC Recommendations Concerning WFD

In 1993, ARAC made seven recommendations to the FAA concerning the need for a structural audit of transport category airplanes to determine the state of WFD in the transport fleet. These recommendations were:

- The AAWG should promote a WFD evaluation of each airplane model within the existing Structures Task Group (STG) environment, using the guidance of AC 91-56, "Supplemental Structural Inspection Program for Large Transport

Category Airplanes" (as modified to include the material mentioned in Recommendation 2, below). These evaluations should be conducted in the timeliest possible fashion relative to the airplane model age.

- AC 91-56 should be modified to include guidelines for conducting a structural WFD evaluation.
- The STGs should recommend appropriate fleet actions, through the Supplemental Structural Inspection Program (SSIP) or service bulletin modification programs.
- The AAWG should be responsible for monitoring evaluation progress and results for consistency of approach for all models.
- Mandatory action should enforce STG recommendations by normal FAA means.
- Additional rulemaking is not necessary or desirable for timely achievement of the evaluation safety goals for the 11 airplane models originally evaluated by the AAWG.
- Additional actions for the airplanes currently in production should only be considered after completion of the initial evaluations of the 11 airplane models originally evaluated by the AAWG.

The basic recommendation was to amend FAA's AC 91-56 to include guidance for a proposed structural audit for WFD. Furthermore, the report advocated that the audit would be performed voluntarily by the STGs under the direction of the manufacturers. Any safety-related issues would be brought to the attention of the FAA for corrective action.

The AAWG developed a new appendix to AC 91-56 that provides guidance on the development of a WFD prediction and verification technique to preclude operation of large transport airplanes in the presence of WFD. ARAC submitted this guidance to the FAA as a recommendation, and the FAA accepted it. In April 1998, the FAA issued AC 91-56A, "Continuing Structural Integrity Program for Large Transport Category Airplanes." That AC contains Appendix 2, entitled "Guidelines for the Development of a

Program to Predict and Eliminate Widespread Fatigue Damage," which is based on the ARAC/AAWG recommendations.

On August 28, 1997 (62 FR 45690), the FAA tasked ARAC again with determining the extent of WFD in the fleet. To obtain the pertinent data, ARAC was to review analytical methods, relevant fatigue test data, related research work, and teardown inspection reports. The review was to take into account the AAWG report "Structural Fatigue Evaluation for Aging Aircraft," dated October 14, 1993.

The FAA also tasked ARAC develop time standards for implementation of a WFD program and to recommend courses of action the FAA might take to address this issue. ARAC assigned this task to the AAWG.

The tasking required that a team of technical experts review the technical program that was developed by the AAWG. The purpose of this review was to validate the approach adopted by the AAWG and to ensure compliance with the tasking. The Authority Review Team (ART) consisted of representatives from the United Kingdom Civil Aviation Authority (UK-CAA), French Direction Générale de l'Aviation Civile (DGAC), and the FAA. The ART conducted its initial review in March 1998, and again in January 1999. It supported the report, with three caveats that have since been resolved.

The AAWG/ARAC completed the tasking and produced a final report entitled "Recommendations for Regulatory Action to Prevent Widespread Fatigue Damage in the Commercial Fleet," Revision A, dated June 29, 1999 (hereafter identified as the "WFD Report"). The ARAC submitted the report to the FAA and the FAA accepted the recommendations. [A copy of this report is included in the public docket for this rulemaking].

The list of five items below summarizes a number of recommendations in the WFD Report developed by the FAA, JAA, and AAWG to improve the current structural maintenance program to preclude WFD from the fleet.

1. Clarify the terminology in AC 91-56A.

Related Regulatory Activity

In addition to the initiatives previously discussed, there are other on-going activities that are associated with FAA's Aging Aircraft Program. These include FAA's response to the Aging Aircraft Safety Act, and future rulemaking to mandate corrosion prevention and control programs for all airplanes used in air transportation.

By the Aging Aircraft Safety Act of 1991 (Public Law 49 U.S.C. 44717), Congress instructed the Administrator to prescribe regulations that ensure the continuing airworthiness of aging aircraft through inspections and reviews of the maintenance records of each aircraft an air carrier uses in air transportation.

Proposed Aging Airplane Safety Rule

In response to the Act, the FAA published Notice of Proposed Rulemaking (NPRM) 99-02 on April 2, 1999 (64 FR 16298), entitled "Aging Airplane Safety." The proposed rule would ensure the continued airworthiness of aging airplanes operating in air transportation by applying damage tolerance analysis and inspection techniques through mandatory records reviews and inspections after the airplane's fourteenth year in service. Damage tolerance-based supplemental inspections would be applicable to the baseline structure [as built by the Type Certificate Holder (TCH)] and all major repairs, alterations, and modifications. The damage tolerance-based supplemental inspections would be required 4 years after the effective date of the proposed rule (with certain exceptions for airplanes with mandated AC 91-60 service-based supplemental inspection programs or for airplanes whose design life goal has been listed in the tables provided in the proposed rule).

That proposed rule would be applicable to:

- all airplanes operated under 14 CFR part 121,
- all U.S. registered multi-engine airplanes operated under 14 CFR part 129, and

- all multi-engine airplanes operated in scheduled operations under 14 CFR part 135.

The FAA has reviewed the public comments to that Notice and anticipates regulatory action in the near future based on those comments and other considerations.

Proposed Corrosion Prevention and Control Program Rule

In addition, the FAA has found that some operators do not have a programmatic approach to corrosion prevention and control programs (CPCP). In its accident investigation report (NTSB/AAR-89/03) on the 1988 accident in Hawaii, the NTSB recommended that the FAA mandate a comprehensive and systematic CPCP. Therefore, the FAA is considering rulemaking to mandate CPCPs for all airplanes used in air transportation. More details about this proposed rule are described later in this preamble.

Existing Regulations and Certification Methods

The current 14 CFR part 25 regulations that are intended to require designs to preclude WFD from the fleet are as follows:

Section 25.571(b) requires that special consideration for WFD must be included where the design is such that this type of damage could occur. Also, it must be demonstrated with sufficient full-scale fatigue test evidence that WFD will not occur within the design service goal of the airplane. These requirements were added to § 25.571 at Amendment 25-96 in 1998 (63 FR 23338, April 28, 1998). Therefore, these requirements have only been applied on the most recent type certification projects.

Prior to Amendment 25-96, § 25.571 and its predecessor CAR 4b did not fully address WFD. Prior to Amendment 25-45 (43 FR 46242, October 5, 1978), § 25.571 and CAR 4b-270 required that those parts of the structure whose failure could result in catastrophic failure of the airplane must be evaluated by a fatigue or fail safe analysis, tests, or both. At Amendment 25-45, § 25.571 was changed to require that those parts of the structure whose failure could result in catastrophic failure be evaluated by a damage tolerance assessment.

In general, for large transport category airplanes certified prior to amendment 25-96, the TCHs have conducted full-scale fatigue tests, even though they were not required. In some cases, by additional fatigue testing, teardown, and analysis, the DSG has been changed to an extended service goal (ESG).

Airplane Maintenance Manuals and Instructions for Continued Airworthiness

Historically, TCHs have been required to provide maintenance-related information for structures. Prior to 1970, most TCHs provided manuals containing maintenance information for large transport category airplanes, but there were no standards prescribing minimum content, distribution, and a timeframe in which the information must be made available to the operator. Section 25.1529, which was added to part 25 by amendment 25-21 in February 1970, required the applicant for a type certificate to provide airplane maintenance manuals (AMM) to owners of the airplanes. This section was later amended by amendment 25-54 (45 FR 60173, September 11, 1980) to require that the applicant for type certification provide Instructions for Continued Airworthiness (ICA) prepared in accordance with Appendix H to part 25. In developing the ICA, the applicant is required to include certain information such as a description of the airplane and its systems, servicing information, and maintenance instructions, including the frequency and extent of the structural inspections necessary to provide for the continued airworthiness of the airplane. As required by Appendix H to part 25, the ICA must also include an FAA-approved Airworthiness Limitations section (ALS) enumerating those mandatory inspections, inspection intervals, replacement times, and related procedures approved under § 25.571, relating to structural damage tolerance.

One method of establishing initial scheduled maintenance and inspection tasks is the Maintenance Steering Group (MSG) process, which develops a Maintenance Review Board (MRB) document for a particular airplane model. The resultant of the MSG-3 process is an MRB document that contains inspections of the aircraft to address accidental damage, environmental damage, and fatigue damage. Operators may

incorporate those provisions, along with other maintenance information contained in the ICA, into their maintenance or inspection program. Earlier MSG processes were used that may not fully address this issue.

Section 21.50 requires the holder of a design approval [including the TC or supplemental type certificate (STC) for an airplane, aircraft engine, or propeller for which application was made after January 28, 1981] to furnish at least one set of the complete ICA to the owner of the product for which the application was made. The ICA for original type certificated products must include inspection and replacement instructions for the structures. A design approval holder who has modified the structure must furnish a complete set of ICA for the modification to the owner of the product.

Type Certificate Amendments Based on Major Change in Type Design

Over the years, many design changes have been introduced into the structure that may affect their safety. There are three ways that design changes can be approved:

1. The TCH can apply for an amendment to the type design.

2. Any person, including the TCH, wanting to alter a product by introducing a major change in the type design not great enough to require a new application for a TC, may apply for an STC.

3. In some instances, a person also may make a major alteration or repair to the type design through a field approval. The field approval process is a streamlined method for obtaining approval of relatively simple modifications to airplanes. An FAA Flight Standards Inspector can approve a repair or alteration using FAA Form 337.

Maintenance and Inspection Program Requirements

Airplane operators are required to have extensive maintenance or inspection programs that include provisions relating to structure:

Section 91.409(e), which generally applies to other than commercial operations, requires an operator of a large turbojet multi-engine airplane or a turbopropeller-powered multi-engined airplane to select one of the following four inspection programs:

1. An inspection program that is part of a continuous airworthiness maintenance program currently in use by a person holding an air carrier operating certificate, or an operating certificate issued under part 119 for operations under parts 121 or 135, and operating that make and model of airplane under those parts;

2. An approved airplane inspection program approved under § 135.419 and currently in use by a person holding an operating certificate and operations specifications issued under part 119 for part 135 operators;

3. A current inspection program recommended by the type certificate holder; or

4. Any other inspection program established by the registered owner or operator of that airplane and approved by the Administrator.

Section 121.367, which is applicable to those air carrier and commercial operations covered by part 121, requires operators to have an inspection program, as well as a program covering other maintenance, preventative maintenance, and alterations.

Section 125.247, which is generally applicable to operation of large airplanes, other than air carrier operations conducted under part 121, requires operators to inspect their airplanes in accordance with an inspection program approved by the Administrator.

Section 129.14 requires a foreign air carrier and each foreign operator of a U.S. registered airplane in common carriage, within or outside the U.S., to maintain the airplane in accordance with an FAA-approved program.

In general, to develop the overall maintenance or inspection program for their airplanes, operators rely on:

- the Type Certificate (TC) data sheet,
- MRB reports,
- ICA,
- the ALS of the ICA,
- other manufacturer's recommendations, and
- their own operating experience.

They also have maintenance programs related to aging aircraft, such as the following four programs or their equivalents:

1. Supplemental Structural Inspection Programs (SSIP): The SSIPs were traditionally mandated by airworthiness directives for certain large transport category airplanes (Airbus Model A300; British Aerospace BAC 1-11; Boeing Models B-707/720, B-727, B-737, B-747; McDonnell Douglas Models DC-8, DC-9/MD-80, DC-10; Fokker F28; and Lockheed Model L-1011 series airplanes) and numerous other transport category airplanes. The TCHs for these airplanes developed the Supplemental Structural Inspection Document (SSID), which was mandated by AD. These mandated inspection programs supplemented each operator's maintenance program.

The FAA is considering additional rulemaking (see section above on "Related Rulemaking Activity") to require that maintenance or inspection programs of the following airplanes include an FAA-approved SSIP:

- all airplanes operated under part 121,
- all U.S. registered multi-engine airplanes operated in common carriage by foreign air carriers or foreign persons under part 129, and
- all multi-engine airplanes used in scheduled operations operated under part 135.

The airplanes subject to the requirement for a SSIP were not certified to a damage tolerance requirement. However, the structure to be evaluated, the type of damage considered (fatigue, corrosion, service, and production damage), and the inspection and/or modification criteria should, to the extent practicable, be in accordance with the damage-tolerance principles of the current § 25.571 standards. An acceptable means of compliance can be found in AC 25.571-1C or the latest revision which recommends the consideration of the following elements.

It is essential to identify the structural parts and components that contribute significantly to carrying flight, ground, pressure, or control loads, and whose failure

could affect the structural integrity necessary for the continued safe operation of the airplane. The damage tolerance or safe-life characteristics of these parts and components must be established or confirmed.

Analyses made in respect to the continuing assessment of structural integrity should be based on supporting evidence, including test and service data. This supporting evidence should include consideration of the operating loading spectra, structural loading distributions, and material behavior. An appropriate allowance should be made for the scatter in life to crack initiation and rate of crack propagation in establishing the inspection threshold, inspection frequency, and, where appropriate, retirement life. Alternatively, an inspection threshold may be based solely on a statistical assessment of fleet experience, provided that it can be shown that equal confidence can be placed in such an approach.

An effective method of evaluating the structural condition of older airplanes is selective inspection with intensive use of nondestructive techniques and the inspection of individual airplanes, involving partial or complete dismantling ("tear-down") of available structure.

The effect of major repairs, alterations, and modifications approved by the TCH should be considered. In addition, it will be necessary to consider the effect of all major repairs and operator-approved alterations and modifications on individual airplanes. The operator has the responsibility for ensuring notification and consideration of any such aspects.

2. Corrosion Prevention and Control Programs (CPCP): The CPCPs were mandated by airworthiness directives (AD) for certain large transport category airplanes (Airbus Model A300; British Aerospace BAC 1-11; Boeing Models B-707/720, B-727, B-737, B-747; McDonnell Douglas Models DC-8, DC-9/MD-80, DC-10; Fokker F28; and Lockheed Model L-1011 series airplanes) and numerous other transport category

airplanes. The TCHs for these airplanes developed the CPCP document that was mandated by AD. These CPCPs supplemented each operator's maintenance program.

The corrosion programs were developed based on the premise that operators would adjust them when unacceptable corrosion levels were found. These maintenance program adjustments should preclude recurrence of unacceptable corrosion findings. Adjustments may include actions such as reduced repetitive task intervals, improved corrosion treatments, or multiple corrosion inhibitor applications.

The FAA is considering additional rulemaking to require that maintenance or inspection programs for the following types of airplanes include an FAA approved CPCP:

- all airplanes operated under part 121,
- all U.S. registered multi-engine airplanes operated in common carriage by foreign air carriers or foreign persons under part 129, and
- all multi-engine airplanes used in scheduled operations operated under part 135.

That proposed rule would give operators two years to incorporate a CPCP into their maintenance or inspection program. (That rulemaking will be issued in response to the Aging Airplane Safety Act of 1991.)

3. Repair Assessment Program: The industry was tasked to develop a method for airlines to evaluate airplane repairs to determine whether they are acceptable permanent repairs incorporating damage tolerance. This program will ensure that existing and future repairs to the fuselage pressure boundary are assessed for damage tolerance.

On April 19, 2000, the FAA issued a final rule entitled "Repair Assessment for Pressurized Fuselages," which promulgated four new operating rules:

- § 91.410 (amdt. 91-264);
- § 121.370 (amdt. 121-275),
- § 125.248 (amdt. 125-33), and

- § 129.32 (amdt. 129-28).

That final rule was published in the Federal Register on April 15, 2000 (65 FR 24108). Additionally, corrections to the final rule were published on June 5, 2000 (65 FR 35703), and August 21, 2000 (65 FR 50744). The final rule's effective date was May 25, 2000. That rule prohibits the operation of certain large transport category airplanes (Airbus Model A300; British Aerospace BAC 1-11; Boeing Models B-707/720, B-727, B-737, B-747; McDonnell Douglas Models DC-8, DC-9/MD-80, DC-10; Fokker F28; and Lockheed Model L-1011 series airplanes) operated under parts 91, 121, 125, and 129 beyond a specified compliance time, unless the operator of those airplanes had incorporated FAA-approved repair assessment guidelines applicable to the fuselage pressure boundary (fuselage skin, door skin, and bulkhead webs) in its operation specification(s) or approved inspection program, as applicable. That rule ensures that a comprehensive damage tolerance repair assessment be completed for repairs to the fuselage pressure boundary.

The FAA also issued an associated advisory circular: AC 120-73, "Damage Tolerance Assessment of Repairs to Pressurized Fuselages," dated December 14, 2000. That AC provides an acceptable means of compliance with the regulations that require incorporating FAA-approved repair assessment guidelines into an operator's FAA-approved maintenance or inspection program.

4. Mandatory Modifications Program: The mandatory modification program was based on the premise that, to ensure the structural integrity of older airplanes, there should be less reliance on repetitive inspections when certain criteria exist. These criteria included:

- There is a high probability that structural cracking exists.
- There is a potential airworthiness concern.
- The cracks are difficult to detect during regular maintenance. (Considerations under this criterion are: the areas to inspect are difficult

to access; NDT methods are unsuitable; and human factors associate with the inspection technique are so adverse that crack detection may not be sufficiently dependable to assure safety.)

- There is adjacent structural damage or the potential for it.

The FAA issued airworthiness directives that incorporated the structural modification program on the original eleven models (Airbus Model A300; British Aerospace BAC 1-11; Boeing Models B-707/720, B-727, B-737, B-747; McDonnell Douglas Models DC-8, DC-9/MD-80, DC-10; Fokker F28; and Lockheed Model L-1011 series airplanes). Each of the TCHs, with their respective operators, reviewed their service bulletins with the FAA to determine which areas of structure needed modifications to terminate the inspections. Then the revised service bulletins that included those terminating modifications were either grouped in a document and mandated, or each service bulletin was mandated individually.

These four programs or their equivalent make up the current structural maintenance program that operators incorporate into their maintenance or inspection programs to address aging structural issues. However, additional maintenance actions are necessary to address WFD issues Specific maintenance instructions to detect and correct conditions that degrade the structural capabilities due to WFD were not previously deemed necessary because it was assumed that the current structural maintenance and inspection programs would be enough to protect the structure.

Also, the validity of the current structural maintenance program is not limited to a number of flight cycles or flight hours. Certain structural components may be limited and must be replaced at a certain number of flight cycles or flight hours; but if the operator accomplishes the maintenance or inspection program as outlined, they can operate the airplanes indefinitely.

DISCUSSION OF THE PROPOSAL

FAA's review of the service history, design features, and maintenance instructions of the transport fleet indicates that aging of structures susceptible to MSD and MED, which could eventually lead to WFD, has become a safety issue for the fleet of transport category airplanes greater than 75,000 pounds (maximum takeoff gross weight). The FAA proposes to amend the current regulations in two areas to prevent WFD.

1. The first requirement concerns the need to limit the validity of the current structural maintenance program.

2. The second requirement concerns the need to impose operational requirements that mandate a structural maintenance program to prevent WFD in the fleet on baseline, repaired, altered, and modified structure. For the purposes of this proposed rule, baseline structure is defined as "the structure that was originally designed and built by the TCH."

These proposed operational rules would apply only to large transport airplanes greater than 75,000 pounds (maximum takeoff gross weight). The FAA recognizes that this does not align with the "One Level of Safety" initiative (i.e., the same safety level for large airplanes as well as commuter/small airplanes). However, there are two reasons for not including the commuter and smaller airplanes in this rulemaking at this time:

First, in addressing the Aging Aircraft Safety Act of 1991, there already has been considerable rulemaking activity to establish mandated SSIP, CPCP, structural modifications, and repair assessment programs for all aircraft operated under part 121, all U.S.-registered multi-engine aircraft operated under part 129, and all multi-engine aircraft used in scheduled operations under part 135. The TCHs and operators of large transport airplanes have been involved with mandated CPCP and damage tolerance-based SSIPs for many years now and are positioned to address the advanced technical issues of how to handle WFD.

Second, several of the initiatives of the Aging Aircraft Safety Act of 1991 are being accomplished to bring commuter aircraft in line with aging aircraft programs that

have already been accomplished on the large transports for several years now. However, the Aging Commuter Aircraft Program is not yet as mature as the Large Transport Aging Aircraft Program. In many cases, commuter aircraft TCHs are developing CPCPs and damage tolerance-based SSIPs for the first time. Further, many of these commuter aircraft were originally certified to safe-life and fail-safe rules, so the aircraft TCHs are not familiar with analyzing airplanes using damage tolerance principles. The FAA has funded development of damage tolerance-based SSIPs to help foster this development process for the smaller aircraft. Damage tolerance-based SSIP final rules for the commuter airplanes are not scheduled to be mandated until FY 2000. ***[Update???]*** The CPCP final rule may not be issued until FY 2002.

Proposed Operating Requirements

In each operational rule part, the proposed rule would impose two new operating rules. These are described below:

Operational Rule 1 – Basis of Structural Maintenance Program

The first operating rule, entitled "Basis of Structural Maintenance Program," would prohibit the operation of transport category airplanes greater than 75,000 pounds (maximum takeoff gross weight) unless the ALS of the ICA that includes the flight cycle or flight hour limits of validity of the structural maintenance program is incorporated in its maintenance or inspection program within 12 months after the effective date of the proposed rule. Regardless of the certification basis, the initial limit of validity chosen must ensure that WFD is precluded from the fleet up until the limit has been reached by that airplane.

Currently, only airplanes certified to the damage-tolerance requirements of § 25.571 at or after amendment 25-54 have an ALS incorporated into their ICA. This proposed rule would make that a requirement for all affected transport category airplanes greater than 75,000 lbs. (maximum takeoff gross weight).

Acceptable elements of the current aging aircraft program would be included or referenced in the ALS of the ICA. The following is a summary of the current aging aircraft structural maintenance program:

1. Acceptable mandatory modifications programs are those programs that have reviewed all relevant service bulletins and have produced a document that lists those service bulletins with applicable terminating modifications that has been mandated by an airworthiness directive. Not all of the terminating modifications are in a single document. There may be airworthiness directives that mandate terminating modifications for individual service bulletins.

2. An acceptable CPCP includes those CPCP documents that were mandated by airworthiness directives. The CPCP mandated by airworthiness directives should be referenced in the ALS of the ICA. Also, for airplanes certified to the damage tolerance requirements at or after amendment 25-54, and for those operators that have incorporated a maintenance program in accordance with MSG-3, Revision 2, an acceptable CPCP is found in the MRB document for those items listed under environmental damage (ED). (As indicated previously, the FAA is considering additional rulemaking to require that maintenance or inspection programs for transport category airplanes include an FAA approved CPCP.)

3. An acceptable SSIP includes those SSIDs developed in accordance with AC 91-56 that are mandated by ADs. Those mandated SSIDs would be referenced in the ALS of the ICA. Also, an acceptable SSIP would be the ALS of the ICA itself, for those airplanes certified to the damage tolerance requirements at or after Amendment 25-54. Also the "Aging Airplane Safety" rule will require damage tolerance-based SSIPs be required 4 years after the effective date of the proposed rule.

4. An acceptable RAP for the fuselage pressure boundary is found for the 11 original "aging models" listed in §§ 91.410, 121.370, 125.248, and 129.32. Airplanes certified to the damage tolerance requirements at or after Amendment 25-45 should have

acceptable repair assessment programs. As part of their certification basis, operators should be assessing repairs for damage tolerance. The Aging Airplane Safety rule will require some operators to develop damage tolerance based supplemental inspections for all major repairs, alterations and modifications to baseline structure within 4 years after the effective date of the rule.

With these aging aircraft structural maintenance programs in place, the TCH will need to establish a limit to the current structural maintenance program in flight cycles or flight hours for a particular airplane model. The limit of validity chosen must ensure that WFD is precluded from the fleet up until the limit has been reached by that airplane, at which time the airplane stops operating or continues to operate based on a maintenance program designed to preclude the occurrence of WFD in the fleet. The FAA expects that, typically, the TCH will choose to limit the airplane at the DSG. The DSG was usually established by the TCH as a period of time (in flight cycles/hours), established at design or certification, during which the principal structure will be reasonably free from significant cracking. Most of the TCHs performed fatigue tests on their airplane models to twice the life delineated in the DSG. Some of the TCHs did additional fatigue testing, teardown, in-service evaluations and analysis to establish an ESG.

When the DSG/ESG were originally conceived, the industry believed that airplanes would be retired before reaching these goals. In some cases, however, airplanes have been operated well beyond the DSG. Therefore, it is imperative to limit the validity of the current structural maintenance program until the maintenance program addresses inspections and/or modification/replacement of structure to prevent WFD in the fleet.

As a result of the AAWG activities, the TCHs have agreed to develop or revise, for each affected airplane model, the ALS of the ICA to reference the applicable aging aircraft programs delineated above and to establish a limit of validity to the current structural maintenance program (in flight cycles/hours). (A copy of these ALS documents is included in the public docket for this rulemaking.) The TCH should ensure

that the limits of validity chosen will ensure that the probability of WFD in the fleet is very low. The FAA will entertain any other entities (e.g. operators) that would like to establish the limit of validity for a particular model based on their knowledge of the model and its susceptibility to WFD. Once the FAA is satisfied the limits of validity chosen are appropriate, the ALS will receive a "conditional" approval by the FAA ACO or office of the Transport Aircraft Directorate (TAD) having cognizance over the type certificate before publication of this NPRM.

Operational Rule 2 – Aging Aircraft Program

The second operating rule, entitled "Aging Aircraft Program (Widespread Fatigue Damage)," would require a three-part compliance:

First, for baseline structure, this proposed rule would prohibit the operation of certain transport category airplanes greater than 75,000 pounds (maximum takeoff gross weight) beyond the flight cycle limits shown in its ALS of the ICA, or 12 months after the effective date of the proposed rule, whichever occurs later, unless a structural maintenance program is incorporated within its maintenance or inspection program. This new program must include inspections and/or modification/replacement actions to the baseline structure for prevention of WFD. The baseline structure is defined as that airplane structure that was originally built by the TCH.

The new structural maintenance program will be limited by flight cycles or flight hours, which must be specified in the ALS that has been approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. Any subsequent revisions to the structural maintenance program for WFD must also be approved by the FAA ACO of office of the TAD having cognizance over the type certificate for the affected airplane before they can be incorporated within the operator's maintenance or inspection program.

For the baseline structure, most of the major TCHs have agreed to publish the inspection procedures and modification/replacement as necessary to preclude WFD in the

fleet for those airplanes that have exceeded their DSG or ESG by December 31, 2001 and will require "conditional" approval by the FAA ACO or office of the TAD having cognizance over the type certificate. (A copy of that documentation for airplanes that have exceeded their DSG/ESG has been provided in the public docket for this rulemaking action). The operator could choose to incorporate that program to meet the proposed requirement.

If the TCH chooses not to develop inspection procedures and modification/replacement as necessary to preclude WFD in the fleet, then the operator would not be able to operate the airplane beyond the limit of validity established in the ALS of the ICA. The operator would also have the option of developing its own program independently to address WFD in its fleet, and ultimately would be responsible for gaining FAA approval.

Second, for structure with existing repairs or alterations, this proposed rule also would prohibit operation of certain transport category airplanes greater than 75,000 pounds (maximum takeoff gross weight), 48 months after initial incorporation of the structural maintenance program for the baseline structure or 48 months beyond the time that the airplane has accumulated the flight cycles shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, unless a structural maintenance program is incorporated within its maintenance or inspection program. This new program must include inspections and/or modifications/replacement actions for repairs, alterations, or modifications susceptible to MSD/MED or repairs, alterations or modifications that affect baseline structure that is susceptible to MSD/MED accomplished prior to the effective date of this proposed rule for the prevention of WFD. . The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The proposed rule would specify that certain tasks would need to be accomplished within the noted 48-month time frame, including:

- Within six months, operators establish a plan to address repairs, alterations and modifications, which includes identification of interim inspections of applicable repairs, alterations, and modifications. Each operator submits that plan to the FAA ACO or office of the TAD through the operator's PMI.
- Within six months after receipt of the plan, the FAA ACO or office of the TAD approves the plan if it is acceptable.
- Within six months after receipt of the FAA approved plan, each operator incorporates interim inspections of applicable repairs, alterations, and modifications identified in the plan.
- Within 36 months after initial incorporation per paragraph (a) or within 36 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator submits the structural maintenance program to the FAA ACO or office of the TAD through the operator's PMI.
- Within six months after receipt of the structural maintenance program, the FAA ACO or office of the TAD approves the program if it is acceptable.
- Within 48 months after initial incorporation per paragraph (a) or within 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator incorporates the FAA approved program into its maintenance program.

Third, for new repairs and alterations (installed after effective date of this NPRM), the proposed rule also would prohibit operation of certain transport category airplanes, greater than 75,000 pounds (maximum takeoff gross weight), 18 months after a repair, alteration or modification susceptible to MSD or MED or a repair, alteration or modification that affects baseline structure that is susceptible to MSD or MED is accomplished on or after the effective date of the rule, unless an appropriate threshold for

inspection and/or replacement is incorporated within its maintenance program. This new program must include a threshold where inspections and modification/replacement actions to said repair, alteration, or modification must be incorporated to preclude WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

- The static strength approval of the repair, alteration, or modification is to be accomplished before further flight.
- Within 18 months of the static strength approval, a damage-tolerance analysis that includes a WFD analysis of the repair, alteration or modification is approved by the FAA ACO or office of the TAD, which defines the threshold for inspections and/or modification/replacement actions is included in the operators FAA approved structural maintenance program.
- Within 24 months before reaching the threshold, specific FAA approved inspection methods and repeat intervals are incorporated for each repair, alteration or modification into the FAA approved structural maintenance program.

The intent of the rule is to require operators first to incorporate a program to preclude WFD in the fleet for baseline structure. Then, the operators would be required to develop a plan, and eventually a structural maintenance program, to preclude WFD in the fleet for repaired, altered, or modified structure. The plan would be developed by the operators and must be based on a survey of their fleet to identify MSD/MED susceptible areas that should be inspected in the interim while the structural maintenance program is being developed. The plan would be sent to the FAA ACO or office of the TAD, having cognizance over the type certificate through the operator's PMI and, if acceptable, would approve the plan with a letter signed by the Manager of the ACO or office of the TAD, as appropriate.

Once the plan is approved, the operator would need to begin inspecting areas of the structure susceptible to MSD/MED. Also, the operator would be required to conduct a WFD assessment of the repaired, altered, or modified structure. The analysis to support the WFD assessment and any new inspections or modification/replacement schedules would need to be FAA-approved.

Once the WFD assessment is completed, the operator would be required to develop a structural maintenance program and submit it to the FAA ACO or office of the TAD through the PMI for approval. Once the approval is obtained, the operator would incorporate the structural maintenance program into its maintenance or inspection program.

The structural maintenance program provided by the manufacturer does not generally apply to structure modified by repairs, alterations, or modifications (e.g., modification installed via an STC). However, under this proposed rule, the operator would still be responsible to conduct a survey of its fleet and provide a WFD assessment of affected structure that meets the program objectives of precluding WFD in the operator's fleet.

The FAA recognizes that operators do not usually have the resources to determine an inspection and/or modification/replacement schedule. The FAA expects the STC holder to assist the operators in preparing the required documents. If the STC holder is out of business, or is otherwise unable to provide assistance, the operator will have to accomplish WFD assessment independently. To keep the airplanes in service, it is possible for operators, individually or as a group, to hire the necessary expertise to develop and gain approval of WFD assessments and the associated an inspection and/or modification/replacement schedule. Ultimately, the operator remains responsible for the continued safe operation of the airplane.

The cost and difficulty of developing WFD assessments for repaired, altered, or modified structure may be less than that for the basic airplane structure for various

reasons. Of those repairs, alterations, or modifications that do affect the structure, many are small enough that the structure may not be susceptible to MSD/MED (i.e., an antenna installation with a small hole in the middle of two frame bays.) Also, the modification may have been made so recently that no supplemental inspections would be needed for many years. For example, in the case of a large cargo door, such installations are often made after the airplane has reached the end of its useful life as a passenger-carrying airplane. For new structure, the clock would start on WFD assessment at the time of installation. Further, since the inspection start point is measured in cycles, and cargo operation usually entails fewer operational cycles than passenger operations, the due date for incorporation of the non-destructive inspection (NDI) and procedures for that structure could be many years away.

To assist operators and STC holders, the TCH maintenance program documents will contain general guidelines developed along strict boundaries for the screening of repairs, alterations, and STCs.

The operator, normally in conjunction with the TCH, would need to consider the following three things:

1. The means by which the FAA-approved structural maintenance program that addresses WFD are incorporated into a certificate holder's FAA-approved maintenance or inspection program, as would be required by the proposed rule, is subject to approval by the certificate holder's PMI or other cognizant airworthiness inspector.

2. This rule would not impose any new reporting requirements; however, normal reporting required under §§ 121.703 and 125.409 would still apply.

3. This rule would not impose any new FAA recordkeeping requirements. However, as with all maintenance, the current operating regulations (e.g., 14 CFR §§ 121.380 and 91.417) already impose recordkeeping requirements that would apply to the actions required by this proposed rule. When incorporating the structural maintenance program that addresses WFD into its approved maintenance or inspection

program, each operator should address the means by which it will comply with these recordkeeping requirements. That means of compliance, along with the remainder of the program, would be subject to approval by the cognizant PMI or other cognizant airworthiness inspector.

In summary, based on discussions with representatives of the affected industry, recommendations from ARAC, and a review of current rules and regulations affecting WFD, the FAA has determined there is a need for a structural maintenance program, including inspections and modification/replacement actions, for the prevention of WFD to be incorporated into the maintenance or inspection program for certain transport category airplanes.

Possible Airworthiness Directives

For airplanes certified to § 25.571, pre-Amendment 25-54, this proposed rule would create a new ALS of the ICA. The proposed rule would set a limit of validity (in flight cycles or hours) in the ALS of the ICA of the current structural maintenance program for each applicable model. If no program to preclude WFD in the fleet is incorporated by the operator in their maintenance or inspection program, then the operator could not operate the airplane beyond the established flight cycle or flight hour limit.

If the TCH conducts a structural evaluation of the baseline structure for WFD and develops a program to preclude WFD in the fleet, then the TCH would develop a new limit (in flight cycles or flight hours) to the structural maintenance program beyond which the airplane could not be operated. The new limit should be referenced in a revision to the ALS of the ICA and submitted to the FAA for approval. The Administrator would approve the new revision to the ALS of the ICA with a letter of approval. If the new limit is less than the original limit established by the TCH, then the Administrator will need to mandate that limit referenced in the revise ALS of the ICA with an AD.

During the time that the TCH is conducting a structural evaluation for WFD of baseline structure, or the operator is conducting a structural evaluation for WFD of repaired, altered, or modified structure, an unsafe condition may be identified that must be rectified by immediate inspections and/or modification/replacement of structure. If this occurs, the FAA will mandate those actions by issuing an appropriate AD.

Structural Evaluation for WFD

The likelihood of the occurrence of fatigue damage in an airplane's structure increases with airplane usage. The design process generally establishes a DSG in terms of flight cycles/hours for the airframe. It is expected that any cracking that occurs on an airplane operated up to the DSG will occur in isolation (i.e., local cracking), originating from a single source, such as a random manufacturing flaw (e.g., a mis-drilled fastener hole) or a localized design detail. It is considered unlikely that cracks from manufacturing flaws or localized design issues will interact strongly as they grow.

With extended usage, uniformly loaded structure may develop cracks in adjacent fastener holes, or in adjacent similar structural details. These cracks, while they may or may not interact, can have an adverse affect on the large damage capability (LDC) before the cracks become detectable. The development of cracks at multiple locations (both MSD and MED) also can result in strong interactions that can affect subsequent crack growth, in which case the predictions for local cracking would no longer apply. An example of this situation may occur at any skin joint where load transfer occurs. Simultaneous cracking at many fasteners along a common rivet line may reduce the residual strength of the joint below required levels before the cracks are detectable under the routine maintenance program established at time of certification.

The operator, normally in conjunction with the TCH, is expected to initiate the development of a maintenance program with the intent of precluding operation with WFD. Such a program must be implemented before WFD may develop in the fleet as substantiated by analysis, tests, and/or service experience. Because of the small

probability of occurrence of MSD/MED in airplane operation up to its DSG, maintenance programs developed for initial certification have generally considered only local fatigue cracking. Therefore, as the airplane reaches its DSG, it is necessary to take appropriate action in the aging fleets to preclude WFD so that continued safe operation of the airplane is not jeopardized. The TCH and /or the operator(s) should conduct structural evaluations to determine where and when MSD/MED may occur. Based on these evaluations the TCH and in some cases the operators would provide additional maintenance instructions for the structure as appropriate. The maintenance instructions include, but are not limited to:

- inspections,
- structural modifications, and
- limits of validity of the new maintenance instructions.

In most cases, a combination of inspections and/or modifications/replacements is deemed necessary to achieve the required safety level. Other cases will require modification or replacement if inspections are not viable.

Before MSD/MED can be addressed, it is expected that the operators will incorporate an augmented structural maintenance program that includes the Mandatory Modifications Program, CPCP, SSIP and RAP to address structural degradation such as corrosion, accidental damage and fatigue.

The structural evaluation for WFD has three objectives:

1. Identify primary structure susceptible to MSD/MED.
2. Predict when it is likely to occur.
3. Establish additional maintenance actions, as necessary, to ensure continued safe operation of the airplane.

Structure Susceptible to MSD/MED

Susceptible structure is defined as that which has the potential to develop MSD/MED. Such structure typically has the characteristics of multiple similar details

operating at similar stresses where structural capability could be affected by interaction of multiple cracking at a number of similar details. There are a number of generic types of structure that have demonstrated the development of MSD/MED in service. These structural details are illustrated in proposed AC 91-56B, Appendix 2, Section 3(b). (**NOTE**: The illustrations contained in proposed AC 91-56B are by no means exhaustive and are included to stimulate the review of all possible structure.)

WFD Evaluation

By the time the high time airplane of a particular model reaches its DSG, the evaluation for each area susceptible to the development of WFD should be completed. This evaluation will establish the necessary elements to determine a maintenance program to preclude WFD in that particular model's commercial airplane fleet. These elements are developed for each susceptible area and include:

- Determination of WFD Average Behavior in the Fleet.
- Initial Crack/Damage Scenario.
- Final Cracking Scenario.
- Crack Growth Calculation.
- Potential for Discrete Source Damage (DSD).
- Analysis Methodology Issues.
- Inspection Start Point (ISP).
- Structural Modification Point (SMP).
- Inspection Interval and Method.

(One means of developing these elements is discussed in detail in proposed AC 91-56B, Appendix 2.)

Evaluation of Maintenance Actions

For all areas that have been identified as susceptible to MSD/MED, the current maintenance program should be evaluated to determine if adequate structural

maintenance and inspection programs exist to safeguard the structure against unanticipated cracking or other structural degradation. The evaluation of the current maintenance program typically begins with the determination of the SMP for each area.

Each area should then be reviewed to determine the current maintenance actions that are directed against the structure and compare them to the maintenance requirements.

- Determine the inspection requirements (method, reliability, inspection start point, and repeat interval) of the inspection for each susceptible area (including that structure that is expected to arrest cracks) that is necessary to maintain the required level of safety.
- Review the elements of the existing maintenance programs already in place
- Revise and highlight elements of maintenance program necessary to maintain safety.

For susceptible areas approaching the SMP, where the SMP will not be increased, or for areas that cannot be reliably inspected, a program should be developed, and documented that provides for replacement or modification of the susceptible structural area.

Period of Evaluation Validity

The initial evaluation of the complete airframe should cover a significant forward estimation of the projected airplane usage beyond its DSG, also known as the "Proposed ESG." Typically, an assessment through at least an additional twenty-five percent of the DSG would provide a realistic forecast with reasonable planning time for necessary maintenance action.

Upon completion of the evaluation and publication of the revised maintenance requirements, the Proposed ESG becomes the ESG. Subsequent evaluations should follow similar validity period guidelines as the initial evaluation.

Documentation

Any person developing a program to comply with the proposed rule must develop a document containing recommendations for inspection procedures and replacement or modification of parts or components necessary to preclude WFD, and establish the new limit of validity of the operator's maintenance program. That person also must revise the SSID or ALS, as necessary, and/or prepare service bulletins that contain the recommendations for inspection procedures and replacement or modification of parts or components necessary to preclude WFD.

The new limit of validity of the ALS of the ICA and the program documents containing inspection procedures and replacement actions must be submitted to the FAA ACO or office of the TAD cognizant over the type certificate. If acceptable, the FAA ACO or office of the TAD will approve the new limit of validity of the ALS of the ICA by letter signed by the Manager of the FAA ACO or office of the TAD, as appropriate.

In addition, any service bulletins or other service information publications revised or issued as a result of in-service MSD/MED findings resulting from implementation of these programs may require separate AD action.

(**NOTE**: Details of the documentation required by the FAA are contained in proposed AC 91-56B, Appendix 2.)

Reporting Requirements

Operators and TCHs are required to report failures, malfunctions, defects, mechanical reliability, etc. in accordance with various regulations (e.g., § 121.703, § 21.3, etc.). While these reporting requirements would not be modified for this proposed rule, both the operators and the TCHs should be cognizant of the following issues concerning reporting:

Due to the potential threat to structural integrity, the results of inspections must be accurately documented and reported in a timely manner to preclude the occurrence of WFD. The current system of operator-manufacturer communication has been useful in

identifying and resolving a number of issues that can be classified as WFD concerns. MSD/MED has been discovered via fatigue testing and in-service experience. Airplane TCHs have been consistent in disseminating related data to operators to solicit additional service experience. However, a more thorough means of surveillance and reporting is essential to preclude WFD.

When damage is found while conducting a FAA-approved MSD/MED inspection program or at SMP where replacement or modification of the structure is occurring, the TCHs, STC Holder and the operators need to ensure that greater emphasis is placed on accurately reporting the following items:

- A description (with a sketch) of the damage, including crack length, orientation, location, flight cycles/hours and condition of structure.
- Results of follow-up inspections by operators that identify similar problems on other airplanes in the fleet.
- Findings where inspections accomplished during the repair or replacement/modification identify additional similar damage sites.
- Adjacent repairs within the same PSE.

Operators should report all cases of MSD/MED to the TCH, STC Holder, or the FAA as appropriate, irrespective of how frequently such cases occur. Cracked areas from in-service airplanes (damaged structure) may be needed for detailed examination. Operators are encouraged to provide fractographic specimens whenever possible. Airplanes undergoing heavy maintenance checks are perhaps the most useful sources for such specimens.

Operators should remain diligent in the reporting of potential MSD/MED concerns not identified by the TCH. Indications of a developing MSD/MED problem may include:

- damage at multiple locations in similar adjacent details;
- repetitive part replacement; or

- adjacent repairs with similar types of damage.

Documentation will be provided by the TCH, STC Holder as appropriate to specify the required reporting format and time frame. The data will be reviewed by the TCH/STC Holder, operator(s), and regulatory authority to evaluate the nature and magnitude of the problem and to determine the appropriate corrective action.

Structural Modifications, Repairs, and Alterations

Operators are responsible for ensuring that all major modifications (STCs), repairs, and alterations that create, modify, or affect structure that has been identified by the TCH as susceptible to MSD/MED are evaluated to demonstrate the same confidence level as the original manufactured structure (i.e., a "two life-time fatigue test"). The operator will need to conduct a survey on each of its airplanes to determine what modifications, repairs, or alterations would be susceptible to MSD/MED. The following are examples of modifications, repairs, and alterations with such concerns:

- passenger-to-freighter conversions (including addition of main deck cargo doors);
- gross weight increases (increased operating weights, increased zero fuel weights, increased landing weights and increased maximum takeoff weights);
- installation of fuselage cutouts (passenger entry doors, emergency exit doors or crew escape hatches, fuselage access doors and cabin window relocations);
- complete re-engine and/or pylon modifications;
- engine hush-kits and nacelle alterations;
- wing modifications such as the installation of winglets or changes in flight control settings (flap droop), and alteration of wing trailing edge structure;
- modified, repaired, or replaced skin splices; and

- any modification, repair, or alteration that affects several stringer or frame bays.

Other potential areas that must be considered include:

- A modification that covers structure requiring periodic inspection by the operator's maintenance program. Modifications must be reviewed to account for the differences with the TCHs baseline maintenance program requirements.
- A modification that results in operational mission change that significantly changes the manufacture's load/stress spectrum. An example of this would be a passenger-to-freighter conversion.
- A modification that changes areas of the fuselage from being externally inspectable using visual means to being uninspectable. An example would be the installation of a large external fuselage doubler that results in hiding details beneath it, rendering them visually uninspectable.

Aging Aircraft Program Implementation Time

The applicability of this WFD structural evaluation has been expanded from the eleven aging fleet models initially evaluated by the AAWG. (The AAWG evaluation is contained in the AAWG's report, "Structural Fatigue Evaluation for Aging Aircraft," dated October 14, 1993. That report has been made a part of the public docket for this proposed rulemaking action.) This proposed rule would apply to all large transport category airplanes having a maximum takeoff gross weight (MTOGW) greater than 75,000 pounds, which have been certified to either a pre- or post- amendment 25-45 certification basis.

In order to ensure that the WFD evaluation is completed in a timely manner, with respect to the actual service life accumulated, the FAA has established the following fleet selection criteria, based on the DSG or the ESG:

1. Airplane cycle age is greater than the DSG or ESG on the effective date of the final rule. The operator would be required to incorporate an aging aircraft program including inspections and modifications/replacement actions for prevention of WFD in its maintenance or inspection program by the flight cycle limits shown in its ALS of the ICA, or one year after the effective date of the rule, whichever occurs later. It is conceivable that the operator will need to replace or modify baseline structure on airplanes that have operated beyond the SMP noted in the program documents (inspections and replacement/modification actions) that address WFD for that structure. The operator should begin planning as soon as possible for this eventuality to ensure that the necessary maintenance is performed with as little disruption of fleet utilization as possible. The operator also should be making a survey of all those repairs, alterations, and modifications that are susceptible to MSD/MED, and producing a plan for FAA approval.

2. Airplane cycle age is greater than 75% DSG or ESG, but less than DSG or ESG on the effective date of the final rule. The WFD structural audit program development should have begun by this time. Operators should be making a survey of all those repairs, alterations, and modifications that are susceptible to MSD/MED, and initiating a plan for FAA approval.

3. Airplane cycle age is greater than 50% DSG or ESG, but less than 75% DSG or ESG on the effective date of the final rule. The WFD structural audit program should be in the preliminary planning stages by this time. The operator should be planning to perform a survey of all those repairs, alterations, and modifications that are susceptible to MSD/MED.

FAA Advisory Material

In addition to the amendments proposed in this notice, the FAA has proposed to revise AC 91-56A to AC 91-56B, "Continuing Structural Integrity Program for Large Transport Category Airplanes." The proposed revised AC would provide guidance for

operators of the affected transport category airplanes on how to incorporate an FAA-approved "Aging Aircraft Program" into their FAA-approved maintenance or inspection program. Public comments concerning the proposed AC are invited by separate notice published elsewhere in this issue of the Federal Register

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. We have determined that there are no new information collection requirements associated with this proposed rule.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA determined that there are no ICAO Standards and Recommended Practices that correspond to these proposed regulations.

Economic Evaluation, Regulatory Flexibility Determination, International Trade Impact Assessment, and Unfunded Mandates Assessment

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs 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 requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (19 U.S.C. 2531-2533) 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 also requires the consideration of international standards and, where appropriate, that they be the basis of U.S. standards. And 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).

In conducting these analyses the FAA has determined that this proposed rule: (1) has benefits that justify its costs; is "a significant regulatory action," as defined in Executive Order 12866; and is "significant," as defined in the Department of Transportation's regulatory policies and procedures (44 FR 11034, February 26, 1979); (2) would have a significant impact on a substantial number of small entities; (3) would not constitute a barrier to international trade; and (4) would not impose an unfunded mandate on State, local, or tribal governments, or the private sector. These analyses are available in the docket and are summarized below. The FAA invites the public to provide comments and supporting data on the assumptions made in this evaluation. All comments received will be considered in any final regulatory evaluation.

Benefits

Current inspection programs are unlikely to uncover WFD problems with airplanes. However, WFD has a positive probability of occurring as the number of cycles exceeds the established limit of validity of the airplanes.

Over the course of the past 17 years, there have been three or more WFD-related accidents or incidents involving sudden depressurizations or other major in-flight disruptions that have resulted in property damage and/or loss of life. Without the proposed WFD program, it is likely that this same experience would be repeated in the future. In the event of an accident, the fleet of that airplane type would be grounded until the affected structure is inspected and/or modified/replaced, with resulting losses in airline income and potential losses to consumers. In addition, in the absence of the proposed rule, airplanes are more likely to be grounded unexpectedly when MSD or MED are detected. If not addressed, MSD or MED may cause the residual strength of airplane structure to fall below the damage tolerant requirements which would result in a WFD condition.

The benefits of the proposed regulation over the planning horizon would be:

Avoided accident costs—C_{t1}

Avoided fleet groundings—C_{t2}.

The expected value of these benefits is:

$$(1) \qquad PV(B) = PV_t\,[A(L_t)\,(C_{t1} + C_{t2}) + P(C_{t2})]$$

which says in words that the present value (PV) of the avoided costs over the planning horizon (t) is the historic WFD accident rate (A) (accidents by affected fleet divided by landings by the fleet) multiplied by landings (L) in year (t) multiplied by the two costs avoided plus the probability (P) of detecting a WFD problem during normal maintenance multiplied by the costs of unexpected groundings.

The annual benefits of the WFD regulation can be separated into two groups:

1. Accident-Related Benefits: The accident-related benefits relate to the estimated costs of accidents that would otherwise occur in the absence of the regulation. These estimated benefits include both the direct costs of the accident and the costs of inspecting and modifying the type of fuselages that were involved in the accident.

2. Detection-Related Benefits: The detection benefits relate to costs incurred by operators when they find WFD problems during the course of their normal maintenance operations; in such cases, the operators will need to develop an inspection and modification program for their fleet.

Both the accident related and detection related benefits are developed stochastically. The accident related benefits depend importantly upon the accident rate and the number of landings by fuselage types during each year of the analysis. Accidents are assumed to be rare events whose behavior is governed by the Poisson distribution. The present value of the mean accident-related benefits is $653.5 million. In FAA's analysis/simulation, there are on average 6.4 WFD related accidents over the 20-year analysis period. Between three and ten accidents occur in approximately 80 percent of the simulations. Zero accidents occur less than one percent of the time. The range of accident-related benefits is from 15 million to $1.5 billion in year 2000 dollars. The median value is **$633.8 million**, which is close to the mean.

The detection related benefits also are produced stochastically. Because WFD problems will occur as airplanes operate beyond their limit of validity, operators are likely to detect such problems over the 20-year forecast period. It has been assumed that there is a probability of finding WFD problems in each model type of five percent in each year. Under this assumption, there is a 35 percent chance that there will be zero WFD problems detected for a particular model type over a 20-year period. The detection behavior is characterized by the binomial distribution, so that in any given year there is either a WFD problem detected or there is not for each model type. Once a WFD problem is detected, it is assumed that the operators will undertake an inspection and

modification program. It is assumed that this inspection program will be approximately 35 percent of the cost of the inspection program that would be undertaken under regulation. The learning curve effects are assumed to apply to these inspections and modifications. Airplanes are assumed to be out of service for a average of 13 days to undertake all of the inspections and modifications, resulting in denial of service (flight cancellations) and loss of revenue costs.

The FAA's analysis/simulation revealed the mean detection benefit estimate as $94.5 million in year 2000 dollars. This ranges from a minimum of $1.75 million to a maximum of $175 million. Eighty percent of the time the detection benefits range between $37.8 and $116.4 million in year 2000 dollars.

The benefits of this proposal consist of accident prevention and the prevention of unscheduled maintenance and groundings of fleets of aircraft. The present value total benefits of this proposal are estimated to be **$728.0 million**.

Costs

The costs of the WFD program include the following:

- The regulatory costs of establishing the rule;
- The costs to manufacturers or other third parties of developing inspection and modification programs to satisfy the rule; it is assumed that these costs are passed forward to operators;
- The direct cost to operators of performing inspections and modifications/replacement actions required under the rule;
- The cost of early retirement of airplanes in the event that airlines find it more cost effective to retire airplanes than to inspect/modify or replace structure.

It should be noted that the attributable costs of the regulation do not include the expense of making modifications or major repairs to structure that has been found to be cracked during inspections mandated by the rule. While these modifications or repairs

may represent a significant direct expense, their costs are not attributable to the proposed rule because existing FAA regulations require that repairs be made when they are found to be necessary to ensure the continued airworthiness of the airplane. However, modifications that may be required to raise the limit of validity (LOV) for the current maintenance program —i.e., those assumed to be required to be made for an airplane to reach 125% of LOV are properly assigned to the rule costs.

It is assumed that the rule will become effective in the year 2004. In that year, approximately 163 airplanes would be subject to the rule. Their operators will be presented with the choice either to undertake an inspection and modification/replacement program or to retire the airplanes. In the analysis, the operators are assumed to select the lower cost alternative. So, for example, in the first year when the rule is assumed to become effective, 136 airplanes would be retired or inspected at a cost of $34.2 million. In that same year, 27 airplanes would be retired or modified at a cost of $36.1 million. (All dollar figures are in discounted year 2000 dollars.) Exposure data and cost estimates are provided for each year.

The total discounted present value costs of the inspection and structural modifications that would be required by the proposed WFD regulation are estimated to be **$358.1 million**.

Benefit/Cost Comparison

The $728.0 million benefits of this proposed rule exceed the estimated costs of the proposed rule of $358.1 million. Therefore, the FAA considers this proposal to be cost-justified.

Initial Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To

achieve that principle, the RFA requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. 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 proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a proposed or final 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 not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

Under the RFA, the FAA must determine whether or not a proposed rule significantly affects a substantial number of small entities. This determination is typically based on small entity size and cost thresholds that vary depending on the affected industry. The FAA has conducted the required review and determined that this proposed rule would have a significant impact on a substantial number of small entities. Accordingly, a regulatory analysis was conducted as required by the RFA, and is summarized in this section.

The FAA has analyzed the effects of this proposal on small entities. It appears that this proposal would have a significant effect on a significant number (XX) of small entities.

Entities potentially affected by the proposed rule include:

[to be completed by APO]

The FAA has attempted to mitigate the impacts on these firms by considering alternatives, such as extending the compliance deadline for small entities. The alternatives are discussed in the full initial regulatory evaluation associated with this rule.

International Trade Impact Assessment

The Trade Agreement Act of 1979 prohibits Federal agencies from engaging in any standards or related activity that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. In addition, consistent with the Administration's belief in the general superiority and desirability of free trade, it is the policy of the Administration to remove or diminish, to the extent feasible, barriers to international trade, including barriers affecting the export of American goods and services to foreign countries and barriers affecting the import of foreign goods and services into the United States.

In accordance with the above statute and policy, the FAA has assessed the potential effect of this proposed rule and has determined that it does not have an effect on international trade.

Unfunded Mandates Assessment

The Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1532-1538) is intended, among other things, to curb the practice of imposing unfunded Federal mandates on State, local and tribal governments. It 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 a $100 million or more expenditure (adjusted annually for inflation) in any 1 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."

This proposed rule does not contain a Federal intergovernmental or private sector mandate that exceeds $100 million in any 1 year. Therefore, the requirements of the Unfunded Mandates Reform Act of 1995 do not apply.

Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action 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. Therefore, we determined that this notice of proposed rulemaking would not have federalism implications.

Environmental Analysis

FAA Order 1050.1D defines FAA actions that may be categorically excluded from preparation of a National Environmental Policy Act (NEPA) environmental impact statement. In accordance with FAA Order 1050.1D, appendix 4, paragraph 4(j), this proposed rulemaking action qualifies for a categorical exclusion.

Energy Impact

The energy impact of the notice has been assessed in accordance with the Energy Policy and Conservation Act (EPCA) Pub. L. 94-163, as amended (42 U.S.C. 6362) and FAA Order 1053.1. It has been determined that the notice is not a major regulatory action under the provisions of the EPCA.

List of Subjects

14 CFR Part 91

Aircraft, Aviation Safety, Reporting and recordkeeping requirements

14 CFR Part 121

Air carriers, Aircraft, Aviation Safety, Reporting and recordkeeping requirements, Safety, Transportation

14 CFR Part 125

Aircraft, Aviation Safety, Reporting and recordkeeping requirements

14 CFR Part 129

Air carriers, Aircraft, Aviation Safety, Reporting and recordkeeping requirements

14 CFR Part 135

Aircraft, Aviation safety, Reporting and recordkeeping requirements

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend parts 91, 121, 125, 129, and 135 of Title 14, Code of Federal Regulations, as follows:

PART 91 - GENERAL OPERATING AND FLIGHT RULES

1. The authority citation for part 91 continues to read:

Authority: 49 U.S.C. 106(g), 40103, 40113, 40120, 44101, 44111, 44701, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316, 46502, 46504, 46506-46507, 47122, 47508, 47528-47531.

2. Add § 91.4XX as follows:

§ 91.4XX Basis of Structural Maintenance Program.

No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond [one year after the effective date of the amendment], unless Instructions for Continued Airworthiness (ICA), developed in accordance with Appendix H of part 25, are incorporated within its inspection program. The ICA must contain a section titled Airworthiness Limitations (ALS) that is segregated and clearly distinguishable from the rest of the document. The ALS must be approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. The ALS must contain either (a) or (b):

(a) For each airplane that has a certification basis that does include a requirement for damage-tolerance based inspections and procedures, this section must set forth each

mandatory replacement time, structural inspection interval and related structural inspection procedure approved under § 25.571, which includes a structural maintenance program that includes a corrosion prevention and control program, repair assessment program and a mandatory modifications program and with a stated limit of validity in flight cycles or flight hours.

(b) For each airplane that has a certification basis that does not include a requirement for damage-tolerance based inspections and procedures, this section must include the supplemental structural inspection program, corrosion prevention and control program, repair assessment program and mandatory modifications program and include a structural maintenance program with a stated limit of validity in flight cycles or flight hours.

3. Add § 91.4YY as follows:

§ 91.4YY Aging Aircraft Program (Widespread Fatigue Damage).

(a) No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond the flight cycle limits shown in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), or [a date one year after the effective date of the amendment], whichever occurs later, unless a structural maintenance program is incorporated within its inspection program. This new program must include inspections and modification/replacement actions to the baseline structure for prevention of WFD. The baseline structure is defined as that airplane structure that was originally built by the TCH. The new structural maintenance program will be limited by flight cycles or flight hours, which must be specified in the ALS of the ICA that has been approved by the FAA Aircraft Certification Office (ACO) or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. Any subsequent changes to the structural maintenance program must also be approved by the FAA ACO or office of the

TAD, having cognizance over the type certificate for the affected airplane before they can be incorporated within the operator's inspection program.

(b) No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 48 months after initial incorporation per paragraph (a), or 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), whichever occurs later, unless a structural maintenance program is incorporated within its inspection program. This new program must include inspections and modification/replacement actions to repairs, alterations or modifications susceptible to MSD or MED or repairs, alterations or modifications that affect the baseline structure that is susceptible to MSD or MED accomplished prior to the effective date of this proposed rule, for prevention of WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) Within six months after initial incorporation per paragraph (a) or within six months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator establishes a plan to address repairs, alterations and modifications, which includes identification of interim inspections of applicable repairs, alterations and modifications. Each operator submits that plan to the FAA ACO or office of the TAD through the operator's PMI.

(2) Within six months after receipt of the plan, the FAA ACO or office of the TAD approves the plan if it is acceptable.

(3) Within six months after receipt of the FAA approved plan, each operator incorporates interim inspections of applicable repairs, alterations, and modifications identified in the plan.

(4) Within 36 months after initial incorporation per paragraph (a) or within 36 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator submits a structural maintenance program to the FAA ACO or office of the TAD through the operator's PMI.

(5) Within six months after receipt of the structural maintenance program, the FAA ACO or office of the TAD approves the program if it is acceptable.

(6) Within 48 months after initial incorporation per paragraph (a) or within 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator incorporates the FAA approved structural maintenance program into its maintenance or inspection program.

(c) No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 18 months after a repair, alteration or modification susceptible to MSD or MED or a repair, alteration or modification that affects the baseline structure that is susceptible to MSD or MED is accomplished on or after the effective date of the rule, unless a structural maintenance program is incorporated within its inspection program. This new program must include a threshold where inspections and/or modification/replacement actions to said repair, alteration, or modification must be incorporated to preclude WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) The static strength approval of the repair, alteration, or modification is to be accomplished before further flight.

(2) Within 18 months of the static strength approval, a damage tolerance analysis that includes a WFD analysis of the repair, alteration or modification is approved by the FAA ACO or office of the TAD, which defines the threshold for inspections and/or modification/replacement actions.

(3) Within 24 months before reaching the threshold, specific FAA approved inspection methods and repeat intervals are incorporated for each repair, alteration or modification into the FAA approved structural maintenance program.

PART 121 - CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT.

4. The authority citation for part 121 continues to read:

Authority: 49 U.S.C. 106(g), 40113, 40119, 44101, 44701-44702, 44705, 44709-44711, 44713, 44716-44717, 44722, 44901, 44903-44904, 44912, 46105.

5. Add § 121.3XX as follows:

§ 121.3XX Basis of Structural Maintenance Program.

No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond [one year after the effective date of the amendment], unless Instructions for Continued Airworthiness (ICA), developed in accordance with Appendix H of part 25, are incorporated within its maintenance program. The ICA must contain a section title Airworthiness Limitations (ALS) that is segregated and clearly distinguishable from the rest of the document. The ALS must be approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. The ALS must contain either (a) or (b):

(a) For each airplane that has a certification basis that does include a requirement for damage-tolerance based inspections and procedures, this section must set forth each mandatory replacement time, structural inspection interval and related structural inspection procedure approved under § 25.571, which includes a structural maintenance program that includes a corrosion prevention and control program, repair assessment program and mandatory modifications program and with a stated limit of validity in flight cycles or flight hours.

(b) For each airplane that has a certification basis that does not include a requirement for damage-tolerance based inspections and procedures, this section must include the supplemental structural inspection program, corrosion prevention and control program, repair assessment program and mandatory modifications program and include a structural maintenance program with a stated limit of validity in flight cycles or flight hours.

6. Add § 121.3YY as follows:

§ 121.3YY Aging Aircraft Program (Widespread Fatigue Damage).

(a) No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond the flight cycle limits shown in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), or [a date one year after the effective date of the amendment], whichever occurs later, unless a structural maintenance program is incorporated within its maintenance program. This new program must include inspections and modification/replacement actions to the baseline structure for prevention of WFD. The baseline structure is defined as that airplane structure that was originally built by the TCH. The new structural maintenance program will be limited by flight cycles or flight hours, which must be specified in the ALSof the ICAthat has been approved by the FAA Aircraft Certification Office (ACO) or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. Any

subsequent changes to the structural maintenance program must also be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane before they can be incorporated within the operator's maintenance program.

(b) No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 48 months after initial incorporation per paragraph (a), or 48 months beyond the time that the airplane has accumulated the flight cycles flight hours shown in the limit of validity manifested in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), whichever occurs later, unless a structural maintenance program is incorporated within its maintenance program. This new program must include inspections and modification/replacement actions to repairs, alterations or modifications to susceptible to MSD or MED or repairs, alterations or modifications that affect the baseline structure that is susceptible to MSD or MED accomplished prior to the effective date of this proposed rule, for prevention of WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) Within six months after initial incorporation per paragraph (a) or within six months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator establishes a plan to address repairs, alterations and modifications, which includes identification of interim inspections of applicable repairs, alterations and modifications. Each operator submits that plan to the FAA ACO or office of the TAD through the operator's PMI.

(2) Within six months after receipt of the plan, the FAA ACO or office of the TAD approves the plan if it is acceptable.

(3) Within six months after receipt of the FAA approved plan, each operator incorporates interim inspections of applicable repairs, alterations, and modifications identified in the plan.

(4) Within 36 months after initial incorporation per paragraph (a) or within 36 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator submits the structural maintenance program to the FAA ACO or office of the TAD through the operator's PMI.

(5) Within six months after receipt of the structural maintenance program, the FAA ACO or office of the TAD approves the program if it is acceptable.

(6) Within 48 months after initial incorporation per paragraph (a) or within 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator incorporates the FAA approved program into its maintenance program.

(c) No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 18 months after a repair, alteration or modification susceptible to MSD or MED or a repair, alteration or modification that affects baseline structure that is susceptible to MSD or MED is accomplished on or after the effective date of the rule, unless a structural maintenance program is incorporated within its maintenance program. This new program must include a threshold where inspections and modification/replacement actions to said repair, alteration, or modification must be incorporated to preclude WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) The static strength approval of the repair, alteration, or modification is to be accomplished before further flight.

(2) Within 18 months of the static strength approval, a damage-tolerance analysis that includes a WFD analysis of the repair, alteration or modification is approved by the FAA ACO or office of the TAD, which defines the threshold for inspections and/or modification/replacement actions.

(3) Within 24 months before reaching the threshold, specific FAA approved inspection methods and repeat intervals are incorporated for each repair, alteration or modification into the FAA approved structural maintenance program.

PART 125 - CERTIFICATION AND OPERATIONS: AIRPLANES HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE

7. The authority citation for part 125 continues to read:

Authority: 49 U.S.C. 106(g), 40113, 44701-44702, 44705, 44710-44711, 44713, 44716-44717, 44722.

8. Add § 125.2XX as follows:

§ 125.2XX Basis of Structural Maintenance Program.

No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond [one year after the effective date of the amendment], unless Instructions for Continued Airworthiness (ICA), developed in accordance with Appendix H of part 25, are incorporated within its maintenance program. The ICA must contain a section titled Airworthiness Limitations (ALS) that is segregated and clearly distinguishable from the rest of the document. The ALS must be approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. The ALS must contain either (a) or (b):

(a) For each airplane that has a certification basis that does include a requirement for damage-tolerance based inspections and procedures, this section must set forth each mandatory replacement time, structural inspection interval and related structural

inspection procedure approved under § 25.571, which includes a structural maintenance program that includes a corrosion prevention and control program, repair assessment program and mandatory modifications program and with a stated limit of validity in flight cycles or flight hours.

(b) For each airplane that has a certification basis that does not include a requirement for damage-tolerance based inspections and procedures, this section must include the supplemental structural inspection program, corrosion prevention and control program, repair assessment program and mandatory modifications program with a stated limit of validity in flight cycles or flight hours.

9. Add § 125.2YY as follows:

§ 125.2YY Aging Aircraft Program (Widespread Fatigue Damage).

(a) No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond the flight cycle limits shown in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), or [a date one year after the effective date of the amendment], whichever occurs later, unless a structural maintenance program is incorporated within its maintenance program. This new program must include inspections and modification/replacement actions to the baseline structure for prevention of WFD. The baseline structure is defined as that airplane structure that was originally built by the TCH. The new structural maintenance program will be limited by flight cycles or flight hours, which must be specified in the ALS of the ICA that has been approved by the FAA Aircraft Certification Office (ACO) or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. Any subsequent changes to the structural maintenance program must also be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane before they can be incorporated within the operator's maintenance program.

(b) No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 48 months after initial incorporation per paragraph (a), or 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), whichever occurs later, unless a structural maintenance program is incorporated within its maintenance program. This new program must includeinspections and modification/replacement actions to repairs, alterations or modifications susceptible to MSD or MED or repairs, alterations or modifications that affect baseline structure that is susceptible to MSD or MED accomplished prior to the effective date of this proposed rule, for prevention of WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) Within six months after initial incorporation per paragraph (a) or within six months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator establishes a plan to address repairs, alterations and modifications, which includes identification of interim inspections of applicable repairs, alterations and modifications. Each operator submits that plan to the FAA ACO or office of the TAD through the operator's PMI.

(2) Within six months after receipt of the plan, the FAA ACO or office of the TAD approves the plan if it is acceptable.

(3) Within six months after receipt of the FAA approved plan, each operator incorporates interim inspections of applicable repairs, alterations, and modifications identified in the plan.

(4) Within 36 months after initial incorporation per paragraph (a) or within 36 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator submits a structural maintenance program to the FAA ACO or office of the TAD through the operator's PMI.

(5) Within six months after receipt of the structural maintenance program, the FAA ACO or office of the TAD approves the program if it is acceptable.

(6) Within 48 months after initial incorporation per paragraph (a) or within 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator incorporates the FAA approved structural maintenance program into its maintenance program.

(c) No person may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 18 months after a repair, alteration or modification susceptible to MSD or MED or a repair, alteration or modification that affects the baseline structure that is susceptible to MSD or MED is accomplished on or after the effective date of the rule, unless a structural maintenance program is incorporated within its maintenance program. This new program must include a threshold where inspections and/or modification/replacement actions to said repair, alteration, or modification must be incorporated to preclude WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) The static strength approval of the repair, alteration, or modification is to be accomplished before further flight.

(2) Within 18 months of the static strength approval, a DTA analysis that includes a WFD analysis of the repair, alteration or modification is approved by the FAA

ACO or office of the TAD, which defines the threshold for inspections and/or modification/replacement actions.

(3) Within 24 months before reaching the threshold, specific FAA approved inspection methods and repeat intervals are incorporated for each repair. Alteration or modification into the FAA approved structural maintenance program.

PART 129 - OPERATIONS: FOREIGN AIR CARRIERS AND FOREIGN OPERATORS OF U.S.-REGISTERED AIRCRAFT ENGAGED IN COMMON CARRIAGE

10. The authority citation for part 129 continues to read:

Authority: 49 U.S.C. 106(g), 40104-40105, 40113, 40119, 44701-44702, 44712, 44716-44717, 44722, 44901-44904, 44906.

11. Add § 129.3X as follows:

§ 129.3X Basis of Structural Maintenance Program.

No foreign air carrier or foreign persons operating a U.S. registered airplane may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond [one year after the effective date of the amendment], unless Instructions for Continued Airworthiness (ICA), developed in accordance with Appendix H of part 25, are incorporated within its maintenance program. The ICA must contain a section titled Airworthiness Limitations (ALS) that is segregated and clearly distinguishable from the rest of the document. The ALS must be approved by the FAA Aircraft Certification Office (ACO), or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. The ALS must contain either (a) or (b):

(a) For each airplane that has a certification basis that does include a requirement for damage-tolerance based inspections and procedures, this section must set forth each mandatory replacement time, structural inspection interval and related structural inspection procedure approved under § 25.571, which includes a structural maintenance

program that includes a corrosion prevention and control program, repair assessment program and mandatory modifications program and with a stated limit of validity in flight cycles or flight hours.

(b) For each airplane that has a certification basis that does not include a requirement for damage tolerance based inspections and procedures, this section must include the supplemental structural inspection program, corrosion prevention and control program, repair assessment program and mandatory modifications program with a stated limit of validity in flight cycles or flight hours.

12. Add § 129.3Y as follows:

§ 129.3Y Aging Aircraft Program (Widespread Fatigue Damage)

(a) No foreign air carrier or foreign persons operating a U.S. registered airplane may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond the flight cycle limits shown in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), or [a date one year after the effective date of the amendment], whichever occurs later, unless a structural maintenance program is incorporated within its maintenance program. This new program must include inspections and modification/replacement actions to the baseline structure for prevention of WFD. The baseline structure is defined as that airplane structure that was originally built by the TCH. The new structural maintenance program will be limited by flight cycles or flight hours, which must be specified in the ALS of the ICA that has been approved by the FAA Aircraft Certification Office (ACO) or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. Any subsequent changes to the structural maintenance program must also be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane before they can be incorporated within the operator's maintenance program.

(b) No foreign air carrier or foreign persons operating a U.S. registered airplane may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 48 months after initial incorporation per paragraph (a), or 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), whichever occurs later, unless a structural maintenance program is incorporated within its maintenance program. This new program must include inspections and modification/replacement actions to repairs, alterations or modifications susceptible to MSD or MED or repairs, alterations or modifications that affect baseline structure that is susceptible to MSD or MED accomplished prior to the effective date of this proposed rule, for prevention of WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) Within six months after initial incorporation per paragraph (a) or within six months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator establishes a plan to address repairs, alterations and modifications, which includes identification of interim inspections of applicable repairs, alterations and modifications. Each operator submits that plan to the FAA ACO or office of the TAD through the operator's PMI.

(2) Within six months after receipt of the plan, the FAA ACO or office of the TAD approves the plan if it is acceptable.

(3) Within six months after receipt of the FAA approved plan, each operator incorporate interim inspections of applicable repairs, alterations and modifications identified in the plan.

(4) Within 36 months after initial incorporation per paragraph (a) or within 36 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator submits the structural maintenance program to the FAA ACO or office of the TAD through the operator's PMI.

(5) Within six months after receipt of the structural maintenance program, the FAA ACO or office of the TAD approves the program if it is acceptable.

(6) Within 48 months after initial incorporation per paragraph (a) or within 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator incorporates the FAA approved structural maintenance program into its maintenance program.

(c) No foreign air carrier or foreign persons operating a U.S. registered airplane may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 18 months after a repair, alteration or modification susceptible to MSD or MED or a repair, alteration or modification that affects baseline structure that is susceptible to MSD or MED is accomplished on or after the effective date of the rule, unless a structural maintenance program is incorporated within its maintenance program. This new program must include a threshold where inspections and/or modification/replacement actions to said repair, alteration, or modification must be incorporated to preclude WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) The static strength approval of the repair, alteration, or modification is to be accomplished before further flight.

(2) Within 18 months of the static strength approval, a damage-tolerance analysis that includes a WFD analysis of the repair, alteration or modification is approved by the FAA ACO or office of the TAD, which defines the threshold for inspections and/or modification/replacement actions.

(6) Within 24 months before reaching the threshold, specific FAA approved inspection methods and repeat intervals are incorporated for each repair, alteration or modification into the FAA approved structural maintenance program.

PART 135 – OPERATING REQUIREMENTS: COMMUTER AND ON-DEMAND OPERATIONS.

13. The authority citation for part 135 continues to read:

Authority: 49 U.S.C. 106(g), 44113, 44701-44702, 44705, 44709, 44711-44713, 44715-44717, 44722.

14. Add § 135.4XX as follows:

§ 135.4XX Basis of Structural Maintenance Program.

No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond [one year after the effective date of the amendment], unless Instructions for Continued Airworthiness (ICA), developed in accordance with Appendix H of part 25, are incorporated within its maintenance program. The ICA must contain a section titled Airworthiness Limitations (ALS) that is segregated and clearly distinguishable from the rest of the document. The ALS must be approved by the FAA Aircraft Certification Office (ACO, or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. The ALS must contain either (a) or (b):

(a) For each airplane that has a certification basis that does include a requirement for damage-tolerance based inspections and procedures, this section must set forth each mandatory replacement time, structural inspection interval and related structural inspection procedure approved under § 25.571, which includes a structural maintenance

program that includes a corrosion prevention and control program, repair assessment program, and mandatory modifications program and with a stated limit of validity in flight cycles or flight hours.

(b) For each airplane that has a certification basis that does not include a requirement for damage-tolerance based inspections and procedures, this section must include the supplemental structural inspection program, corrosion prevention and control program, repair assessment program and mandatory modifications program with a stated limit of validity in flight cycles or flight hours.

15. Add § 135.4YY as follows:

§ 135.4YY Aging Aircraft Program (Widespread Fatigue Damage).

(a) No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), beyond the flight cycle limits shown in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), or [a date one year after the effective date of the amendment], whichever occurs later, unless a structural maintenance program is incorporated within its inspection program. This new program must include inspections and modification/replacement actions to the baseline structure for prevention of WFD. The baseline structure is defined as that airplane structure that was originally built by the TCH. The new structural maintenance program will be limited by flight cycles or flight hours, which must be specified in the ALSof the ICAthat has been approved by the FAA Aircraft Certification Office (ACO) or office of the Transport Airplane Directorate (TAD), having cognizance over the type certificate for the affected airplane. Any subsequent changes to the structural maintenance program must also be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane before they can be incorporated within the operator's maintenance program.

(b) No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 48 months after initial incorporation per paragraph (a) or 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its Airworthiness Limitations section (ALS) of the Instructions for Continued Airworthiness (ICA), whichever occurs later, unless a structural maintenance program is incorporated within its maintenance program. This new program must include inspections and modification/replacement actions to repairs, alterations or modifications susceptible to MSD or MED or repairs, alterations or modifications that affect the baseline structure that is susceptible to MSD or MED accomplished prior to the effective date of this proposed rule, for prevention of WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) Within six months after initial incorporation per paragraph (a) or within six months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator establishes a plan to address repairs, alterations and modifications, which includes identification of interim inspections of applicable repairs, alterations and modifications. Each operator submits that plan to the FAA ACO or office of the TAD through the operator's PMI.

(2) Within six months after receipt of the plan, the FAA ACO or office of the TAD approves the plan if it is acceptable.

(3) Within six months after receipt of the FAA approved plan, each operator incorporates interim inspections of applicable repairs, alterations, and modifications identified in the plan.

(4) Within 36 months after initial incorporation per paragraph (a) or within 36 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator submits the structural maintenance program to the FAA ACO or office of the TAD through the operator's PMI.

(5) Within six months after receipt of the structural maintenance program, the FAA ACO or office of the TAD approves the program if it is acceptable.

(6) Within 48 months after initial incorporation per paragraph (a) or within 48 months beyond the time that the airplane has accumulated the flight cycles or flight hours shown in the limit of validity manifested in its ALS of the ICA, whichever occurs later, each operator incorporates the FAA approved structural maintenance program into its maintenance program.

(c) No certificate holder may operate a transport category airplane, greater than 75,000 pounds (maximum takeoff gross weight), 18 months after a repair, alteration or modification susceptible to MSD or MED or a repair, alteration or modification that affects baseline structure that is susceptible to MSD or MED is accomplished on or after the effective date of the rule, unless a structural maintenance program is incorporated within its maintenance program. This new program must include a threshold where inspections and/or modification/replacement actions to said repair, alteration, or modification must be incorporated to preclude WFD. The new structural maintenance program must be approved by the FAA ACO or office of the TAD, having cognizance over the type certificate for the affected airplane. The following requirements are to be accomplished at the times noted below:

(1) The static strength approval of the repair, alteration, or modification is to be accomplished before further flight.

(2) Within 18 months of the static strength approval, a damage-tolerance analysis that includes a WFD analysis of the repair, alteration or modification is approved by the

FAA ACO or office of the TAD, which defines the threshold for inspections and/or modification/replacement actions.

(3) Prior to 24 months before reaching the threshold, specific FAA approved inspection methods and repeat intervals are incorporated for each repair, alteration or modification into the FAA approved structural maintenance program.

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