Aviation Rulemaking Advisory Committee (ARAC)
Transport Airplane and Engine (TAE) Issues Area

Meeting Minutes

Date: June 27, 2006 (ad hoc)
Time: 11:00 a.m. EDT
Location: Washington, DC

Call to Order/Administrative Reporting

Mr. Craig Bolt (Assistant Chair) called the meeting to order at 11:00 a.m. Ms. Dionne Palermo (the acting Assistant Executive Director) read the Federal Advisory Committee Act statement. Mr. Bolt began the introductions. All attendees were listening via teleconference.

AAWG Report

Mr. Amos Hoggard (Boeing) reviewed his letter **[handout #1]** and the AAWG report and proposed advisory circular (AC) **[handout #2]**. He said the proposed AC was a revision to the draft sent to the TAE in December, which was published for comment in April 2006. The AC amends the AC but does not affect the Phase 1, Task 1 recommendation. It includes information about determining damage tolerance inspection requirements for aircraft alterations.

Mr. Hoggard commented the word "nacelle" was removed from the draft AC but is still in the NPRM. He said TAE may need to submit a comment reminding the FAA to remove it from the final rule language.

Mr. Dave Lotterer (Regional Airline Association) asked, if the FAA adopts the recommendations, and if it affects the Notice of Proposed Rule Making (NPRM), would a supplemental proposed rule be issued. Ms. Palermo said FAA would consider a supplemental proposed rule if the recommended guidance impacts the scope of the NPRM. She said once the FAA receives the alteration guidance material, the FAA will revise the draft AC and publish it for public comment.

Mr. Walter Desrosier (General Aviation Manufacturers Association) asked about how the AC addresses Supplemental Type Certificate (STC) holders that do not provide STC the data required by the Design Approval Holders (DAHs). He asked for details about the process to ensure participation from those STC holders. Mr. Hoggard said subpart I will require the STC holder to either participate or surrender the STC. The STC holder will have a legal obligation to take the necessary action to comply with the rule. Lacking that cooperation, he said STC holders would sign a waiver making the information available to the public. If they don't sign the waiver, then they're still responsible for the STC.

In reviewing this comment, the FAA notes that, under current regulations, an STC holder surrendering an STC is under no legal obligation to sign a waiver making the STC information available to the public. Also, once an STC holder surrenders an STC, there is nothing in current or proposed regulations that would still make them responsible for the STC. The effect of the surrender is that the former holder would no longer be able to exercise the privileges of an STC holder, as defined in 14 CFR § 21.119.

Mr. Michael Van Zummeren (Aerospace Industries Association) asked if the rule, as currently written, already addresses alterations; and if the AC is being brought up to date to match the regulation. Mr. Hoggard said the AC supports the relevant DAH regulations with regard to alterations.

Mr. Bolt called for a vote on the recommendation from the AAWG, and the TAE approved the recommendation to be transmitted to the FAA.

Ms. Palermo discussed possible dates for a future ad hoc TAE meeting to discuss the Avionics Systems Harmonization Working Group recommendation on the AC related to 14 CFR 25.11. Mr. Bolt offered to set up the meeting via email, and Ms. Palermo said she would check and make sure a current version of the recommendation is available to the committee members.

Adjourn at 11:40 a.m.

Public Notification

The *Federal Register* published a notice **[handout #3]** of this meeting on June 1, 2006.

Approval

I certify the minutes are accurate.

Craig R. Bolt

Craig R Bolt
Assistant Chair, ARAC

May 16, 2006

Craig Bolt
Assistant Chair
Transport Airplane and Engine Issues
Aviation Rulemaking Advisory Committee
Pratt & Whitney
400 Main Street
East Hartford Connecticut 06108

RE: ARAC; Transport Airplane and Engine Issues – New Task FR Doc. 04-10816, Dated May 13, 2004, Phase 1, Task 2 Close-out.

Dear Mr. Bolt

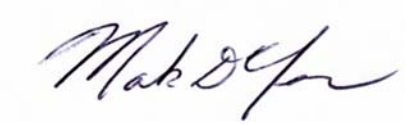
On behalf of the Airworthiness Assurance Working Group (AAWG), we, the undersigned, are pleased to submit a Final Report concerning the referenced task for your consideration. The FAA tasking requested the AAWG to consider how best to comply with the requirements set forth in 14 CFR 121.370a and 129.16 of the Aging Airplane Safety Final Rule.

This final report is being submitted as a full consensus position of the AAWG; there are no dissenting opinions.

The Task assigned from ARAC was split into two Phases and four subtasks. Subtasks 1, 2 and 3 are addressed in Phase 1 and Subtask 4 is addressed in Phase 2. This final report covers the activities specifically requested in the follow-on work authorized by the TAEIG for Phase 1, Task 2 and complements the work previously submitted for Phase 1, Task 1, 2 and 3. Specifically, the AC, submitted for Task 1 of Phase 1, has been updated to contain guidance on how best to develop and provide DT data for alterations and repairs to alterations for persons seeking compliance to §§121.1109 and 129.109 (§§ 121.370a and 121.16 have been redesignated as §§121.1109 and 129.109 respectively)

The AAWG is continuing to work on *Task 3 – Widespread fatigue Damage (WFD) of Repairs, Alterations and Modifications*. We are in the process of reviewing the recently released WFD NPRM and EASA NPA 05-2006 and comparing it to the requested task elements for Task 3. We have noted, in that review, some significant issues between the WFD NPRM, EASA NPA, previously submitted ARAC developed means of compliance and the TAEIG authorized work statement (Approved December 11, 2005) that may require further clarification and possible redirection for the AAWG to complete its task. We will be preparing a summary of our thoughts on the subject for discussion at the June 27, 2006 phone call. The AAWG will make this summary available approximately one week prior to the meeting.

The AAWG wishes to thank the FAA and ARAC; TAEIG for allowing us to participate in this important rule making event.



Rao Varanasi
Co-Chairperson, AAWG
Boeing Commercial Airplanes

Mark Yerger
Co-Chairperson, AAWG
Federal Express

A REPORT OF THE AIRWORTHINESS ASSURANCE WORKING GROUP

RECOMMENDATIONS CONCERNING ARAC TASKING FR Doc. 04-10816

RE: AGING AIRPLANE SAFETY FINAL RULE

14 CFR 121.370a AND 129.16

TASK 2 CLOSEOUT

FINAL REPORT

May 12, 2006

SIGNED BY

Rao Varanasi
Co-Chairperson, AAWG
Boeing Commercial Airplanes

Mark Yerger
Co-Chairperson, AAWG
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REVISION PAGE

LTR	DATE	CHANGE	PAGES ADDED	PAGES DELETED	PAGES CHANGED	APPROVED BY

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List of Abbreviations

The following abbreviations are used throughout this report

AASA	Aging Airplane Safety Act of 1991
AASFR	Aging Airplane Safety Final Rule
AASIFR	Aging Airplane Safety Interim Final Rule
AATF	Airworthiness Assurance Task Force
AAWG	Airworthiness Assurance Working Group
AC	Advisory Circular (FAR)
ACO	Aircraft Certification Office
AD	Airworthiness Directive
AIA	Aerospace Industries Association of America
ALS	Airworthiness Limitation Section
ARAC	Aviation Rulemaking Advisory Committee
ATA	Air Transport Association of America
ATC	Amended Type Certificate
CAA	Civil Aviation Authority
CAR	Civil Airworthiness Requirements
CFR	Code of Federal Regulations
DAH	Design Approval Holder
DSG	Design Service Goal
DT data	Damage Tolerance Data
DTE	Damage Tolerance Evaluation
DTIP	Damage Tolerance Inspection and Procedures
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
ISP	Inspection Start Point
LOV	Limit of Validity
MPD	Maintenance Planning Document
NDI	Non Destructive Inspection
NPRM	Notice of Proposed Rulemaking
OEM	Original Equipment Manufacturer
OIP	Operator Implementation Program
PMI	Principal Maintenance Inspector (FAA)
RAG	Repair Assessment Guidelines
RAM	Repairs, Alterations and Modifications
RAP	Repair Assessment Program
SB	Service Bulletin
SMP	Structural Modification Point
SRM	Structural Repair Manual
SSIP	Supplemental Structural Inspection Program
STC	Supplemental Type Certificate
STG	Structures Task Group
TAEIG	Transport Airplane and Engines Issues Group
TC	Type Certification
TCH	Type Certificate Holder
WFD	Widespread Fatigue Damage

List of References

The following is provided as a means to access current rules and regulations together with previous ARAC Recommendations from the AAWG. Documents noted by an (*) are available at the following web site.

http://www.faa.gov

1. Title 14 of the Code of Federal Regulations (14 CFR): The following Regulations are referenced in this report:

a. Part 21, §21.101*
b. Part 25, §§ 25.571*, 25.1529*
c. Part 43, §§ 43.13*, 43.16*
d. Part 91, § 91.403*
e. Part 121, §§ 121.1105*, 121.1107*, 121.1109*
f. Part 129, §§ 129.109*, 129.107*, 129.105*

2. Advisory Circulars (AC): The following Advisory Circulars are reference in this report:

a. AC 21.101-1, Change Product Rule*
b. AC 25.571-1, Damage Tolerance and Fatigue Evaluation of Structure*
c. AC 25.571-1A, Damage Tolerance and Fatigue Evaluation of Structure*
d. AC 25.571-1B, Damage Tolerance and Fatigue Evaluation of Structure*
e. AC 25.571-1C, Damage Tolerance and Fatigue Evaluation of Structure*
f. AC 25.1529-1, Instructions for Continued Airworthiness of Structural Repairs on Transport Airplanes*
g. AC 91-56A, The Continued Airworthiness of Older Airplanes*
h. AC 91-56B, The Continued Airworthiness of Older Airplanes*
i. AC 120-73, Damage Tolerance Assessment of Repairs to Pressurized Fuselages*

3. Other Documents referred to in this report:

a. A Final Report of the AAWG – Continued Airworthiness of Structural Repairs*
b. A Report of the AAWG – Recommendations for Regulatory Action to Prevent Widespread Fatigue Damage in the Commercial Airplane Fleet*
c. A Report of the AAWG - Recommendations For Regulatory Action To Enhance Continued Airworthiness Of Supplemental Type Certificates*
d. Repair Assessment Guidelines, FAA Approved Model Specific Guideline Documents**
e. FAA Approved Model Specific Supplemental Inspection Documents**
f. ATA Report 51-93-01 - Structural Maintenance Program Guidelines For Continuing Airworthiness***
g. ATA Response to FAA Docket 1999-5401 Dated May 5, 2003***
h. Federal Register/Vol. 69, No. 146/Friday, July 30, 2004/Rules and Regulations Fuel Tank Safety Compliance Extension (Final Rule) and Aging Airplane Program Update (Request for Comments). Page 45936*
i. A Report to the AAWG - Structures Task Group Guidelines Document, June 1996*
j. Federal Register/ Vol. 67, No. 235 / Friday, December 6, 2002 / Rules and Regulations Aging Airplane Safety
k. A Report of the AAWG – Recommendations Concerning ARAC Tasking FA Doc. 04-10816 RE: Aging Airplane Safety Final Rule 14 CFR 121.370a and 129.16 dated 28 October 2005

** Various manufacturers publish these documents. Please contact those manufacturers to determine the general availability of the documents.

*** Please contact the ATA.

Executive Summary

On May 13, 2004, the FAA published a new ARAC tasking and assigned it to the Transport Airplane and Engine Issue Group/Airworthiness Assurance Working Group. The Tasking requested Industry assistance in preparing guidance material for certificate holders wishing to show compliance to the Aging Airplane Safety Final Rule, 14 CFR 121.1109 and 129.109. The Tasking consisted of four sub-tasks to be accomplished in two phases. In Phase 1, tasks 1, 2, and 3 are completed; in Phase 2, task 4 is completed.

The AAWG submitted a report (ref 3.k.) dated 28 October 2005 that included an AC which proposed a means of compliance for damage tolerance inspections and procedures for repairs (Task 1). In the process of completing the Phase 1 activities, the report also provided recommendations with respect to damage tolerance inspection and procedures for alterations (Task 2). In addition, recommendations were made concerning with respect to widespread fatigue damage assessment of repairs and alterations (Task 3). The AAWG, at the direction of ARAC has considered these recommendations and have proposed advisory material and other data to complete Phase 1 of the tasking. This report documents the finalized AAWG recommendations for alterations (Task 2). A separate report will be published documenting the actions from the WFD (Task 3) recommendations.

In approving the results of the Phase 1 activities, the TAEIG requested clarification in three areas.

1. Concerning the proposed AC 120.AAWG contained in the Reference 3.k report, the TAEIG requested that a responsibility matrix be provided that would detail the various tasks including responsible parties the generation of data and a time line stipulating when the data would be provided to other parties. Information should include principle points where Operators, TCHs and DAHs share information. This has been completed and is documented in Section 2.A.1).d) of this report.
2. One Engine Manufacturer indicated that the inclusion of Nacelles in the list of major modifications is problematical and should not be there. AAWG has an action item to review its position and provide a rationale for the removal/retention of Nacelles from this list. The AAWG has decided to remove the term Nacelles from the list of candidate STCs for consideration. The rationale for this change is documented in Section 2.A.3).a)(3) of this report
3. One member of the TAEIG wants to retain 25.1529 since some airplanes, not effected by the AASFR rely on it's guidance. The AAWG has an action to review its recommendation. Upon further review, the AAWG concurs and now recommends that AC 25.1529-1 be retained and modified in part to specify the airplanes that it is applicable to. Those Recommendations are contained in Section 2B and Appendix C of this report.

Conclusions and Recommendations (Alterations/Modifications)

The AAWG has revised draft AC 120-AAWG to include the process for assessing both repairs and alterations to fatigue critical structure using damage tolerance principles. The proposed AC addresses repairs and alterations to both baseline structure as well as repairs to alteration and modifications. The AAWG believes that the proposed AC 120-AAWG contains sufficient guidance for all DAHs to develop a Compliance Document which would support operator compliance with the AASFR for repairs and alterations.

Key to initiating this process is the identification of fatigue critical structure for each applicable airplane model. Repairs and alterations to the fatigue critical structure will need to be assessed for damage tolerance. Depending on the certification level of the aircraft model and whether installed repairs and alterations are already covered by DT data, this may require a survey of the aircraft.

The conclusions and recommendations from the AAWG tasking regarding alterations are documented in Section 3 of this report. These are summarized below.

Conclusions:

1. A survey of 10 operators revealed that there are approximately 246 alterations installed on the active commercial fleet. Of the 246, 171 did not have DT data, and 24 of the 171 were deemed complex.

2. The conclusions and recommendations contained in the AAWG report on MCSTCs are still strongly supported by the industry. Those conclusions and recommendations address issues with complex STCs which are still being considered by the FAA. Any action on complex STCs is therefore deferred to the FAA and their deliberations.

3. Operators are required to keep permanent records of alterations installed on their aircraft where requirements for record keeping for repairs may only extend to the next major maintenance visit.

4. Once an alteration is approved for installation, operators may purchase alterations from their owners and install them on their fleet. The data package may or may not have DT data included.

5. The engineering support of an alteration is the responsibility of the DAH and extends to the provision of DT data for continued airworthiness. In the absence of the DAH, the responsibility falls to the operator.

6. The process for compliance for alterations is dependant upon timely communications between the FAA, DAH and operators and consistent application of standards by the FAA.

7. Implementation Plans for Alterations

    a. Installed alterations are a matter of record with a particular airline and therefore implementation plans can be handled differently than repairs.

    b. Implementation plans for alterations are dependant on the willingness or availability of DAH to support the alteration with DT data, if required.

    c. There is a possibility that deactivated alterations exist on an airplane that are not part of the records that an operator holds. In these cases, the repairs survey would be used to reveal these deactivated alterations for appropriate action.

8. Rotable Components

    a. Alterations to rotable components can use the same guidance developed for repairs to rotable components contained in the original issue of AC 120-AAWG.

    b. Based on an EASA request, the AAWG concluded that there was a potential issue with the tracking of rotable components in the industry, however we were not tasked to consider this.

9. Analysis of Alterations for DTA

    a. The DT data for an alteration must include both an assessment of the new FCS added by the alteration and it's affect both locally and globally on the baseline FCS.

    b. Because alterations tend to be unique, DT data will need to be developed for each unique installation. The use of RAG type programs may not be feasible.

    c. For existing alterations that require a new DTE, the DAH should use 14 CFR 25.571 at Amendment 45 or the certification basis of the airplane whichever is greater.

    d. Dependant on the scope of the modification, the applicant may need to revisit published documents such as the SRM to insure that the information is still valid.

Recommendations

1.0 The AAWG Recommends that AC 120-AAWG be promulgated as a means of compliance to 14 CFR 121.1109 and 129.109 with respect to repairs and alterations. A copy of this AC is contained in Appendix B.

2.0 The AAWG recommends that operators keep records on repairs that affect Fatigue Critical Structure.

3.0 The FAA provide adequate direction and training to it's ACO and Flight Standards staff to ensure that there is uniformity in the administration of these regulations across the industry.

1. Introduction

A. New Tasking

On May 13, 2004, the FAA published a new ARAC tasking and assigned it to the Transport Airplane and Engine Issue Group/Airworthiness Assurance Working Group. The Tasking requested Industry assistance in preparing guidance material for certificate holders wishing to show compliance to the Aging Airplane Safety Final Rule, 14 CFR 121.1109 and 129.109. The Tasking consisted of four sub-tasks to be accomplished in two phases. In Phase 1, Tasks 1, 2, and 3 are completed; in Phase 2, Task 4 is completed. The complete tasking statement is contained in Appendix A and summarized below.

1) Phase 1 – Preparation of Guidance Material

Phase 1 of the task requirements require the definition of guidance material and recommendations on the following subjects.

a) Task 1 – Repairs to Fatigue Critical Structure and Repairs to Alterations and Modifications

In Section 2 of this report, the AAWG has developed the rationale for the guidance material that will enable the operators to develop damage tolerance maintenance programs for repairs to fatigue critical structure and repairs to alterations and modifications. The actual proposed Advisory Circular is contained in Appendix B of this report. The FAA requested several subtask be evaluated in the development of the advisory material. These evaluations were conducted and the appropriate information included.

b) Task 2 – Alterations and Modifications

In Section 3 of this report the AAWG provides recommendations to the FAA on appropriate means to develop damage tolerance based maintenance programs for alterations and modifications. These recommendations are in the form of a request for an additional tasking to develop an amended Advisory Circular to include a process to develop the required programs

c) Task 3 – Consideration of Widespread Fatigue Damage for RAMs

In Section 4 of this report, the AAWG provides recommendations to the FAA on appropriate means to include the consideration of WFD prevention for installed repairs, alterations and modifications. These recommendations are in the form of a request for an additional tasking to develop an amended Advisory Circular to include a process to develop the required programs

2) Phase 2 – Task 4 Preparation of Compliance Data

Section 5 of this report briefly describes the expected process the industry will use to develop and implement the required programs.

B. Airworthiness Assurance Working Group

The AAWG is a duly constituted Federal Advisory Committee Act (FACA) entity. The AAWG reports to the Aviation Rulemaking Advisory Committee, Transport Airplane and Engine Issues Group (ARAC TAEIG). The AAWG was formed shortly after the 1988 Accident in Hawaii involving an older Boeing 737 in which a large section of fuselage departed the airplane. The AAWG has been active ever since examining the health of the fleet and proposing additional programs to maintain overall integrity of the commercial fleet. The membership of the AAWG consists of representation from:

ABx Air*
Airbus *
Airline Pilot's Association
American Airlines*
Air Transport Association
American West Airlines
Boeing Commercial Airplanes*
British Airways*
Continental Airlines*
Delta Air Lines Incorporated*
Evergreen International Airlines
Federal Aviation Administration*
Federal Express*
Fokker Service
International Air Transport
Japan Air Lines*
EASA*
Northwest Airlines*
Regional Airline Association
United Airlines*
United Parcel Service*
US Airways*

The AAWG established a task group to prepare and finalize the recommendations from this Tasking. The entities identified by an asterisk participated in the task group. A list of meeting venues and meeting attendance is documented in Appendix D respectively.

2. Task 2 – Evaluation of Alterations and Modifications for Damage Tolerance

A. Task 2 - Element 1 – Recommendations for Damage Tolerance Based Inspections of Alterations and Modifications

The AAWG was asked to review and comment on:

Prepare a written report assessing how an operator would include damage tolerance-based inspections and procedures for alterations and modifications made to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure….

AAWG Recommendation Number 8 Regarding Task 2

The AAWG recommends that the TAEIG task the AAWG to revise AC 120-AAWG to include a process for developing damage tolerance based maintenance inspections for alterations and modifications. A copy of the proposed tasking is included in Appendix E of Reference 3.k.

AAWG Proposed Task 2 Action Plan

Task 2 Proposed Action Plan for Follow-on Activities– Damage Tolerance Based Inspections And Procedures For Alterations And Modifications.

The AAWG determined that additional specific guidance material was necessary for the industry to uniformly develop DT data for previously installed Alterations and Modifications. Specifics of that recommendation requested that the TAEIG task the following to the AAWG:

1. The AAWG will prepare and submit guidance materials for consideration of alterations and modifications to the TAEIG within six months of TAEIG acceptance of the written report.
2. Upon TAEIG acceptance of the AAWG guidance material, the AAWG will recommend that Model Specific STGs invite STC DAH and involve them in the dialog to ensure that DT data is in existence on December 18, 2009 for all commonly embodied alterations in concert with Task 4 of the original tasking.

1) Introduction

Compliance with 14 CFR 121.1109 and 129.109 requires a damage tolerance based maintenance program for fatigue critical structure. These requirements extend to the baseline, as delivered structure, repairs to that structure, alterations and repairs to alterations. The FAA has also proposed rules that would require the DAH to provide information in support of operator compliance under 14 CFR 25.1823, 25.1825, and 25.1827. In expectation of these rules, the FAA also issued a tasking to ARAC/TAEIG/AAWG to provide guidance material for both the operator and the DAH.

In a previous ARAC tasking, the AAWG submitted advisory material concerning DAH and operator actions necessary for repairs to baseline, as delivered fatigue critical structure as well as repairs to alterations. In a subsequent action by the TAEIG, the TAEIG authorized the AAWG to develop guidance material for alterations. This section of the report documents the findings of the AAWG that lead to the technical basis of AC 120.AAWG-1 contained in Appendix B.

The AC contained in Appendix B is based on the previously submitted AC 120.AAWG. This AC was published as AC 120.xx for comment on April 21, 2006, for repairs to fatigue critical structure. AC 120.AAWG has now been revised to include the actions necessary to determine a damage tolerance based maintenance program for alterations and the steps necessary to incorporate that information into an operators maintenance program.

a) Terminology and References to 14 CFR Section Numbers

For the purposes of this report, the term “alteration” is used to describe a design change and encompasses the terms “modification” and “Supplemental Type Certificate (STC).”

During the codification process, the FAA has made a proposal to re-designate the section numbers of existing rules to accommodate their initiatives set forth in FAA Policy Statement PS-ANM110-7-12-2005. The following table lists the various rules and their old and new designations. Where possible, this report uses the new proposed 14 CFR designations, but in all cases these designations should be thought of as interchangeable for the purposes of this report

Current 14 CFR Designation	Proposed 14 CFR Designation	Title
121.368	121.1105	Aging airplane inspections and records review
121.370	121.1107	Special maintenance program requirements
121.370a	121.1109	Supplemental Inspections
129.16	129.109	Supplemental Inspections
129.32	129.107	Special maintenance program requirements
129.33	129.105	Aging airplane inspections and records review for US-registered multiengine aircraft

b) Operator STC Data

In order to understand the overall impact of the proposed guidance material will have on the industry, it was decided to collect data on the number and type of alterations that might require development of DT data within the fleet. The AAWG Task Group asked member operators to compile a listing of all alterations that affect fatigue critical

structure, to indicate whether DT data is currently available for this alteration, and if not, whether the operator has contacted the STC holder to obtain the necessary DT data for compliance with 14 CFR 121.1109 and 129.109. Guidelines for filtering the list were provided based on a previous ARAC tasking involving Multiple Complex STCs together with the additional consideration of two items. Those items included (1) installation of interior mass items and (2) antenna installations. As a result, the list of alterations below was deemed of primary interest.

i) Passenger-to-freighter conversions (including addition of main deck cargo doors).
ii) Gross weight increases (increased operating weights, increased zero fuel weights, increased landing weights, and increased maximum takeoff weights).
iii) Installation of fuselage cutouts (passenger entry doors, emergency exit doors or crew escape hatches, fuselage access doors, cabin window relocations and antenna installations).
iv) Complete re-engine or pylon alterations.
v) Engine hush-kits.
vi) Wing alterations such as installing winglets or changes in flight control settings (flap droop), and alteration of wing trailing edge structure.
vii) Modified skin splices.
viii) Any alteration that affects several stringer or frame bays.
ix) An alteration that covers structure requiring periodic inspection by the operator's maintenance program.
x) An alteration that results in operational mission change that significantly changes the manufacturer's load or stress spectrum, e.g. passenger-to-freighter conversion.
xi) An alteration that changes areas of the fuselage that prevents external visual inspection, e.g. installation of a large external fuselage doubler that results in hiding details beneath it.
xii) Interior Mass items (Monuments)
xiii) Antenna installations

Ten operators responded to our request, yielding 246 alterations installed on their fleets. Of the 246 alterations, 171 do not currently have DT data. Of the 171 alterations that currently do not have DT data, 24 of them where deemed multiple complex STCs. These included hush-kits, re-engine or pylon alterations, passenger-to-freight modifications, winglet installations, and gross weight increases.

c) STC Interaction

On March 22, 2001, the FAA published a task in the Federal Register for ARAC/ TAEIG/AAWG on the subject of Multiple Complex Supplemental Type Certificates. The following is an excerpt from the Federal Register detailing the scope and deliverables expected from ARAC.

16089 Federal Register / Vol. 66, No. 56 / Thursday, March 22, 2001 / Notice

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration Aviation Rulemaking Advisory Committee; Transport Airplane and Engine Issues—New Task AGENCY: Federal Aviation Administration (FAA), DOT. ACTION: Notice of new task assignment for the Aviation Rulemaking Advisory Committee (ARAC). SUMMARY: The FAA assigned the Aviation Rulemaking Advisory Committee a new task to study the effects of multiple complex structural supplemental type certification (STC) modifications installed on transport category airplanes. The ARAC will develop a report with recommendations for a long-term plan addressing the effects of multiple complex STC modifications on the structural integrity and continued safe operations of transport category airplanes. This notice is to inform the public of this ARAC activity.

FOR FURTHER INFORMATION CONTACT: John McGraw, 1601 Lind Ave., Renton, Washington 98055–4056, 425–227–1171, john.mcgraw@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA established an Aviation Rulemaking Advisory Committee to provide advice and recommendations to the FAA Administrator on the FAA's rulemaking activities with respect to aviation-related issues.

The Task

Study the effects of multiple complex structural STC modifications installed on transport category airplanes. Develop a report with recommendations for a long term plan addressing the effects of multiple complex STC modifications on the structural integrity and continued safe operation of transport category airplanes, and the ability of the operators to accomplish mandatory FAA aging fleet programs.

The report should identify the types of structural modifications considered to be complex STC modifications, and should propose recommended actions to be taken by the FAA to address the effects complex structural STC modifications have on the structural integrity and continued safe operation of modified airplanes.

The report and recommendations should contain the following:

1. A description of FAA and industry actions necessary to identify the interaction effects of multiple complex STC modifications,

2. A description of FAA and industry actions that will address the effects that complex modifications have on aging aircraft issues, and

3. A description of FAA and industry actions necessary to address the effects that complex modifications have on FAA mandated airworthiness actions (i.e., airworthiness directives, aging aircraft programs).

Schedule: The report should be completed no later than September 28, 2002.

ARAC Acceptance of Tasks

ARAC accepted the task and assigned the task to the Airworthiness Assurance Working Group, Transport Airplane and Engine Issues. The working group will serve as staff to ARAC and assist in the analysis of the assigned task. ARAC must review and approve the working group's recommendations. If ARAC accepts the working group's recommendations, it will forward them to the FAA.

Working Group Activity

The Airworthiness Assurance Working Group is expected to comply with the procedures adopted by ARAC. As part of the procedures, the working group is expected to:

1. Recommend a work plan for completion of the task, including the rationale supporting such a plan for consideration at the next meeting of the ARAC on transport airplane and engine issues held following publication of this notice.

2. Give a detailed conceptual presentation of the proposed recommendations prior to proceeding with the work stated in item 3 below.

3. Draft the appropriate documents and required analyses and/or any other related materials or documents the working group determines to be appropriate.

4. Provide a status report at each meeting of the ARAC held to consider transport airplane and engine issues. Participation in the Working Group The Airworthiness Assurance Working Group will be composed of technical experts having an interest in the assigned task. A working group member need not be a representative or a member of the full committee.

An individual who has expertise in the subject matter and wishes to become a member of the working group should write to the person listed under the caption FOR FURTHER INFORMATION CONTACT expressing that desire, describing his or her interest in the task, and stating the expertise he or she would bring to the working group. All requests to participate must be received no later than April 30, 2001. All requests will be reviewed by the assistant chair, the assistant executive director, and the working group chair. Individuals will be advised whether or not the request can be accommodated. Individuals chosen for membership on the working group will be expected to represent their aviation community segment and actively participate in the working group (e.g., attend all meetings, provide written comments when requested to do so, etc.). They also will be expected to devote the resources necessary to support the working group in meeting any assigned deadlines. Members are expected to keep their management chain and those they may represent advised of working group activities and decisions to ensure that the agreed technical solutions do not conflict with their sponsoring organization's position when the subject being negotiated is presented to ARAC for approval.

Once the working group has begun deliberations, members will not be added or substituted without the approval of the assistant chair, the assistant executive director, and the working group chair.

The Secretary of Transportation determined that the formation and use of the ARAC is necessary and in the public interest in connection with the performance of duties imposed on the FAA by law.

Meetings of the ARAC will be open to the public. Meetings of the Airworthiness Assurance Working Group will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. The FAA will make no public announcement of working group meetings.

Issued in Washington, DC, on March 14, 2001.
Anthony F. Fazio,
Executive Director, Aviation Rulemaking Advisory Committee.
[FR Doc. 01–7068 Filed 3–21–01; 8:45 am]
BILLING CODE 4910–13–M

On January 21, 2003, ARAC submitted their recommendations on complex STCs to the FAA. There were five recommendations included in the report to the FAA. The recommendations were:

Considering the conclusions reached by the AAWG, the AAWG recommends that the Aviation Rulemaking Advisory Committee (ARAC), Transport Airplane and Engine Issues Group (TAEIG) consider enacting the following five recommendations to ensure proper consideration of how an STC might interact and affect certification, aging airplane and continued airworthiness programs.

A. *The existing STC Limitations and Conditions template should be revised. The current wording implies that it is the installer's responsibility to ensure that the incorporated STC does not introduce any adverse effects on the airplane. It is the recommendation of the AAWG that this responsibility be placed with the Operator/STC holder/Installer. This includes configuration control, STC compatibility with actual airplane, and continued*

airworthiness in regard to the STC design and application. This will require a new 14 CFR 21 rule with a revision to AC 21-40, new operating rules with an advisory circular (AC), and a change to Order 8110.4b.

B. *Require a special identification of complex STCs, where the installation may result in interaction effects with other STCs. The recommendation would require the determination of a complex STC by applicants for new STCs. This will require a new 14 CFR 21 rule, revision to Order 8110.4b and AC 21-40.*

C. *Establish a set of criteria to consider in evaluating interaction effects amongst complex STCs. This recommendation would require the development of an FAA Order and possibly some advisory material.*

D. *Require all STC applicants to provide information within the Instructions for Continued Airworthiness of the regions and areas affected by the proposed STC. This will require a new part 21 rule, possible revision to § 25.1529, Appendix H, revision to AC 21-40 and Order 8110.4b.*

E. *The AAWG further recommends that the FAA conduct a Special Certification Review of those items (listed below) categorically classified as CSTCs to determine any additional maintenance actions required as a result of interactions not considered when the CSTC was installed:*
    a. *Hush kits,*
    b. *Winglets,*
    c. *Auxiliary fuel tanks,*
    d. *Re-engine,*
    e. *Weight increases,*
    f. *PAX cargo conversions*
    g. *Reinforced Flight Deck Doors*

F. *The AAWG recommends that the FAA and JAA regulations specific to certification and continued airworthiness of STCs and CSTCs be harmonized to the extent possible.*

These recommendations are comprehensive and address all of the issues found during the AAWG study of the subject, including the subject of STC interaction and are still strongly supported by the AAWG. The FAA is still considering how these recommendations will be enacted and therefore the AAWG defers any action on this subject of interaction of STCs to the FAA.

d) Program Timeline

One of the additional requests from the TAEIG was to identify a responsibility matrix for generation of data and a time line stipulating when the data is to be provided to various parties. At the time this report is being written, the rule requirements for the DAH (14 CFR 25.1823, 25.1825 and 25.1827) have not been published. The AAWG suspects that timelines for the development of data will be specified within the rule requirements that will be published. With that in mind, the AAWG has developed a timeline based on the way the advisory material was developed. This may or may not coincide with the

dates and times that will be specified in the rule. Figure 1, provides the AAWGs view of the overall program timeline.

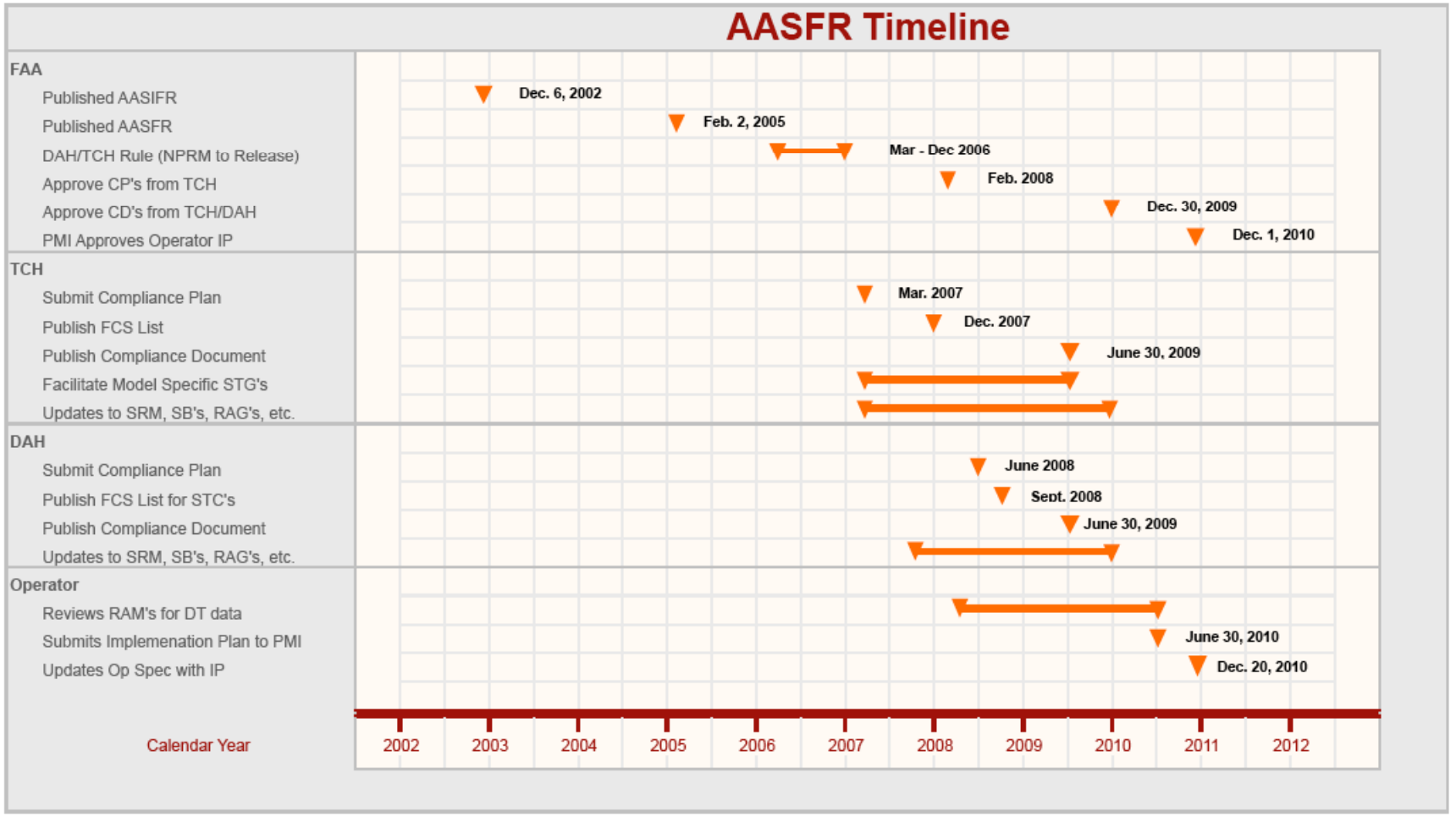

Figure 1. Program Timeline

2) Implementation Program for Alterations

There are fundamental differences between the recommendations for programs to implement Damage Tolerance requirements for alterations verses the implementation of Damage Tolerance requirements for repairs.

a) AAWG Findings on Alterations

The AAWG reviewed the similarities and differences between repairs and alterations and determined that there were nine basic differences between the two. These nine are listed in outline form below:

(1) Installations of alterations are generally planned events determined by business decisions repairs are not.
- Alterations generally have Engineering Order documentation for the installation of alterations.
- Repair installations are generally documented on non-Engineering Department paperwork.
- Repairs have a 12-month period to develop DT after installation, where alterations generally have the DT data at the time of installation.

(2) Record keeping and configuration control requirements make it more likely that an operator will have a record of existing alterations than a record of a repair.
- Operators have the ability to identify embodied alterations through a records retrieval process in lieu of waiting for a physical aircraft survey, similar to the repairs program. Thus alterations can have an accelerated compliance schedule when compared to repairs.

(3) Alterations have an added complexity of being able to affect FCS indirectly (e.g. loading/stresses).
- An intellectual review of the specific alteration is required to make a determination of how the alterations affects or creates FCS.

(4) Many alterations may have been developed and certified by non-TC holders.
- A process needs to be developed to involve the DAH for the specific alterations as opposed to the repairs program that mainly involved the TC holders.

(5) The DAH who holds the engineering data for an alteration may be unwilling or not available to support upgrading the alterations to DT standards.
- A process is required that will assure the development of the required data when the DAH is unwilling or unavailable to support their alteration.

(6) With some exceptions, alterations designed for and installed upon airplanes certified to 14 CFR Amendment 25-45 or later aircraft have DT data as part of their original certification.

(7) Regulators are not in a position to easily identify either alterations that have been installed or the owners of those alterations.
- Operators will need to identify the alterations embodied on their aircraft and the identity of the DAH. The operators can then provide that information to the regulators to enforce DAH compliance.

(8) The process used to identify FCS and the certification amendment level for determination of DT data should be the same for a given model type.

(9) The process of developing DT data for an alteration should be similar to the process used for an individual repair.
- Because of the uniqueness of alterations, the development of a RAP type document is technically difficult and therefore not considered here. Each alteration will be addressed on its own individual basis.

b) Industry Precedents

The AAWG reviewed the following resources to determine what information already exists that can be utilized for this tasking;
- Existing SSID ADs
- FAA SSID Standardization Team Report “Aging Aircraft Program SSID Review - Final Report-, September 2001
- RAP Documents
- AAWG Report on Supplemental Type Certificates, Reference 3c.

c) AAWG Actions

The AAWG accomplished the following tasks in order to determine an appropriate implementation schedule;
- Survey of industry alterations to determine the size and scope of this task.
- A review of industry resources that are DT qualified and available to support this effort.

d) Conclusions and Recommendations – Implementation Program for Alterations:

When determining how and when to incorporate DT for alterations, a clear distinction is made between those alterations where the DAH will support providing the DT data and those alterations where the DAH will not provide support. Additionally, in those expected

rare situations where the operators' records system does not identify an alteration, a safety net is required. It is proposed that the aircraft survey for repairs be utilized to find any remaining unidentified alterations. In consideration of the number of potential alterations and industry resources that are available to assist operators in determining compliance, the following technical basis for the implementation program is proposed:

(1) DAH Support is Available

Where the DAH of the alteration is available to support it, the DAH can start that process in conjunction with the DAH rule (see timeline charts in previous section of this report). The Compliance Document, which contains the DT data, is anticipated to be available by December 2009. This date is within the recommendations of the FAA SSID Standardization Team Report (5years) and the SSID ADs (4-5 years) and provides a means for the operator to incorporate the DT data into their maintenance program by Dec 2010. Coordination is required between the DAH, operator and regulator to accomplish the following:

(a) Determine the embodied alterations;
(b) Communicate that information to the DAH and regulators;
(c) Determine the availability of DT data for each alteration;
(d) Develop and approve the DT data as required;
(e) Develop a means to provide the DT data; and,
(f) Define a means to implement the DT data into the operator maintenance program.

(2) DAH Support is not Available

Where DAH does not intend to comply with 14 CFR 25.1827 and provide assistance to the operators, the burden of developing the data will be placed on the operator. This situation may not be known before Dec 18, 2009. In this case a delayed compliance timeline is needed for the operator to develop or have that data developed. It is proposed that the timeline for development of the data for the oldest aircraft is within 3 years starting in December 2009. Further the timeline proposed for the younger aircraft is prior to 75% DSG. This timeline provides a phased approach to the development of the DT data that spreads out the work and reduces any bow wave effects that would adversely affect industry DT resources. This timeline is within the recommendations of the FAA SSID Standardization Team Report (5years) and the SSID ADs (4-5 years). Since a delayed compliance timeline is needed for this situation, the operator will provide a schedule of when the DT data would be available to their PMI in lieu of the actual DT data. The schedule would be called a "DT Development Schedule" and it would need FAA approval and incorporation in the approved maintenance program by the December 2010 compliance deadline. One of the provisions of the DT Development Schedule would be a clause that would prohibit the operation of the

airplane past the scheduled due date of the DT data unless an approved addendum containing that data is added to the maintenance program.

(3) The Alteration Identified During the Repair Survey

In those rare situations when the operators have no record of an installed alteration, the repair survey will be utilized as a safety net to ensure no alterations are missed. It is proposed that a 24-month compliance period would be allowed to obtain and incorporate the DT data into the maintenance program. This is longer than 12-months allowed for repairs due the added complexity of determining the prior approval process for the alteration, identifying the DAH, and developing the DT data.

(4) Operators Implementation Plan

The operator's implementation plan (OIP) would be similar to that developed for repairs. The plan will contain a means to incorporate DT data that has already been developed and DT data that is yet to be developed.

3) The Effect Of Alterations On Baseline Structure

In order to make recommendations relating to damage tolerance based inspections for alterations embodied on FCS it was necessary to determine which categories of alterations would most likely need damage tolerance based inspections.

The DT evaluation to determine inspection requirements must include both an evaluation of the alteration itself and the interaction between the modification structure and the baseline fatigue critical structure. These interactions can be limited to the area immediately surrounding the modification or, depending on the alteration, can affect the baseline FCS more globally.

a) Alterations of Interest

A previous ARAC tasking relating to MCSTCs (Reference 3.c) investigated which factors can lead to an alteration being a concern beyond a localized area. These alterations were called "complex" if they:

- "Alters the design loads (static and/or fatigue) that affect a significant portion of the airplane structure, and/or
- Causes a change to the approved instructions for continued airworthiness, the Airplane Flight Manual and/or the Weight and Balance Manual. "

The report also listed some examples of "complex" alterations. Examples of these "complex" alterations are:

- Hush kits,
- Winglets,
- Auxiliary fuel tanks,
- Re-engine,
- Weight increases,
- PAX cargo conversions
- Reinforced Flight Deck Doors

Examples of non -"complex" alterations would be where the affect on FCS is local but could still be significant enough to require changes to the baseline DT based inspections. These included modifications that affect splices or which add skin cutouts.

Additional guidance of which alterations are of most concern is provided in AC 25.571-1c with reference to prevention of WFD. While these criteria have been identified in the section devoted to WFD, they are in fact appropriate for durability issues associated with alterations. These criteria include the consideration of the following issues and their affect on the DT based maintenance inspections:

- Distribution of stresses in the underlying structure
- How loads in other parts of the airplane are affected
- The effect of a change in the basic utilization of the airplane due to the alteration
- The alteration may have changed the inspectability of the structure

Since the list of alterations was published in the Reference 3.k report additional changes were made relating to antenna doublers, interior mass items, and nacelles.

(1) Addition Of The Antenna Doubler Installations To The List Of Alterations.

The MCSTC report identified antennas as sometimes being significant and may adversely affect the inspection requirements for the baseline structure. A recent survey of operators regarding alterations confirmed that antenna installations were common. While many of these installations were small, the AAWG concluded that antennas had sufficient potential for affect on FCS to merited addition to the list because of the following issues:

- Additional loading induced through aerodynamics or inertia
- Hidden cracking in the now covered baseline structure.
- Initiation of cracking in the baseline structure.
- Degradation or cracking in the antenna structure.

(2) Addition of Interior Mass Items (Monuments)

The AAWG concluded that addition or modification of items of mass in the interior space of the airplane was necessary. These alterations are of interest because of the potential for significant addition to the inertial loading from the connection of these mass items to baseline FCS.

(3) Removal Of Nacelles From The List

The AAWG decided to remove nacelles from the list of alterations to be considered. This was done because alterations done to the nacelle generally are part of a larger class of alterations including engine/pylon replacements or hush-kit installations. If any of these alterations were performed, the applicant would need to define the FCS, including nacelles as appropriate, and develop the required data for compliance.

b) Creation of FCS

Alterations that modify the structure introduce new structural elements that may contain fatigue sensitive details, like fastener holes. These elements will need to be assessed to determine if they classify as FCS. Guidance for such an evaluation is provided in AC 25.571-1c. Not all structural elements added as a result of an alteration will be classified as FCS. There are two different issues to be considered.

(1) The Alteration Itself

The design of the alteration may contain details that introduce FCS.

(2) Existing Baseline Structural Elements May Be Directly Affected By The Alteration.

New fatigue sensitive details may be created by the alteration. This is the case for cutouts applied in fuselage skins, or fastener holes in frames. When the affected structural element is already identified as a FCS, the newly created details should be assessed. New maintenance actions may be required to ensure continued airworthiness.

c) Alterations to Removable Structural Components

AC120-AAWG provided guidance for DT data development and implementation for existing and new repairs to fatigue critical structure. The AAWG identified the need for guidance on how to track DT inspections at a component level, as opposed to an

aircraft level, for those components that can be moved from one airplane to another. In summary, the guidance covered:

- Tracking removable components that containing fatigue critical structure.
- Methods and schedules for developing and implementing DT data for repairs to removable components containing fatigue critical structure.
- Implementation options for removable components containing fatigue critical structure.
- Methods of determining or assigning the age (hours/cycles) to a removable structural component when its original life history is unknown.

The guidance provides an acceptable means for an operator to comply as agreed with their PMI.

Conclusions:
The AAWG concludes that the AC guidance developed for repairs to rotable components is also applicable for alterations to rotable components.

Recommendations:
The combined AC for repairs and alterations (Appendix B of this report) contains language that provides guidance applicable to both repairs and alterations.

d) Instructions for Continued Airworthiness for Removable Structural Components:

The AAWG reviewed the industry status of various programs that contain Instructions for Continued Airworthiness (ICAs) such as Fatigue Damage, Environmental Damage, Accidental Damage, Airworthiness Directives, Repairs and Alterations. The review identified the lack of consistency in the industry with respect to tracking these ICAs on baseline structure at an aircraft level versus component level. Table 1 summarizes the AAWG findings of Various ICA Programs for Rotables.

Conclusions:
The AAWG concluded;

- It is not part of our current tasking to address this issue.
- Compliance with the various types of ICA programs is currently achieved via local processes between the operator and their PMI.
- In general, the industry has processes and does individually track components with ICAs for safe life components and ADs, and does maintain those ICAs when components are transferred.
- Historically, the industry has not individually track components with ICAs for fatigue, environmental, and accidental damage.
- The industry generally does not provide repair or alteration status, or their applicable ICAs, as components are transferred throughout the industry.

Recommendations:
The AAWG recommends industry wide involvement to resolve the following generalized issues:

- Which ICAs can be tracked on an aircraft level vs. a component level?
- A process to maintain the various ICAs on removable structural components as they are transferred through out the industry.
- A process to bring existing components up to a component level tracking standard. That process would need to include;
    - Methods of determining or assigning the age (hours/cycles) to a removable structural component when its original life history is unknown.
    - Methods to assign serialization to components that were not originally anticipated to require it.

Types of ICA programs	Specific Programs	Comments Regarding Components	Generalized Industry Status	Comments	AAWG recommendations & suggestions
Fatigue Damage (FD)	Baseline MX Programs (MRB MPD) WFD SSID / ALI	No industry standard for tracking baseline programs at the component level.	The industry generally DOES NOT provide status as components are transferred throughout the industry.	Tracking of components for FD is necessary. This is easier to do for new aircraft, and very tough to do as a catch up plan for existing aircraft.	This issue is beyond the tasking of the AAWG
	Safe Life Parts	Tracking is controlled from birth.	Safe life parts are being tracked from birth.	Safe Life components require tracking. These parts are identified at delivery which makes tracking easier.	No further action is needed
Airworthiness Directives	Individual ADs.	Requires specific compliance for each component.	The industry generally DOES provide AD status (on 8130s) as components are transferred throughout the industry.	No further action is needed	No further action is needed
Repairs	DT	Any post repair ICAs requires compliance for each component.	The industry generally DOES NOT provide repair status (on 8130s) as components are transferred throughout the industry.	Need a program to bring existing components up to the documentation requirements (121.1109, 121.1107, 25.1823, 25.1825, 25.1827), then need a industry wide program to maintain this level of documentation as components move throughout the industry.	Provide a means, like the AAWG has in the AC, that permits an operator to comply on an individual basis with his PMI. Any industry tracking/documentation issues are beyond the tasking to the AAWG.
Alterations	DT	Any post alteration ICAs requires compliance for each component.	The industry generally DOES NOT provide alteration status (on 8130s) as components are transferred throughout the industry.	Need a program to bring existing components up to the documentation requirements (121.1109, 121.1107, 25.1825, 25.1827), then need a industry wide program to maintain this level of documentation as components move throughout the industry.	Provide a means, like the AAWG has in the AC, that permits an operator to comply on an individual basis with his PMI. Any industry tracking/documentation issues are beyond the tasking to the AAWG.
Environmental Damage (ED)	Baseline MX Programs (MRB MPD) CPCP	No industry standard for tracking baseline programs at the component level.	The industry generally DOES NOT provide status as components are transferred throughout the industry.	In general, component tracking is not necessary for ED or AD programs. Recommend MRB statements as such.	This issue is beyond the tasking of the AAWG
Accidental Damage (AD)	Baseline MX Programs (MRB MPD)	No industry standard for tracking baseline programs at the component level.			

Table 1 – Overview of ICA programs for Rotable Components

e) The Possibility Of A Deactivated Alteration That Might Not Exist On Configuration Documents

The AAWG considered deactivated alterations that may not exist in maintenance records. The situation is likely to be rare and would most likely occur with aircraft that had been transferred between different operators.

While airplane transfer requires the new operator to be provided with embodiment and configuration documentation for all major alterations this does not always occur especially when an alteration has been deactivated.

There are three principal situations where an operator may not be aware that a deactivated alteration exists.

- Where the alteration is totally removed, but has resulted in changes to the baseline structure e.g. fastener holes, trim outs.
- Where the alteration has been partially removed and some elements of the alteration remain installed on the baseline structure.
- Where the alterations purpose is no longer required however it has been left installed.

The AAWG recommends operators survey the airplane for deactivated alterations while accomplishing the airplane repair survey. Operators would need to include procedures in the model specific OIP on how to handle these alterations. This would include a survey of the airplane for these alterations during the repair survey. Operators would also need include a method to develop DT data and incorporate it into their maintenance program.

4) DAH/FAA/Operator Involvement

The interaction between the DAH, FAA and Operator is far more complicated and complex for alterations then it is for repairs. This is because of the way alterations are certified and installed on airplanes. This subject is discussed further in the AAWG report on MCSTCs (Reference 3.c). With repairs, the TC Holder is most likely to be the entity that holds the engineering data for a particular model airplane. For alterations, the engineering data is held by the DAH, whose identity may only be known by the operator who installed it. Therefore it is more likely the DAH will be known by the operator than the regulator. In order for the FAA to implement 14 CFR 25.1827, the operator will need to assist the FAA in determining the DAH for each of the alterations installed. It is proposed that the following approach is utilized in engaging the DAH for alterations.

a. The operator would review their records to determine which alterations were installed on his fleet. He would note the tail numbers and the name and address of each DAH.

b. Operators would then contact the DAH of applicable alterations of record that exist on his fleet of airplanes to ascertain whether or not the alterations affect or create fatigue critical structure and if so, verify that the appropriate DT data exists for those alterations.

c. The operators will need to provide a list of applicable alterations on their active fleet to the FAA. The lists shall contain information relative to the DAH for each alteration. From this list the FAA can notify the DAHs of their responsibility for supporting their alteration per 14 CFR 25.1827.

d. In those situations where the DAH no longer exists or is unwilling to comply with the request, it becomes the responsibility of the operator to develop the data using the guidance contained in AC 120 AAWG. Operators need to determine this in a timely manner so that they can begin the task of obtaining the required DT data. AC 120.AAWG provides tasks the operator should follow to develop the required DT data.

e. To ensure the complete and timely flow of data to and from the FAA, the FAA should examine their existing method of handling correspondence, and develop a new means as appropriate for this activity. To ensure that the new process is accomplished properly, appropriate training should be given to the applicable personnel prior to beginning this activity.

f. There needs to be an open communication between the FAA, the DAH and the operators concerning the intent of the DAH to support compliance. To facilitate this communication the FAA should develop an electronic method of notifying the operators concerning the status of DAH support for the alteration installed.

5) Alterations Without DT Based Inspection Programs.

The FAA should consider training of their PMIs to prevent the installation of already approved alterations on Transport Category Airplanes operated under 14 CFR 121 and 129 after December 20, 2010, without an FAA approved maintenance program addendum that contains DT based inspections.

6) Analysis and Documentation Issues

a) Alterations Will Need To Be Evaluated Individually

Alterations are normally performed on an airplane to add certain functionality not available when delivered by the TCH. Therefore alterations are likely to be unique to ensure those different functionalities. Further, various alterations may be designed to different standards that the original type design for a variety of reasons and may vary from one airplane to another due to different baseline design. Also alterations might alter the structure significantly (e.g. Cargo Door, winglet, MTOW increase,) and the impact on the baseline structure in a manner that is not easily predictable.

Therefore alterations are not comparable to repairs, where standardized practices have been used to define a RAG to cover specific repairs on certain baseline structure. Because of the variety of alterations no standardized approach is possible to establish a RAG for this subject.

b) Certification Level To Be Used

As for the repairs, an alteration should not degrade the level of safety of the baseline structure. Therefore all alterations shall be certified to the same amendment level as the baseline structure (minimum 14 CFR Amendment 25-45) or in case of Major Change even to a higher level.

c) Alteration Compliance Document

As described above, alterations are naturally quite different from each other and might also be quite large in size or could have an adverse effect on the baseline structure. Therefore if the alteration has an influence on existing FCS or creates new FCS, the maintenance program may require extensive revision.

For example, a MTOW increase would need to establish a completely changed maintenance program, consisting of a supplemental ALI and a review other in-service manuals such as the SRM. Therefore depending on the change incorporated by the

alteration, a complete or partial review and update of all documents might be necessary to demonstrate compliance to 14 CFR 121.1109 and 129.109.

B. Action on AC 25.1529-1

In approving the results of the Phase 1 activities, the TAEIG requested that the AAWG review and provide comment to the following issue:

> **One member of the TAEIG wants to retain 25.1529 since some airplanes, not effected by the AASFR rely on it's guidance. The AAWG has an action to review the recommendation.**

The AAWG has reviewed its position on TAEIG Query number 3 and concurs that AC 25.1529-1 should not be rescinded. A copy of this AC with proposed changes to make its effectivity clear is included as Appendix C of this report.

3. Conclusions and Recommendations

The AAWG has revised draft AC 120-AAWG to include the process for assessing both repairs and alterations to fatigue critical structure using damage tolerance principles. The proposed AC addresses repairs and alterations to both baseline structure as well as repairs to alteration and modifications. The AAWG believes that the proposed AC 120-AAWG contains sufficient guidance for all DAHs to develop a Compliance Document which would support operator compliance with the AASFR for repairs and alterations.

Key to initiating this process is the identification of fatigue critical structure for each applicable airplane model. Repairs and alterations to the fatigue critical structure will need to be assessed for damage tolerance. Depending on the certification level of the aircraft model and whether installed repairs and alterations are already covered by DT data, this may require a survey of the aircraft.

Conclusions:

1. A survey of 10 operators revealed that there are approximately 246 alterations installed on the active commercial fleet. Of the 246, 171 did not have DT data, and 24 of the 171 were deemed complex.

2. The conclusions and recommendations contained in the AAWG report on MCSTCs are still strongly supported by the industry. Those conclusions and recommendations address issues with complex STCs which are still being considered by the FAA. Any action on complex STCs is therefore deferred to the FAA and their deliberations.

3. Operators are required to keep permanent records of alterations installed on their aircraft where requirements for record keeping for repairs may only extend to the next major maintenance visit.

4. Once an alteration is approved for installation, operators may purchase alterations from their owners and install them on their fleet. The data package may or may not have DT data included.

5. The engineering support of an alteration is the responsibility of the DAH and extends to the provision of DT data for continued airworthiness. In the absence of the DAH, the responsibility falls to the operator.

6. The process for compliance for alterations is dependant upon timely communications between the FAA, DAH and operators and consistent application of standards by the FAA.

7. Implementation Plans for Alterations

a. Installed alterations are a matter of record with a particular airline and therefore implementation plans can be handled differently than repairs.

b. Implementation plans for alterations are dependant on the willingness or availability of DAH to support the alteration with DT data, if required.

c. There is a possibility that deactivated alterations exist on an airplane that are not part of the records that an operator holds. In these cases, the repairs survey would be used to reveal these deactivated alterations for appropriate action.

8. Rotable Components

a. Alterations to rotable components can use the same guidance developed for repairs to rotable components contained in the original issue of AC 120-AAWG.

b. Based on an EASA request, the AAWG concluded that there was a potential issue with the tracking of rotable components in the industry, however we were not tasked to consider this.

9. Analysis of Alterations for DTA

a. The DT data for an alteration must include both an assessment of the new FCS added by the alteration and it's affect both locally and globally on the baseline FCS.

b. Because alterations tend to be unique, DT data will need to be developed for each unique installation. The use of RAG type programs may not be feasible.

c. For existing alterations that require a new DTE, the DAH should use 14 CFR 25.571 at Amendment 45 or the certification basis of the airplane whichever is greater.

d. Dependant on the scope of the modification, the applicant may need to revisit published documents such as the SRM to insure that the information is still valid.

Recommendations

1.0 The AAWG Recommends that AC 120-AAWG be promulgated as a means of compliance to 14 CFR 121.1109 and 129.109 with respect to repairs and alterations. A copy of this AC is contained in Appendix B.

2.0 The AAWG recommends that operators keep records on repairs that affect Fatigue Critical Structure.

3.0 The FAA provide adequate direction and training to it's ACO and Flight Standards staff to ensure that there is uniformity in the administration of these regulations across the industry.

Appendix A: Copy of FAA Tasking Notice

Federal Register / Vol. 69, No. 93 / Thursday, May 13, 2004 / Notices

Pages 26641 through 26644

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee; Transport Airplane and Engine Issues—New Task

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of new task assignment for the Aviation Rulemaking Advisory Committee (ARAC).

SUMMARY: The FAA assigned the Aviation Rulemaking Advisory Committee a new task to develop guidance that will support industry compliance with the Aging Airplane Safety Final Rule requirements that relate to supplemental structural inspections. This new tasking will also address certain aspects of recommendations made during a previous ARAC tasking related to widespread fatigue damage. This notice is to inform the public of this ARAC activity.

FOR FURTHER INFORMATION CONTACT: Mike Kaszycki, Federal Aviation Administration, Transport Standards Staff, 1601 Lind Avenue, SW., Renton, Washington 98055–4056, *mike.kaszycki@faa.gov.*

SUPPLEMENTARY INFORMATION:

Background

The FAA established the Aviation Rulemaking Advisory Committee to provide advice and recommendations to the FAA Administrator on the FAA's rulemaking activities with respect to aviation-related issues. This includes obtaining advice and recommendations on the FAA's commitments to harmonize Title 14 of the Code of Federal Regulations (14 CFR) with its partners in Europe and Canada.

Airplane Applicability of Tasking

This new tasking shall apply to transport category airplanes with a type certificated passenger seating capacity of 30 or greater, or a maximum payload capacity of 7,500 pounds or greater, operated under part 121 or under part 129 (U.S. registered airplanes).

Statement of Tasking

There are four major tasks to be completed under this tasking:

Task 1.—Repairs to Baseline Primary Structure and Repairs to Alterations and Modifications

Draft an Advisory Circular (AC) that contains guidance to support the following two paths of compliance with §§ 121.370a and 129.16 of the Aging Airplane Safety Interim Final Rule (AASIFR):

1. *Damage-tolerance-based inspection program developed by part 121 and 129 certificate holders:* Develop guidelines and procedures that will enable part 121 and 129 certificate holders to develop a damage-tolerance-based inspection program that addresses repairs made to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure.

2. *Model specific damage-tolerance-based inspection program:* Develop Guidance that can be used by Type Certificate (TC) holders, Supplemental Type Certificate (STC) holders, and Structural Task Groups to support the development of a model specific damage-tolerance-based inspection program. The model specific damage-tolerance-based inspection program will address repairs made to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure. The developed model specific inspection program will support part 121 and 129 certificate holders' compliance with the AASIFR.

A written report will also be submitted that includes an action plan for the implementation of the recommendations of task 1 that will be addressed in task 4 below. The report is to be submitted to the Aviation Rulemaking Advisory Committee (ARAC), Transport Airplane and Engine Issues Group, for approval. The ARAC, Transport Airplane and Engine Issues Group, will determine as appropriate the means by which the action plan will be implemented. The proposed actions and implementation process approved by the ARAC, Transport Airplane and Engine Issues Group, will be subject to FAA concurrence.

In the process of drafting the AC, the ARAC should assess the effectiveness of AC 91–56B to provide guidance to TC and STC holders for developing damage-tolerance-based inspections and procedures for repairs made to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure. The ARAC should do the following:

• Assess the effectiveness of AC 91– 56B to support Industry compliance with the AASIFR with respect to repairs.

• Document any improvements to the AC that would provide better direction with respect to the guidance for TC and STC holders in their development of damage-tolerance-based inspections and procedures for repairs.

The ARAC is requested to validate that the guidance material in the new AC will result in programs that provide a high degree of autonomy for part 121 and 129 certificate holders while supporting compliance with the AASIFR. In order to determine a rational approach for addressing repairs to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure, and are not currently covered by a mandated program, the AC should provide guidance to the part 121 and 129 certificate holders and to the type certificate holder to address the seven issues listed below.

1. The significance of the airplane certification amendment level in providing direction for the development of damage tolerance inspections and methods for repairs.

2. The degree to which Supplemental Structural Inspection Documents/ Programs (SSID/P) or equivalent documents/programs provide direction to repair the structure using damage-tolerance-rated repairs. The assessment should apply to SSID/Ps or equivalent documents/programs developed for 14 CFR part 25 pre-amendment 25–45 transport airplane models having a maximum gross takeoff weight of 75,000 lbs or greater. The following should be identified:

• Areas of aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure, which are not covered by SSID/ Ps or equivalent documents/programs

• Significant assumptions applied in developing SSID/Ps or equivalent documents/programs

• Any significant issues in the implementation of the requirements of SSID/Ps or equivalent documents/ programs

• Data from SSID/Ps or equivalent documents/programs that would be useful in supporting this new tasking

3. The degree to which an applicable airplane model's Airworthiness Limitations Section (ALS) provides direction to repair the structure using damage-tolerance-rated repairs. This assessment should apply to damage-tolerance-based inspection programs/ data developed for 14 CFR part 25 amendment 25–45 or later transport airplane models having a maximum gross takeoff weight of 75,000 lbs or greater. The following should be identified:

• Areas of aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure, which are not covered by a damage-tolerance-based inspection program/data

• Any significant issues in the implementation of the requirements of the damage-tolerance-based inspection programs/data

• Data from the damage-tolerance-based inspection programs that would be useful in supporting this new tasking

4. The degree to which existing Repair Assessment Guideline documents developed for §§ 121.370 and 129.32 provide damage-tolerance-based inspections for repairs made to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure. The assessment should identify the following:

• Areas of the aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure, which are not covered by these documents

• Data from these documents that would be useful in supporting this new tasking

5. Identify the issues/difficulties industry has encountered with establishing damage-tolerance-based inspections and procedures for repairs as required by various FAA approaches in issuing SSIP airworthiness directives (*e.g.*, 727/737 AD 98–11–03 R1,

AD 98– 11–04 R1 verses other SSIP AD approaches like the 747). The assessment should identify the following:

• Comparison of approaches with pros and cons for each approach

• Data from these documents that would be useful in supporting this new tasking

6. Assess the extent to which Structural Repair Manuals (SRM) provide damage-tolerance-based inspections for repairs made to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure.

7. Assess the need to include damage-tolerance-based inspections and procedures in TC and STC Holder issued Service Bulletins (SB) that provide repair instructions for aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure.

Task 2.—Alterations and Modifications to Baseline Primary Structure, Including STCs and Amended Type Certificates (ATCs)

Prepare a written report assessing how an operator would include damage tolerance-based inspections and procedures for alterations and modifications made to aircraft structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure. This assessment would include, but is not limited to, alterations and modifications performed under an STC, ATC, FAA field approval (*e.g.*, FAA form 337) and/or FAA approved TC holder design data. The report should include a recommendation on the best means to develop damage-tolerance-based inspections and procedures for these alterations and modifications and the applicability of AC 91–56B. The ARAC should assess the effectiveness of AC 91–56B to provide guidance to STC holders for developing damage-tolerance-based inspections and procedures for alterations and modifications. The ARAC should do the following:

• Assess the effectiveness of AC 91– 56B to support Industry compliance with the AASIFR with respect to alterations and modifications.

• Document any improvements to the AC that would provide better direction with respect to the guidance for STC holders in their development of damage-tolerance-based inspections and procedures for alterations and modifications.

The written report will include a proposed action plan to address and/or accomplish these recommendations, including actions that should be addressed in task 4 below. The report should also provide a recommendation on the means of compliance provided by the AC developed in Task 1 in regards to repairs installed on STC or ATC approved alterations and modifications. The report is to be submitted to the ARAC, Transport Airplane and Engine Issues Group, for approval. The ARAC, Transport Airplane and Engine Issues group, will determine as appropriate the means by which the action plan will be implemented. The proposed actions and implementation process approved by the ARAC, Transport Airplane and Engine Issues Group, will be subject to FAA concurrence (FAA concurrence is necessary to ensure actions will support industry compliance with the AASIFR).

Task 3.—Widespread Fatigue Damage (WFD) of Repairs, Alterations, and Modifications

Provide a written report providing recommendations on how best to enable part 121 and 129 certificate holders of airplanes with a maximum gross take-off weight of greater than 75,000 pounds to assess the WFD characteristics of structural repairs, alterations, and modifications as recommended in a previous ARAC tasking. The written report will include a proposed action plan to address and/or accomplish these recommendations including actions that should be addressed in task 4 below. The report is to be submitted to the ARAC, Transport Airplane and Engine Issues Group, for approval. The ARAC, Transport Airplane and Engine Issues Group, will determine as appropriate the means by which the action plan will be implemented. The proposed actions and implementation process approved by the ARAC, Transport Airplane and Engine Issues Group, will be subject to FAA concurrence.

Task 4.—Model Specific Programs

Oversee the Structural Task Group (STG) activities that will be coordinated for each applicable airplane model by the respective type certificate holders' and part 121 and 129 certificate holders. These STG activities will involve the development of model specific approaches for compliance with §§ 121.370a and 129.16 under the guidance material supplied in Task 1. As part of this tasking, the AAWG will identify those airplane models that do not have an STG, and will assess the need to form one (based on industry benefit). For those airplane models that will need to form an STG, the AAWG will initiate the coordination required to form the STG with the respective type certificate holder and/or part 121 and 129 certificate holders.

In addition, the AAWG will support the implementation of the action plan to address recommendations made in tasks 2 and 3 as determined necessary by the ARAC, Transport Airplane and Engine Issues Group, and concurred with by the FAA.

Schedule

The tasking will be performed in two phases. In Phase 1, the ARAC will provide to the FAA the results of Tasks 1 through 3. Phase 1 should be accomplished by December 16, 2005. In Phase 2, the Structures Task Groups, under the direction of the ARAC, should produce the model specific guidance material, Task 4, using the guidelines and procedures of the AC produced in Phase 1. The ARAC will be responsible for coordinating and overseeing the STG's application of the AC. Phase 2 documents should be completed by December 18, 2009.

ARAC Acceptance of Task

ARAC accepted the task and assigned the task to the Airworthiness Assurance Working Group, Transport Airplane and Engine Issues. The Structural Task Groups (STG) composed of type certificate and part 121 and 129 certificate holders familiar with the specific model aircraft will support the working group. The working group will serve as staff to ARAC and assist in the analysis of the assigned task. ARAC must review and approve the working group's recommendations. If ARAC accepts the working group's recommendations, it will forward them to the FAA.

Working Group Activity

The Airworthiness Assurance Working Group must comply with the procedures adopted

by ARAC. As part of the procedures, the working group must:

1. Recommend a work plan for completion of the task, including the rationale supporting such a plan for consideration at the next meeting of the ARAC on transport airplane and engine issues held following publication of this notice.

2. Give a detailed conceptual presentation of the proposed recommendations prior to proceeding with the work stated in item 3 below.

3. Draft the appropriate documents and required analyses and/or any other related materials or documents.

4. Provide a status report at each meeting of the ARAC held to consider transport airplane and engine issues.

Participation in the Working Group

The Airworthiness Assurance Working Group will be composed of technical experts having an interest in the assigned task. A working group member need not be a representative or a member of the full committee. If you have expertise in the subject matter and wish to become a member of the working group you should write to the person listed under the caption **FOR FURTHER INFORMATION CONTACT** expressing that desire, describing your interest in the task, and stating the expertise you would bring to the working group. We must receive your request to participate no later than May 28, 2004. The assistant chair, the assistant executive director, and the working group chair will review your request and will advise you whether your request is approved. If you are chosen for membership on the working group, you must represent your aviation community segment and actively participate in the working group (*e.g.*, attend all meetings, provide written comments when requested to do so, *etc.*). You must also devote the resources necessary to support the working group in meeting any assigned deadlines. You must keep your management chain and those you may represent advised of working group activities and decisions to ensure that the proposed technical solutions don't conflict with your sponsoring organization's position when the subject being negotiated is presented to ARAC for approval.

Once the working group has begun deliberations, members will be added or substituted only with the approval of the assistant chair, the assistant executive director, and the working group chair.

The Secretary of Transportation determined that the formation and use of the ARAC is necessary and in the public interest in connection with the performance of duties imposed on the FAA by law.

Meetings of the ARAC will be open to the public. Meetings of the Airworthiness Assurance Working Group will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. The FAA will make no public announcement of working group meetings.

Issued in Washington, DC, on May 4, 2004.

Anthony F. Fazio,

Executive Director, Aviation Rulemaking Advisory Committee.

[FR Doc. 04–10816 Filed 5–12–04; 8:45 am]

BILLING CODE 4910–13–P

Appendix B: Draft AC 120-AAWG

Advisory Circular

Subject: DAMAGE TOLERANCE INSPECTIONS FOR REPAIRS AND ALTERATIONS	**Date:** Draft **Initiated by:** ANM-100 and AFS-300	**AC No:** 120-XX Rev 3A March 9, 2006

1. PURPOSE.

a. This Advisory Circular (AC) provides guidance material for design approval holders (DAH) and operators for developing and incorporating Damage Tolerance Inspections and Procedures. This AC supports DAH compliance with 14 Code of Federal Regulations (14 CFR) 25.1823, Supplemental Structural Inspections, Holders of type certificates – Repairs, 14 CFR 25.1825, Supplemental Structural Inspections, Holders of type certificates – Alterations and repairs to alterations, 14 CFR 25.1827, Supplemental Structural Inspections, Holders of and applicants for a Supplemental type certificate – Alterations and repairs to alterations and operator compliance with 14 CFR 121.1109 and 14 CFR 129.109, the Aging Airplane Safety Final Rule (AASFR) with respect to repairs and alterations. This AC is applicable to repairs and alterations to structure susceptible to fatigue cracking that could contribute to a catastrophic failure. For the purposes of this AC, the term “alteration” is used to describe a design change and encompasses the term “modification.” This AC refers to that type of structure as fatigue critical structure.

b. This AC also provides guidance for new and existing repairs and alterations made to the as original, delivered, airplane structural configuration, as well as repairs to alterations. For compliance with § 121.1109 and § 121.109, operators will need to demonstrate that new and existing repairs and alterations will have an evaluation and damage tolerance based inspections or other procedures implemented if needed.

2. APPLICABILITY.

a. The guidance provided in this AC is applicable to type certificate (TC) holders, supplemental type certificate (STC) holders, Design approval holders (DAH) and operators of transport category airplanes with a type certificated passenger seating capacity of 30 or greater, or a maximum payload capacity of 7,500 pounds or greater.

The applicability is limited to airplanes operated under Parts 121 or 129 (US Registered Airplanes).

b. Like all AC material, this AC is not, in itself, mandatory, and does not constitute a regulation. It describes an acceptable means, but not the only means, for showing compliance with the requirements for transport category airplanes. The Federal Aviation Administration (FAA) will consider other methods of showing compliance that an applicant may elect to present. While these guidelines are not mandatory, we derived them from extensive FAA and industry experience in showing compliance with the relevant regulations. On the other hand, if we become aware of circumstances that convince us that following this AC would not result in compliance with the applicable regulations, we will not be bound by the terms of this AC. We may require additional substantiation or design changes as a basis for finding compliance.

c. This material does not change, create any additional, authorize changes in, or permit deviations from, regulatory requirements.

d. Terms in this AC, such as “shall” or “must” are used only in the sense of ensuring applicability of this particular method of compliance when the acceptable method of compliance described herein is used. While these guidelines are not mandatory, they are derived from FAA and industry experience in determining compliance with the pertinent regulations.

[Draft AC/Signature Remove before posting]

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CHAPTER 1. DAMAGE TOLERANCE

100. DAMAGE TOLERANCE INSPECTIONS AND PROCEDURES, DAMAGE TOLERANCE EVALUATION PROCESSES (DTE PROCESSES) AND DAMAGE TOLERANCE DATA (DT DATA).

a. The term Damage Tolerance Inspections and Procedures used in the Aging Airplane Safety Final Rule (AASFR) is synonymous with the term damage tolerance data (DT data) used in this AC. These damage tolerance inspections (DTI) for repairs and alterations supplement existing airworthiness authority - approved maintenance programs, including those contained in the instructions for continued airworthiness (ICA), scheduled maintenance programs, supplemental structural inspection programs (SSID) and airworthiness limitation items (ALI) programs, Service Bulletins (SB), and Repair Assessment Programs (RAP).

b. Amendment 25-45 to 14 CFR Part 25 introduced the use of damage tolerance principles. This approach requires an evaluation of the structure to determine its crack growth and residual strength characteristics. The evaluation supplies the information necessary to determine a maintenance plan for continued airworthiness. For this AC, the term damage tolerance evaluation (DTE) processes refers to an approved process, that includes, analysis and/or tests and service data, that leads to a determination of a continuing airworthiness maintenance plan, including inspections (i.e., DTI), or other procedures for a repair/alteration or replacement of fatigue critical structure. Consistent with the guidance provided by this AC, a DTE process could entail anything from a rigorous analysis methodology for use by a structures analyst to generic guidelines for operator use. This process will enable a survey and assessment of existing repairs and alterations to be made. In this AC, the term “DT data” means DTE documentation and DTI. Damage tolerance evaluation documentation means data that identifies the evaluated fatigue critical structure, the basic assumptions applied in a DTE, and the results of a DTE. Use of the term “DTI” in this AC means inspections and other procedures developed as a result of a DTE.

c. The DTE processes typically result in four items that comprise the DTI. Those are as follows:

- Where to inspect.
- When to start inspecting.
- How to inspect.
- How often to repeat the inspection.

d. For some airplane models, the requirements of the AASFR are beyond the scope of the original certification level. For these airplanes, development of DT data and incorporation of that data into the existing maintenance programs are required. For other models, there are DT data included in various documents, for example SSIDs, repair assessment guidelines (RAGs), airworthiness limitation sections (ALSs),

structural repair manuals (SRMs), and airworthiness directives (ADs). These documents will need to be reviewed to determine if sufficient data exists to satisfy the requirements of the AASFR. In any case, an operator may use these DT data in part or in whole to support compliance with the requirements of the AASFR for repairs and alterations.

e. Sometimes, the results of the DTE process may indicate that inspections are either impractical or unreliable. In such cases, the continued airworthiness of the airplane is assured by establishing a replacement time for the repair or alteration.

101. OVERVIEW OF DT DATA DEVELOPMENT AND INCORPORATION.

a. Developing DT data involves accomplishing tasks typically performed by a DAH, assisted by interested operators. The product is an FAA approved, model specific Compliance Document or other service information (e.g. Service Bulletin) that contains the DT data required for compliance. Incorporation of the DT data into a maintenance plan involves accomplishing tasks that are typically performed by an operator. The product is an FAA-PMI approved airplane specific Operator Implementation Plan.

b. Design approval holders, operators and regulators should develop model specific Compliance Documents with oversight provided by aviation airworthiness authorities and the Aviation Rulemaking Advisory Committee's (ARAC) Airworthiness Assurance Working Group (AAWG).

c. The following is a summary of the tasks necessary to develop DT data for repairs and alterations and incorporate it into an operator's maintenance program:

(1) Design approval holder Tasks - Repairs. The following is an overview of the tasks for repairs that are further developed in Chapter 2 of this AC. These tasks are normally the responsibility of the type certificate (TC) holder.

(a) Identify the affected airplane model, models, or airplane serial numbers to which the DT data will apply.

(b) Identify the fatigue critical structure.

(c) Identify the certification level.

(d) Review of existing DT data.

(e) Develop additional DT data.

(f) Establish Implementation Schedule.

(g) Prepare Compliance Document**.** This is a model or airplane specific document that contains the information from Paragraphs (a) through (f)

above. The operator will use this document to develop an implementation plan for complying with the AASFR. In order to support operator compliance to the AASFR, the DAH should submit the Compliance Document to the FAA Oversight Office for approval and should make it available to operators by December 18, 2009.

(2) Design approval holder Tasks - Alterations. The following is an overview of the DAH Tasks that would be done for Alterations and are further developed in Chapter 3.

(a) Obtain data from the type certificate (TC) holder or the operator relative to each applicable model concerning the identification of fatigue critical structure and certification level. Alternately the DAH may wish to develop his own data.

(b) Establish a list of candidate Alterations that may have been embodied on fatigue critical structure and/or have design details that could be classified as fatigue critical structure.

(c) In consultation with operators (See below), determine which airplane models the alteration(s) has been installed on.

(d) Identify applicable alterations
- Alterations that affect fatigue critical baseline structure
- Alterations that create fatigue critical structure

(e) Determine if DT data exists for the identified alterations.

(f) Develop additional DT data.

(g) Establish Implementation Schedule.

(h) Prepare a Means of Compliance. This means of compliance can be an alteration specific document (e.g. Service Bulletin, Compliance Document, or Amended STC) that contains the information from Paragraphs (a) through (g) above. The operator will use this document to develop an implementation plan for complying with the AASFR. In order to support operator compliance to the AASFR, the DAH should submit the Compliance Document to the FAA Oversight Office for approval and should make it available in accordance with 14 CFR 25.1825 or 25.1827 as applicable.

(3) Operator Tasks – Repairs and Alterations. The following is an overview of the operator tasks that are further developed in Chapter 4.

(a) Review the applicable Compliance Documents**.**

(b) Obtain or Develop additional DT data for alterations.

(i) Identify applicable alterations that exist in the operator fleet that have been embodied on Fatigue Critical Baseline Structure.

(ii) Identify and contact the DAH for the applicable alteration and request DT data for the alteration. If the DAH no longer exists or is unwilling to comply with this request it becomes the responsibility of the operator to develop the DT data using the guidance contained in Chapter 3.

(iii) Review the DAH compliance documents**.**

(c) Develop an Operators Implementation Plan. This is specific to the identified airplane or group of airplanes in the implementation plan and contains information from Paragraphs 101(1)(g), 101(2)(h) and/or 101(3)(b) of this AC.

(d) Incorporate The DT Data For New And Existing Repairs and Alterations into Operators Maintenance Program.

(e) Submit the implementation plan to the PMI for approval.

102 thru 199 RESERVED.

CHAPTER 2. REPAIRS - DESIGN APPROVAL HOLDERS TASKS

200. GENERAL INFORMATION ABOUT THIS CHAPTER.

This chapter provides guidance to design approval holders (DAHs) for developing data to support compliance with §§ 25.1823, 25.1825, 25.1827 and operator compliance with §121.1109 and § 129.109, with respect to repairs and repairs to alterations. This includes the development of damage tolerance procedures, DTE processes, and DT data. For repairs installed on structure that has been altered, the operator should coordinate with the party (TC, non TC, or STC Holder) responsible for the alteration to develop the required damage tolerance data.

201. DEVELOPMENT OF COMPLIANCE DOCUMENTS.

a. Design approval holders (DAH) supporting the operation of airplanes under 14 CFR 121 and 129 should use the following guidance material to develop Compliance Documents which contain information and data that the operator will need to demonstrate compliance. Airplanes certified to Amendment 25-54, or later, may not need additional DT data to be developed but will require the development of a Compliance Document. This will allow an operator the means to demonstrate to his PMI how his existing maintenance program meets the intent of the AASFR relative to new and existing repairs.

b. To facilitate compliance with the AASFR with respect to repairs, compliance documentation should be created that encompasses all fatigue critical structure, including repairs, to repairs and alterations as necessary. The compliance document will be applicable to a specific airplane model or airplane serial number(s). The documentation should provide the data necessary for developing an Operator Implementation Plan with respect to a given airplane. The Compliance Document should also include implementation schedule information as well as specific guidance on which repairs will require evaluation. The process for evaluation of repairs contained in this AC considers both existing and future repairs. Existing repairs will be brought into the program using the implementation plan and airplane surveys after December 20, 2010 (See Appendix 6). New repairs, installed after December 20, 2010 will be required to have DT data provided within the guidelines contained in Appendix 5.

c. To assist the operators in establishing DT data for various repairs the establishment of a Repair Evaluation Guidelines (REG) is proposed. These guidelines will provide instructions to the operator on how to survey airplanes, how to obtain DT data and an implementation schedule that would provide timing for airplane surveys and when the DT data is needed. Concerning the processes used to obtain DT data, the process most commonly used today by operators to obtain DT data is time consuming and resource intensive. The REG would provide operators with various methods for obtaining DT data for repairs. Possible methods for obtaining the required DT data

should include:

- *Using existing FAA approved data.* These should include TC holder developed service information such as SRMs, service bulletins, and Repair Assessment Guideline (RAG) documents developed for compliance to § 121.1107.

- *Making direct requests for support from the TC holder for repairs.* If the TC holder determines that the existing service information does not provide operators with the needed DT data, the process may recommend that the operator directly solicit DT data from a TC holder. In this case, the TC holder would evaluate the operator's request and make available damage tolerance inspections for a specific repair or alteration or group of repairs and alterations as needed. If the processes developed for the repair evaluation guidelines direct the operator to obtain assistance from the TC holder, the TC holder would be required to provide such assistance. This assistance must be provided in a manner that would support the DT data implementation schedule.

- *Using repair evaluation procedures.* These procedures would enable operators to establish damage tolerance inspections without having to contact the TC holder for direct support. These procedures may be similar in concept to the RAG documents. If technically feasible, a new generalized RAG may be developed to support operators with a streamline process to develop DT data for certain repairs. The REG would incorporate any new RAG.

d. Where specific DT data needs to be developed to support compliance with the AASFR, it is recommended that the model-specific Compliance Document be produced as a joint effort between the DAH, operators, and airworthiness authorities. In previous aging aircraft programs, ARAC's AAWG formed airplane model specific Structures Task Groups (STGs) to develop programs for those models. Where necessary, an STG for this activity should be formed and tasked to develop the model-specific Compliance Document.

e. Figure 1, below, shows the process that should be used to produce a Compliance Document that supports compliance with the AASFR for repairs to fatigue critical structure. The paragraphs referenced in Figure 1 are in Chapter 2 of this AC.

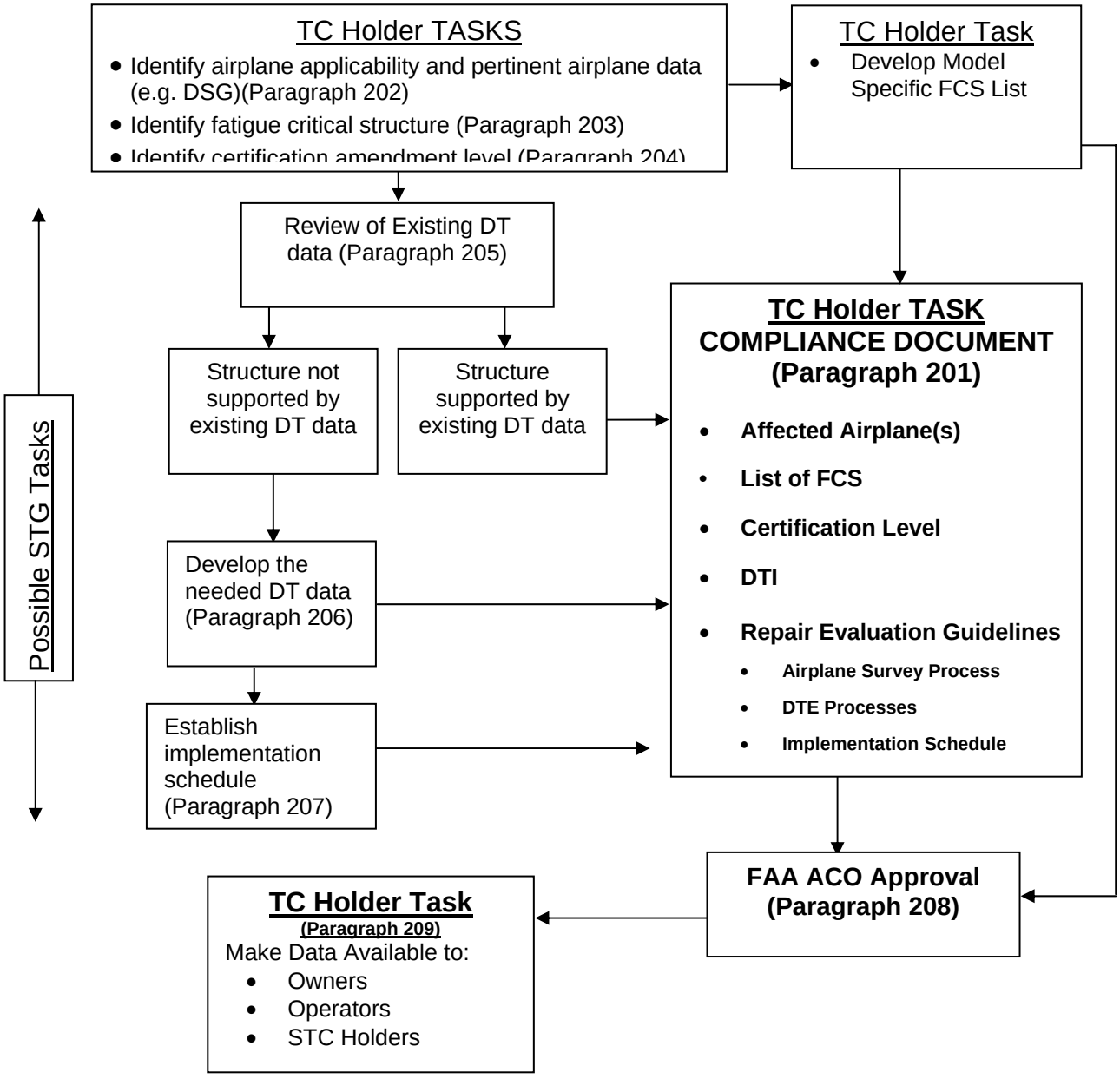

Figure 1. Development of a Compliance Document.

202. IDENTIFICATION OF AFFECTED AIRPLANES.

The airplane model and model variations or serial numbers, including gross weights, should be identified in the Compliance Document for the applicable airplane models. For each model of airplane, the DAH will identify the DT data needed to support compliance with the AASFR

203. IDENTIFICATION OF FATIGUE CRITICAL STRUCTURE.

a. Paragraph (c) of § 25.1823 requires TC holders to identify and make available a list of structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure. This structure is referred to as “fatigue critical structure”. Guidance for identifying this structure can be found in AC 25.571-1C, “Damage Tolerance and Fatigue Evaluation of Structure,” dated April 29, 1998, or latest version. When fatigue critical structure is repaired it requires DTE to comply with the AASFR. This includes repairs to alterations of fatigue critical structure. A fatigue critical structure list will be included as part of the Compliance Document.

b. When identifying fatigue critical structure, it is not sufficient to consider only that structure contained in the SSID or ALS. Some SSIDs or ALSs might only include supplemental inspections of critical elements of the fatigue critical structure, as determined by the damage tolerance analysis. Other areas of structure may require supplemental inspections if repaired.

c. The STC Holder, based on the information available from the TC holder, should identify how his alteration affects the baseline FCS and provide that information in a separate document. Further the STC Holder should identify the extent to which his alteration affects the baseline FCS where repairs installed in this affected area will require him to develop DT data for those repairs.

d. For compliance with § 25.1823(c), TC holders must develop a list of fatigue critical baseline structure, and submit it to the FAA Oversight Office for review and approval no later than 90 days after the effective date of the rule. Upon approval, the TC holders must make the list available to persons required to comply with § 25.1827 (STC holders) and §§ 121.1109 and 129.109 of the AASFR (operators). This list should also be included in the compliance document.

204. CERTIFICATION AMENDMENT LEVEL.

In order to understand what data is required for compliance with the AASFR, the TC holder should identify the amendment level of the original certification relative to 14 CFR Part 25.571. The amendment level is useful in identifying what DT data may be applicable and what standard should be used for developing of DT data for AASFR compliance. The two airplane groups that are relevant to the AASFR are:

a. Group A - Airplanes certified before 14 CFR 25.571 Amendment 25-45, damage tolerance requirements. These airplanes were not evaluated for damage tolerance as part of the original type certification. Therefore, the requirements of the AASFR are beyond the scope of the original certification amendment level. Repairs to fatigue critical structure will need development of DT data unless previously accomplished.

b. Group B - Airplanes certified to 14 CFR 25.571 Amendment 25-45 or beyond. Repairs to these aircraft will need to meet their certification level. Although these airplanes were evaluated for damage tolerance, they may not have repair data that includes DT data. In this situation, the DAH and operators may need to identify and perform a DTE of these repairs and develop DTI or other procedures.

205. REVIEW OF EXISTING DT DATA.

a. Introduction. The DAH, in support of his product, publishes a number of different documents that may provide the necessary DT data for AASFR compliance. Each of these documents will need to be reviewed to determine if that data exists. These documents typically include:

- **(1)** Repair Assessment Guidelines (RAG)
- **(2)** Structural Repair Manual
- **(3)** Individual Repairs
  - **(a)** To areas covered by ALS, SSIP and RAP
  - **(b)** Other individual repairs
- **(4)** Service Bulletins that provide
  - **(a)** Inspections for RAMs
  - **(b)** Significant modification or
  - **(c)** Repair service bulletins
- **(5)** Airworthiness Directives (ADs) that mandate
  - **(a)** Modifications or repairs
  - **(b)** Inspections to STCs

Review each of the items above to determine the applicability of the data for compliance with the AASFR.

Repairs With Existing DT Data. Repairs, including those in Service Bulletins, published in existing TC holder documents that have FAA approved DT data form a portion of the data required for compliance with the AASFR. These repairs should be documented in the Compliance Document. In addition, the following model specific documents may contain additional data that supports compliance to the AASFR:

(1) Repair Assessment Guidelines (RAGs). The programs developed for complying with §§ 121.1107 and 129.107 (previously designated as §121.370 and 129.32) resulted in model specific RAGs. These documents provide support in complying with the AASFR for repairs to the fuselage pressure boundary. Additionally, under certain circumstances, the RAG documents developed may be applicable to repairs to STC's that are embodied on the fuselage pressure boundary.

(2) Service Bulletins (SBs) and Airworthiness Directives (ADs). Review Service Bulletins and ADs that provide instructions to inspect, or repair fatigue critical structure. Determine if it supports compliance with the AASFR. The DAH should propose a process for reviewing these documents.

(3) Structural Repair Manuals (SRMs). The Structural Repair Manual may contain some of the information required for compliance with the AASFR and other existing programs, such as the SSIP and RAP. Review SRMs to identify all repairs to fatigue critical structure and if those repairs have had established DT data.

206. DEVELOPMENT OF ADDITIONAL DT DATA TO SUPPORT COMPLIANCE.

a. Introduction. Damage tolerance inspections and procedures means establishing the following maintenance requirements for repairs:

(1) A threshold for when to commence inspections of the structure.

(2) A repetitive interval for repeat inspections

(3) A method of inspection.

(4) Occasionally, a life limit for replacing structure.

b. Repair Categories and Associated Maintenance Requirements.

(1) For repairs, the following repair category terminology from AC 120-73 is used to assist in describing the maintenance requirements.

(a) *Category A*: A permanent repair for which the BZI is adequate to ensure continued airworthiness (inspectability). The operator's approved maintenance or inspection program must be at least as rigorous as the BZI.

(b) Category B: A permanent repair that requires supplemental inspections to ensure continued airworthiness.

(c) Category C: A temporary (time-limited) repair that will need to be reworked or replaced prior to an established time limit. Supplemental inspections may be necessary to ensure continued airworthiness prior to this limit.

(2) For each of the identified repair categories, the following maintenance requirements would be needed.

(a) For Category A repairs, normal maintenance procedures (inspection threshold and /or BZI) are sufficient to provide the required damage tolerance coverage.

(b) For Category B repairs, items 1, 2, and 3 above are normally provided as part of the damage tolerance package.

(c) For Category C repairs, all four items are provided as necessary.

c. Analysis Standards and Repairs to be Evaluated

(1) Development of DT data, requires the use damage tolerance requirements dependant on the certification level of the affected airplane. For Group A airplanes use the requirements of 14 CFR 25.571 at Amendment 45 as a minimum standard. For Group B airplanes use the requirements that correspond to their original certification level as a minimum standard.

(2) For each of the following, the TC holder, or the DAH (for an alteration) should develop DT data according to the minimum standard determined in (1) above:

(a) SRM Repairs.

(b) SB Repairs.

(c) AD Mandated Repairs.

(d) TC holder reviewed and approved repairs that have general interest (multiple airplane approvals).

(e) Other repairs, including third-party approved repairs, repairs to alterations or alteration affected structure and repairs that deviate from published repairs that otherwise qualify as damage tolerant.

(3) For future repairs, damage tolerance evaluation on an individual repair basis is acceptable. However, it may be more efficient to use published repair instructions such as SRMs or RAGs that contain already approved DT data. For published repair data to be acceptable, it must be FAA Approved and it should contain a statement that

DTE has been accomplished, and the data should include any DTI resulting from the DTE.

(4) For existing repairs that are identified during an individual airplane survey, there are at least two possible approaches to evaluate a repair. The first would involve a damage tolerance analysis on individual repairs as those repairs are identified. This will be necessary for unique and complex non-routine repairs. Another approach would be to develop guidelines to assess repairs that are not addressed by existing RAGs developed for compliance with 14 CFR 121.1107. The development of these additional guidelines is complex and therefore requires the support of the TC holder.

d. Performing DTEs and developing DTI on a case-by-case basis. If performing DTEs and developing DTI on a case-by-case basis, use the guidance included in AC 25.571 consistent with the certification amendment level identified in Chapter 2, paragraph 204 of this AC.

e. Development of additional repair assessment guidance. The update of the SRM, SBs, together with the existing RAG documents, forms the core of the information supplied to the operator for compliance with the AASFR. A means will be developed and documented in the compliance document to assist the operator in evaluating repairs using the updated published standards and to determine if additional DAH support is necessary. This support may be in the form of individual repair DTA data requests or new repair evaluation guidelines (e.g. may cover fatigue critical structure of the wing, fuselage, empennage, etc.). The means developed should provide operators with a high degree of confidence that they can comply with the requirements of the AASFR.

In the development of new evaluation guidelines, the percentage of existing repairs that could be addressed by the new repair guidance material should weighed against the resources and time required to develop and have the guidance approved. General guidance on development of this material can be found in AC 120-73, “Damage Tolerance Assessment of Repairs to Pressurized Fuselages,” December 14, 2000. Even though this guidance is for the Fuselage Pressure Boundary, it can also be used for structure that is susceptible to fatigue cracking.

f. SRMs. Based on the review described in paragraph 205 of the AC, determine if the SRM needs revising to support compliance with the § 25.1823(d). In determining the extent by which an SRM may need to be revised for compliance with § 25.1823(d), consider the following:

(1) Whether the existing SRM contains an adequate description of damage tolerance data for the specific model. This includes defined repair categories.

(2) Whether normal maintenance procedures (e.g. the inspection threshold and/or baseline zonal inspection program) cover Category A repairs.

(3) Whether the SRM contains an identification of fatigue critical structure for the model specific airplane that, if repaired, will need a damage tolerance assessment.

(4) Whether SRM Chapter 51 standard repairs have a DT evaluation.

(5) Whether all SRM specific repairs for fatigue critical structure have DT Data.

(6) Whether there is specific guidance on the size of repairs that would qualify as Category A repairs.

(7) Whether there is any guidance on proximity of repairs and the effect of this condition on damage tolerance characteristics.

(8) Whether superseded repairs are addressed and how DT data for future superseded repairs will be made available.

g. Service Bulletins. Based on the review performed in paragraph 205 of this AC, determine if the SBs need DT data to support compliance with the AASFR. Compliance Document needs to identify the status of the DT data for those service bulletins. A Service Bulletin review process is provided in Appendix 9 to assist the TC holder in determining which SBs require review.

207. IMPLEMENTATION SCHEDULE.

The implementation schedule described in this Paragraph represents an acceptable time line to establish DT data and continued airworthiness maintenance plans for both existing and new repairs. Justify any deviation to the time line and present it to the FAA oversight office for approval. Include the information contained in this chapter in the Compliance Document to support the operator in developing an implementation plan for his particular fleet of airplanes. This Implementation Schedule will support compliance to 14 CFR 121.1109 (1) with respect to the requirement to address the adverse effects repairs have on fatigue cracking and the inspection of fatigue critical structure. In principle this implementation schedule is similar to the implementation schedule adopted for compliance to 14 CFR 121.1107.

a. Existing repairs that already have DT data developed and in place in the maintenance program. These repairs require no further action.

b. Existing repairs that either require developing DT data or have not had ICA embodied in the maintenance program. Identify and evaluate all existing repairs to fatigue critical structure. For the purposes of compliance to the AASFR, only existing repairs that reinforce (e.g. restore strength) the fatigue critical structure need to be considered; this typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc. For those existing repairs that do not have DT data or other procedures implemented, establish that data according to an FAA approved plan. Assessing existing repairs consists of:

- Airplane Repair Survey.

- Identification and Disposition of repairs requiring immediate action.
- DTI Development.

Appendix 5 defines these three steps. The timing allowance for each of these steps for any given airplane depends on the age of the airplane on December 18, 2009. The following program will support the DAH development of an Implementation Schedule for the Compliance Document. This implementation schedule would be incorporated as part of the Operator's Implementation Plan developed in Chapter 3 of this AC.

(1) Implementation Schedule for Survey and Disposition.

(a) Airplanes less than 75% DSG on December 18, 2009. Operators would complete a survey at the first D-check after 75% DSG, not to exceed DSG, completing steps 1 and 2 of the DTI assessment process (see Appendix 5). After accomplishing step 1, complete step 3 of Appendix 5 within 12 months.

(b) Airplanes between 75% DSG and DSG on December 18, 2009. Operators would complete a survey of these airplanes completing steps 1 and 2 of the DTI assessment process (see Appendix 5) at or before the next major check (equivalent to a D-check) after December 20, 2010, not to exceed DSG or 6 years whichever is greater. After accomplishing step 1, complete step 3 of Appendix 5 within 12 months.

(c) Airplanes greater than the DSG on December 18, 2009. Operators would complete a survey of these airplanes completing steps 1 and 2 of the DTI assessment process (see Appendix 5) at or before the time limit equivalent to a D-check after December 20, 2010, not to exceed 6 years. Operators should not defer the implementation of the program until the end of the D-check time period. For example, if an operator had 30 airplanes over DSG on December 18, 2009 and was operating on a six year D-check equivalent, the operator would inspect approximately 5 equivalent airplanes each year until all of the airplanes were inducted into the program. Within 12 months after accomplishing Step 1, complete step 3 of Appendix 5.

NOTE: The DAH will identify the established DSG for a particular airplane type that is representative of the airplane considering the probable variation of the number of flight hours per cycle that could exist in the fleet.

(2) Implementation of DTI.

(a) Once the DTI is known, accomplish the first inspection of the repair according to the schedule of the DTI as follows:

i Inspect the repair before the inspection threshold or within a time limit equivalent to a C-check from accomplishment of the assessment, whichever occurs later.

ii If the age of the repair is unknown, use the aircraft age in cycles or hours.

(b) Implement repeat inspection intervals per the instructions provided.

d. New Repairs. Unless already required by the airplane certification level or other FAA approved program, all new repairs to fatigue critical structure installed beginning December 21, 2010, and thereafter must have DTE performed. Implement DTI according to the process described in Appendix 5, "Approval Process for New Repairs". This includes blendouts, trim-outs, etc. that are beyond published DAH limits.

e. Repairs to Removable Structural Components. Fatigue critical structure may include structure on removable structural parts or assemblies that can be exchanged from one aircraft to another such as door assemblies, flight control surfaces, etc. In principle, the DT data development and implementation process also applies to repairs to fatigue critical structure on components. During their life history, however, these parts may not have had their flight times recorded on an individual component level because of removal and reinstallation on different airplanes multiple times. These actions may make it impossible to determine the age or total hours/cycles. In these situations, guidance for handling DT data development and implementation for existing and new repairs is given in Appendix 6.

208. FAA ACO APPROVAL OF COMPLIANCE DOCUMENT.

The FAA oversight office for the affected airplane or STC will approve the Compliance Document and any revision to an FAA-approved Compliance Document.

209. TCH DOCUMENT AVAILABILITY

The TCH will make available such documents as specified in 14 CFR 25.1823 to owners, operators and STC Holders.

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CHAPTER 3. ALTERATIONS – DESIGN APPROVAL HOLDER TASKS

300. GENERAL INFORMATION ABOUT THIS CHAPTER.

This chapter gives guidance to design approval holders for developing data to support operator compliance with § 121.1109 and 129.109.

301. ESTABLISHING A MEANS OF COMPLIANCE FOR ALTERATIONS

a. To facilitate compliance with the AASFR with respect to alterations, a means of compliance should be developed to address alterations that affect fatigue critical structure. The means of compliance will be applicable to a specific alteration and should provide the data necessary for developing, in part, an Operator Implementation Plan with respect to the fleet of airplanes operated by a particular operator.

b. The operator would need to show that the required maintenance actions are included in his operational specification. This will be done by the preparation of an Operator Implementation Plan (OIP) (See Chapter 4). The OIP will contain data developed from the activities required to support compliance with 14 CFR 25.1823, 25.1825 and 25.1827 which will provide a comprehensive plan to accomplish the required maintenance actions. For each affected alteration the DAH should provide the following:

1. DT data established as part of the original certification of the alteration, if it exists.

2. Data that would show that the alteration itself did not create fatigue critical details.

3. DT data for the fatigue critical details of the alteration if it did not already exist.

4. DT data for the baseline fatigue critical structure affected by the alteration, if any.

5. DT data for the fatigue critical structure of the alteration itself, if any.

6. An implementation schedule for fatigue related inspections, if any.

7. A means of compliance approved by the cognizant ACO:
    i. A change to the original alteration approval documentation that details all of the necessary maintenance actions.
    ii. A Service Bulletin that details all of the necessary maintenance actions.
    iii. A Compliance Document
    iv. A Letter from the DAH that demonstrates compliance.

c. Where specific DT data needs to be developed to support compliance to the AASFR, it is recommended that the Compliance Document be produced as a joint effort between the DAH and operators.

d. Figure 2 shows the process that may be used to determine a specific means of compliance that supports and operator's compliance with the AASFR for alterations to fatigue critical structure:

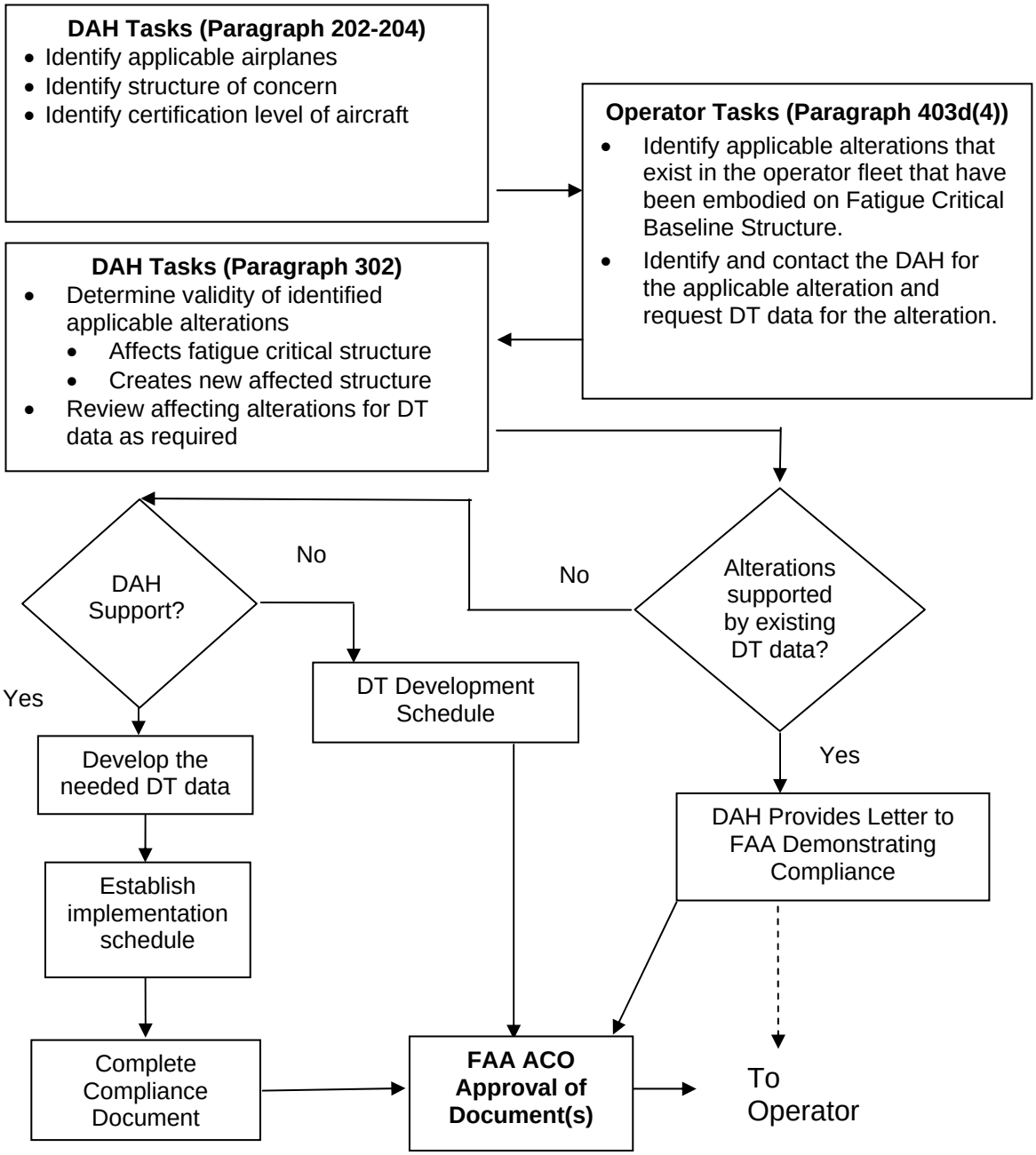

Figure 2 – Development of a Means of Compliance for Alterations

302. DAH Tasks

a. Identification Of Affected Airplanes And Fatigue Critical Structure. The TC Holder will develop model specific data detailing the structure that is fatigue critical and the 14 CFR 25.571 Amendment level that should be used to develop the DT Data (Paragraphs 203 and 204). This data will be presented to the FAA as required under 14 CFR 25.1823. The list of FCS will be made available to the operators. The DAH will need this data to perform his task. The DAH may obtain the data directly from the TC Holder, the operators or develop his own data. If the DAH develops his own data that data should be submitted it to the FAA Oversight Office for approval. This is the first step in the process.

b. Certification Amendment Level. The certification amendment level to be used for determining DT data for a specific existing alteration should be the same certification level established for the assessment of repairs and repairs to alterations. For certification of new alterations, the Changed Product Rule (14 CFR 21.101) may require the latest 14 CFR 25.571 amendment level to be used.

c. Identification of Alterations To Be Considered. There are three categories of alterations that may be installed on a transport category airplane. All three of which may require the development of DT data:

1) **Supplemental Type Certificates (STCs)** – STCs are normally developed by persons other than the Type Certificate Holder (TC Holder). They are approved by the FAA under Subpart E of 14 CFR 21.

2) **TC Holder alterations** – these are alterations that are developed and approved by the TC Holder, either through an Amended Type Certificate approved by the FAA under Subpart I of 14 CFR 21, or through FAA-approved service documents such as Service Bulletins

3) **Individual alterations** – these are alterations that are developed by and for an operator and are approved through individual FAA Forms 337 or other means acceptable to the Administrator.

d Specific Alterations To Be Considered. The DAH should consider alterations he owns that fall into anyone of the categories Listed in Appendix 11:

e. Determination of alterations that need DT Data. Using the guidance provided in AC 25.571-1x and the detailed knowledge of the alteration and it's effect on the baseline structure, the DAH should consider the following situations in determining what DT Data needs to be developed for compliance to the AASFR:

1) **Alterations that affect fatigue critical structure.** Any alteration defined in d above that is installed on baseline fatigue critical structure must be evaluated regardless of the size or complexity of the alteration. In addition, any alteration which indirectly affects baseline fatigue critical structure (for example, alterations which change the fatigue loads environment affect the inspectability of the structure, etc.) must also be evaluated.

2) **Alterations that create new fatigue critical structure.** Any alteration that creates new fatigue critical structure (as defined in AC 25.571-1x) must be evaluated regardless of the size or complexity of the alteration. Examples of this type of alteration may be an alteration that adds new structural splices, or which increases the operational loads causing existing structure to become fatigue critical.

3) **Repairs to Alterations or repairs to FCS affected by the alteration.** Repairs incorporated on an alteration determined to either affect FCS or create FCS should be analyzed to determine if DT data is required.

f. Review Affecting Alterations For Existing DT Data. Based on the 14 CFR 25.571 certification amendment level and other existing rules, the alteration's approval documentation may provide DT data to support compliance with the AASFR.

The DAH will identify alterations that have existing FAA Approved DT data that will support compliance with the AASFR. Acceptable DT data would contain a statement of DTE accomplishment and be FAA approved. Existing FAA Approved DT data should be made available to the operators by suitable means (e.g. STC Amendment etc).

Alterations that have been developed by a TC Holder may affect fatigue critical structure. These include Amended Type Certificates (ATCs) and in some cases Supplemental Type Certificates. These changes to type design also require a review for data needed for compliance to the AASFR.

g. Development Of Additional DT Data To Support Compliance. The DAH for the alteration is responsible for the development of the required DT data to support compliance with the AASFR.

There are four possible scenarios:

a. **The DAH no longer exists.** In some cases, the STC may have been surrendered to the FAA, or;

b. **The DAH exists but is unable or unwilling to develop the DT data.** The DAH may not have the resources available to develop the data, or may be unwilling to commit the resources to do so, or;

c. **The DAH exists and will provide the DT data, or;**

d. **The DT data already exists and is available.**

The DAH would use the guidance in AC 25.571-1x consistent with the certification amendment level of the affected airplane to identify which areas of the alteration require assessment as fatigue critical structure. The minimum certification amendment level for a specific alteration is identified in Paragraph 204.

With reference to the three categories of alterations described in Paragraph 302c, the DT data may be published as follows:

1) **Supplemental Type Certificates (STCs)** – The additional DT data for existing alterations may be published in the form of an amended STC, a supplemental compliance document, or an individual approval.

2) **TC Holder alterations** – The additional DT data for existing alterations may be published in the form of an amended TC, TC Holder Service Information, etc.

3) **Individual alterations** – Unless previously accomplished, the operator shall obtain DT data for existing individual alterations to fatigue critical structure. For those existing individual alterations that do not have DT data or other procedures implemented, establish the DT data according to an FAA approved plan (See Paragraph 304). One means of compliance may be to publish a revision to the individual alteration that contains the DT data.

303. Implementation Schedule.

The implementation schedule contained in this paragraph represents an acceptable time line to establish DT data and continued airworthiness maintenance plans for both existing and new alterations. Any deviation to the time line must be justified and presented it to the FAA Oversight Office for approval. The information contained in this chapter should be included in the OIP for their particular fleet of airplanes.
a. Acceptable Compliance Timeline for STCs, TC Holder Alterations, and Individual Alterations

1) Existing alterations installed prior to December 20, 2010.

i. The DAH is supporting the AASFR Requirements

The DAH will provide DT data for their alteration by December 18, 2009.

Operators will have until December 20, 2010 to incorporate that DT data into their maintenance program.

ii. The DAH has not developed the DT data, and they will not or cannot develop the data by December 18, 2009.

The operator shall provide a DT development schedule to obtain DT data and incorporate this into the implementation plan no later than December 20, 2010. The DT data should be available no later than December 20, 2012, or prior to the airplane reaching 75% DSG, whichever occurs later. The

operator will incorporate the DT data into their maintenance program no later than 12 months from FAA approval of the data.

iii. The alteration identified during airplane survey.

For those alterations that were not identified via a records review in paragraph i. or ii. above, they may be found during the survey for repairs. In this case the operator has 24 months from time of discovery to obtain the DT data and incorporate the data into their maintenance program.

For Subparagraphs (ii) and (iii), once the DT data is developed for the alteration on the first airplane, the data may be applicable to another airplane in their fleet with the same alteration.

2) Any alteration installed after December 20, 2010 that affects or creates FCS, must have DT data to comply with AASFR.

3) Implementation of DTI.

Accomplish the first inspection of the alteration according to the schedule of the DTI as follows:

i. For airplanes which have not reached the implementation threshold for the DTI, accomplish the first inspection of the alteration before the inspection threshold or within a time limit equivalent to a BZI C-check interval from incorporation of the DTI into the operator's approved maintenance program, whichever occurs later.

ii. For airplanes which are beyond the implementation threshold for the DTI, accomplish the first inspection within a time limit equivalent to a BZI C-check interval from accomplishment of the assessment.

iii. If the age of the alteration is unknown, use the aircraft age in cycles or hours as applicable.

iv. Implement repeat inspection intervals per the instructions provided.

304. DAH Compliance Documentation.

For those alterations where the DAH is supporting their alteration, this Paragraph provides guidance for how to provide compliance documentation for that alteration to support operator compliance to the AASFR.

If the DAH already has FAA-approved DT data for the required 14 CFR Part 25.571 Amendment Level, the DAH should submit a letter to the FAA Oversight Office that details the status of the Alteration with respect to damage tolerance. In addition, if the DAH makes the determination that the standard maintenance program defined by the BZI is sufficient for the continued airworthiness of the alteration, he should submit such a finding on FAA Form 8110-3, or equivalent, to the FAA Oversight Office.

If DT data has to be developed to support compliance to the AASFR, a Compliance Document must be developed and submitted to the FAA Oversight Office for approval. The Compliance Document should contain the following information:

a. A description of the alteration (define contents, e.g. gross weight limits);
b. The applicable airplane(s) and the affected fatigue critical structure (Paragraphs 202 and 203 of this AC);
c. The 14 CFR 25.571 certification level used for determining the DT data (Paragraph 204 of this AC);
d. The DT data for the alteration (Paragraph 302g of this AC);
e. An implementation schedule for incorporating the DT data (Paragraph 303 of this AC)

For an alteration where specific DT data needs to be developed to support compliance to the AASFR, it is recommended that the compliance documentation be produced as a joint effort between the DAH and operators where possible.

305. DT DEVELOPMENT SCHEDULE WHERE DAH DOES NOT SUPPORT THE OPERATOR

For those alterations where the DAH does not support their alteration, this Paragraph provides guidance for an operator to produce a DT Development Schedule for that alteration to support compliance to the AASFR. The DT Development Schedule should contain the following information:

a. A description of the alteration;
b. The applicable airplane(s) and the affected fatigue critical structure (Paragraphs 202 and 203 of this AC);
c. The 14 CFR 25.571 certification level to be used for determining the DT data (Paragraph 204 of this AC);
d. The plan to obtain the DT data for the alteration (Paragraph 302g of this AC)
e. The schedule to incorporate the DT data once it is received (Paragraph 304 of this AC)

306. FAA OVERSIGHT OFFICE APPROVAL.

For the DAH Compliance Document, the FAA oversight office for the alteration will approve the Compliance Document and any revision to an FAA-approved Compliance Document.

For the DT Development Schedule, the FAA Oversight Office for the alteration will approve the Development Schedule. After the DT Development Schedule is approved, the operator will obtain the necessary DT data via an FAA Form 8110-3 or equivalent within the time period agreed upon.

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CHAPTER 4. OPERATORS IMPLEMENTATION PLAN - OPERATOR TASKS

400. GENERAL INFORMATION ABOUT THIS CHAPTER.

This Chapter will guide operators on the procedures to obtain damage tolerance inspections and procedures. This Chapter will additionally guide operators on how to revise their maintenance programs as required by 14 CFR 121.1109 and 129.109.

401. DEVELOPMENT OF AN OPERATORS IMPLEMENTATION PLAN (OIP)

The AASFR requires affected air carrier certificate holders to incorporate FAA-approved DTE Processes and DTI into their maintenance programs by December 20, 2010 for repairs and alterations to fatigue critical structure. This includes processes for both existing and new repairs, and alterations of fatigue critical structure. The means of incorporating DT data into a certificate holder's FAA-approved maintenance program is subject to approval by the certificate holder's Principal Maintenance Inspector (PMI) or other airworthiness inspector. The compliance documents developed using Chapters 2 and 3 of this AC provides the basic information required, including identification of the fatigue critical structure, DT data and implementation schedule information.

Operators should develop an OIP that integrates the processes, data and requirements from the Compliance Document(s) and/or DT Development Schedule(s) developed using the guidance in Chapters 2 and 3. The OIP will be submitted to the PMI or other airworthiness inspector for review and approval. PMI Approval of the OIP for the airplanes affected constitutes compliance to the AASFR rule.

402. REVIEW OF APPLICABLE COMPLIANCE DOCUMENTS.

a. For each affected airplane in an operator's fleet, the operator should review the FAA Oversight Office-approved Compliance Documents (discussed in Chapters 2 and 3) that are applicable. The Compliance Document will identify all fatigue critical structure, the DT data for the fatigue critical structure, and implementation schedule information for incorporating DT data into the operator's maintenance program.

b. In addition, the operator should review any additional FAA Oversight Office approved Compliance Documents associated with a given model aircraft, for repairs, repairs to repairs and alterations, third-party approved repairs and alterations installed on their airplanes. These may be applicable to the entire model fleet or to individual aircraft within a given fleet type. These Compliance Documents will also identify fatigue critical structure for that fleet type, the DT data for the fatigue critical structure, and implementation schedule information for incorporating DT data into the operator's maintenance program.

403. CONTENTS OF AN OPERATOR'S IMPLEMENTATION PLAN

a. Figure 3 outlines one possible means an operator can use to develop an Operator's Implementation Plan for airplanes in their fleet.

b. The operator should include the following in the OIP:

(1) A process to ensure that all new repairs and alterations to fatigue critical structure will have DT data and have DTI or other procedures implemented.

(2) A process to ensure that all existing repairs and alterations to fatigue critical structure are evaluated for damage tolerance and have DTI or other procedures implemented. This process would include:

(a) A review of operator processes to determine if DT data for repairs and alterations affecting fatigue critical structure have been developed and incorporated into the operator's maintenance program throughout the life of the airplane. If an operator is able to demonstrate to its PMI that these processes ensure that DT data is developed for all repairs and alterations affecting fatigue critical structure, then no further action is required for existing repairs and alterations. For repairs and alterations with existing DT-based Instructions for Continued Airworthiness, the Operator's Implementation Plan should provide a cross-reference showing where the DT data for that alteration exists within the operator's FAA-approved maintenance program.

(b) A process that an operator can use to identify or survey existing repairs and alterations that affect fatigue critical structure and determine DTI for those repairs and alterations. This process should include an implementation schedule that incorporates the DT data into the operator's maintenance program within the timeframe given in the Compliance Document.

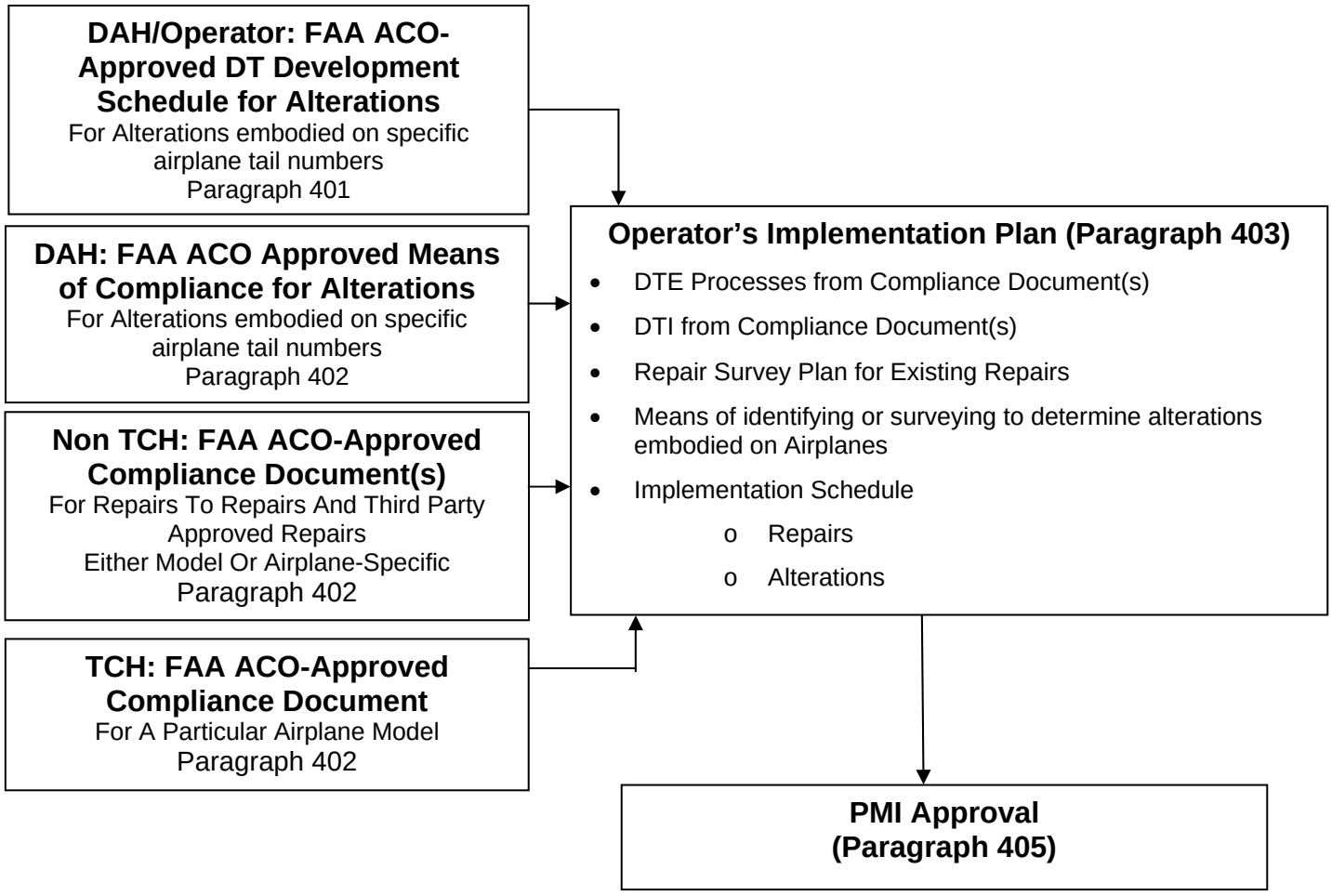


Figure 3. Operator's Implementation Plan Approval Process

c. Implementation Plan for Repairs.

(1) Repair Survey Plan. The OIP should contain a repair survey plan using the survey parameters from chapter 2 above to identify repairs that may need DT data developed. This survey plan may be divided into three groups of airplanes, those that are below 75% DSG, those that are between 75% DSG and DSG and those above DSG on December 18, 2009. (Note: In the following three-implementation plans, DSG is in cycles.) Examples of typical calculations to determine when an airplane would need to be surveyed are contained in Appendix 7.

(a) For an airplane that has not reached 75% DSG on Dec. 18, 2009. The operator must perform the survey at the first heavy maintenance check (equivalent to a D-check) after 75% DSG, not to exceed DSG. A heavy maintenance check (D-check or equivalent airplane inspection) means an airplane maintenance visit where all the major structural inspections are performed. In some cases this may be a formal D-check or, in the case of MSG-2 or -3 based maintenance program, the D-check equivalent may be the C-check multiple that contains the majority of the major structural inspections such as a “C-4” check which is sometimes called a Heavy Maintenance Visit (HMV).

(b) For an airplane that has reached 75% DSG but is less than or equal to DSG on Dec. 18, 2009. The operator should perform the survey at the next heavy maintenance check, not to exceed DSG or 6 years, whichever occurs later.

(c) For an airplane that has exceeded DSG on December 18, 2009, the survey should be accomplished at or before the next heavy maintenance check, not to exceed 6 years. The OIP should have a procedure in place to prorate airplane surveys in order to evenly spread out the surveys that need to be accomplished over a six-year time frame. Operators should not defer the implementation of the program until the end of the D-check time period. Rather they should evenly distribute the surveys over the 6-year period, with the high time airplanes being surveyed first. For example, if an operator has 30 airplanes over DSG on December 18, 2009, and is operating on a 6-year D-check equivalent, the operator would inspect approximately 5 equivalent airplanes each year until all of the airplanes were inducted into the program. The highest time airplanes should be inspected first (e.g., using the above example of 30 affected airplanes, the 10 highest time airplanes should be surveyed in the first two years.

d. Implementation Plan for Alterations:

(1) The OIP should contain a process to review records and produce a list of those alterations on their airplanes which affect fatigue critical structure. For each applicable alteration, the process should document the means of compliance for incorporating DT data associated with that alteration, whether through a DAH Compliance Document, an

operator's DT Development Schedule, or existing DT-based Instructions for Continued Airworthiness.

(2) The Operator's Implementation Plan should contain the process for when and how to obtain the DT data for those alterations included in a DT development schedule, and a means of ensuring that the airplane will not be operate past the time limit established for obtaining the DT data.

(3) The Operator's Implementation Plan should contain the DT data associated with each Alteration included in a Compliance Document. The implementation plan should identify how the DT data will be incorporated into the operator's FAA-approved maintenance program.

(4) In parallel with the DAH tasks (see Paragraph 302), the operator should identify the alterations that exist in his fleet of airplanes. This may be done by review of airplane configuration records. In the process, the DAH of each specific alteration should be identified. The operator should then establish which alterations have been installed on or likely affect Fatigue Critical Baseline Structure and prepare a list of alterations by airplane.

The list of alterations can be developed using the steps below.

i. Compile a listing of all alterations that are currently installed on their fleet;
ii. Delete from the listing those alterations in which the airplane or fleet is no longer in operation;
iii. Delete from the listing those alterations that do not affect fatigue critical structure (FCS). The FAA approved compliance documents from the TC Holder identifies the FCS. Examples of alterations that do affect fatigue critical structure are provided in Paragraph (5) below.
iv. Include in the list those alterations that affect FCS, but have since been removed.
v. The remaining alterations that affect FCS on this list will require DT data.
vi. The operator must review each alteration to determine whether:
    a. The DT data already exists; or,
    b. THE DT data may need to be developed.
vii. The Operator should notify both the DAH and the FAA of the determination that STCs owned by the DAH exist on their fleet and that DT data is required for support of the AASFR per Paragraphs (6) and (7) below.
viii. The time frame for obtaining DT data and its incorporation into the maintenance program is specified in paragraph 303.

NOTE: The operator should begin developing this alterations list as soon as the TC Holder's make their FCS listing available.

(5) The operator should consider the list of alterations contained in Appendix 11 in determining which may affect fatigue critical structure on a model specific basis.

(6) The operator should provide a list of alterations he has on his active fleet to the FAA. The list should contain information relative to the DAH for each STC. The operator letter should also request the FAA to provide a status concerning the DT data available for each Alteration on his list (see Appendix 10 for a suggested format).

(7) The operator should also contact the DAH for the applicable alteration and ascertain the status of DT data for this alteration and if the DAH intends to support the development of DT data, if the data does not exist. If this alteration is likely to exist on other operator's fleets, the group of affected operators may wish to collectively meet with the DAH to assist in the determination of an appropriate means of compliance for the AASFR. If the DAH no longer exists or is unwilling to support the alteration, it becomes the responsibility of the operator(s) to develop the data, either internally, or by a third party. In this case, the operator would need to follow the tasks described in Paragraph 302 using the schedules of Paragraph 303 and the guidance contained in Paragraph 305 to develop the required information.

(8) Some individual alterations may not be readably identified through a review of maintenance records of the airplane. In these situations, one means of compliance is a plan to survey the airplane for alterations in the similar manner as repairs and repairs to alterations as given in Chapter 2. The DT data for those alterations identified in the survey would be developed and implemented into an operator's maintenance program according to the schedule identified in Paragraph 303.

e. DT Implementation Techniques. The OIP should specify incorporating the DTI as part of an operator's maintenance program. This technique would require the operator to choose an inspection method and interval using an FAA-approved DTE.

Use the regular FAA-approved maintenance or inspection program for repairs where the inspection requirements utilize the chosen inspection method and interval. Repairs or alterations added between the predetermined maintenance visits, including Category B and C repairs installed at remote locations, should have a threshold greater than the predetermined maintenance visit. It may also be individually tracked to account for the repair's unique inspection method and interval requirements. This would ensure the airworthiness of the structure until the next predetermined maintenance visit, when the repair or alteration would be evaluated as part of the repair maintenance program.

Category B or C repairs, where inspection requirements are not fulfilled by the chosen inspection method and interval, would need additional attention. These repairs would either require upgrading to allow utilization of the chosen inspection method and interval, or individually tracking to account for the repair's unique inspection method and interval requirements.

Note: DTI thresholds and repeat intervals for individual repairs or alterations cannot be exceeded without FAA approval.

404. EXISTING OPERATOR RESPONSIBILITIES.

a. Reporting Requirements. There are no added reporting requirements associated with the AASFR. However, the FAA encourages operators to report significant findings to the type certificate holders to ensure that prompt fleet action is taken. Existing reporting requirements under 14 CFR § 121.703 still apply.

b. Recordkeeping Requirements. Once the Operator receives approval for the Implementation Plan, include the list of the required inspections and their status in the records review requirements of §§121.368 and 129.33. Existing record-keeping requirements are still applicable.

c. Transfer of Airplanes after December 20, 2010. After December 20, 2010, before adding an airplane to an air carrier's operations specifications or operator's fleet, the following should apply:

(1) For airplanes previously operated under an FAA-approved maintenance program, the new operator may use either the previously PMI approved Operator Implementation Plan or their own earlier PMI approved Implementation plan.

(2) For airplanes not previously operated under an FAA-approved maintenance program, the operator develops and implements an Operator Implementation Plan.

d. Operation of Leased Foreign-Owned Airplanes. Acquisition of a leased foreign-owned airplane for use in operations under 14 CFR parts 121, or 129 will require the certificate holder to develop and implement an Operator's Implementation Plan.

e. Maintenance Program Changes. When revising a maintenance program, and the continued airworthiness of repairs and alterations to fatigue critical structure is dependent on that program, the operator must evaluate the impact of the change on continued airworthiness. For example, maintenance program inspection intervals such as those specified for BZI, are adequate to ensure the continued airworthiness of Category A repairs (see AC 120-73, Stage 2: Repair Classification). Therefore, if the maintenance program is revised in a manner that changes the inspection intervals, the operator must assess whether the new interval is adequate for classifying the repairs as Category A.

405. FAA PMI APPROVAL OF OPERATOR'S IMPLEMENTATION PLAN.

The certificate holder's Principal Maintenance Inspector (PMI) or other airworthiness inspector is responsible for approving the means for incorporation of the DT data for repairs into a certificate holder's FAA-approved maintenance program. An operation specification revision will show approval of the plan.

406. THRU 499 RESERVED.

CHAPTER 5. ADMINISTRATIVE REQUIREMENTS

500. ADVISORY CIRCULAR AVAILABILITY

HOW DO I GET A COPY OF THE PUBLICATIONS REFERRED TO IN THIS AC?

a. The CFR and those ACs for which a fee is charged may be obtained from the Superintendent of Documents at the following address. A listing of the CFR and current prices is located in AC 00–44, "Status of Federal Aviation Regulations," and a listing of all ACs is found in AC 00–2, "Advisory Circular Checklist."

Superintendent of Documents
P.O. Box 371954
Pittsburgh, PA 15250–7954

b. To be placed on our mailing list for free ACs contact:

U.S. Department of Transportation
Subsequent Distribution Office
M-30
Ardmore East Business Center
3341Q 75th Avenue
Landover, MD 20785

c. You may view and print the CFR and Aircraft Certification Service and Flight Standards Service ACs on the FAA Web page at http://www.airweb.faa.gov/rgl.

501. WHO DO I SUBMIT COMMENTS TO ABOUT THIS AC?

Submit direct comments regarding this AC to:

U.S. Department of Transportation
Federal Aviation Administration
Aircraft Maintenance Division, AFS-300
800 Independence Avenue SW.
Washington, DC 20591

502. thru 599. Reserved.

APPENDIX 1. REGULATORY AND GUIDANCE MATERIAL RELATED TO THIS AC

The following related documents are provided for information purposes and are not necessarily directly referenced in this AC. An electronic copy of the current revision levels of the following rules, ACs, and FAA Policy Statement that are noted by an (*) can be downloaded from the Internet at http://www.airweb.faa.gov/rgl.

1. Title 14 of the Code of Federal Regulations (14 CFR):

a. Part 21, §21.101, Designation of applicable regulations.*
b. Part 25, § 25.571, Damage-tolerance and fatigue evaluation. *
c. Part 25, § 25.1529, Instructions for continued airworthiness.*
d. Proposed Part 25, § 25.1823, Supplemental Inspections, Holders of type certificates—Repairs*
e. FAA Final Rule – "Fuel Tank Safety Compliance Extension and Aging Airplane Program" (69 FR 45936, July 30, 2004).*(revised text added from previous section 3. h.)
f. Part 43, § 43.13, Performance rules (general). *
g. Part 43, §43.16, Airworthiness Limitations.*
h. Part 91, § 91.403, General. *
i. Part 121, § 121.1105, Aging airplane inspections and records reviews.*
j. Part 121, § 121.1107, Special maintenance program requirements.*
k. Part 121, § 121.1109, Supplemental inspections. *
l. Part 129, § 129.109, Supplemental inspections for U.S.-registered aircraft.
m. Part 129, § 129.107, Special maintenance program requirements.
n. Part 129, § 129.105, Aging airplane inspections and records reviews for U.S.-registered multiengine aircraft.*

2. Advisory Circulars (AC):

a. AC 21.101-1, Change Product Rule*
b. AC 25.571-1C, Damage Tolerance and Fatigue Evaluation of Structure*(references to AC25.571-1A and –1B removed).
c. AC 25.1529-1, Instructions for Continued Airworthiness of Structural Repairs on Transport Airplanes*
d. Proposed AC 25.XX, Subpart I, Continued Airworthiness and Safety Improvements*
e. AC 91-56A, ('The Continued Airworthiness of Older Airplanes' has been removed) Continuing Structural Integrity Program for Large Transport Category Airplanes * (reference to AC91-56B has been removed)
f. AC 120-73, Damage Tolerance Assessment of Repairs to Pressurized Fuselages*

3. FAA Policy Statement: PS-ANM110-7-12-2005, Policy Statement, Safety – A Shared responsibility – New Direction for Addressing Airworthiness Issues for Transport Airplanes," issued July 6, 2005, effective July12, 2005.*

4. FAA Orders:

a. Proposed Order 8300.10 Rev. XX, Airworthiness Inspectors Handbook

b. Proposed Order 8110.XX, Continued Airworthiness and Safety Improvements, Responsibilities, Requirements, and Contents for Design Approval Holders

5. Other Documents referred to in this AC:

a. A Final Report of the AAWG – Continued Airworthiness of Structural Repairs**

b. A Report of the AAWG – Recommendations for Regulatory Action to Prevent Widespread Fatigue Damage in the Commercial Airplane Fleet**

c. A Report of the AAWG - Recommendations For Regulatory Action To Enhance Continued Airworthiness Of Supplemental Type Certificates

d. Air Transport Association (ATA) Report 51-93-01***

e. ATA Response to FAA Docket 1999-5401, dated May 5, 2003***

f. FAA-Approved, Model Specific, Repair Assessment Guidelines ****

g. FAA-Approved, Model Specific, Supplemental Inspection Documents****

** An electronic copy of the AAWG reports can be downloaded from the Internet at http://www.faa.gov.

*** Please contact the ATA. Air Transport Association of America, Inc., 1301Pennsylvania Avenue., NW, Suite 1100, Washington, DC 20004-1707; telephone (202) 626-4000.

**** Various manufacturers publish these documents. Please contact the applicable manufacturer regarding the general availability of the documents. The addresses are provided below.

- Airbus, 1 Rond-Point Maurice Bellonte, 31700 Blagnac Cedex, France
- The Boeing Company, P.O. Box 3707, Seattle, Washington 98124-2207
- Bombardier Aerospace, Bombardier Inc., 400 Cote Vertu West, Donval, Quebec, H4S 1Y9

- British Aerospace, British Aerospace Regional Aircraft American Support, 13850 Mclearen Road, Herndon, Virginia 20171

- Fokker Services B.V., P.O. Box 231, 2150 AE Nieuw-Vennep, the Netherlands

- Lockheed Martin Corporation/Lockheed Martin Aeronautics Company, Airworthiness Office, Dept. 6A0M, Zone 0252, Column P-58, 86 S. Cobb Drive, Marietta, Georgia 30063

APPENDIX 2. DEFINITIONS

a. Airplane structural configuration is the approved type certificate design, including the original; any model variations or derivatives; and alterations or replacements mandated by AD.

b. Airworthiness Limitations Section (ALS) is a collection of mandatory maintenance actions required for airplane structure and fuel tank system. For structural maintenance actions, the ALS includes structural replacement times, structural inspection intervals, and related structural inspection procedures.

c. Alteration or modification is an FAA-approved design change that is made to an airplane. Within the context of this AC, the two terms are synonymous.

d. Amended Type Certificate (ATC) is a process where the type certificate holder may modify the airplane and have the modification approved by amending the original type certificate under § 21.177.

b. Damage Tolerance Evaluation (DTE) is a process that leads to a determination of continuing airworthiness inspections and other procedures for a repair using damage tolerance procedures as defined in AC 25.571-1, 1A, 1B, or 1C.

c. DTE Documentation is data that identifies the evaluated fatigue critical structure, the basic assumptions applied in a DTE, and the results of a DTE.

g. Damage Tolerance Inspections (DTI) are inspections and other procedures developed as a result of a DTE. These include the location of the airplane structure to be inspected, the inspection method, the threshold and interval associated with those inspections, and corrective maintenance actions. In some cases the corrective actions may include replacement of structure.

h. Design Approval Holder (DAH) is a person that holds a type design approval for an airplane or any FAA-approved data necessary to repair, alter, or modify airplane structure.

i. Design Service Goal (DSG) is the period of time (in flight cycles or flight hours) established at design and/or certification during which the principal structure will be reasonably free from significant cracking.

j. Damage Tolerance data is DTE documentation and DTI needed by an operator to address repairs as required by the AASFR.

k. Federal Aviation Administration Oversight Office is the Aircraft Certification Office or office of the Transport Airplane Directorate having oversight responsibility for

the relevant type certificate or supplemental type certificate, as determined by the Administrator.

l. Instructions for Continued Airworthiness (ICA) are maintenance actions defined by the TC or STC holder in accordance with 14 CFR 25.1529 and delivered with the airplane in accordance with § 21.509. ICA are documented information that include the applicable methods, inspections, processes, procedures and airworthiness limitations.

m. Repair is the restoration of an item to a serviceable condition in conformity with an approved standard.

n. Repair Assessment Guidelines (RAG) is a document that provides a means to establish a damage tolerance based inspection program for repairs to detect damage that may develop in a repaired area before that damage degrades the load carrying capability of a structure below the levels required by the applicable airworthiness standards.

o. Repair Assessment Program (RAP) is a program to incorporate damage tolerance based inspections for repairs to the fuselage pressure boundary structure into the operator's FAA-approved maintenance and/or inspection program as required by § 121.1107.

p. Structures Task Group (STG) is a model specific group that consists of DAHs and operators responsible for the development of aging airplane model specific programs. It also includes regulatory authorities who approve and monitor those programs.

q. Supplemental Structural Inspection Program (SSIP) is a damage tolerance based inspection program. Structural Inspection Programs only address the structure identified by the type certificate holder using the guidance contained in AC 91-56.

r. Type Design consists of drawings and specifications; information on dimensions, materials, and processes; airworthiness limitations; and any other data necessary to describe the design of the product (see § 21.31).

APPENDIX 3. ACRONYMS USED IN THIS AC

AASA	Aging Airplane Safety Act
AASFR	Aging Airplane Safety Final Rule
AASIFR	Aging Airplane Safety Interim Final Rule
AAWG	Airworthiness Assurance Working Group
AC	Advisory Circular
ACO	Aircraft Certification Office
AD	Airworthiness Directive
ALI	Airworthiness Limitation Items
ALS	Airworthiness Limitations Section
ARAC	Aviation Rulemaking Advisory Committee
ATC	Amended Type Certificate
BZI	Baseline Zonal Inspection
DAH	Design Approval Holder
DSG	Design Service Goal
DT Data	Damage Tolerance Data
DTA	Damage Tolerance Assessment
DTE	Damage Tolerance Evaluation
DTI	Damage Tolerance Inspections
FAA	Federal Aviation Administration
FCS	Fatigue Critical Structure
ICA	Instructions for Continued Airworthiness
OIP	Operator's Implementation Plan
PMI	Principal Maintenance Inspector
PSE	Principal Structural Element
RAG	Repair Assessment Guideline
RAP	Repair Assessment Program
REG	Repair Evaluation Guidelines
SB	Service Bulletins
SRM	Structural Repair Manual
SSID	Supplemental Structural Inspection Document
SSIP	Supplemental Structural Inspection Program
STC	Supplemental Type Certificate
STG	Structures Task Group
TC	Type Certificate

APPENDIX 4. BACKGROUND

a. Structural fatigue is recognized as a significant threat to the continued airworthiness of airplanes. This is because even small fatigue cracks can significantly reduce the structural strength of airplane structure. Consistent with this the airworthiness standards for certification of new transport category airplanes for over 50 years have addressed fatigue with the intent of preventing catastrophic failures due to fatigue throughout the anticipated usage of the airplane. However, these requirements have not remained unchanged. They have evolved as the relevant knowledge base has increased. This knowledge includes service experience, specific incidents and accidents, and technological advances in designing, analyzing, testing, manufacturing, and inspecting airplanes.

b. One of the first significant changes in the standards occurred in March 1956 with revision of the Fatigue Evaluation requirements contained in CAR 4b.270. This revision added “Fail-safe strength” as an option to the “Fatigue strength” approach for addressing fatigue. Motivation for this change was the realization that precluding fatigue cracking from occurring might not always be possible and, therefore, as an option, the structure may be designed to survive cracking. The fatigue strength approach tries to achieve a design where fatigue cracking is not probable within the operational life of the airplane. The fail-safe approach assumed that cracking could occur, while maintaining a specified minimum strength after a “fatigue failure or obvious partial failure” had occurred. The efficacy of the fail-safe approach was not only dependent on the structure keeping the specified minimum strength with the fatigue damage present, but also on finding the damage during normal maintenance. As applied, the fail-safe approach emphasis is on redundancy as opposed to fatigue performance, and inspectability is assumed and not quantified. The fail-safe option was the predominate approach chosen for most large transport category airplanes certified in the 1960s and 1970s.

c. Another significant change in the airworthiness standards for fatigue occurred in October 1978 with Amendment 25-45, with the revision of § 25.571 and the deletion of § 25.573. This change involved removing the fail-safe option entirely and establishing a new requirement to develop damage tolerance based inspections wherever practical. The fatigue strength approach, as a default option, is used only if the damage tolerance approach is impractical. The motivation for the 1978 change is a recognition, based on mounting evidence, that the fail-safe approach applied up to that point was not reliable and would not achieve the desired level of safety. Specific areas of concern with the fail-safe approach included the loss of fail-safety with age. This is because of the increased probability of cracking in the structure adjacent to the fatigue failure, or obvious partial failure, and the lack of directed inspections and quantification of residual life with the assumed damage present. It was agreed at the time that more emphasis is needed on where and how fatigue cracking could occur in the structure, and on quantifying crack growth and residual strength characteristics. This includes damage tolerance characteristics and development of effective inspection protocols, such as

where, when, how, and how often to inspect. The 1978 changes achieved this for certification of new transport category airplanes.

d. The same events and reasoning that drove the changes to airworthiness standards for new airplanes also influenced the strategy adopted to ensure the continued airworthiness of the existing fleet. There was increasing concern about existing older airplanes certified according to the fail-safe requirements of CAR 4b.270. Eleven large transport models were specifically identified as needing the most attention. FAA determined a need to develop damage tolerance based inspection programs. These inspections supplement existing maintenance inspections, so these programs were referred to as SSIPs. The inspection requirements were documented in supplemental inspection documents (SIDs). It was also agreed that SIDs would be developed by the OEMs on a voluntary basis and then mandated by AD. The Civil Aviation Authority (CAA) for the United Kingdom published guidance for developing the SSIPs in Airworthiness Notice No. 89, "Continuing Structural Integrity of Transport Aeroplanes," dated August 23, 1978, and by the FAA published guidance for developing the SSIPs in AC No. 91-56, "Supplemental Structural Inspection Program for Large Transport Category Airplanes," dated May 6, 1981. Subsequently, SSIPs were developed and mandated by AD for the eleven aging model airplanes. In the development of the SSIDs little or no consideration was given to the effect of the repairs and alterations on inspections required for supplemental inspections. However, later revisions to some SSID ADs addressed supplemental inspection requirements for repairs and alteration to varying degrees.

e. In April 1988 one of the eleven aging model airplanes, suffered major structural damage to its pressurized fuselage structure because of undetected fatigue cracking of the baseline primary structure. That airplane had a SSIP that was mandated by AD. The accident was attributed, in part, to the aging of the airplane involved, and precipitated actions that culminated in regulations aimed at avoiding catastrophic failures from fatigue in existing and future airplanes.

f. In response to the April 1988 accident the FAA sponsored a conference on aging airplanes and established a task force representing the interests of the airplane operators, airplane manufacturers, regulatory authorities, and other aviation representatives. In addition, other recommendations from this task force specifically recommended consideration of damage tolerance for repairs. In direct response to these recommendations, the FAA adopted changes to parts 91, 121, 125 and 129 in April 2000. These required operators to incorporate damage tolerance based inspections for existing and future repairs to the fuselage pressure boundary for the eleven aging model airplanes previously identified. This did not address other model airplanes or repairs to other structure.

g. The April 1988 accident also precipitated Congressional legislation. In October 1991, Congress enacted Title IV of Public Law 102-143, the "Aging Airplane Safety Act of 1991" (AASA). Two key elements of the AASA are as follows:

(1) Required "the Administrator to make such inspections and conduct such reviews of maintenance and other records of each airplane used by an air carrier to provide air transportation as may be necessary to determine that such is in a safe condition and is properly maintained for operation in air transportation."

(2) Specified that an air carrier must be able to demonstrate, as part of the inspection, "that maintenance of the airplane's structure, skin, and other age sensitive parts and components have been adequate and timely enough to ensure the highest level of safety."

h. Although the AASA did not define specifics of what had to be done, the one clear intent was to avoid catastrophic failures because of fatigue throughout the operational life of each affected airplane. Consistent with this, and the damage tolerance requirements adopted in 1978 for new transport category airplanes, FAA initiated rulemaking that would require broader implementation of damage tolerance based structural inspection programs. This would apply to almost all multi-engine airplanes used in scheduled passenger service. Additionally, the intent was to address all structure where fatigue cracking could result in catastrophic failure.

i. In response to the AASA, FAA rulemaking efforts eventually resulted in the issuance of the Aging Airplane Safety Interim Final Rule (AASIFR) on December 6, 2002. This rule required implementation of damage tolerance based inspection programs for all airplanes operated under part 121 and 129 operations. The AASIFR was also applicable to all multi-engine airplanes engaged in part 129 or 135 operations that were initially certificated with 10 or more passenger seats by December 8, 2007. Airplanes operated between any point within the State of Alaska and any other point within the State of Alaska were exempt from that rule.

j. The AASIFR was subsequently amended and finalized on February 2, 2005, as the Aging Airplane Safety Final Rule (AASFR). The revised rule requires implementation of damage tolerance based inspection programs by December 20, 2010. This applies to airplanes engaged in part 121 or 129 operations with type certificated passenger seating capacity of 30 or more or a payload capacity of 7,500 pounds or more. Airplanes operated within Alaska remain exempt. Although the scope has been reduced, the AASFR still affects the majority of airplanes engaged in scheduled passenger service. Relative to damage tolerance based inspection programs, the AASFR raises the level of safety on the existing fleet of affected airplanes to the same level required for current transport category airplane type design approvals.

APPENDIX 5. APPROVAL PROCESS FOR NEW REPAIRS

In the past, AC 25.1529-1, "Instructions for Continued Airworthiness of Structural Repairs on Transport Airplanes," August 1, 1991, allowed a two-stage approach in approving repairs to principal structural elements. The two-stage approach consisted of:

- Type design strength requirements of § 25.305 before return to service
- Damage tolerance evaluation performed and DT data developed to demonstrate compliance with § 25.571 within 12 months of return to service.

The guidance material in AC 25.1529-1 is now embodied in this AC, and is modified to allow a three-stage approach now commonly used in the industry.

The DT data includes inspection requirements (i.e., inspection threshold, inspection method, and inspection repetitive interval) or other procedures (e.g., replacement/modification time) if inspections are shown to be impractical. The required data may be submitted all at once, prior to the airplane return to service, or it may be submitted in stages. The following three-stage approval process is available, which involves incremental approval of engineering data to allow an airplane to return to service before all the engineering data previously described is submitted. The three stages are described as follows:

a. The first stage is approval of the static strength data and the schedule for submittal of the DT data. This approval is required prior to returning an airplane to service. The submittal of the DT data should generally occur prior to 12 months after the airplane was returned to service.

b. The second stage is approval of the DT data. The DT data should be submitted in accordance with the schedule approved in the first stage. The DT data might only contain the threshold where inspections are required to begin as long as the operator can demonstrate that a process is in place to acquire the required inspection method and repetitive intervals before the threshold is reached. In this case, the submittal and approval of the remaining DT data may be deferred to the third stage.

c. The third stage is approval of the DT data not submitted and approved in the second stage. This would typically involve the inspection method and the repetitive intervals. This data would need to be submitted and approved prior to the inspection threshold being reached. Operation beyond the threshold would not be allowed unless the data is submitted to and approved by the FAA.

APPENDIX 6. ASSESSMENT OF EXISTING REPAIRS

A DTI assessment process consists of the following three steps:

1. Airplane Repair Survey. A survey will be used to identify existing repairs and repair configurations on fatigue critical structure and provide a means to categorize those repairs. The survey would apply to all affected airplanes in an operator's fleet, as defined in the Operator Implementation Plan, using the process contained in the Compliance Document. The procedure to identify repairs that require DTE should be developed and documented in the Compliance Document using § 25.571 and AC 25.571-1C (dependant on airplane certification level), together with additional guidance specific to repairs, such as:

a. Size of the repair

b. Repair configuration

(1) SRM standards

(2) Other

c. Proximity to other repairs

d. Potential affect on fatigue critical baseline structure

(1) Inspectability (access and method)

(2) Load distribution

2. Identification and Disposition of Repairs Requiring Immediate Action. Certain repairs may not meet minimum requirements based on its condition because of cracking, corrosion, dents, or inadequate design. Use the guidance provided in the Compliance Document to identify these repairs and once identified take appropriate corrective action. In some cases, modifications may need to be made before further flight. The operator should consider establishing a fleet campaign if similar repairs may have been installed on other airplanes.

NOTE: **Additional FAA Certificate Maintenance Office (CMO) coordination and approval or regulatory action may be required in these cases.**

3. Damage Tolerance Inspection Development. This includes the development of the appropriate maintenance plan for the repair under consideration. During this step determine the inspection method, threshold, and repetitive interval. Determine this information from existing guidance information as documented in the Compliance Document, or from the results of an individual damage tolerance evaluation performed

in AC 25.571-1C. Then determine the feasibility of an inspection program to maintain continued airworthiness. If the inspection program is practical, incorporate the DTI into the individual airplane maintenance program. If the inspection is either impractical or impossible, incorporate a replacement time for the repair into the individual airplane maintenance program. The three-stage approach discussed in Appendix 5 of this AC may be used, if appropriate.

APPENDIX 7. REPAIRS AND ALTERATIONS TO REMOVABLE STRUCTURAL COMPONENTS

This Appendix provides guidance for DT data development and implementation for existing and new repairs and alterations to fatigue critical structure on removable structural components. In summary, the guidance covers:

- Methods of determining or assigning the age (hours/cycles) to a removable structural component when its original life history is unknown.
- Guidance on tracking of removable components that contain fatigue critical structure.
- Methods and schedules for developing and implementing DT data for repairs and alterations to removable components that contain fatigue critical structure.
- Implementation options for removable components that contain fatigue critical structure.

Other methods than those given below for determining the age of a component or tracking structural components may be used if approved by the PMI as part of the Operator's Implementation Plan.

a. Determining the Age of a Removable Structural Component. Determining an actual component age or assigning a conservative age will provide flexibility and reduce operator burden when implementing DT data for repairs and alterations to structural components. In some cases, the actual component age may be determined from records. If the actual age cannot be determined this way, the component age may be conservatively assigned using one of the following fleet leader concepts, depending upon the origin of the component:

(1) If component times are not available, but records indicate that no part changes have occurred, airplane flight cycles or flight hours can be used.

(2) If no records are available, and the parts could have been switched from one or more older airplanes under the same maintenance program, it should be assumed that the time on any component is equal to the oldest airplane in the program. If this is unknown, the time should be assumed equal to the same model airplane that is the oldest or has the most flight cycles or flight hours in the world fleet.

(3) A manufacturing date marked on a component may also be used to establish the component's age. This can be done by using the above reasoning and comparing it to airplanes in the affected fleet with the same or older manufacturing date.

If none of these options can be used to determine or assign a component age or total number of flight cycles or fight hours, a conservative implementation schedule can be

applied in Paragraph c of this Appendix, for the initial inspection, if required by the DT data.

b. Tracking. An effective, formal control or tracking system should be established for removable structural components that are identified as fatigue critical structure or that contain fatigue critical structure. This will help ensure compliance with maintenance program requirements specific to repairs and alterations installed on an affected removable structural component. Paragraph d, of this Appendix, provides options that could be used to alleviate some of the burdens associated with tracking all repairs to affected removable structural components.

c. Developing and Implementing DT Data:

(1) Existing Repairs and Alterations – Components Installed prior to December 20, 2010.

Repairs: Accomplish the initial repair assessment of the affected structural component at the same time as the airplane level repair survey for the airplane on which the component is installed (Paragraph b, above). Develop the DT data per the process given in Step 3 of Appendix 6 and incorporate the DTI into the maintenance program. Accomplish the first inspection on the affected component according to the following schedule in paragraph c.(1).(a)-(c) below:

Alterations: Accomplish the initial alteration assessment of the affected structural component at the same time as the airplane level alteration assessment for the airplane on which the component is installed. Develop the DT data and incorporate the DTI into the maintenance program. Accomplish the first inspection on the affected component according to the following schedule:

(a) If the actual repairs or alterations installation age or accumulated number of flight cycles or flight hours is known, use that to accomplish the first inspection against the component. Repeat inspect at the intervals given for the repair or alteration against the component.

(b) If the repairs or alterations installation age or accumulated number of flight cycles or flight hours is unknown, but the component age or total number of flight cycles or flight hours is known, or can be assigned conservatively, use the component age, or total number of flight cycles or flight hours to accomplish the initial inspection against the component. Repeat the inspection at the intervals given for the repairs and alterations against the component.

(c) As an option, accomplish the initial inspection on the affected component at the next C-check (or equivalent interval) following the repair assessment. Repeat the inspection at the intervals given for the repairs and alterations against the component.

(2) Existing Repairs and Alterations – Components Installed from Storage after December 20, 2010. For affected removable structural components installed from

storage after December 20, 2010 that have not previously had DT data developed and implemented as follows:

(a) If the time on the component (in flight cycles or flight hours) is known, or can be conservatively assigned, perform the following:

i Survey the component,

ii Disposition the repairs and alterations

iii Implement any DTI in accordance with the schedule in Chapter 2 or 3 of this AC, using the component's age.

iv Accomplish the first inspection using the actual repairs or alterations age, or accumulated number of flight cycles or flight hours, if known. If the repairs or alterations age is not known, use the component age. Repeat the inspection at the intervals given for the repairs or alterations against the component.

(b) If the time on the component (in flight cycles or flight hours) is unknown and cannot be assigned, accomplish the initial repair or alteration assessment of the affected component prior to installation.

i Develop the DT data per the process given in Paragraph 207 or 303 of this AC as applicable.

ii Incorporate any DTI into the maintenance program.

iii Accomplish the first inspection on the affected component at the next C-check (or equivalent interval) following the repair or alteration assessment.

iv Repeat the inspection at the intervals given for the repair or alteration against the component.

(3) New Repairs and Alterations. New repairs and alterations to affected removable structural components installed after December 20, 2010, must have DTE performed and DTI implemented according to an approved process. For repairs, that process is described in Appendix 5, "Approval Process for New Repairs". The initial and repetitive inspections are accomplished at the intervals given for the repair or alteration against the component.

d. Implementation Options to Help Reduce Tracking Burden. The following implementation techniques could be used to alleviate some of the burdens associated with tracking repairs to affected removable structural components. These techniques, if used, would need to be included in the Operator's Implementation Plan(s) and may require additional FAA approval and DAH input for DTI.

(1) Upgrading Existing Repairs. As an option, existing repairs may be removed and replaced to zero time the DTI requirements of the repair and establish an initial tracking point for the repair. Normally, this would be done at or before the survey for

maximum benefit. The initial and repeat inspections for the upgraded repair would then be accomplished at the intervals given for the repair against the component.

A repair could also be upgraded to one whose inspection requirements and methods are already fulfilled by an Operator's regular FAA-approved maintenance or inspection program (Section 403, Step e., Implementation Techniques, of this AC). That repair would then be repetitively inspected at each routine inspection interval applicable to the repair. Specific tracking would not be required because that area of the airplane would already be normally inspected on each airplane in the fleet as part of the existing approved maintenance program. If the Operator's program intervals were changed, the affect on requirements for specific tracking would have to be re-evaluated.

(2) Special Initial and/or Routine Inspections. As an option, existing repairs may have special initial inspections accomplished during the survey. This initial inspection would be used to establish an initial tracking point for the repair. Following this initial inspection, the DTI requirements (e.g., repetitive inspections) of the repair would be implemented.

In addition, special routine inspections could be defined for typical repairs that could be applied at a normal interval. In this case, an operator could check the affected components on each aircraft for this type of a repair at the defined interval. If the repair were found, the special inspection would be applied to ensure its airworthiness until the next scheduled check. This would alleviate the need to specifically track affected components for every repair, especially typical ones.

The development of inspection processes, methods, applicability and intervals would most likely require the assistance of the DAH for the fatigue critical structure in question. In all circumstances, the data must be approved by the FAA- Oversight Office.

APPENDIX 8. PROGRAM IMPLEMENTATION EXAMPLES

The following are provided to assist the operator in understanding how the program should be implemented. Two examples are given, one covers airplanes below 75% DSG on December 18, 2009, and the other is for airplanes beyond DSG on December 18, 2009.

a. Airplane Below 75% DSG on December 18, 2009

Consider the following:

(1) Airplane Total Cycles on December 18, 2009 – 55,000
(2) DSG = 75,000 Cycles, 75% DSG – 56,250 Cycles
(3) Time of last "D"-Check Equivalent – 53,000 Cycles
(4) 8 Year "D"- check Equivalent – 360 Days/Year, 4 cycles/day = 11,680 Cycles

The survey would be performed after the airplane reaches 56,250 cycles and would be due before 64,680 cycles, but in any case would be required before the airplane reached 75,000 cycles.

b. Airplane Beyond DSG on December 18, 2009

Consider an airplane that has accumulated 80,000 cycles as of December 18, 2009, a DSG of 75,000 cycles. The airplane is currently on an 8 year "D" check equivalent and the last "D"-check was performed in January 2009 at 78,540 cycles. The survey would need to be performed prior to the airplane accumulating 90,220 cycles or 6 years whichever occurs sooner, based on the airplane utilization of 4 cycles/day, a 360-day year, and a maximum accumulated cycles of 81,460 as of December 20, 2010.

APPENDIX 9. SERVICE BULLETIN REVIEW PROCESS

Guidelines for the SB Flow Chart

This is primarily a TCH responsibility to screen SB to determine which ones require DT Data.

Please note: while it is believed that this guidance is fairly comprehensive, there is a reasonable possibility that not all situations have been considered. It is therefore incumbent on the user to use good judgment and rationale any determinations made.

The results of this process will be a list of service bulletins where special directed inspections are required to insure continued airworthiness. It will not contain a total list of all bulletins. Specifically it will not include those bulletins where the BZI program is sufficient to meet the damage tolerance requirements. A note similar to the follow will be prominently placed somewhere in the compliance document to attest to this unspoken requirement.

ALL SB HAVE BEEN EVALUATED FOR DAMAGE TOLERANCE INSPECTION REQUIREMENTS, SERVICE BULLETINS NOT INCLUDED IN THIS LIST HAVE BEEN DETERMINED TO SATISFY THE DAMAGE TOLERANCE REQUIREMENT BY INSPECTIONS COVERED IN THE BZI. THE BZI IS DOCUMENTED IN SECTION X.XXX.XX.X OF THE MPD.

Query 1 – Does the Service Bulletin address a structural repair or an alteration to fatigue critical structure? Historically any service bulletin, service letter or other device that lists ATA chapter 51 through 57 could provide repair or alteration instructions that may require DT data. In addition, certain repairs or alteration data carried out under other ATA chapters may affect fatigue critical structure. The first step in the process is to identify all such service instructions and develop a list of candidates for review (Q2).

Query 2 – Does the service instruction either specify a repair/alteration that creates or affects fatigue critical structure? If it does, then the Service instruction requires further review (Q3). If it does not, then the service instruction need no longer be considered.

Query 3 – Is the service instruction mandated? Service Bulletins and other service instructions that are under the requirements of an AD have a certain reporting and accountabilities built into them. As such, it is highly likely that the inspection programs have been established using either DT data and/or service based inspection results. They are also under continuous review for their adequacy and as such should be considered as complying with the requirements of the AASFR. Outcomes of this decision branch to two unrelated boxes (Q4 – if under AD) or (Q7- if not under AD).

Query 4 – Does the Service Bulletin or instruction contain terminating action? From Q3 we have already established that the inspection program for the baseline configuration

is compliant with the AASFR requirements. This box asks if there is a terminating modification that terminates the AD mandated inspections. If no termination action exists, then the service bulletin is in compliance with the AASFR and no further action on the SB is required (note that repairs performed as a result of SB inspections are most likely done by reference to the SRM or via TELEX which will require review outside this process). If the SB does have a terminating action then further review is required (Q5).

Query 5 – Does the termination action have DT data? If the terminating action has a documented continuing airworthiness inspection program based on damage tolerance principals, then the SB is in compliance with the AASFR and should be documented on the list of Service Actions as such. If it does not, or the status of the inspection program cannot be verified, then further review is necessary (Q6).

Query 6 – Does the Service Bulletin address a safe-life part? If it does, other considerations exist that place this service action outside the scope of the AASFR. No further action is required. Otherwise, damage tolerant based inspections will need to be developed and provided to the operators. The Service bulletin should be referenced in the list along with where to find the required continued airworthiness inspection program.

Query 7 – From Q3 we have a structural service bulletin that has not been mandated by AD and this query asks if a one-time inspection is required to satisfy the intent of the requirement. If it does, it is deemed that this is being done to verify that a condition does not exist and, on condition, correct that condition to baseline configuration. As such normal SSID programs would then be expected to cover any required continued airworthiness inspections in compliance with the AASFR. If a repair is necessary, it is further assumed that this was done by reference to the SRM or other suitable means. No further action is required if this is the case and if a repair was necessary other means exist to determined the required DT data. If no inspections or multiple inspections are required, additional evaluation is required (Q8).

Query 8 – Is this a major structural design change (e.g. Alteration)? This is an OEM decision that is part of the original certification process and is not a major/minor repair decision. If it is not a major design change then proceed to Q10, if not, proceed to Q9.

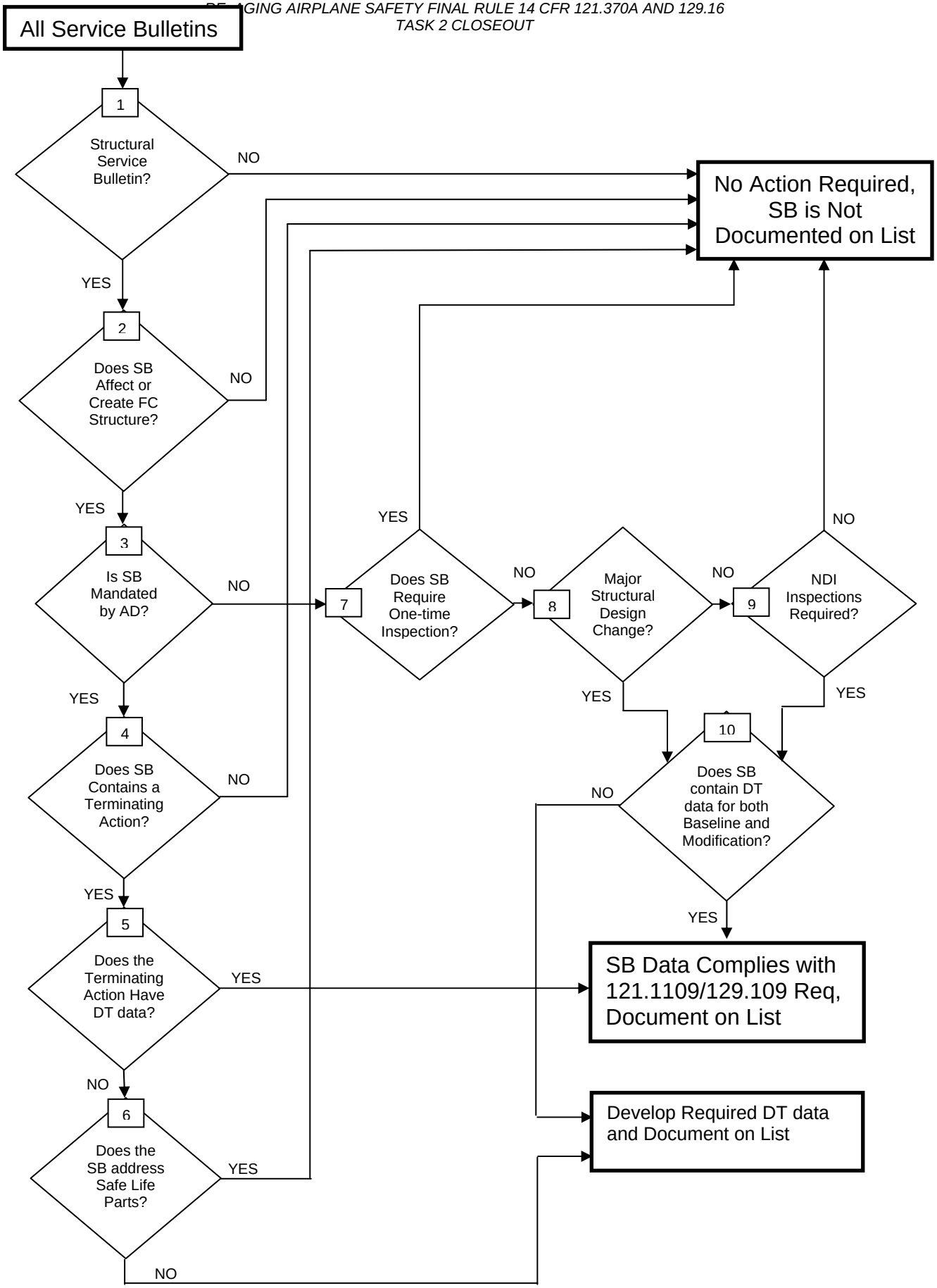
Query 9 – Does the change require NDI inspections to verify the integrity of the structure or is normal routine maintenance inspections (as delineated in the BZI) sufficient? This is a subjective question and may require a re-evaluation of the change and where specific fatigue cracking might be expected. If normal maintenance inspections are adequate, no further action is required. Otherwise proceed to Q10.

Query 10 – Does the SB contain DT data for both the Baseline and Modified configurations? If so, the SB is in compliance with the AASFR and should be documented as such on the list. Otherwise, damage tolerant based inspections will need to be developed and provided to the operators. The Service bulletin should be

referenced in the list along with where to find the required continued airworthiness inspection program.

Service Bulletin Screening Procedure

1. The screening will be performed by the DAH and the outcome validated by the STG.
2. A list of all service bulletins requiring action will be included in the Compliance Plan. Those not requiring action will not be in the list.
3. FAA Oversight Office approval of the compliance plan will constitute FAA concurrence with what has been screened out and therefore Flight Standards does not need to address service bulletins that have been incorporated on an airplane but do not appear in the Compliance Plan.
4. Service Bulletins included on the list will fall into one of two general types:
   Type I - Service Bulletins for which DT data exists.
   Type II - Service Bulletins that require DT data development.
5. DAH actions:
   Type I – None
   Type II – Develop DT data and make it available to operators.
6. Operator actions (apply to both SB Types):
   - Review SB incorporation on a tail number basis.
   - For incorporated SBs that rely on zonal inspections (i.e. no special inspections required based on DTE performed) reconcile any MPD structural inspection escalations.
   - For incorporated SBs that require DTI verify that DTI has been included in the Op Spec and include if not.


All Service Bulletins
1
Structural Service Bulletin?
NO
No Action Required, SB is Not Documented on List
YES
2
Does SB Affect or Create FC Structure?
NO
YES
3
Is SB Mandated by AD?
NO
YES
7
Does SB Require One-time Inspection?
NO
8
Major Structural Design Change?
NO
9
NDI Inspections Required?
NO
YES
YES
YES
4
Does SB Contains a Terminating Action?
NO
10
Does SB contain DT data for both Baseline and Modification?
NO
YES
YES
5
Does the Terminating Action Have DT data?
YES
SB Data Complies with 121.1109/129.109 Req, Document on List
NO
6
Does the SB address Safe Life Parts?
YES
Develop Required DT data and Document on List
NO

APPENDIX 10. Proposed Operator Letter to FAA Concerning Alterations

Date

Federal Aviation Administration
Transport Standards Staff ANM-115
1601 Lind Ave
Renton WA 98055-4056

Subject: STCs Installed on **"Blue Streak Airline"** Fleet.

Blue Streak Airline operates airplanes that are required to comply with 14 CFR 121.1109 (or 14 CFR 129.109). This rule requires that the structural maintenance programs be based on damage tolerance. One aspect of compliance to this rule is to demonstrate that certain Supplemental Type Certificates have compliant maintenance requirements. Blue Streak Airline has reviewed the airplanes that are required to be compliant according to the guidance provided in AC 120.AAWG and have determined that there are STCs that are incorporated on those airplanes which will require damage tolerance maintenance programs**. Blue Streak Airline** has made a list of these STCs and the Design Approval Holders of record and has attached that list to this letter. **Blue Streak Airline** requests that the FAA contact the DAH for each alteration and make them aware of their responsibility under 14 CFR 25.1825 or 25.1827. Further, **Blue Streak Airline** requests the FAA to notify us of any decision made by the DAH in regards to continued support of their STC under 14 CFR 25.1825 or 25.1827. We would be interested if the FAA could provide information in one of the following four categories.

(1) The DAH has an FAA approved maintenance program based on damage tolerance for this STC. Please contact the DAH for obtaining that information.
(2) The DAH is in the process of developing an FAA approved maintenance program based on damage tolerance for this STC. Please contact the DAH for information on when this data will be available.
(3) The DAH has decided that he will no longer support this STC and has submitted the engineering data and STC to the FAA. At this time the engineering data is available to persons who can demonstrate a need. Please file a FOIA request with the FAA ACO.
(4) The DAH has decided that he will no longer support this STC and has submitted the engineering data and STC to the FAA. The engineering data is not available to be distributed at this time.

Thank You

Blue Streak Airline

Attachment: List of STC Installed

APPENDIX 11. LIST OF SIGNIFICANT STCs

i) Passenger-to-freighter conversions (including addition of main deck cargo doors).
ii) Gross weight increases (increased operating weights, increased zero fuel weights, increased landing weights, and increased maximum takeoff weights).
iii) Installation of fuselage cutouts (passenger entry doors, emergency exit doors or crew escape hatches, fuselage access doors, and cabin window relocations).
iv) Complete re-engine or pylon alterations.
v) Engine hush-kits.
vi) Wing alterations such as installing winglets or changes in flight control settings (flap droop), and alteration of wing trailing edge structure.
vii) Modified skin splices.
viii) Antenna Installations
ix) Any alteration that affects several stringer or frame bays.
x) An alteration that covers structure requiring periodic inspection by the operator's maintenance program.
xi) An alteration that results in operational mission change that significantly changes the manufacturer's load or stress spectrum, e.g., passenger-to-freighter conversion.
xii) An alteration that changes areas of the fuselage that prevents external visual inspection, e.g., installation of a large external fuselage doubler that results in hiding details beneath it.
xiii) In general, attachment of interior monuments to FCS.

Appendix C: AC 25.1529-1 With Proposed Changes

Note: Revisions are italicized and underlined

U.S. Department Of Transportation
Federal Aviation Administration
Advisory Circular

Subject: INSTRUCTIONS FOR CONTINUED AIRWORTHINESS OF STRUCTURAL REPAIRS ON TRANSPORT AIRPLANES
Date: *Feb. 2006*
Initiated by: *AAWG AASR*
AC No: 25.1529-1
Change: *Draft revision*

1. **Purpose:** This Advisory Circular (AC) provides instructions to ensure continued airworthiness of structural repairs on transport category airplanes *which are not required to comply with 14 CFR Parts 121.1109 and 129.109 (Aging Airplane Safety Rule). For compliance to14 CFR Parts 121.1109 and 129.109 (AASR) AC 120.AAWG provides instructions to ensure continued airworthiness. This AC* ~~It~~ addresses the approval procedures to follow when making structural repairs to structure certificated under the damage tolerance requirements of 5 25.571 of the Federal Aviation Regulations (FAR), Amendment 25-45, and to type designs with Supplemental Inspection Documents (SIDs) which were based on these criteria. The methods provided herein are not the only means acceptable for showing compliance with the applicable portions of 5 25.1529 and Appendix H of Part 25. The Federal Aviation Administration (FAA) will consider other methods of compliance the applicant may elect to present.

2. Applicability:

3. **Related FAR Sections**. Sections 1.1, 21.31(c), 21.50, 25.571, 25.1529, and 43.16 of the FAR. Appendix H of Part 25. Appendix A of Part 43.

4. **Background**. The current industry procedure for repairing structural elements is to first classify the repair as either major or minor in accordance with the definitions set forth in 5 1.1 and Appendix A of Part 43. The FAA-approval procedures depend on the classification of the repair. The structure is then restored to the original certification status; either safe-life, fail-safe, or damage tolerant and approved in accordance with established procedures. The definitions of major and minor have historically been subject to widely varying application by maintenance and inspection personnel. In order to standardize the application of the term major repair, the FAA published a list of parts and types of repairs considered major in Civil Aeronautics Manual (CAM).18 in 1953. This was later adopted as Appendix A of Part 43. This standardized list of major repairs has in some cases resulted in the classification of minor repairs as major simply because the list has not been updated to include evolving airplane design and

construction techniques and it is not practical to tailor the list to individual airplane models. There is no attempt in this AC to redefine the terms major or minor as defined in Parts 1 and 43 of the FAR. Rather, the intent of this AC is to ensure damage tolerant structure will remain damage tolerant after it has been repaired.

The advent of damage tolerant design in modern transport category airplanes further complicated the approval procedures for repairs by introducing the need for additional testing and/or analysis in order to assess the long-term effects of repairs on damage tolerant structure. Although the repairs may be structurally sound and airworthy when completed, it is not practical in many instances to complete the damage tolerance evaluation for long-term airworthiness prior to returning the airplane to service. This AC 25.1529-1 8/l/91 necessitates an interim repair approval where the repair is found to be structurally sound relative to static strength but has not been analyzed for long-term airworthiness effects. The final approval of the repair is made shortly thereafter and before long-term fatigue effects are manifested. This AC provides guidance to airplane manufacturers and to those authorized to repair structures, in cases where this two-phase approval process is necessary.

5. Definition of Terms

a. Damage tolerance means that the structure has been evaluated to ensure that should serious fatigue, corrosion, or accidental damage occur within the operational life of the airplane, the remaining structure can withstand reasonable loads without failure or excessive structural deformation until the damage is detected.
b. Fail-safe means the structure has been evaluated to assure that catastrophic failure is not probable after fatigue failure or obvious partial failure of a single, principal structural element.
c. Safe-life means that the structure has been evaluated to be able to withstand the repeated loads of variable magnitude expected during its service life without detectable cracks.
d. Primary structure is structure that significantly contributes to the carrying of flight, ground, or pressure loads. It is also known as a structurally significant item (SSI).
e. Principal structural elements (PSE) are those elements of primary structure which contribute significantly to carrying flight, ground, and pressurization loads, and whose failure could result in catastrophic failure of the airplane.
f. Single load path is where the applied loads are eventually distributed through a single member, the failure of which would result in the loss of the structural capability to carry the applied loads.
g. Multiple load path is identified with redundant structures in which, (with the failure of individual elements) the applied loads would be safely distributed to other load-carrying members.

6. **GUIDANCE**. Appendix H of Part 25 specifies the general requirements for the preparation of instructions for continued airworthiness as required by § 25.1529. The following guidance is to be used in conjunction with Appendix H and other related regulations.
   a. Structural Repair Manual. The applicant should include in the maintenance instructions required by Appendix H, paragraph H25.3 (b) a structural repair manual (SRM) which describes the types of structural repairs anticipated in service. This SRM should be reviewed and approved by the FAA.
   b. Principal Structural Elements. The SRM should identify all PSE's and primary structure requiring approved repair data. Examples of PSE's may be found in Advisory Circular 25.571-lA, Damage Tolerance and Fatigue Evaluation of Structure, dated 3/5/86.
   c. Repair Documentation. Any repair to a PSE or primary structure, including the removal of cracks and corrosion, requires some form of approval whether deemed "major" or "minor" under the definition of Part 1 and the provisions of Part 43. The SRM should provide criteria for determining if the repair warrants FAA engineering approval. In general, repair to a PSE or primary structure requires FAA engineering approval. Such approval is usually accomplished by the FAA, a designated engineering representative or a Special Federal Aviation Regulations (SFAR) 36 authorized staff.
   d. Substantiating Repairs. Additionally, the SRM should provide guidance to repairers as to what substantiating data is necessary to show that the repair complies with certification requirements. This guidance should address repairs to PSE's and primary structure for which no FAA-approved or acceptable data currently exists. It should identify the applicable certification requirements and describe acceptable methods for demonstrating compliance. The SRM must tell the repairer that FAA approval is required for such repairs.
   e. Basis for Inspection Program. The basis for an inspection program for repairs certified herein will be contained in a future revision to AC 25.571-1A.
   f. Two Stage Structural Evaluation.
      (1) Applicants may elect to allow two-stage repair approval in which the basic structural evaluation shows that the repair will meet immediate and short term strength requirements (ultimate strength) but a more extensive investigation is required to show long-term strength requirements. If the applicant elects this option he must schedule the completion of the evaluation such that the airplane is not subjected to the risk of structural failure due to fatigue in the interim. For example, a two-stage evaluation may be recommended where;
         (i) A static structural strength evaluation is made prior to release of the airplane into service with a stated time for completion of the damage tolerance evaluation, and
         (ii) A damage tolerance evaluation of the repair is made within the prescribed time period after this interim release. The final evaluation must reflect any changes in

the related inspection program, including threshold, interval, and inspection procedure.

(2) Final repair approval should not be made until a damage tolerance evaluation has been completed and has shown that the repair is adequate to assure continued airworthiness. The time period established for completion of the approval should be based on technical, logistic and recordkeeping considerations. Due to the logistics and recordkeeping requirements and the ability of the operator to realistically track follow-on technical approval programs, a time period for completion of the approval process that does not exceed 12 months is generally adequate for most structural repairs. This time period is justified based on the assumed inherent crack free performance of structure designed to maintain its initial strength level for the lifetime of the structure.

(3) Procedures must be established by the operator as agreed upon by the manufacturer, with approval from the cognizant Aircraft Certification Office, which would assure timely completion of the approval process. These procedures should also provide for audits to ensure that interim repairs are finalized as scheduled.

g. Special Qualifications. Guidance should be provided with regard to the qualifications of persons evaluating and approving repairs made to certain PSE's, which have special design considerations. For example, a particular design may include certain PSE's having damage tolerant structure requiring a person who has comprehensive knowledge of the specific design philosophy, loading spectrum, and fracture mechanics techniques used in that particular design. Due to these qualifications of the specialist, responsibility for the assessment may be restricted to staff members of the airframe manufacturer, certain designated engineering representatives, the FAA, or certain SFAR 36 engineering staff personnel. The FAA Aircraft Certification Offices should provide guidance in regard to qualifications of personnel.

h. Logic Diagram. The logic diagram in Figure 1 is provided to assist in the determination of when FAA Engineering approval is required for a repair to damage tolerant structure. The decision process begins when it has been determined that structural damage has occurred to a PSE.

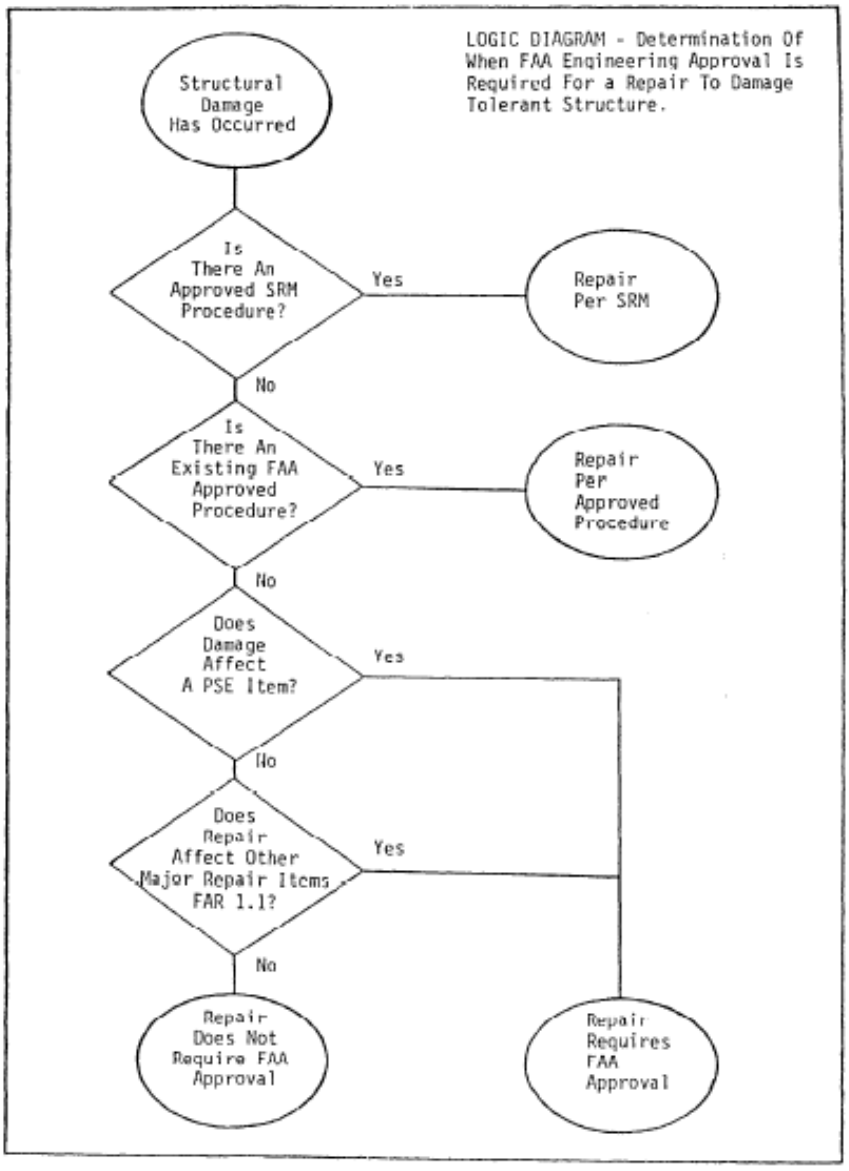


Figure 1

The following guidance is offered for use with the logic diagram:

(1) Determine if the repair can be accomplished using standard methods defined in the SRM for the particular airplane. These standard repair methods may be simple or complex; for example:
   (i) Blend out - local.
   (ii) Replacement with identical part.
   (iii) Oversize attachment.
   (iv) Reduction of edge distance.

(2) For damage not covered by an SRM procedure determine if an FAA approved repair exists or if other means of repair acceptable to the FAA exists; for example:

(i) FAA approved repair.
(ii) Service Bulletin (FAA or DER approved).
(iii) All operators letter (FAA or DER approved).
(iv) FAR 36 repair previously approved.

(3) Once it has been determined that the damage or repair does not affect primary structure (PSE) then it must be determined whether it affects other criteria in the major repair definition of 5 1.1; i.e., systems, weight and balance, aerodynamics, or airplane performance.

(4) If it has been determined that a repair must be submitted for FAA approval, and cannot be shown to have prior approval or other acceptable data, it may be approved by the FAA, a designated engineering representative, or an SFAR 36 authority.

Appendix D: AAWG Meetings and Attendance Records

1. Meeting Dates and Venues

AAWG Meetings

July 23, 2003	--	Atlanta Georgia (Delta Air Lines)
June 30, 2004	--	Long Beach CA (FAA)
March 1, 2005	--	Miami FL (Airbus)
October 26, 2005	--	Memphis TN (FedEx)
January 25, 2006	--	Miami FL (Airbus)
May 3, 2006	--	Long Beach CA (Boeing/FAA)

Task Group Meetings

Ad-hoc Task Planning Group

September 15-17, 2003	–	Seattle Washington (Boeing)
November 11-14, 2003	–	London England (British Airways)
March 29-April 2, 2004	–	Toulouse France (Airbus)
May 17-21, 2004	–	Memphis Tennessee (FedEx)

Task Group Meetings

July 12-16, 2004	–	Gatwick England (CAA-UK)
September 20-21, 2004	–	Long Beach (Boeing)
November 15-19, 2004	–	Brussels Belgium (FAA)
January 31- Feb 4, 2005	–	Miami FL (Airbus)
March 14-18, 2005	–	Hamburg GE (Airbus)
May 2-6, 2005	–	Long Beach CA (FAA/Boeing)
June 13-19, 2005	–	Collioure FR (Airbus)
September 26-30, 2005	–	Seattle WA (Boeing)
November 7-11, 2006	--	Bristol UK (Airbus)
January 23-27, 2006	--	Miami FL (Airbus)
March 6-10, 2006	--	Seville SP (Airbus)
May 1-5, 2006	--	Long Beach CA (FAA/Boeing)

2. **AAWG Organizational Meeting Attendance**

	MEETING DATE					
Organization	**Jul 2003**	**Jun 2004**	**Mar 2005**	**Oct 2005**	**Jan 2006**	**May 2006**
Airborne Express (M)	**X**	**X**	**X**	**X**		**X**
Airbus (M)	**X**	**X**	**X**	**X**	**X**	**X**
ALPA						
America West						
American Airlines (M)	**X**	**X**		**X**	**X**	**X**
ATA (M)				**X**		
Boeing (M)	**X**	**X**	**X**	**X**	**X**	**X**
British Aerospace (M)	**X**					
British Airways (M)	**X**	**X**		**X**	**X**	
CAA-UK(JAA) (M)	**X**					
Continental Airlines (M)	**X**	**X**	**X**	**X**	**X**	**X**
Delta Air Lines (M)	**X**	**X**				
Evergreen Aviation						
FAA (M)	**X**	**X**	**X**	**X**	**X**	**X**
Federal Express (M)	**X**	**X**	**X**	**X**	**X**	
Fokker Services						
IATA						
Japan Air Lines		**X**				
Lockheed (M)	**X**					
Northwest Airlines (M)		**X**	**X**	**X**	**X**	
SIE		**X**				**X**
TIMCO		**X**				
United Airlines (M)	**X**	**X**	**X**		**X**	**X**
UPS (M)	**X**	**X**	**X**	**X**		
US Airways (M)	**X**	**X**		**X**	**X**	

(M) – AAWG Voting Member

3. AAWG Task Planning Group Organizational Attendance

	MEETING DATES			
Organization	**Sep 2003**	**Nov 2003**	**Mar 2004**	**May 2004**
Airborne Express	**X**	**X**		**X**
Airbus	**X**	**X**	**X**	**X**
American Airlines	**X**	**X**	**X**	**X**
ATA				
Boeing	**X**	**X**	**X**	**X**
British Airways	**X**	**X**	**X**	**X**
Continental Air Lines	**X**	**X**	**X**	**X**
Delta Air Lines	**X**	**X**	**X**	**X**
EASA		**X**	**X**	
FAA	**X**	**X**	**X**	**X**
Federal Express	**X**	**X**		**X**
Gulfstream		**X**	**X**	
Japan Air Lines	**X**	**X**	**X**	**X**
Lockheed			**X**	**X**
Northwest Airlines	**X**	**X**	**X**	**X**
SIE				
TIMCO				
United Airlines	**X**			
UPS	**X**	**X**		**X**
US Airways	**X**	**X**	**X**	**X**

4. **AAWG Task Group Organizational Attendance**

	MEETING NUMBER											
Organization	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Airborne Express		X		X		X						
Airbus	X	X	X	X	X	X	X	X	X	X	X	X
American Airlines	X		X	X	X	X	X		X	X	X	X
ATA												
Boeing	X	X	X	X	X	X	X	X	X	X	X	X
British Airways	X	X	X	X	X		X	X	X	X	X	X
Continental Air Lines												
Delta Air Lines	X	X										
EASA	X	X	X	X								
FAA	X	X	X	X	X	X	X	X	X	X	X	X
Federal Express	X	X	X	X		X	X	X	X	X	X	
Gulfstream												
Japan Air Lines	X	X		X				X				
Lockheed												
Northwest Airlines	X	X	X	X	X	X	X	X	X	X	X	
SIE						X						X
TIMCO												
Transport Canada								X				X
United Airlines												
UPS	X	X	X	X	X	X	X	X	X			
US Airways	X	X								X		

No.	Date	Venue
1	July 12-16, 2004	Gatwick England (CAA-UK)
2	September 20-21, 2004	Long Beach (Boeing)
3	November 15-19, 2004	Brussels Belgium (FAA)
4	January 31- Feb 4, 2005	Miami FL (Airbus)
5	March 14-18, 2005	Hamburg GE (Airbus)
6	May 2-6, 2005	Long Beach CA (FAA/Boeing)
7	June 13-19, 2005	Collioure FR (Airbus)
8	September 26-30,2005	Seattle WA (Boeing)
9	November 7-11, 2006	Bristol UK (Airbus)
10	January 23-27, 2006	Miami FL (Airbus)
11	March 6-10, 2006	Seville SP (Airbus)
12	May 1-5, 2006	Long Beach CA (FAA/Boeing)

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Summary Notice No. PE–2006–17]

Petitions for Exemption; Summary of Petitions Received

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of petitions for exemption received.

SUMMARY: Pursuant to FAA's rulemaking provisions governing the application, processing, and disposition of petitions for exemption part 11 of Title 14, Code of Federal Regulations (14 CFR), this notice contains a summary of certain petitions seeking relief from specified requirements of 14 CFR. The purpose of this notice is to improve the public's awareness of, and participation in, this aspect of FAA's regulatory activities. Neither publication of this notice nor the inclusion or omission of information in the summary is intended to affect the legal status of any petition or its final disposition.

DATES: Comments on petitions received must identify the petition docket number involved and must be received on or before June 21, 2006.

ADDRESSES: You may submit comments [identified by DOT DMS Docket Number FAA–2006–24863] by any of the following methods:

- Web site: *http://dms.dot.gov*. Follow the instructions for submitting comments on the DOT electronic docket site.
- Fax: 1–202–493–2251.
- Mail: Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL–401, Washington, DC 20590–001.
- Hand Delivery: Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Docket: For access to the docket to read background documents or comments received, go to *http://dms.dot.gov* at any time or to Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Kenna Sinclair (425–227–1556), Transport Airplane Directorate (ANM–113), Federal Aviation Administration, 1601 Lind Ave., SW., Renton, WA 98055–4056; or John Linsenmeyer (202–267–5174), Office of Rulemaking (ARM–1), Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591.

This notice is published pursuant to 14 CFR 11.85 and 11.91.

Issued in Washington, DC, on May 23, 2006.

Anthony F. Fazio,

Director, Office of Rulemaking.

Petitions for Exemption

Docket No.: FAA–2006–24863.
Petitioner: American Airlines.
Section of 14 CFR Affected: 14 CFR 121.312.
Description of Relief Sought: Permission to operate one Boeing Model 767 airplane until the insulation material is replaced with material that is compliant with the flame propagation requirements of § 25.856.

[FR Doc. E6–8422 Filed 5–31–06; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee Meeting on Transport Airplane and Engine Issues

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of public meeting.

SUMMARY: This notice announces a public meeting of the FAA's Aviation Rulemaking Advisory Committee (ARAC) to discuss transport airplane and engine (TAE) issues.

DATES: The meeting is scheduled for Tuesday, June 27, 2006, starting at 11 a.m. Eastern Daylight Time. Arrange for oral presentations by June 19, 2006.

ADDRESSES: Federal Aviation Administration, 800 Independence Ave., SW., Room 810, Washington, DC 20591.

FOR FURTHER INFORMATION CONTACT: John Linsenmeyer, Office of Rulemaking, ARM–207, FAA, 800 Independence Avenue, SW., Washington, DC 20591, Telephone (202) 267–5174, FAX (202) 267–5075, or e-mail at *john.linsenmeyer@faa.gov.*

SUPPLEMENTARY INFORMATION: Pursuant to section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92–463; 5 U.S.C. app. III), notice is given of an ad hoc ARAC meeting to be held June 27, 2006 at the Federal Aviation Administration, 800 Independence Ave., Room 810, Washington, DC. The meeting/teleconference is being held to consider the report on recommended guidance for the Aging Airplane Safety Rule from the Airworthiness Assurance Working Group (AAWG). This ad hoc TAE meeting is necessary because the report from the AAWG is a critical part of FAA's effort to develop new guidance to support the Aging Airplane Safety Rule, issued January 25, 2005.

The agenda will include:

- Opening Remarks.
- AAWG Report.

Attendance is open to the public, but will be limited to the availability of meeting room space. Please confirm your attendance with the person listed in the **FOR FURTHER INFORMATION CONTACT** section no later than June 19, 2006. Please provide the following information: Full legal name, country of citizenship, and name of your industry association, or applicable affiliation. If you are attending as a public citizen, please indicate so.

For persons participating domestically by telephone, the call-in number is (202) 366–3920; the Passcode is ''1888.'' To insure that sufficient telephone lines are available, please notify the person listed in the **FOR FURTHER INFORMATION CONTACT** section of your intent to participate by telephone by June 19. Anyone calling from outside the Washington, DC metropolitan area will be responsible for paying long-distance charges.

The public must make arrangements by June 19, 2006, to present oral statements at the meeting. Written statements may be presented to the committee at any time by providing 25 copies to the Assistant Executive Director for Transport Airplane and Engine Issues or by providing copies at the meeting. Copies of the document to be presented to ARAC for decision by the FAA may be made available by contacting the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

If you need assistance or require a reasonable accommodation for the meeting or meeting documents, please contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section. Sign and oral interpretation, as well as a listening device, can be made available if requested 10 calendar days before the meeting.

Issued in Washington, DC on May 17, 2006.

Tony F. Fazio,

Director, Office of Rulemaking.

[FR Doc. E6–8427 Filed 5–31–06; 8:45 am]

BILLING CODE 4910–13–P