Federal Aviation Administration

Memorandum

Date: April 10, 2009

To: Manager, Seattle ACO, ANM-100S

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Gary Oltman, ANM-120S

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for Boeing Structural Repair Manual Chapter 51 Repairs Treated as Unpublished Repairs

ELOS Memo#: A-3

Regulatory Ref: §§ 26.43(c)

The purpose of this memorandum is to inform the certificate management aircraft certification office of an evaluation made by the Transport Airplane Directorate on the establishment of an equivalent level of safety finding for Boeing Structural Repair Manual Chapter 51 Typical Repairs.

Background

Boeing has requested equivalent safety findings (ESF) to the above referenced requirements for Structural Repair Manual (SRM) Chapter 51 Typical Repairs.

The ESF request involves treating Structural Repair Manual (SRM) Chapter 51 Repairs as Unpublished Repairs.

SRM Chapter 52 through Chapter 57 repairs will be treated as published repairs.

Title 14 Code of Federal Regulations (14 CFR) 26.43(c) requires the Type Certificate (TC) holder to perform a damage tolerance evaluation (DTE) for published repair data that affects fatigue critical baseline structure (FCBS). It also requires the TC holder to develop any damage tolerance inspections (DTI) that would be required as a result of the DTE, and to make that DTI available to operators. This requirement can be met for for repairs in SRM Chapters 52 through 57 as these repairs address specific structural components and the applicability to

FCBS items are readily identified. For the typical structural repairs developed using the repair procedures in SRM Chapter 51, this applicability is not clear. SRM Chapter 51 provides typical structural repair procedures for general application and use on the aircraft. In addition to general usage instructions relative to certain parameters, typical metal structural repairs are presented which can be used on most structure, but the applicability to certain structural components is restricted. The specific repair design is left to the operator, including location on the airplane. In general, operator application of repairs developed from Chapter 51 procedures and installed on FCBS can not be reasonably determined or known. Therefore, it would be difficult to provide accurate damage tolerance (DT) data for Chapter 51 repairs because of the unknown location of the repair.

Applicable regulation(s)

§§ 26.43(c)

Regulation(s) requiring an ELOS

§§ 26.43(c)

Description of compensating design features or alternative standards which allow the granting of the ELOS (including design changes, limitations or equipment need for equivalency)

TC holders will be will be required to develop processes that will enable operators to identify and obtain DTI for existing unpublished repairs on their airplanes that affect FCBS. Collectively, these processes are referred to as the Repair Evaluation Guidelines (REG).

The REGs provide instructions to the operator on how to survey airplanes, how to obtain DTIs, and an implementation schedule that provides timelines for these actions. Effective REGs may require that certain DT data be developed by the TC holder and made available to operators. Updated SRMs and service bulletins (SBs), along with repair assessment guideline (RAG) documents form the core of the information that will need to be made available to the operator to support this process. In developing the REGs the TC holder will determine what DT data are currently available for repairs, and what new DT data will need to be developed to support operator compliance.

The SRMs will be revised to include appropriate notes in Chapter 51 to inform the operator or third party maintenance facility of the necessity to obtain DTE from an appropriate authorized source for SRM Chapter 51 typical repairs.

Explanation of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation

The notes provided in SRM Chapter 51 will inform operators that they will need to obtain DT data for SRM Chapter 51 repairs affecting FCBS.

The REG process and implementation guidance for performing the initial inspection provided in Advisory Circular 120-93, if applied to SRM Chapter 51 repairs that affect FCBS, would provide an equivalent level of safety.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Findings in issue paper A-3. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section (TC's & ATC's) or in the Limitations and Conditions Section of the STC Certificate. An example of an appropriate statement is provided below.

Equivalent Safety Findings have been made for the following regulation(s):
§§ 26.43(c) (documented in TAD ELOS Memo No. A-3)

Original signed by John Shelden for Frank Tiangsing 5/1/2009

Transport Airplane Directorate, Date
Aircraft Certification Service

ELOS Originated by Seattle ACO:	Gary Oltman	ANM-120S