



# Federal Aviation Administration

---

## Memorandum

Date: FEB 18 2010

To: All ACOs, FSDOs, CMO, DERs, and TC and MRA ODAs

From: David W. Hempe, Manager, Aircraft Engineering Division, AIR-100 *D. Hempe*  
*for* Carol Giles, Manager, Aircraft Maintenance Division, AFS-300 *Carol Giles*

Prepared by: Kevin Kendall, Delegation & Airworthiness Programs Branch, AIR-140

Subject: Interpretation and Clarification of Flight Standards Information Management System (FSIMS) Order 8900.1, Volume 4, Chapter 9, Figure 4-68, Major Alterations Job Aid, Transport Airplane Structural Requirements for STC

---

This memo reinforces the FAA expectation that Aircraft Certification Offices (ACO), Flight Standards District Offices/Certificate Management Offices (FSDO/CMO), Designated Engineering Representatives (DER), and Organizational Designation Authorization (ODA) holders follow the FSIMS Order 8900.1, Volume 4, Chapter 9 job aid located in figure 4-68 when determining how data can be approved for major alterations. Specifically, if the job aid indicates a particular alteration requires approval by STC, then an STC (or TC amendment) is required. Likewise, if a particular alteration requires engineering (ENG) then the data must be approved by FAA engineering (ACO, DER) or ACO concurrence for field approval must be obtained.

This memo also transmits an interpretation and clarification of one specific item in the figure 4-68 tables. The legend for these tables requires that items with the letters STC must be approved by an STC. There is an item in the section for Transport Airplane Structural Strength that states "Changes to principal or primary structural elements (principal elements that carry flight, ground, or pressure loads) defined by AC 25.571-1, as amended" which requires such changes to be approved by STC. However, this has been determined to be too broad of a description to be useful in the field since requiring an STC for any change to a principal or primary structural element could encompass such routine major alterations as small antenna cutouts, which wouldn't necessarily warrant an STC. The clarification to this item will be incorporated in a future change to Order 8900.1.

As used in this item, primary structural element is defined in Advisory Circular (AC) 25.571-1C as an element that contributes significantly to the carrying of flight, ground, or pressurization loads, and whose integrity is essential in maintaining the overall structural integrity of the airplane (see AC 25.571-1C for list of example PSEs). Use this AC definition instead of any TC Holder published PSE List or Airworthiness Limitations Section when determining if a particular change

affects a PSE. Also, the interpretation in this memo does not supersede the requirements of § 121.1109 or § 129.109. Operators must still comply with those requirements.

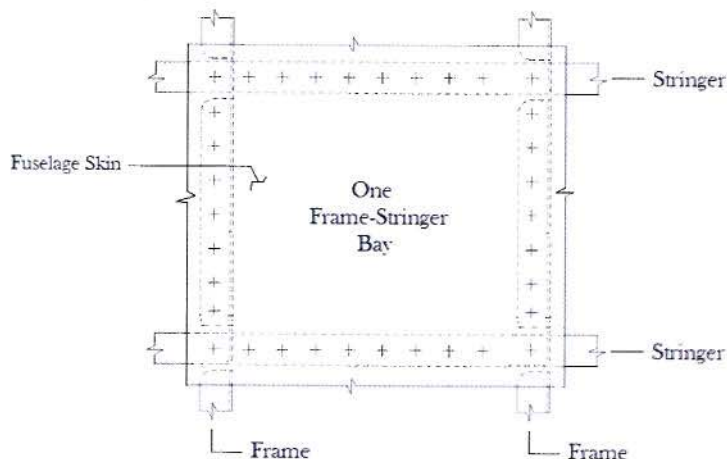
The following three exceptions are permitted to use data approved by ACO, DER or ODA for alterations that affect a PSE provided that a damage tolerance evaluation is performed and the data is approved to § 25.571 amendment 25-45 or later for the alteration and affected PSE. A PSE is affected when it is physically altered, it is subject to increased loading, or its inspectability is decreased.

NOTE: All the following exceptions require damage tolerance approval. DER/ODA approvals for static strength alone are not permissible.

**Exception 1: Alterations that install “small” equipment mounted externally on the fuselage skin**

Structural changes to the fuselage skin such as cutouts with reinforcing-doublers installed to accommodate externally mounted equipment (e.g., small antennas), provided that:

- 1) Compliance with the damage tolerance requirements of § 25.571 at amendment 25-45 or later amendments is demonstrated and approved for the alteration and the affected PSE (e.g., skin, stringers, frames etc.)
- 2) The modification is contained within one frame-stringer bay (area between adjacent frames and adjacent stringers) as shown below.



- 3) Certified Ho (reference 14 CFR 25.365) is not exceeded
- 4) External profile is not changed such that there is an appreciable effect on Vibration (14 CFR 25.251), Aeroelastic Stability (14 CFR 25.629), Noise (14 CFR 36), or Performance (14 CFR, Part 25, Subpart B)
- 5) Weight of the antenna or device does not exceed four pounds and the size of the installation is such that its failure will not contribute to a catastrophic failure of the airplane

NOTE: DERs from several technical disciplines may be required to make compliance findings for the above noted items in support of the structural change.

**Exception 2: Alterations that install mechanisms (e.g., brackets, clips etc.) to support system/wiring installations**

Structural changes to bulkheads, floor beams, frames, etc., such as those made to install brackets, clips, or other mechanism to accommodate systems/wiring installations, provided that compliance with the damage tolerance requirements of § 25.571, amdt 25-45 or later, is demonstrated and approved for the alteration and the affected PSE (e.g., bulkheads, floor beams, frames etc.).

**Exception 3: Alterations that install mechanisms (intercostals, tie rods, links, brackets, clevis lugs, fittings etc) to support interior component installations**

Structural changes to skin, frames, stringers, floor beams, etc., such as those made to install intercostals, tie rods, links, brackets, clevis lugs, fittings etc. to accommodate the installation of interior components (i.e., galleys, closets, lavatories, stowage bins etc.), provided that compliance with the damage tolerance requirements of § 25.571, amdt 25-45 or later, is demonstrated and approved for the alteration and the affected PSE (e.g., skin, frames, stringers, floor beams, etc.).

For questions regarding this memo, please contact Kevin Kendall in the Delegation and Airworthiness Programs Branch, AIR-140 at (405) 954-7074, or by email at [kevin.kendall@faa.gov](mailto:kevin.kendall@faa.gov).