# Federal Aviation Administration

# Memorandum

Date: MAY 02 2011

To: All Aircraft Certification Office (ACO) Managers

From: For David W. Hempe, Manager, Aircraft Engineering Division, AIR-100 Lynn Cahill

Prepared by: Richard Spencer, Technical Programs & Continued Airworthiness Branch, AIR-120

Subject: Policy Statement on FAA Involvement with TSOA Applicants who Develop Software or Airborne Electronic Hardware.

Memo No.: AIR100-2011-120-002

Regulatory Reference: Title 14 of the Code of Federal Regulations (14 CFR) § 21.605

Policy References: Order 8110.37E; Order 8150.1B; Order 8110.49; Order 8110.105; AIR-100 Policy Memorandum #2001-01; AIR-100 Policy Memorandum *Designated Engineering Representative (DER) Authority for Complex Electronic Hardware Approval and Special Delegation for TSO Complex Electronic Hardware*, dated December 20, 2007; and AIR-100 Policy Memorandum *Technical Standard Order (TSO), Software Approval Criteria*, dated August 10, 1994.


**Summary**

This policy memorandum addresses FAA involvement with Technical Standard Order Authorization (TSOA) applicants whose article implements functionality with software or Airborne Electronic Hardware (AEH) and review of life cycle data.


**Current Regulatory and Advisory Material**

Both RTCA/DO-178B and RTCA/DO-254 identify a certification liaison process whose purpose is to establish communication between the applicant and certification authority throughout the development life cycle to assist in the certification process. This relationship is established upon submittal of the Plan for Software (or Hardware) Aspects of Certification to the FAA. Using a risk-based approach described in Order 8110.49, *Software Approval Guidelines* and Order 8110.105, *Simple and Complex Electronic Hardware Approval Guidance,* the FAA determines its level of involvement throughout the software and AEH development processes.

**Relevant Past Practice**

TSOA applicants have typically used software and AEH Designated Engineering Representatives (DERs) in their software and AEH development processes in support of the TSOA applicant's statement of conformance to the applicable TSO standard. Previous policy allowed these DERs to submit FAA Form 8110-3 as evidence of compliance to the RTCA/DO-178B and RTCA/DO-254 objectives.

**Policy In Regards to TSO Applications**

Effective May 30, 2011, use of the FAA Form 8110-3 will no longer be allowed in support of an application for TSOA. The applicant's statement of conformance will serve as evidence that they have met all applicable objectives of DO-178B and DO-254. The certification liaison process objectives will be considered satisfied after FAA review of the applicable life cycle data. Issuance of the TSOA constitutes approval of the life cycle data. As described in AC 21-50, *Installation of TSOA Articles and LODA Appliances*, applicable life cycle data approved under the TSOA may be used to support showing compliance with any related aspects of the airworthiness requirements applicable to an installed design.

Order 8150.1B, *Technical Standard Order Program*, states that for a new applicant not known to have prior experience in meeting FAA requirements and demonstrated technical competence, the ACO engineer should thoroughly evaluate the technical data to verify compliance with the TSO. For an applicant known to have prior experience in meeting FAA requirements and demonstrated technical competence, the ACO may need to make only a cursory check of the applicant's capabilities. In evaluating compliance to DO-178B and DO-254, aircraft certification offices should continue to use the risk-based strategy outlined in Order 8110.49 and Order 8110.105 in determining the level of oversight that is appropriate for TSOA applications, recognizing the use of applicant personnel responsible for software oversight.

The criteria in this memo will be incorporated in the next revision of Order 8150.1B, Order 8110.49, and Order 8110.105. This memo also cancels the following AIR-100 Policy Memorandums:

- Policy Memorandum #2001-01, *Use of Designated Engineering Representatives in the Technical Standard Order Authorization process*, dated April 16, 2001;

- *Designated Engineering Representative (DER) Authority for Complex Electronic Hardware Approval and Special Delegation for TSO Complex Electronic Hardware,* dated December 20, 2007; and

- *Technical Standard Order (TSO), Software Approval Criteria*, dated August 10, 1994.