

**CHANGE**

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

ORDER 8150.1C  
CHG 2

12/17/2013

National Policy

**SUBJ:** Technical Standard Order (TSO) Program

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**1. Purpose.** This change clarifies data retention requirements for foreign applicants and delegates authority to the aircraft certification office (ACO) to approve certain TSO deviations as listed in Appendix H without AIR-100 review.

**2. Applicability.** This change is distributed to the branch level in the Aircraft Certification Service and the Flight Standards Service; to the branch level in the Aircraft Certification Directorate offices and the regional Flight Standards Divisions; to the Federal Aviation Administration Academy and the Regulatory Support Division; to all Air Carrier; General Aviation, and Flight Standards District Offices; to all International Field Offices, International Area Offices; Aircraft Certification Field Offices; Manufacturing Inspection District and Satellite Offices.

**3. Explanation of Changes:** This change corrects Appendix references in Section 6-7a. and 6-8a., revises wording in Section 7-4e. and 8-7c., and adds a new Appendix H and moves existing Appendices H to I and I to J.

**4. Disposition of Transmittal Paragraph.** Retain this transmittal sheet until the directive is cancelled by a new directive.

**PAGE CHANGE CONTROL CHART**

Remove Pages	Dated	Insert Pages	Dated
17	05/10/2012	17	12/17/2013
18	03/08/2012	18	12/17/2013
21-22	05/10/2012	21-22	12/17/2013
26	05/10/2012	26	12/17/2013
		APPENDIX H	12/17/2013
APPENDIX H	03/08/2012	APPENDIX I	12/17/2013
APPENDIX I	03/08/2012	APPENDIX J	12/17/2013



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**6-6. Considering Service History at Time of TSOA or LODA Application.** The ACO should not issue a TSOA for an article that is not in a condition for safe operation. See 14 CFR part 45.10(b). The ACO may review the service history of the article when it is a known derivative of a prior design. The ACO will verify that the prior design is neither subject to an AD nor found as a causal factor in an accident investigation. Also, the ACO must verify the prior design has not been the cause of an airworthiness problem. The ACO will follow the guidelines below if a prior design presents a potentially unsafe condition and the proposed article has a similar design.

**6-7. Issuing a TSOA.** After the applicant's article has been found to meet the TSO and the applicant meets 14 CFR part 21 subpart O, as explained above in paragraphs 6-1. and 6-4., the ACO will issue a TSOA letter. The TSOA is issued to the principal manufacturing facility that controls the design and quality of the article(s). The ACO will:

**a.** Prepare the TSOA letter using the sample in appendix C of this order as a guide. The ACO modifies or adds additional details to the TSOA letter as necessary. The original letter is sent to the manufacturer and the ACO keeps a copy for the TSOA master file. If requested, the ACO can send a scanned copy of the letter to the manufacturer, as long as the original is also sent. Notify the MIDO responsible for inspecting and monitoring the manufacturer. Also, the ACO will electronically send a copy of the letter to AIR-110 at [9-AMC-AIR140-Information-Products@faa.gov](mailto:9-AMC-AIR140-Information-Products@faa.gov) (Submittals to this email address need to be in Microsoft Word), who adds it to the TSO approval database.

**b.** The ACO will specifically list in the TSOA letter all pertinent data submitted by the applicant. The letter *must* state:

(1) The FAA authorizes the applicant to identify the article with the applicable TSO marking.

(2) The TSOA is based on the applicant's:

(a) Statement certifying that the applicant meets the requirements of 14 CFR part 21 subpart O.

(b) Statement certifying that the article complies with the TSO in effect on the date of application.

(c) Quality system, which complies with the requirements of 14 CFR 21.607 and has been found satisfactory for production of the article.

(3) The FAA requires the applicant to:

- (a) Report failures, malfunctions, or defects, in accordance with 14 CFR 21.3.
- (b) Notify the ACO and MIDO of name, address, or proposed ownership changes.
- (c) Furnish a copy of the data required by the TSO to the original owner/installer of each article or multiple articles if furnished to one source (for example, operator, type certificate holder, repair station).
- (d) Establish a process for the timely submittal of minor design changes, as required by 14 CFR 21.619, to their responsible ACO. (See chapter 8, paragraph 8-4. in this order for more information.)

**Note:** After a name, address, or ownership change, the TSOA holder may not identify articles with the TSO marking without further FAA approval. (See chapter 5, paragraph 5-5.)

c. The ACO uses FAA Order 8130.2, *Airworthiness Certification of Aircraft and Related Products*, FAA Order 8130.21, *Procedures for Completion and Use of the Authorized Release Certificate*, and FAA Form 8130-3, *Airworthiness Approval Tag*, for information on export airworthiness approval of TSOA approved articles.

**6-8. Issuing a LODA.** After the applicant's article has been found to meet the TSO and the applicant meets 14 CFR part 21 subpart O, as explained above in paragraphs 6-2 and 6-5, the ACO issues a LODA. The ACO will:

**a.** Prepare the LODA letter using the sample in appendix D of this order as a guide. Modify or add additional details to the LODA letter as necessary. Give the original letter to the CAA responsible for the manufacturer and the ACO will keep a copy in the LODA master file. If requested, the ACO can send a scanned copy of the letter to the CAA, as long as the original is also sent. Also, electronically send a copy of the letter to AIR-110 at [9-AMC-AIR140-Information-Products@faa.gov](mailto:9-AMC-AIR140-Information-Products@faa.gov) (Submittals to this email address need to be in Microsoft Word), who adds it to the TSO approval database.

**b.** Specifically list in the LODA letter all pertinent data the CAA submitted on behalf of the applicant. The letter *must* state:

(1) The FAA authorizes the applicant to identify the article with the applicable TSO marking.

(2) The LODA is based on:

(a) The CAA's statement certifying the applicant's article meets the FAA's applicable TSO.

**d. Notification.** ACOs notify applicants of the decision to approve or deny their deviation by doing one of the following:

(1) For TSOA applicants:

- (a) Sending a copy of the letter from AIR-100 to the applicant,
- (b) Asking AIR-100 to respond directly to the applicant with a copy to the ACO, or
- (c) Writing the response to the applicant based on the AIR-100 response.

(2) For LODA applicants:

(a) Sending a copy of the letter from AIR-100 to the applicant's CAA with a cover letter from the ACO,

(b) Asking AIR-100 to respond directly to the applicant's CAA with a copy to the ACO, or

(c) Writing the response to the applicant's CAA based on the AIR-100 response.

(d) In all cases, the ACO notifies the applicant's CAA, and the CAA notifies the applicant.

**e. Deviations the ACO Grants Without AIR-100 Approval.** The ACO may grant the following types of requests to deviate from a TSO standard without AIR-100 approval:

**Note:** The applicant must formally request a deviation from the TSO and the deviation must be reviewed and evaluated by the ACO who will either approve or deny the TSO deviation request. If approved it may be documented in a letter to the applicant or referenced in the TSOA Letter. If denied, a copy of the denial correspondence must be retained as part of the TSO data. The letter to the applicant must include all applicable limitations and marking requirements. The deviation may only be applied to the specific TSOA(s) for which the applicant seeks approval to deviate.

(1) Use of a later version of RTCA/DO-160, *Environmental Conditions and Test Procedures for Airborne Equipment*, which has been recognized by the FAA in AC 21-16, than the environmental test conditions specified in the applicable TSO, provided the applicant uses the *entire* later version of the standard and not just a *portion* of it.

**Note:** If the TSO for electronic equipment contains an appendix with environmental test conditions and test procedures, or references an older industry standard for environmental test conditions other than RTCA/DO-160, it is acceptable to allow deviation to use a version of RTCA/DO-160 recognized by the FAA in AC 21-16.

(2) Use of a later version of RTCA/DO-178, which has been recognized by the FAA in AC 20-115, in lieu of the software design assurance standard specified in the applicable TSO, provided the applicant uses the *entire* later version of the standard and not just a *portion* of it.

**Note:** The applicant must obtain AIR-100 approval when requesting an alternative method, as defined in RTCA/DO-178B, Section 12.3.

(3) Use of a later version of RTCA/DO-254, which has been recognized by the FAA in AC 20-152, than the hardware design assurance standard specified in the applicable TSO.

(4) Deviations to the TSO article marking requirements to establish one TSO as the primary TSO for an article receiving multiple TSO approvals. In that case, the applicant must:

(a) Mark the primary TSO number on the nameplate. (Marking each individual TSO number on the article's nameplate may be impractical.)

(b) Mark the primary article permanently and legibly with a statement that the remaining TSO marking requirements are in the IM, for example "See Inst Mnl for Addtl TSO approvals and/or markings."

(c) List the other TSOs (and marking requirements for each TSO) in the front section of the IM for the article's primary TSO.

(5) Deviations identified in Appendix H.

**7-5. Documenting Details of Deviation.** ACOs instruct manufacturers to document the specific details of deviations granted in their manual (installation manual (IM), component maintenance manual (CMM), etc.). This includes any installation limitations or maintenance procedures required to ensure the article continues to meet the MPS of the TSO after installation. This is necessary to alert installers to evaluate the article further for installation or operational limitations affected by the deviations. The ACO will:

**a.** Ensure manufacturers describe the details of any deviations and document any known functional differences resulting from a deviation.

**b.** Ensure the TSOA or LODA letter includes a reference to the deviations granted as noted in appendixes C and D of this order.

- (c) Notifies the MIDO of the withdrawal.

**8-7. Administrative Activity After Issuance of TSOAs and LODAs.**

**a. Reporting TSO Authorizations.** The ACO will report all new TSOAs, LODAs, and name or address changes to AIR-110, which updates the index of TSO manufacturers. This information may be sent to: [9-AMC-AIR140-Information-Products@faa.gov](mailto:9-AMC-AIR140-Information-Products@faa.gov) Submittals to this email address need to be in Microsoft Word.

**b. Maintaining Records.** The ACO will create and maintain complete and accurate records of the following for each TSOA and LODA:

- (1) Authorizations and design approvals granted,
- (2) Technical data,
- (3) Design change approvals and service difficulty reports,
- (4) Relevant service bulletins and airworthiness directives (ADs),
- (5) Non-compliance actions, and
- (6) Terminations related to each TSO application.

**c. Keeping Master File.** The issuing ACO creates and maintains a master file. The file contains all data submitted by a TSOA/LODA manufacturer pertaining to their application and TSO approval or disapproval. If the ACO and TSOA holder have an agreement (a PSP, MOU, MOA, or other agreement) covering the master file, a TSOA/LODA holder may retain it. The agreement must have a clause requiring the TSOA holder to provide copies of records from the master file upon request. Expect the manufacturer to submit to the ACO, and keep for their records, one copy of the technical data specified in the “data requirements” paragraph of the applicable TSO. When requested, the responsible ACO will give copies of the technical data to other ACOs and show in the transmittal letter which TSO applies. For LODA applications, if the United States has a bilateral agreement that allows for data retention, the LODA holder may retain the master file, provided they comply with the terms of that applicable bilateral agreement. The ACO must retain a copy of the LODA application letter, any applicable certifying statement by the foreign authority, and the LODA issuance letter.

**d. Keeping Adequate TSO-Authorization Records.** Each ACO (or the TSOA holder on the ACO’s behalf, as allowed above) must keep adequate records. Keeping proper records guarantees continued airworthiness support for TSO articles that remain in service but are no longer in production. When a TSOA holder goes out of business or no longer operates under the provisions of their TSOA, instruct them to send the ACO copies of all required data, per 14 CFR 21.607, and any other technical data the ACO deems necessary. Under FAA Order 1350.15C, *Records Organization, Transfer, and Destruction Standard*, Paragraph 8151, we don’t authorize destruction of TSOA records. As the OPR, the ACO has authority to dispose of technical data. Accordingly, under 14 CFR 21.613(b), the ACO must keep these data for as long as approved articles are in service.

**APPENDIX H DEVIATION DELEGATION AUTHORITY TO ACO**

**H-1. Instructions for Use of this Appendix.** This appendix identifies specific TSO deviations that AIR-100 has determined provide an equivalent level of safety (ELOS) for a specific TSO. The ACO is authorized to grant, without further AIR-100 involvement, an applicant's deviation request, provided the request complies with the guidance in this appendix.

**H-2. List of Common Acceptable Deviations.** This list is comprised of TSO deviations that have been repetitive in nature, reviewed by an ACO, and approved by AIR-100. When used as a tool to determine the equivalency of an individual deviation request, the following TSO deviations may be granted by the appropriate ACO Manager. Once approved, the deviation must be filed with AIR-100 for review and record keeping purposes.

- a. TSO-C-39c: 9g Transport Airplane Seats Certified by Static Testing and TSO-C-127a: Rotocraft, Transport Airplane, and Normal and Utility Airplane Seating Systems

It is acceptable to grant a deviation to the required method for determining the Seat Reference Point (SRP) defined in SAE/AS8049A Figure 1B with one of the SRP determination methods defined in SAE/AS8049B Figure 1B.

LIMITATION: The selected method from SAE/AS8049B Figure 1B must be documented and must be used consistently when evaluating all variations of the seat model or future changes to the seat model design.

- b. TSO C-39c: 9g Transport Airplane Seats Certified by Static Testing and TSO C-127a: Rotocraft, Transport Airplane and Normal and Utility Airplane Seating Systems

For Type A and Type B Transport seats, if an inflatable restraint is included, it is acceptable to grant a deviation to the flammability requirements of the airbag material to meet flammability requirements of 14 CFR, Part 25, Appendix F, Part I (a)(iv) as recognized in multiple FAA special conditions.

**Note:** Inflatable restraints are a relatively new and novel technology used in commercial aviation. As such, the seat TSO MPS were not developed to specifically address this new technology. Therefore, the installation approval is still subject to the applicable special conditions and certification requirements.

- c. TSO C-90: Cargo Pallets, Nets, and Containers (Unit Load Devices)

Common deviation to C-90, C-90a, C-90b, and C-90d Section (b)(2) requirement for weight marking to the nearest pound. It is acceptable to grant a deviation to the marking requirements to read the same as paragraph 4.a.(6) of TSO C-90d which reads:

“The nominal weight of the article in the format: Weight: \_\_\_\_\_kg ( \_\_\_\_\_lb)”.

The one pound tolerance for weight marking of a ULD does not add safety. It is unnecessarily restrictive considering the large differences between the marked ULD weight and actual in-service ULD weight that may exist due to accumulated dirt, moisture and other environmental effects.

## Appendix I - Administrative Information

**I-1. Distribution.** Distribute this order to branch levels in Washington headquarters, the branch levels of the Aircraft Certification Service and the Flight Standards Service; to the branch levels of the regional aircraft certification directorates; all ACOs; to the regional Flight Standards Divisions and to all air carrier, general aviation, and flight standards district offices; to the Federal Aviation Administration Academy and the Regulatory Support Division; to all international field offices and international area offices. Also, distribute this order to all MIDOs and MISOs.

**I-2. Suggestions for Improvement.** If you find any deficiencies, need clarification, or want to suggest improvements to this order, send a paper or electronic copy of FAA Form 1320-19, Directive Feedback Information, to the Aircraft Certification Service, Administrative Services Branch, AIR-510, Attention: Directives Management Officer. Form 1320-19 is on the last page of this order. You also may send a copy to the Aircraft Engineering Division, AIR-100, Attention: Comments to Order 8150.1C. If you urgently need an interpretation, contact AIR-100 at (202) 385-6330. Always use Form 1320-19 to follow up each conversation.

**I-3. Records Management.** For guidance on keeping or disposing of records, refer to FAA Orders 0000.1, *FAA Standard Subject Classification System*; 1350.14, *Records Management*; and 1350.15, *Records, Organization, Transfer, and Destruction Standards*, or see your records management officer or directives management officer.

**I-4. Deviating From This Order.** FAA engineering personnel must follow this order to ensure standardized approvals of TSO articles. The Aircraft Engineering Division (AIR-100) coordinates and disposes any proposals to deviate from this order. When the FAA staff needs to use or base an approval on different guidance or alternative procedures, they substantiate and document the need, gain concurrence from the appropriate supervisor, and send the request to AIR-100 for concurrence.

**Appendix J - Sample Directive Feedback Information, FAA Form 1320-19**



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

**Directive Feedback Information**

Please submit any written comments or recommendations for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order 8150.1C

To: Directive Management Officer, AIR-510

*(Please check all appropriate line items)*

An error (procedural or typographical) has been noted in paragraph \_\_\_\_\_ on page \_\_\_\_\_.

Recommend paragraph \_\_\_\_\_ on page \_\_\_\_\_ be changed as follows:  
*(attach separate sheet if necessary)*

In a future change to this directive, please include coverage on the following subject:  
*(briefly describe what you want added)*

Other comments:

I would like to discuss the above. Please contact me.

Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_

FTS Telephone Number: \_\_\_\_\_ Routing Symbol: \_\_\_\_\_  
FAA Form 1320-19 (8-89)(Representation)