



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

Memorandum

Subject: INFORMATION: FAA Order 8150.1B, Technical Standard Order Program, Policy Clarification. Date: 6/13/2003

From: Manager, Aircraft Engineering Division, AIR-100 Reply to
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To: All Directorate Managers
All Aircraft Certification Office Managers

This policy memorandum addresses three specific areas of the subject Order 8150.1B. Since the issuance of the order in May of 2002, questions have been raised and it was determined that the following three specific areas were in need of immediate clarification:

- Incomplete Systems and whether there is a need for deviation requests and marking requirements;
- Contradictions regarding furnished data with multiple articles sent to one source; and
- General marking requirements.

The following information becomes effective immediately and will be incorporated into the next revision of Order 8150.1B.

INCOMPLETE SYSTEMS AND MULTIPLE-USE SYSTEMS

FAA Order 8150.1B paragraph **17b** stipulates that all incomplete system TSO articles must be approved through a deviation request. Paragraph **17a(3)** requires that each of those articles must be marked as an incomplete system. For some segments of the industry, this policy was a change to past practice and is considered to be needlessly burdensome and does nothing to increase the level of safety.

Central to the above policy issues is whether the rules permit the issuance of a TSO authorization (TSOA) for an incomplete system. It has been determined that an incomplete system is approvable as a separate TSO article when clear and precise standards are embedded in the MPS for the TSO without requiring a deviation. There is precedence for granting a TSOA for incomplete systems without a deviation. In addition, the basis and support for acceptance of incomplete systems TSO articles can be found in the requirements of 14 CFR § 21.603(a) that states, "...the article meets applicable TSO performance standards." This phrase is interpreted to mean that if adequate standards exist within a TSO to independently evaluate an incomplete system then a separate TSOA may be awarded to that component.

In consideration of the above, only incomplete system TSO articles that do not have a defined MPS will be required to seek a deviation. Additionally, the required instructions and operational limitations for an incomplete system TSO or any TSO article are to be documented in the Installation Manual (IM). Note that IM documented operational limitations are considered sufficient to ensure compatibility of a system in lieu of specifically marking articles as an incomplete system. Therefore, paragraphs **17a** and **17a(1)** through **a(4)** are replaced with new paragraphs **17a** and **17a(1)** to **a(4)** to reflect a less burdensome approach to handling incomplete systems and paragraph **17b** is also revised to read as follows:

17. INCOMPLETE SYSTEMS AND MULTIPLE-USE SYSTEMS

a. An incomplete system is defined as any component or sub-system that provides a portion of the functionality specified in the MPS of an applicable TSO and may be approved and a TSO authorization issued for only that component or sub-system, under all of the following conditions:

(1) The TSO specifically provides appropriate and adequate minimum performance standards for the independent evaluation of the article as an independent component as well as an integral element of the system.

(2) The component provides a major and independent function of the complete system or the principal function of the component is essential to complete system function.

(3) All detailed instructions and limitations for the installation and use of the article, including limitations of the complete TSO system(s) with which it may be integrated, are adequately documented in the installation drawings, IM and/or CMM. For example, Company “ABC” manufactures a VHF radio control head under TSO-C37/C38 and due to the type of interface it can only be used with a Company “XYZ”, Model “123” VHF receiver-transmitter. Therefore, this interface limitation should be documented to limit the installation of the VHF radio control head to only those VHF receiver-transmitters that Company “ABC” has demonstrated to be interoperable.

(4) In those cases where the incomplete system status of the article is ambiguous and installation dependent, and where installation of the apparent complete system could lead to an airworthiness deficiency, the article should also be marked as an “Incomplete System”, and appropriate limitations be added to the installation drawings, IM and/or CMM as discussed in paragraph **17a(3)**.

b. Applications where the MPS of the applicable TSO are inadequate to define the MPS for the evaluation and testing of the component or sub-system will require review by AIR-100 via a deviation request. Furthermore, the component or sub-system must still comply with the requirements of paragraphs **17a(2)** and **a(3)**. For procedures on deviation requests, see paragraph **12** of this order. The following procedures will then apply:

To be consistent with the changes to paragraph **17** and allow the application of this policy to all TSOs, the boilerplate information shown in **Appendix 1**, the first sentence of paragraph **5a(2)** and **(6)** is revised as follows:

APPENDIX 1

5. DATA REQUIREMENTS

a. Application Data

(2) “Installation procedures and limitations. The limitations, in the form of an installation manual (IM), ...”

(6) “Instructions, in the form of an installation manual (IM) and/or component maintenance manual (CMM), as appropriate containing...”

FURNISHED DATA WITH MULTIPLE ARTICLES SENT TO ONE SOURCE

To more clearly address the ability of manufacturers to provide one set of instructions for multiple articles and to avoid the unnecessary and unwanted delivery of copies of the same data to a single user of multiple articles, the text of paragraph **22** is revised as follows:

22. CONTINUED AIRWORTHINESS. “The holder of a design approval, including holders of TSO authorizations, must provide at least one complete set of instructions for continued airworthiness (ICA) to the original owner/installer of each article or multiple articles, as required by 14 CFR § 21.50(b)....”

In addition, the specific text of the information to be provided with each article(s) contained in **Appendix 2** and **3** of the order is revised to accurately reflect the guidance of paragraph **22** and the new text which was put in the TSO format of **Appendix 1** paragraph **5c(1)**. The text of paragraph **5c(1)** currently reads as follows: “One copy of the technical data and information ... and any other data or information necessary for the proper installation, certification and use and/or for continued airworthiness ... must accompany each article or multiple articles, if furnished to one source, i.e. operator, repair station, etc., manufactured under this TSO.”

Appendix 2 and **3** provide the format and guidance for the preparation of the TSOA letter and letter of TSO Design Approval (LODA). Each of these appendices are intended to reflect the requirements of each TSO, which as stated above requires that a certain statement be furnished with each manufactured unit.

To be consistent with the requirements of **Appendix 1**, the guidance for preparation of the TSOA letter and LODA contained in **Appendix 2** and **3** regarding the statement to be furnished with each article or multiple articles is revised as follows:

APPENDIX 2 AND 3

As required by the TSO, the following statement must be furnished to the original owner/installer of each article or multiple articles, if furnished to one source:

“The conditions and tests required for TSO approval of this article...”

These changes also accommodate the trend of TSOA holders to deliver the required technical data by electronic means (i.e. CD-ROM, Internet, etc.).

MARKING REQUIREMENTS

Appendix 1 paragraph **4a** of the order states: “At least one major component must be permanently and legibly marked with all of the information listed in 14 CFR § 21.607(d), except for the following: the option in 14 CFR § 21.607(d)(2), where the name, type and part number must be used in lieu of the optional model number; and the option in 14 CFR § 21.607(d)(3), where the date of manufacture must be used in lieu of the optional serial number.”

As written, paragraph **4a** removed the option for manufacturers to mark a TSO article with either the serial number or the date of manufacture of the article or both. For some articles, the date of manufacture is critical to the continued airworthiness of the articles, future maintenance and/or inspections. The intent was to ensure that the date was used instead of the serial number in situations where critical maintenance/overhaul cycles need to be readily inspectable. However, for other articles, the Serial number can be more informative. Therefore, **Appendix 1** paragraph **4a** of the order is revised as follows:

APPENDIX 1

4. MARKING

a. At least one major component must be permanently and legibly marked with all of the information listed in 14 CFR § 21.607(d), except for the following: the option in 14 CFR § 21.607(d)(2), where the name, type and part number must be used in lieu of the optional model number; and the option in 14 CFR § 21.607(d)(3), where the date of manufacture must be used in lieu of the optional serial number when that information is critical for maintenance and/or inspections.

In conclusion, the above policy changes provide clarifications and are more consistent guidance for the TSO process. If you have any questions, please contact John Petrakis, AIR-120 at 202-267-9274.

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Aircraft Certification Service