

# TSOA Data and Design Changes

Presented to: TSO Workshop

By: Rachel Cabe

Date: September 20, 2023



**Federal Aviation  
Administration**



# Overview

- **Approving TSOA Data**
- **Changes to TSOA Data**
- **Using TSOA Data**



# Approving TSOA Data



# Approved

**Unless used with reference to another person, means approved by the FAA or any person to whom the FAA has delegated its authority in the matter concerned, or approved under the provisions of a bilateral agreement between the US and a foreign country or jurisdiction**

Reference 14 CFR § 1.1

# How is Data Approved?

- **Technical data are approved under part 21 usually when the FAA issues a design approval**
  - Type Certificate (TC)
  - Supplemental Type Certificate (STC)
  - Parts Manufacturer Approval (PMA)
  - **Technical Standard Order Authorization (TSOA)**
  - Other methods, i.e. § 21.8(d)
- **Technical data can also be approved in support of repairs and alterations such as field approval (block 3 of FAA Form 337) and by using FAA forms 8110-3 or 8100-9**
- **Data associated with Part 39 Airworthiness Directives (e.g., service bulletin or AMOC)**
- **Under the provisions of a bilateral agreement between the US and a foreign country or jurisdiction**

# TSOA Requirements

## Subpart A

### General

- Definitions
- Falsification
- Approval of Articles

## Subpart O

### Technical Standard Order Approvals

- Applicability and Definitions
- Application
- Holder Responsibilities
- Minor Design Changes
- Inspections and Tests
- Quality System / Quality Manual
- Deviations

## TSO

- General qualification
- Minimum Performance Standards (MPS)
- Marking
- Maintenance instructions
- Installation limitations
- Application Data
- Furnished Data

# TSOA Technical Data

## Descriptive Data

- Drawings and specifications necessary to define the configuration and the design features;
- Information on dimensions, materials, and processes;
- Installation limitations, if applicable; and
- Documents such as maintenance and inspection instructions

## Substantiation Data

- Test results
- Computations, and
- Other information necessary to show that the descriptive data meets the applicable requirements

# TSOA Applicant Requirements

- **Provide a statement that each article conforms to the TSO**
  - Statement of conformity must include a statement that applicant has complied with § 21.603(a)(1)
- **Show compliance with all applicable requirements in the TSO**
- **Provide all technical data required by the TSO**
- **Allow FAA inspections and test as requested (§ 21.610)**
- **Establish a quality system / quality manual (§§ 21.607 and 21.608)**
- **Describe the organization and identify an accountable manager (§ 21.605)**



# TSOA Holder Responsibilities

- **Ensure that each manufactured article conforms to its approved design, is in a condition for safe operation, and meets the applicable TSO (§ 21.616(c))**
- **Have access to the design data necessary to determine conformity and airworthiness for each article produced under the TSO authorization (§ 21.616(f))**
- **Maintain a quality system (§ 21.607) and notify the FAA of any changes (§ 21.620)**
- **Report failures, malfunctions and defects (§ 21.3)**
- **Not falsify applications, reports or records (§ 21.2)**
- **Furnished data in accordance with requirements of the TSO**
- **Make minor design changes (§ 21.619(a))**

# Changes to TSOA Data



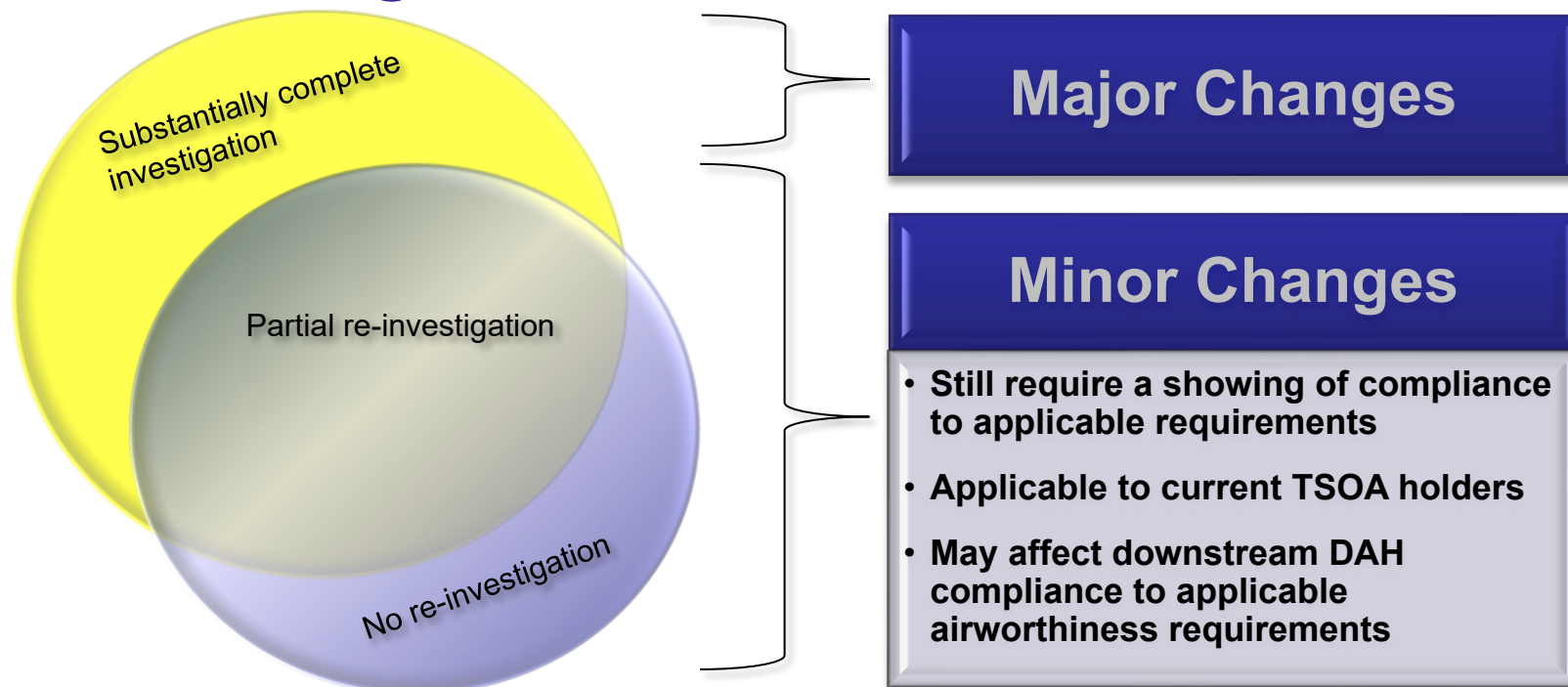
# Changes to TSOA Design Approvals

## § 21.619 Design changes.

- (a) Minor changes by the manufacturer holding a TSO authorization. The manufacturer of an article under an authorization issued under this part may make minor design changes (any change other than a major change) without further approval by the FAA. In this case, the changed article keeps the original model number (part numbers may be used to identify minor changes) and the manufacturer must forward to the FAA, any revised data that are necessary for compliance with § 21.603(a).
- (b) Major changes by the manufacturer holding a TSO authorization. Any design change by the manufacturer extensive enough to require a substantially complete investigation to determine compliance with a TSO is a major change. Before making a major change, the manufacturer must assign a new type or model designation to the article and apply for an authorization under § 21.603.
- (c) Changes by persons other than the manufacturer. No design change by any person (other than the manufacturer who provided the statement of conformance for the article) is eligible for approval under this part unless the person seeking the approval is a manufacturer and applies under § 21.603(a) for a separate TSO authorization. Persons other than a manufacturer may obtain approval for design changes under part 43 or under the applicable airworthiness regulations of this chapter. TSOA design changes are classified as 'major' or 'minor'

- **A TSOA holder may make minor design changes under § 21.619(a)**
  - Note: § 21.619(a) was amended (Dec. 9, 2022) to update the reference to § 21.603(a)
  - If a person is not the holder of the TSOA, they may apply under § 21.603(c)
- **Major design changes to a TSOA require a new TSOA application**

# Types of Changes



**EMPHASIS ON EFFECT TO THE INVESTIGATION OF COMPLIANCE TO TSO**

# Using TSOA Data



# How is Data Approved?

- **Technical data are approved under part 21 usually when the FAA issues a design approval**
  - Type Certificate (TC)
  - Supplemental Type Certificate (STC)
  - Parts Manufacturer Approvals (PMA)
  - Technical Standard Order Authorizations (TSOA)
  - Other methods, i.e. § 21.8(d)
- **Technical data can also be approved in support of repairs and alterations such as field approval (block 3 of FAA Form 337) and by using FAA forms 8110-3 or 8100-9**
- **Data associated with Part 39 Airworthiness Directives (e.g., service bulletin or AMOC)**
- **Under the provisions of a bilateral agreement between the US and a foreign country or jurisdiction**

Applicant

# Applicant Responsibilities

**Applicant is responsible for submitting a sufficient data package to the FAA that is necessary to show that the product meets the applicable requirements of the Federal Aviation Regulations**

- **Data must be considered valid**
  - TSO article design data approved under TSOA
  - TSO article design data approved under the provisions of a bilateral agreement
- **Data must be considered applicable**
  - Is the article-level data appropriate for the product-level certification project?
  - Can the design data approved for a certain use be appropriately applied to another use?
  - Are the showings providing rationale for non-interference with any design features of the installation, etc.?

# Using or Reusing Technical Data

## *Common Questions*



How do you know the data that was generated is still valid?



At what point in the project is the data approved?



What evidence does the applicant need to reuse the data?



Are there special considerations for data approved via a foreign authority?



# ***AC 21-50, Installation of TSOA Articles and LODA Appliances***

- **The data developed by a TSOA holder is required to address the MPS defined by the TSO, and might not address all of the applicable airworthiness requirements for its installation in the type design of a product**
- **The TSO marking on a TSO article does not indicate that the applicable airworthiness requirements of the product on which it is being installed have been addressed**
- **An applicant must have the descriptive and substantiation data necessary to show that the product on which the TSO article is being installed meets the applicable airworthiness regulations**
- **An applicant may use data approved by the FAA under a TSOA to support showing compliance to the airworthiness requirements applicable to the category of the product on which the TSO article is being installed**
- **If the applicant makes design changes and cannot demonstrate that the TSO article still meets the TSO MPS, the data approved or accepted under the TSOA may not be valid**
- **Additional FAA review of any TSO data affected by design changes is required to ensure that the article complies with any applicable airworthiness requirements at installation**

# Contact Information

**Rachel Cabe**

**Aerospace Engineer**

**Product Policy – Systems Standards, AIR-63A**

**Rachel.cabe@faa.gov**

**<OR>**

**[9-AVS-TSO-Questions@faa.gov](mailto:9-AVS-TSO-Questions@faa.gov)**