



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

Advisory Circular

Subject: Compliance Assurance System (CAS)
Requirements for a Technical Standard Order
Authorization (TSOA) Applicant/Holder

Date: 10/19/26

AC No: 21-56

Initiated By: AIR-630

1 PURPOSE

This advisory circular (AC) provides guidance on an acceptable means, but not the only means, for an applicant or holder (hereafter referred to as “applicant”) of a Technical Standard Order Authorization (TSOA) to implement a Compliance Assurance System (CAS) within their organization. A TSOA applicant with an established CAS would be using a systems-based approach as the basis for determining design compliance to the requirements of a Technical Standard Order (TSO). This AC defines the baseline organizational capabilities and engineering processes that constitute an effective CAS. Applicants may use these criteria to evaluate, establish, or improve their internal compliance architectures. If you use the means described in the AC, you must follow it in all important respects. For the purposes of this AC, the term “must” applies only to applicants who choose to follow this specific method, and the term “you” includes both TSOA applicants and current TSOA holders following this specific method.

Note: This AC addresses an applicant’s organizational structure and engineering capabilities regarding conformance to a TSO. This AC does not provide guidance for production approval requirements found in Title 14, Code of Federal Regulations (14 CFR) part 21, subparts G and O, and does not address requirements for an Organization Designation Authorization (ODA).

2 APPLICABILITY.

- 2.1 This AC applies to TSOA applicants who wish to implement a system-based approach to design compliance. The FAA recognizes a Partnership for Safety Plan (PSP) as a preferred, structured mechanism for an applicant to document and communicate their CAS capabilities to the FAA. Applicants who choose to implement a CAS through an agreed-upon framework facilitate the ability of the FAA to audit the TSO applicant’s system on an ongoing basis to verify that it meets FAA regulatory expectations. Experienced applicants may wish to use this guidance to substantiate their capabilities for creating, controlling, and maintaining the design of articles that meet the requirements of applicable TSOs.

- 2.2 This is a guidance document. Its content is not legally binding in its own right and will not be relied upon by the Department as a separate basis for affirmative enforcement action or other administrative penalties. Conformity with the guidance document is voluntary only. Nonconformity will not affect rights and obligations under existing statutes and regulations.
- 2.3 The FAA will consider other means of demonstrating compliance that an applicant may elect to present. Terms such as “should,” “may,” and “must” are used only in the sense of ensuring the applicability of this particular method of compliance when the acceptable method of compliance in this document is used. If the FAA becomes aware of circumstances in which following this AC would not result in compliance with the applicable regulations, the FAA may require additional substantiation or design changes as a basis for finding compliance.
- 2.4 The material contained in this AC does not change or create any additional regulatory requirement, nor does it authorize changes in, or permit deviations from, existing regulatory requirements.

3 RELATED MATERIAL.

3.1 Title 14, Code of Federal Regulations (14 CFR).

The following 14 CFR regulations are related to this AC. You can download the full text of these regulations from the [Federal Register](#).

- Part 21, *Certification Procedures for Products and Articles*;
- § 21.603. *Application*;
- § 21.619. *Design Changes*;
- § 21.618. *Approval for Deviation*;
- § 21.137. *Quality System*;
- Part 45, *Identification and Registration Marking*.

3.2 FAA Advisory Circular.

AC 21-46, *Technical Standard Order Program*, provides related guidance to this AC. The latest versions of these ACs are available at [FAA Advisory Circulars](#) and the [Dynamic Regulatory System](#).

3.3 FAA Orders.

The following orders are related to the guidance in this AC. The latest versions of orders referenced in this document are available on the [Dynamic Regulatory System](#).

- Order 1350.14, *Records Management*.
- Order 8150.1, *Technical Standard Order Program*.

3.4 FAA Guides.

[The FAA and Industry Guide to Product Certification, Third Edition \(CPG\)](#), or its latest version, is related to the guidance in this AC.

4 BACKGROUND

The FAA has a program called the Partnership for Safety Plan (PSP), which allows applicants and holders to agree on the applicants' capabilities and processes. This can allow the FAA to accept certain data without a full review based on those agreed-upon capabilities. The program has existed for many years; however, there is very little guidance to allow the FAA and applicants to develop these plans consistently, nor is there any guidance or policy to specify what types of processes should be included in these PSPs.

5 ESTABLISHING A TSO COMPLIANCE ASSURANCE SYSTEM.

5.1 Partnership for Safety Plan (PSP).

A PSP is a high-level written agreement between the FAA and a TSOA applicant on the applicant's certification process. It is used to:

- Define the applicant's procedures for showing that an article meets the applicable TSOs;
- Establish general expectations of interaction between the FAA and applicant;
- Identify expected deliverables; and
- Define the general discipline, methodology, and accountability framework for planning and administering TSO certification projects.

5.1.1 Establishing a New PSP.

If you do not already have a PSP established with your certification branch and wish to use this AC, then you should use both the guidance contained in the latest version of the CPG and this AC to develop your PSP. If needed, you may include multiple certification branches in your PSP agreement, such as for those companies that may interface with more than one certification branch.

5.1.2 Using the PSP to Establish a CAS.

Document all the elements outlined in this AC to establish the framework of the CAS in the PSP. You may develop separate procedural documents (e.g., work instructions, quality manual) to further detail any of the elements specified in this AC, and you must include references to them in the PSP.

Note: Establishing or amending a PSP takes considerable effort by both the FAA and the applicant. Both parties must agree that entering into or amending a PSP per this AC will be beneficial for future TSOA projects.

5.1.3 Evaluating an Existing PSP.

To verify that your existing PSP adequately covers the elements described in this AC, or to document additional elements, contact your certification branch.

6 ORGANIZATIONAL RESPONSIBILITIES.

6.1 Regulatory Compliance.

To develop a PSP, your organization must have the capability to ensure compliance with 14 CFR part 21, subpart O. You must document your processes that ensure you:

- Comply with governing documentation, FAA policy, and associated processes and procedures;

- Maintain the necessary resources to meet regulatory requirements;
- Have requirements for staff to report potential or actual compliance issues (e.g., non-compliances);
- Evaluate your organization's performance with respect to compliance to the applicable requirements; and
- Ensure your organization's policies do not conflict with FAA regulations or policy.

6.2 **Listing Applicable TSOs.**

Include an appendix in your PSP that lists all TSOs you wish to facilitate application for through your CAS. You may include TSOs which you are currently applying for or TSOAs you already hold. For each listed TSO, you must define:

- Each type of article (including a brief description) for which you plan to use your CAS to determine conformance to TSO requirements;
- A compliance matrix of TSO requirements, identifying which requirements CAS should determine conformance to;
- Methods of compliance your CAS will use to determine conformance to the TSO requirements; and
- Technical competencies required to determine conformance to applicable TSO requirements.

6.3 **FAA Oversight.**

To participate in the systems-based approach outlined in this AC, you should coordinate with the applicable certification branch to evaluate your CAS capabilities and support FAA systemic oversight with necessary facilities and personnel. You should identify the primary operational interfaces with FAA personnel within your documented processes.

6.4 **Communication with the FAA.**

You should document your processes to:

- Identify points of contact for your organization;
- Define a process to address and resolve technical compliance disputes regarding TSO requirements;
- Define the events or activities that trigger communication with the FAA;
- Direct formal correspondence to the appropriate individual(s) in the FAA;
- Coordinate with the FAA on TSOA project activity including, but not limited to, design changes, continued operational safety, and the introduction of new technologies into a TSOA article;
- Coordinate with the FAA on changes to your organizational structure and personnel that directly impact CAS capabilities; and
- Coordinate with the FAA on relocations or expansions of facilities that alter the established engineering or testing capabilities validated under your CAS framework.

6.5 Compliance Assurance.

Commitment to compliance assurance should be documented and communicated throughout your organization. You should ensure that your organization can communicate your compliance assurance objectives and the framework for setting and reviewing those objectives. Senior management should conduct regular reviews of the compliance assurance policy to ensure it remains effective.

6.6 Means of Compliance (MoC) Library.

Practices or procedures describing design practices, inspections, analyses, tests, etc., that consistently and reliably generate compliance design data may be accepted by the FAA and used to establish that a design meets the listed TSOs. You should establish a repeatable methodology to:

- Identify a MoC for each applicable TSO requirement, recognizing that a single MoC may be capable of demonstrating compliance to more than one requirement, while other requirements may require more than one MoC to show compliance;
- Apply each MoC consistently for each submittal; and
- Ensure your compliance practices reflect new and changed FAA policies and methods of compliance for your organization's current competencies.

6.7 Compliance Risk Management.

You should document your processes to:

- Identify potential or actual compliance issues and evaluate if they have an acceptable level of compliance risk relative to TSO requirements;
- Identify the qualified individual(s) within your organization that can make decisions regarding compliance risk;
- Identify and implement controls to mitigate potential or actual compliance issues that have compliance risks above an acceptable level; and
- Apply compliance risk management and mitigation data into your standard design substantiation records.

6.8 Compliance Performance Assessment.

6.8.1 Current TSOA holders should maintain records demonstrating that their organization continues to meet its established CAS responsibilities and have them available for review upon request. They should agree to notify the FAA within an agreed timeframe if their organization cannot meet the requirements it agreed to with the FAA.

6.8.2 You should document your processes to:

- Monitor the compliance performance of your organization and identify any internal or external changes that may have an impact to design capabilities;
- Audit your design approval processes and systems on a recurring basis to determine if they conform to your documented procedures;
- Identify areas for improvement and revise your processes and systems accordingly; and

- Process reports of potential or actual compliance issues, concerns, occurrences, or incidents affecting TSO articles and implement appropriate corrective actions consistent with applicable regulatory reporting requirements.

7 PERSONNEL.

7.1 Organizational Structure.

7.1.1 A compliance team is composed of a CAS manager and one or more qualified individuals. You may establish more than one compliance team as needed to address different TSO standards. You should establish a compliance team of personnel with the competencies to perform the required activities to ensure that the requirements of the applicable TSOs are satisfied. You should notify the FAA any time your organization is not capable of meeting your stated technical capabilities.

7.1.2 An effective CAS relies on an organization's ability to:

- Assess and allocate adequate staffing levels to accomplish the design and compliance activities required to comply with 14 CFR part 21, subpart O, and the applicable TSO(s);
- Select, train, and qualify sufficient personnel to perform the required design and compliance activities;
- Document training objectives and plans to maintain qualifications for each compliance team member, including training on a recurrent basis, as applicable;
- Conduct internal oversight of all CAS activities on a recurring basis to ensure system integrity; and
- Ensure each compliance team member has no conflicting duties and there is no other interference that may affect their performance of CAS activities.

7.2 Roles and Responsibilities.

7.2.1 CAS Manager.

7.2.1.1 CAS Manager Responsibilities.

The CAS manager is an employee or owner of your company, but not necessarily a member of the management staff. The CAS manager should report to the appropriate organization or person in the organization to effectively perform the assigned responsibilities. The CAS manager may sign the statement of conformance on your behalf. Other responsibilities of the CAS manager may be delegated to qualified individuals if appropriately documented in the PSP. The individual is designated by the applicant to manage:

- All management, procedural, and policy aspects of your TSOA CAS;
- The processes that verify conformance with applicable TSO standards and the requirements of 14 CFR part 21, subpart O;
- The regular review of the compliance assurance performance and intended results of the CAS, and the incorporation and documentation of corrective action for any identified non-compliances; and

- The signing of the statement of conformance for a TSOA application as required by § 21.603.

7.2.1.2 You should identify the CAS manager by name and describe the position for the CAS manager, including the overall relationship to other management positions within the organization in the PSP.

7.2.2 Qualified Individuals.

7.2.2.1 **Qualified Individual Responsibilities.**

Qualified individuals may be employees of your company or external contract personnel. They should be able to perform design activities to establish compliance with TSO requirements without undue pressure or influence from other organizational elements. The applicant's system framework should ensure that these qualified individuals are designated to review the following data to verify compliance with applicable requirements:

- Design data, substantiation data, and reports;
- Master document data;
- TSO compliance matrices; and
- Other required documents ensuring that the article(s) continue to meet TSO requirements, such as maintenance instructions, installation instructions, or installation limitations.

7.2.2.2 **Identifying Qualified Individual Roles and Responsibilities.**

7.2.2.2.1 To identify the roles and responsibilities of a Qualified Individual, you should define within your CAS how you:

- Identify the role(s) of the qualified individual(s) in the compliance team and any of their duties or limitations regarding compliance;
- Define the competencies required to ensure each role is able to perform compliance activities as defined;
- Establish the process that qualified individual(s) will use to document evidence of the data approval;
- Outline the overall relationship(s) of the qualified individuals within your organization, including how consultants, contractors, or other outside entities are integrated into the structure; and
- Describe how the qualified individuals will be protected from undue pressure or influence from other organizational elements in establishing compliance with TSO requirements.

7.2.2.2.2 You should establish qualification criteria ensuring that qualified individuals have appropriate knowledge of technical requirements, technical proficiency, and experience to effectively assess an article's compliance with TSO requirements. The qualified individuals that you select may include specialists in particular disciplines for

technologies specified in the applicable TSOs (e.g., High-Intensity Radiated Fields (HIRF), or TSO-required processes such as software assurance, airborne electronic hardware assurance, or aeronautical database assurance).

7.3 **Selecting Qualified Individuals.**

7.3.1 General Requirements.

You should determine the technical criteria for qualified individuals in the required competencies described on your PSP listing of TSOs. You should evaluate each candidate's qualifications on an individual basis against these criteria. Select individuals who possess:

- Comprehensive knowledge of FAA TSO policies, procedures, and regulations associated with the design of TSOA articles;
- Technical knowledge or skill appropriate to the assigned responsibilities; and
- Understanding of the technical requirements and issues related to TSO-article approval.

7.3.2 Records.

You should maintain qualification records for each qualified individual containing:

- The TSO competencies as listed in your PSP that the qualified individual holds;
- Relevant work experience, education, training, or certifications; and
- Any other information related to the individual's qualifications.

Note: You should maintain these qualification records for the duration you hold the associated TSO authorizations, including performance reports, corrective actions, and other relevant information necessary to substantiate system capability.

7.3.3 Personnel with Current FAA Designations Pursuant to 14 CFR Part 183.

You are not restricted from using individuals who hold FAA designations (i.e., Designated Engineering Representatives or ODA unit members); however, you should still assess their qualifications using the same process as other candidates. When executing duties strictly within the scope of an applicant's CAS, these individuals function as part of the applicant's internal compliance team rather than acting within their designated authority pursuant to 14 CFR part 183.

7.3.4 Evaluations.

You should ensure each qualified individual effectively performs the assigned responsibilities by performing regular proficiency assessments. You should maintain proficiency records within the CAS, which should be available to the FAA for review upon request, including:

- The criteria used as the basis for the assessments;
- The frequency of the assessment (annually or as appropriate); and
- Documentation confirming that the individual continues to possess the necessary technical proficiency to fulfill their designated roles.

7.4 **Training Personnel.**

7.4.1 All compliance team members should receive the necessary training to ensure that they remain capable of performing their functions within your organization. You should define the training

requirements for each qualified individual's technical role and for your CAS manager to maintain the technical integrity of the system.

7.4.2 Internal Training.

You may provide ongoing training to compliance team members as needed to ensure that they have the competency to perform their assigned duties. You should make internal training materials available for FAA evaluation upon request, which may include a review of the training documents or coordinating attendance at a training session during systemic oversight audits.

7.4.3 External Training.

In addition to any internal training you provide, qualified individuals may also be required to attend outside training, such as FAA or industry group seminars.

7.4.4 Training Records.

You should include a training record for each compliance team member within your CAS documentation. Training record(s) should include a training history identifying a description and the date of training received (e.g., company training, FAA seminars, or any other training related to the individual's assigned duties). These records should be maintained in a manner that facilitates FAA review upon request.

8 **DESIGN PROCEDURES.**

You should document your design development process. Process documentation should include, but is not limited to, the elements outlined below to ensure a repeatable and auditable system-based approach to design compliance.

8.1 **TSO Requirements.**

You are responsible for documenting how you plan to verify compliance with the requirements of the TSO (e.g., using a compliance matrix or equivalent method). You should trace design requirements throughout the article and CAS lifecycles as needed, and document your process for determining, validating, and managing changes to design requirements to maintain the integrity of the design baseline.

8.2 **Design Data Control.**

You are responsible for documenting how you define and control your design data such that your article meets and continues to meet the TSO requirements. Design data includes, but is not limited to: drawings, documents, media, or data, including any subsequent changes. Your design data control system should include processes to ensure that design data is:

- Arranged for easy retrieval by the organization and the FAA;
- Consistent with applicable regulatory data retention standards; and
- Controlled under configuration management (see § 21.619) with engineering evaluation of design changes through a change process.

8.3 **Design Data Review.**

You are responsible for documenting how you should:

- Review design data;

- Make approved design data available to production in accordance with your configuration control system;
- Ensure that an appropriate qualified individual reviews and concurs with all design data and design changes;
- Define and disposition design changes, including the technical criteria used to determine if a design change is minor; and
- Notify the FAA of design changes within the interval agreed to by the certification branch within your CAS.

8.4 **Non-TSO Functions.**

You are responsible for documenting how you should ensure that your system framework has the capability to:

- Identify any declared non-TSO function(s) incorporated into the design of your article(s);
- Determine and substantiate that non-TSO function(s) do not interfere with the article's ability to meet applicable TSO requirements; and
- Ensure that qualified individual(s) with appropriate technical competencies execute their responsibilities without interference.

8.5 **Configuration Management.**

You should document your configuration management system process. Documentation should include, but is not limited to, the identification and control of physical and functional attributes throughout the lifecycle of your article(s), including traceability to requirements, and the implementation of identified changes consistent with the actual attributes of the articles.

8.6 **Deviations.**

You should document your process for identifying, justifying, and submitting TSO deviation requests to the FAA (see § 21.618). Process documentation should include methods to ensure that you do not utilize any deviated design data until you receive formal written approval from the certification branch.

8.7 **Supplier Control.**

You should document your processes for managing and controlling supplier design activities to meet applicable requirements. Process documentation should include the review, verification, and validation of supplier-furnished design data to ensure it meets applicable TSO requirements.

8.8 **Record Retention.**

8.8.1 You must retain all technical data, drawings, and specifications required to be made and retained in accordance with part 21, subpart O.

8.8.2 You are responsible for documenting your process for identifying records that are required to be made and retained in accordance with part 21, subpart O, to include:

- Application and required certification or approval data, including the data and records documenting the CAS compliance process;
- A copy of each approved PSP manual revision; and

- Any other records as specified in the PSP.

8.8.3 All CAS records and data should be made available to the FAA for inspection upon request.

8.8.4 The records required by this AC are addressed by the information collection OMB Control Number: 2120-0018.

9 **AC FEEDBACK FORM.**

For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form.

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DRAFT DOCUMENT

The FAA will add Advisory Circular Feedback Form (FAA 1320-73) to the end of this document during final issuance.

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