

## ARAC - Support Regulatory Reform of Aviation Regulations Tasking – Phase 2

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### Regulation & Title

14 CFR 21.33 Inspection and tests.

14 CFR 21.53 Statement of conformity.

FAA Order 8110.4C Type Certification Process

### Existing Regulation Text

#### §21.33 Inspection and tests.

(a) Each applicant must allow the FAA to make any inspection and any flight and ground test necessary to determine compliance with the applicable requirements of this subchapter. However, unless otherwise authorized by the FAA—

(1) No aircraft, aircraft engine, propeller, or part thereof may be presented to the FAA for test unless compliance with paragraphs (b)(2) through (b)(4) of this section has been shown for that aircraft, aircraft engine, propeller, or part thereof; and

(2) No change may be made to an aircraft, aircraft engine, propeller, or part thereof between the time that compliance with paragraphs (b)(2) through (b)(4) of this section is shown for that aircraft, aircraft engine, propeller, or part thereof and the time that it is presented to the FAA for test.

(b) Each applicant must make all inspections and tests necessary to determine—

(1) Compliance with the applicable airworthiness, aircraft noise, fuel venting, and exhaust emission requirements;

(2) That materials and products conform to the specifications in the type design;

(3) That parts of the products conform to the drawings in the type design; and

(4) That the manufacturing processes, construction and assembly conform to those specified in the type design.

[Doc. No. 5085, 29 FR 14564, Oct. 24, 1964, as amended by Amdt. 21-17, 32 FR 14926, Oct. 28, 1967; Amdt. 21-27, 34 FR 18363, Nov. 18, 1969; Amdt. 21-44, 41 FR 55463, Dec. 20, 1976; Amdt. 21-68, 55 FR 32860, Aug. 10, 1990; Amdt. 21-68, 55 FR 32860, Aug. 10, 1990; Amdt. 21-92, 74 FR 53386, Oct. 16, 2009]

#### §21.53 Statement of conformity.

(a) Each applicant must provide, in a form and manner acceptable to the FAA, a statement that each aircraft engine or propeller presented for type certification conforms to its type design.

(b) Each applicant must submit a statement of conformity to the FAA for each aircraft or part thereof presented to the FAA for tests. This statement of conformity must include a statement that the applicant has complied with §21.33(a) (unless otherwise authorized under that paragraph).

[Amdt. 21-17, 32 FR 14926, Oct. 28, 1967, as amended by Amdt. 21-92, 74 FR 53386, Oct. 16, 2009]

### FAA Order 8110.4C Type Certification Process

#### 2-5. COMPLIANCE PLANNING

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**c. Conformity for Engineering Purposes.** The FAA uses conformity inspections for both quality assurance and engineering purposes. FAA conformity is a validation of the applicant's conformity. As part of the type certification process, the ACO must identify the minimum level of conformity inspections needed for certification. During the inspection, FAA

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manufacturing inspectors base the depth of their assessment on factors such as quality of the applicant's conformity paperwork, comparison of inspection results, and magnitude and complexity of the inspection.

(1) The applicant is responsible for identifying the test articles that will be used to generate compliance data, and for conducting 100 percent applicant conformity of those test articles as required by 14 CFR § 21.33(b). The ACO is responsible for identifying features, attributes, and components critical to the test results and for requesting FAA conformity on these test articles with special instructions as necessary. The MIDO is responsible for determining what conformity inspections will be necessary for processing production approvals. Because both offices need FAA conformity inspections for different purposes, the ACO and MIDO should finalize a comprehensive conformity plan (also known as conformity verification plan) together. Base this conformity plan on the test article and schedule data in the applicant's certification plan.

(2) To expedite agreement of a completed PSCP, applicants should develop their test article and schedule data into a conformity plan that the ACO and MIDO can accept with minimal further development (see paragraph 5-5 of this order). Applicants should consider the conformity requirements elsewhere in this and other orders and present a plan that supports their showing of compliance for a TC and the FAA's finding of compliance for the TC and PC. While applicant involvement in the conformity plan is strongly encouraged (only the supporting data listed in paragraph 2-3d of this order are required), the FAA must retain the discretion to make the inspections necessary to determine compliance with the applicable 14 CFR requirements. Therefore, the FAA is responsible for the final content of the plan.

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**Why is this rule on the list?**

*b) Are outdated, unnecessary or ineffective;*

- *Applicant manufacturers are completely responsible for conformity specifically prescribed by regulation and have modern quality systems and industry best practices for robust configuration management systems and IT tools for controlling test article configuration to ensure conformity in compliance with safety and regulatory requirements. A configuration management system ensures conformity is built into the process for all articles/parts whereas the current FAA conformity process is only capable of managing configuration at a single individual component level.*

*c) Impose costs that exceed benefits; or*

- *Redundant FAA conformity process is extremely administratively burdensome for both industry and FAA and also requires FAA personnel or its designees to travel all over the U.S. and the world to conduct redundant inspections which is already the responsibility of the applicant.*

*d) Create a serious inconsistency or otherwise interfere with regulatory reform initiatives and policies*

- *Redundant FAA verification of conformity at the individual part level is not a systematic approach to system safety oversight and is contrary to current FAA compliance philosophy and risk based decision making as well as certification reforms supported by FAA, industry and Congress.*
- *Redundant verification of conformity is unique to the FAA and United States. EASA from Europe and TCCA from Canada do not require a second verification check of configuration and allows for a manufacturer configuration management system that has been approved/accepted by the Authority.*

### **Proposed Action (Repeal/Replace/Modify)**

Replace the current requirement for redundant FAA conformity verification to allow the use of a systematic approach to test article configuration management system that satisfies FAA conformity and safety requirements in accordance with 14 CFR 21.33 and 21.53.

### **Proposed Change (Include specific regulatory text edits if appropriate – Replace or Modify proposals)**

14 CFR 21.33 and 21.53 does not require a redundant FAA conformity but custom and practice for this interpretation and method of compliance has been established by FAA Order 8110.4C, Type Certification Process. At a minimum, FAA Order 8110.4C, Type Certification Process (and other related policy and guidance material) must be revised to allow the use of a configuration management system as an alternative to the currently required redundant FAA conformity process. Specific recommendations for changes to these documents are provided in the referenced report.

### **Rationale – Context of Regulation and proposed change**

*The FAA 14 CFR Part 23 Reorganization Aviation Rulemaking Committee (23ARC), comprised of broad representation from both industry and FAA, report dated June 5, 2013 included a recommendation to replace current redundant FAA conformity process to allow the use of a configuration management system. The current FAA conformity process is essentially a double check of the applicant process (who is required by regulation to do 100% company conformity) and is extremely administratively burdensome for both industry and FAA. It requires FAA personnel or its specially authorized designees to travel all over the U.S. and the world to conduct redundant inspections which is already conducted as a responsibility of the applicant.*

*In addition, the redundant FAA conformity process is very labor intensive and disjointed by the fact that individual Requests For Conformity (RFC) are frequently required for different tests on the same test article. Coordinating these RFCs requires significant manual effort, spreadsheets, or even software for complex aircraft programs. This can be accomplished more quickly and efficiently using an integrated data management system that links the test plan requirements directly to the test article configuration and test schedule.*

*The Type Design and Production Certification Working Group of the 23ARC compared the current conformity process against a proposed configuration management system (currently used in FAA approved quality systems and industry best practice in the US and is a standard method of conformity verification accepted by EASA and TCCA) that would allow the applicant and the FAA to ensure that the article being tested satisfied the requirements in the applicable test plan(s). The analysis is available from the 23ARC report Section 5, Type Certification / Production Certification Working Group – Recommendations and Appendix F.3 Conformity White Paper.*

*In addition, redundant verification of conformity is unique to the FAA and United States. EASA from Europe and TCCA from Canada do not require a second verification check of configuration and allows for a manufacturer configuration management system that has been approved/accepted by the Authority.*

*The 23ARC recommends that the appropriate policies, Orders, or other guidance be created or revised to allow implementation of the configuration management process in lieu of the current conformity requirements described in FAA Orders. No changes to part 21 would be required to allow for the use of the configuration management process.*

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**Rationale – Associated Cost Information**

*There was unanimous agreement by the 23ARC working group that the FAA conformity process was the number one cost driver in certification. A detailed cost/benefit analysis for replacing a redundant FAA conformity with a configuration management process is provided in the 23ARC report, Appendix F.3 Conformity White Paper. In summary, Direct type certification conformity expense savings on the order of 2 to 8 full time equivalency (FTE) heads for each individual part 23 airplane TC applicant depending on the complexity of the project in addition to operating expense travel savings of \$40,000 per year during routine times to \$200,000 per month during peak type certification program efforts. In addition, there are significant cost savings by avoiding/reducing program delay due to required redundant FAA conformity which can run over \$100,000 per day for a small part 23 airplane.*

Ref: [https://www.faa.gov/about/office\\_org/headquarters\\_offices/avs/offices/air/directorates\\_field/small\\_airplanes/media/P23\\_Reorg\\_ARCFINAL.pdf](https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/air/directorates_field/small_airplanes/media/P23_Reorg_ARCFINAL.pdf)