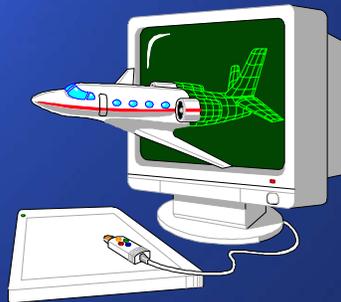


2003 FAA National Software Conference

Software Conformity

Software Conformity Inspection



Dennis Wallace
ASW-170
817.222.4635
dennis.wallace@faa.gov

Software Standardization Conference
September 2003

Outline

- **A byte of History**
- **Order 8110.49**
 - Chapter 4
 - Software Conformity Inspection

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History

- Notion of ASIs teaming with ASEs in finding compliance to RTCA/DO-178B
- Confusing Terminology
 - SW Review
 - SW Conformity Review
 - SW Conformity Inspection
 - SW Conformity Installation Inspection

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History

- An epiphany
 - ASI guidance != Assurance
- Notice 8110.86
 - Terminology
 - clarified
 - introduced
 - still confused ?
 - Roles & Responsibilities
 - who does what, when

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Outline

- A byte of History
- **Order 8110.49 Chapter 4**
 - **Software Conformity**

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Software Conformity

- **Based in Rule**
 - 14 CFR Part 21, Section 21.33 Inspection and Tests (b):
 - “(2) That materials and products **conform** to the specifications in the **type design**; (3) That parts of the products **conform** to the drawing in the **type design**; and (4) That the manufacturing processes, construction and assembly **conform** to those specified in the **type design**.”

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Software Conformity

- When talking software, what is **type design**?
 - RTCA/DO-178B invoked by AC 20-115B states, as a minimum:
 - SRD & SDD
 - source & executable code
 - SCI & SAS

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Software Conformity

- What then, is Conformity to Software Type Design?
 - Largely assessed as part of technical reviews
 - Defined in chapter 2 of draft Order
- Two departures
 - test acceptance
 - Software part conformity inspection
 - installation
 - Software installation conformity inspection

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Test Acceptance Basis

- FAA Order 8110.4B, Paragraph 2-11f:
Conformity & witnessing of tests
 - *“The conformity of the test article, test setup, test procedures used, and the validity of the test results must be established for each test conducted to show compliance with a **type certification requirement . . .**”*

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Software Part Conformity Inspection (SPCI)

- Type certification requirement
 - Test for Certification Credit
 - system certification test
 - FAA approved test plan
 - not the SVP
 - Examples
 - environmental qualification
 - system functional tests

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Software Conformity

FAA SPCI

- ASE tasks
 - Baseline complies to type design
 - LRU test software complies with baseline
 - Software artifacts are identified, controlled, & reflect currency
 - Qualified tools
 - Retention, archival, & retrieval
 - FAA Form 8120-10

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FAA SPCI

- ASI tasks (per FAA Form 8120-10)
 - Build & load files
 - Build & load instructions
 - LRU integrity check
 - Test setup

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Installation Basis

- **FAA Order 8110.4B, Paragraph 2-11g: Conformity Inspections**
 - *“A conformity inspection is required to ensure that the product being certificated complies with the type design. . . . An FAA conformity inspection should be successfully conducted **before any official FAA tests** (ground or flight) are conducted. . . .”*

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Software Installation Conformity Inspection (SICI)

- **Any FAA aircraft level ground or flight test**
 - Type Inspection Authorization
- **Objective**
 - Approved & controlled software load
 - System initialization

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Software Conformity

FAA SICI

- ASE tasks
 - Prior SPCI conducted
 - Initiate
 - FAA Form 8120-10
 - Request for Conformity
 - FAA Form 8110-1
 - Type Inspection Authorization

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FAA SICI

- ASI tasks
 - Correct software loaded
 - Correct hardware installed
 - Two methods
 - Witness
 - Records

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Software Conformity

Summary

- **Software Conformity**
 - Unit under test
 - Documentation
 - Installation
 - Final configuration

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