

Airframe Breakout Session
Seattle DER Recurrent Seminar – November 6, 2003
ICA - Instructions for Continued Airworthiness

This slide has a black background with the same logos and graphics as the previous slide. The text is centered and reads: 'Seattle AEG Website' in yellow, followed by the URL '<http://www.nw.faa.gov/seattleaeg>' in pink. Below that is 'Presented By: John A. Flores' in yellow. At the bottom, in smaller white text, is the address: 'Seattle Aircraft Evaluation Group', '1601 Lind Ave. S.W.', 'Renton, Washington 98055', and 'Ph. 425-917-6600'.

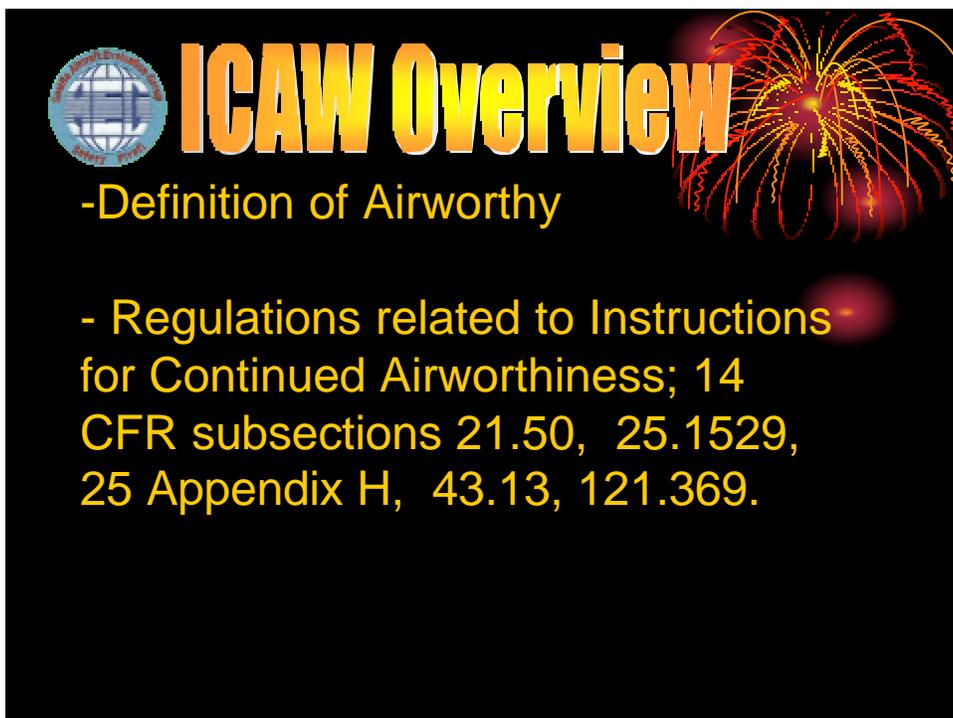
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The slide features a black background with a blue and white globe logo on the left. The title "AEG's Offices" is in white. A list of office locations and their regulatory jurisdictions is provided in yellow text. On the right, there are images of fireworks, a helicopter, and a biplane.

AEG's Offices

- Seattle (SEA-AEG) Transport Category, FAR Part 25
- Long Beach (LGB-AEG) Transport Category, FAR Part 25
- Boston (BOS-AEG) Engines and Propellers, FAR Part 33, FAR Part 35
- Fort Worth (FTW-AEG) Rotorcraft, FAR Part 29
- Kansas City (MKC-AEG) Small Airplanes, FAR Part 23
- Headquarters, Washington D.C. at: AFS-200.-300,-400,etc



The slide features a black background with a blue and white globe logo on the left. The title "ICAW Overview" is in large, bold, yellow and white letters. Below the title, the text "-Definition of Airworthy" and "- Regulations related to Instructions for Continued Airworthiness; 14 CFR subsections 21.50, 25.1529, 25 Appendix H, 43.13, 121.369." is written in yellow. On the right, there are images of fireworks.

ICAW Overview

-Definition of Airworthy

- Regulations related to Instructions for Continued Airworthiness; 14 CFR subsections 21.50, 25.1529, 25 Appendix H, 43.13, 121.369.

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ICAW Overview



-Regulations related to
Airworthiness Limitations 43.16,
91.403

- Operational Considerations for
STC Projects



FAA Order 8130.2D Airworthiness Certification of Aircraft and Related Products



The term "Airworthy" is not defined in Title 49 or the regulations; however, a clear understanding of its meaning is essential for use in the agency's Airworthiness Certification Program.

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FAA Order 8130.2D
Airworthiness Certification of
Aircraft and Related Products



Title 49 Section 44704(c) and 14 CFR Part 21, Certification Procedures for products and Parts (part 21), § 21.183(a), (b), and (c) all relate to the two conditions necessary for issuance of an airworthiness certificate.



FAA Order 8130.2D
Airworthiness Certification of
Aircraft and Related Products



The aircraft must conform to its Type Certificate (TC).

The aircraft must be in a condition for safe operation

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FAA Order 8130.2D
Airworthiness Certification of
Aircraft and Related Products



9a. The aircraft must conform to its Type Certificate (TC). Conformity to type design is considered attained when the aircraft configuration and the components installed are consistent with the drawings, specifications and other data that are part of the TC, and would include any STC and field approved alterations incorporated into the aircraft.



FAA Order 8130.2D
Airworthiness Certification of Aircraft
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9b. The aircraft must be in a condition for safe operation. This refers to the condition of the aircraft relative to wear and deterioration. E.g., skin corrosion, window delamination/crazing, fluid leaks, tire wear. Etc.

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FAA Order 8130.2D
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NOTE: If one or both conditions
are not met, the aircraft would
be considered unairworthy.



14 CFR § 21.50



**§ 21.50 Instructions for
Continued Airworthiness and
Manufacturer's Maintenance
Manuals having Airworthiness
Limitations Sections.**

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14 CFR § 21.50 Instructions for Continued Airworthiness Cont.

- (a) The holder of a type certificate for a rotorcraft for which a Rotorcraft Maintenance Manual containing an "Airworthiness Limitations" section has been issued under § 27.1529(a)(2) or § 29.1529(a)(2), and who obtains approval of changes to any replacement time, inspection interval, or related procedure in that section of the manual, shall make those changes available upon request to any operator of the same type of rotorcraft.



§ 21.50 Instructions for Continued Airworthiness Cont.

- (b) The holder of design approval, including either the Type Certificate or Supplemental Type Certificate for an aircraft, aircraft engine, or propeller for which application was made after January 28, 1981, shall furnish at least one set of complete Instructions for Continued Airworthiness,

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§ 21.50 Instructions for Continued Airworthiness Cont.

(b cont.) prepared in accordance with §§ 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, or 35.4 of this chapter, or as specified in the applicable airworthiness criteria for special classes of aircraft defined in § 21.17(b), as applicable,



§ 21.50 Instructions for Continued Airworthiness Cont.

(b cont.) to the owner of each type aircraft, aircraft engine, or propeller upon its delivery, or upon issuance of the first standard airworthiness certificate for the affected aircraft, whichever occurs later,

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§ 21.50 Instructions for Continued Airworthiness Cont.



(b cont.) and thereafter make those instructions available to any other person required by this chapter to comply with any of the terms of those instructions.



§ 21.50 Instructions for Continued Airworthiness Cont.



(b cont.) In addition, changes to the Instructions for Continued Airworthiness shall be made available to any person required by this chapter to comply with any of those instructions.

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§ 25.1529 \ Instructions for Continued Airworthiness

The applicant must prepare Instructions for Continued Airworthiness in accordance with appendix H to this part that are acceptable to the Administrator.



§ 25.1529 \ Instructions for Continued Airworthiness Cont.

The instructions may be incomplete at type certification if a program exists to ensure their completion prior to delivery of the first airplane or issuance of a standard certificate of airworthiness, whichever occurs later.

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FAA Order 8130.2D
Airworthiness Certification of Aircraft
and Related Products

**41. STANDARD AIRWORTHINESS
CERTIFICATE**

A Standard Airworthiness Certificate remains valid as long as maintenance, preventive maintenance, and alterations are performed in accordance with parts 21, 43, and 91.



Appendix H \ Instructions for Continued Airworthiness

H25.1 General.

- (a) This Appendix specifies requirements for the preparation of instructions for Continued Airworthiness as required by § 25.1529.

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Appendix H \ Instructions for
Continued Airworthiness Cont.

- (b) **The Instructions for Continued Airworthiness for each airplane must include the Instructions for Continued Airworthiness for each engine and propeller (hereinafter designated "products"), for each appliance required by this chapter, and any required information relating to the interface of those appliances and products with the airplane.**



Appendix H \ Instructions for
Continued Airworthiness Cont.

- (b cont.) **If Instructions for Continued Airworthiness are not supplied by the manufacturer of an appliance or product installed in the airplane, the Instructions for Continued Airworthiness for the airplane must include the information essential to the continued airworthiness of the airplane.**

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Appendix H \ Instructions for Continued Airworthiness Cont.



- (c) The applicant **must submit** to the FAA a **program to show how changes to the Instructions for Continued Airworthiness** made by the applicant or by the manufacturers of products and appliances installed in the airplane **will be distributed**.



Appendix H \ Instructions for Continued Airworthiness Cont.



H25.2 Format.

- (a) The Instructions for Continued Airworthiness must be in the **form of a manual or manuals** as appropriate for the quantity of data to be provided.
- (b) The format of the manual or manuals must provide for a **practical arrangement**.

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Appendix H \ Instructions for Continued Airworthiness Cont.



H25.3 Content.

The contents of the **manual or manuals** must be prepared in the **English language**. The Instructions for Continued Airworthiness must contain the following manuals or sections, as appropriate, and information:



Appendix H \ Instructions for Continued Airworthiness Cont.



(a) **Airplane maintenance manual or section.**

(1) Introduction information that includes an explanation of the **airplane's features and data** to the extent necessary for maintenance or preventive maintenance.

(2) **A description of the airplane and its systems and installations** including its engines, propellers, and appliances.

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Appendix H \ Instructions for Continued Airworthiness Cont.

- (3) **Basic control and operation information** describing how the airplane components and systems are controlled and how they operate, including any special procedures and limitations that apply.



Appendix H \ Instructions for Continued Airworthiness Cont.

- (4) **Servicing information that covers details regarding servicing points, capacities of tanks, reservoirs, types of fluids to be used, pressures applicable to the various systems, location of access panels for inspection and servicing, locations of lubrication points, lubricants to be used, equipment required for servicing, tow instructions and limitations, mooring, jacking, and leveling information.**

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Appendix H \ Instructions for Continued Airworthiness Com

(b) Maintenance instructions

- (1) **Scheduling information** for each part of the airplane and its engines, auxiliary power units, propellers, accessories, instruments, and equipment that provides the recommended periods at which they should be cleaned, inspected, adjusted, tested, and lubricated, and the degree of inspection, the applicable wear tolerances, and work recommended at these periods.



Appendix H \ Instructions for Continued Airworthiness Com

However, the applicant may refer to an accessory, instrument, or equipment manufacturer as the source of this information if the applicant shows that the item has an exceptionally high degree of complexity requiring specialized maintenance techniques, test equipment, or expertise.

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Appendix H \ Instructions for Continued Airworthiness Com



The recommended overhaul periods and necessary cross references to the Airworthiness Limitations section of the manual must also be included.



Appendix H \ Instructions for Continued Airworthiness Com



In addition, the applicant must include an inspection program that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the airplane.

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Appendix H \ Instructions for
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(b) Maintenance instructions cont.

- (2) **Troubleshooting** information describing probable malfunctions, **how to recognize those malfunctions, and the remedial action** for those malfunctions.
- (3) Information describing the **order and method of removing and replacing products and parts** with any necessary precautions to be taken.



Appendix H \ Instructions for
Continued Airworthiness Cont



(b) Maintenance instructions cont.

- (4) Other general procedural instructions including **procedures for system testing** during ground running, symmetry checks, weighing and determining the center of gravity, lifting and shoring, and storage limitations.

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Appendix H \ Instructions for
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- (c) **Diagrams** of structural access plates and information needed to gain access for inspections when access plates are not provided.
- (d) Details for the application of **special inspection techniques** including radiographic and ultrasonic testing where such processes are specified.



Appendix H \ Instructions for
Continued Airworthiness Cont



- (e) Information needed to **apply protective treatments** to the structure after inspection.
- (f) **All data relative to structural fasteners** such as identification, discard recommendations, and torque values.
- (g) A list of **special tools** needed.

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Appendix H \ Instructions for
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H25.4 Airworthiness Limitations section.

The Instructions for Continued
Airworthiness **must contain a**
section titled **Airworthiness**
Limitations that is segregated
and clearly distinguishable
from the rest of the document.



Appendix H \ Instructions for
Continued Airworthiness Cont

H25.4 Airworthiness Limitations section.

This **section must set forth** each
mandatory replacement time,
structural inspection interval, and
related structural inspection
procedure approved under **§**
25.571.

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Appendix H \ Instructions for
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H25.4 Airworthiness Limitations section.

This section must set forth each mandatory replacement time, inspection interval, related inspection procedure, and all critical design configuration control limitations approved under § 25.981 for the fuel tank system.



Appendix H \ Instructions for
Continued Airworthiness Cont



H25.4 Airworthiness Limitations section

If the Instructions for Continued Airworthiness consist of multiple documents, the section required by this paragraph must be included in the principal manual.

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H25.4 Airworthiness Limitations section

This section must contain a legible statement in a prominent location that reads: "The **Airworthiness Limitations section is FAA approved and specifies maintenance required under §§ 43.16 and 91.403** of the Federal Aviation Regulations unless an alternative program has been FAA approved."



§ 43.16 Airworthiness Limitations

Each person performing an inspection or other maintenance specified in an Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness shall perform the inspection or maintenance in accordance with that section, or in accordance with operations specifications approved by the Administrator under Part 121, 123, or 135, or an inspection program under § 409(e).

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§ 91.403 General

(a) The owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition, including compliance with part 39 of this chapter.

(b) No person may perform maintenance, preventive maintenance, or alterations on an aircraft other than prescribed in this subpart and other applicable regulations, including part 43 of this chapter.



§ 91.403 General (Cont.)

(c) No person may operate an aircraft for which a manufacturer's maintenance manual or instructions for continued airworthiness has been issued that contains an airworthiness limitations section unless the mandatory replacement times, inspection intervals, and related procedures specified in that section

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§ 91.403 General (Continued)

(c) ... or alternative inspection intervals and related procedures set forth in an operations specification approved by the Administrator under part 121 or 135 of this chapter or in accordance with an inspection program approved under § 91.409(e) have been complied with.



§ 43.13 Performance Rules (General)

- a) Each person performing maintenance, alteration, or preventive maintenance on an aircraft, engine, propeller, or appliance shall use the methods, techniques, and practices prescribed in the current manufacturer's maintenance manual or Instructions for Continued Airworthiness prepared by its manufacturer, or other methods, techniques, and practices acceptable to the Administrator, except as noted in § 43.16.

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**§ 43.13 \ Performance Rules
(General)**



- a) **Cont. He shall use the tools, equipment, and test apparatus necessary to assure completion of the work in accordance with accepted industry practices. If special equipment or test apparatus is recommended by the manufacturer involved, he must use that equipment or apparatus or its equivalent acceptable to the Administrator.**



**§ 43.13 \ Performance Rules
(General) Cont.**



- (b) Each person maintaining or altering, or performing preventive maintenance, shall do that work in such a manner and use materials of such a quality, that the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition (with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness).

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**§ 43.13 \ Performance Rules
(General)
Cont.**



(c) Special provisions for holders of air carrier operating certificates and operating certificates issued under the provisions of part 121, 127, or 135 and part 129 operators holding operations specifications. Unless otherwise notified by the administrator, the methods, techniques, and practices contained in the maintenance manual



**§ 43.13 \ Performance Rules
(General)
Cont.**



(c) Cont. or the maintenance part of the manual of the holder of an **air carrier operating certificate** or an **operating certificate under part 121, 127, or 135 and part 129 operators holding operations specifications** (that is required by its operating specifications to provide a **continuous airworthiness maintenance and inspection program**) constitute **acceptable means of compliance with this section.**

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**§ 121.369 \ Manual Requirements
Cont.**



- (b) The certificate holders **manual must contain the programs required by § 121.367 that must be followed in performing maintenance, preventive maintenance, and alterations of that certificate holder's airplanes, including airframes, aircraft engines, propellers, appliances, emergency equipment and parts thereof, and must include at least the following:**



**Operational Considerations For
STC Projects**



- Prior to entry into revenue service, operators maintenance program must have instructions for continued airworthiness for the added system(s)/components or modification. The guidance for these "maintenance Instructions" can be found in 14 CFR part 25.1529 (appendix H).

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**Operational Considerations For
STC Projects**



- The applicant should coordinate the Maintenance instructions, through the ACO, with the Maintenance Review Board Chairman, who is located in the Aircraft evaluation Group.



**Operational Considerations For
STC Projects**



- If an STC applicant desires to allow for dispatch relief with the added system(s)/components inoperative, the Master Minimum Equipment List (MMEL) for the particular aircraft type referenced in the STC will have to be amended.

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**Operational Considerations For
STC Projects**

- The applicant should submit a written proposal for change to the MMEL, including rationale, system subscription, and documentation to the Flight Operations Evaluation Board (FOEB) Chairman located within the AEG.



**Operational Considerations For
STC Projects**

- The proposed changes to the MMEL should be submitted at least 90 days prior to the STC certification date to allow sufficient time for review and approval.

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**Operational Considerations For
STC Projects**

- Flight crew Operations Manual or Users Guide must be developed to explain the operation of new system/components. As a minimum, the FCOM or UG must include a full system description, uses of switches and indicators, and operation of the system in both Normal and Non-Normal situations.



**Operational Considerations For
STC Projects**

- The FCOM or UG should be submitted to the Flight Standardization Board (FSB) Chairman located within the AEG. The FCOM or UG should be submitted in sufficient time prior to the STC being certified to allow for review by the FSB.

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Operational Considerations For STC Projects

- The STC applicant, when contacting the respective ACO during the certification process, should also notify the local AEG who has responsibility for determining minimum training requirements for new systems/ components installed on the aircraft. The primary responsibility for making training determinations, within the AEG, falls under the authority of the Flight Standardization board.



The End! Questions!

