ATSRAC Task 9
Draft EZAP NPRM
and
Advisory Circular

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ATSRAC Task 3

- Enhancement of Inspection Criteria and Expectations
- Maintenance Program Enhancement
  - Maintenance Practices
  - EZAP

ATSRAC Task 9

- Draft SFAR and other rule language to require
  - EZAP
  - Protection and caution information
  - Training
- Draft A.C. for method of compliance

EZAP

Enhanced Zonal Analysis Procedure

EZAP

An analytical logic procedure specifically designed to identify applicable and effective tasks that…

1) *minimize accumulation of combustible materials,*

2) address wiring discrepancies,

3) address installations where wiring is in close proximity to both primary and backup flight controls.

Draft EZAP NPRM

SFAR Portion of NPRM

Mandates TC/STC Holders to apply certain new certification requirements to existing aircraft

Rule Change Portion of NPRM

Mandates new requirements for instructions for continued airworthiness for new TC/STC's, and new operating requirements for Operators and Repair Stations

Effect on TC/STC Holders

SFAR Effect on TC/STC Holders

- For existing designs….

1. TC/STC Holders must perform an analytical logic procedure specifically designed to identify applicable and effective tasks that minimize accumulation of combustible materials, address wiring discrepancies, and address installations where wiring is in close proximity to <u>both</u> primary and backup flight controls.

SFAR Effect on TC/STC Holders

- For existing designs….

2. TC/STC Holders must communicate to FAA and operators the results of the analytical logic procedure.

SFAR Effect on TC/STC Holders
- For existing designs….

3. TC/STC Holders must update Instructions for Continued Airworthiness to include tasks derived from the analytical logic procedure.

SFAR Effect on TC/STC Holders

- For existing designs….

4. TC/STC Holders must ensure that the standard practices section of the maintenance instructions include protection and caution information to minimize contamination and accidental damage to electrical wiring interconnection systems.

SFAR Effect on TC/STC Holders

- For existing designs…

5. TC/STC Holders must include protection and caution information to minimize contamination and accidental damage to electrical wiring interconnection systems in all newly created maintenance instructions, including service bulletins, where applicable.

Rule Change Effect on TC/STC Holders

- For new designs…

Part 25, Appendix H - Instructions for Continued Airworthiness

1. Scheduled maintenance instructions for electrical wiring interconnection systems shall include tasks derived from an analytical logic procedure that provides a means to identify applicable and effective tasks …

Rule Change Effect on TC/STC Holders - For new designs…

Part 25, Appendix H - Instructions for Continued Airworthiness (continued)

… that minimize accumulation of combustible materials, address wiring discrepancies, and address installations where wiring is in close proximity to both primary and backup flight controls.

Rule Change Effect on TC/STC Holders - For new designs…

Part 25, Appendix H - Instructions for Continued Airworthiness (continued)

2. Instructions for maintenance, alteration, or repairs must include protection and caution information designed to minimize contamination and accidental damage to electrical wiring interconnection systems where applicable.

Rule Change Effect on TC/STC Holders - For new designs…

Part 25, Appendix H - Instructions for Continued Airworthiness (continued)

3. Instructions for maintenance, alteration, or repairs of electrical wiring interconnection systems must be in a standard format, and must include wire separation guidelines and special wiring identification requirements.

Rule Change Effect on TC/STC Holders - For new designs…

Part 25, Appendix H - Instructions for Continued Airworthiness (continued)

4. Instructions for continued airworthiness of electrical wiring interconnection systems must include electrical load data, and instructions for updating electrical load data.

Rule Change Effect on TC/STC Holders

Part 25, New Rule – EZAP for Modifications

1. For each new modification to a TC/STC, the TC/STC Holder shall determine if the modification requires application of an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials, address wiring discrepancies, and address installations where wiring is in close proximity to both primary and backup flight controls.

Rule Change Effect on TC/STC Holders

Part 25, New Rule – EZAP for Modifications

2. Apply the analytical logic procedure for each modification as determined in (1.).

3. Include tasks derived from the application of the analytical logic procedure in the modification instructions. These tasks shall be uniquely identified in the instructions for future traceability.

Draft EZAP NPRM

Effect on Operators
and
Repair Stations

NPRM Effect on Operators
&
Repair Stations

1. Special Maintenance Program Requirements
2. EWIS Training Program Requirements
3. Analysis of “Orphan” STC’s

1. Special Maintenance Program Requirements

a) Protection and Caution Information,

<u>Part 91, 121, 125, and 129 Operators</u>

Maintenance instructions must include protection and caution information designed to minimize contamination and accidental damage to electrical wiring interconnection systems where applicable.

1. Special Maintenance Program Requirements (continued)

a) Protection and Caution Information, <u>Part 145 Repair Stations</u>

The Repair Station General Instructions Manual must include protection and caution information designed to minimize contamination and accidental damage to electrical wiring interconnection systems where applicable.

1. Special Maintenance Program Requirements (continued)

b) Analytically Derived EWIS Tasks

Part 91, 121, 125, and 129 Operators

The maintenance program must include instructions for the continued airworthiness of electrical wiring interconnection systems that are developed using an analytical logic procedure that provides a means to identify applicable and effective tasks ….

1. Special Maintenance Program Requirements (continued)

… that minimize the accumulation of combustible materials, address wiring discrepancies, and address installations where wiring is in close proximity to both primary and backup flight controls.

2. EWIS Training Program Requirements

Part 121, 125, and 129 Operators, and Part 145 Repair Stations

Each operator/repair station must have a training program that accomplishes the following:

2. EWIS Training Program Requirements (continued)

a) Ensures acceptable awareness of wiring as a system that requires adherence to proper procedures, methods, techniques, and practices

Target Audience: All persons who perform maintenance, inspection, alteration or cleaning of aircraft.

2. EWIS Training Program Requirements (continued)

b) Ensures an acceptable knowledge of housekeeping practices to be followed during the performance of maintenance, inspection, alteration, and cleaning in order to minimize contamination and accidental damage to electrical wiring interconnection systems.

Target Audience: All persons who perform maintenance, inspection, alteration, or cleaning of aircraft.

2. EWIS Training Program Requirements (continued)

c) Ensures acceptable knowledge of procedures, techniques, and practices to be used when performing maintenance, inspection, alteration, and cleaning of electrical wiring interconnection systems.

Target Audience: All persons who perform maintenance, inspection, alteration, and cleaning of electrical wiring interconnection systems. The training should be specific to the tasks they perform.

3. Analysis of Orphan STC's

Part 91, 121, 125, and 129 Operators

For each STC for which there is no viable STC Holder to comply with the requirements of SFAR xxx…..

3. Analysis of Orphan STC's

a) Determine if the STC requires application of an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize the accumulation of combustible materials, address wiring discrepancies, and address installations where wiring is in close proximity to both primary and backup flight controls.

3. Analysis of Orphan STC's

b) Apply the analytical logic procedure for each STC affected

c) Amend the aircraft maintenance program as required based on the results of the analytical logic procedure

Draft EZAP Advisory Circular

Draft EZAP A.C.

EWIS Definition

Inspection Definitions

Guidance for GVI / Zonal Inspections

Maintenance Practices

EZAP Logic

EWIS – Electrical Wiring Interconnection System

An electrical connection between two or more points including the associated termination devices and the necessary means for its installation and identification.

Included in EWIS:

(1) Wires and cables
(2) Bus bars
(3) Connection to electrical devices
(4) Circuit breakers or other circuit protection devices
(5) Connectors and accessories
(6) Electrical grounding and bonding devices
(7) Electrical splices

Included in EWIS:

(8) Materials used to provide additional protection for wires

(9) Shield or braids

(10) Conduits that have electrical termination for the purpose of bonding

(11) Clamps and other devices used to route and support the wire bundle

(12) Cable tie devices

(13) Labels or other means of identification

(14) Pressure seals associated with EWIS

Not Included in EWIS:

(1) Wiring inside avionics equipment,

(2) Equipment including non-required miscellaneous equipment qualified to environmental conditions and testing procedures approved by the Administrator other than those specifically included in this definition,

(3) Equipment qualified to a technical standard order

(4) Portable, carry on, or otherwise non-permanently mounted electrical equipment.

(5) Fiber optics

Inspection of EWIS

GVI – General Visual Inspection

A visual examination of an interior or exterior area, installation, or assembly to detect obvious damage, failure or irregularity.

This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to enhance visual access to all exposed surfaces in the inspection area.

This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight or droplight and may require removal or opening of access panels or doors.

Stands, ladders or platforms may be required to gain proximity to the area being checked.

GVI – General Visual Inspection

A visual examination of an interior or exterior area, installation, or assembly to detect obvious damage, failure or irregularity.

GVI – General Visual Inspection

GVI is accomplished within touching distance unless otherwise specified.

GVI – General Visual Inspection

GVI allows use of a mirror to enhance visual access to all exposed surfaces in the inspection area.

Zonal Inspection

A collective term comprising selected General Visual Inspections and visual checks that are applied to each zone, defined by access and area, to check system and power plant installations and structure for security and general condition.

DET - Detailed Inspection

An intensive examination of a specific item, installation, or assembly to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses or other means may be necessary. Surface cleaning and elaborate access procedures may be required.

DET - Detailed Inspection

Not the same as DVI…

DET allows tactile examination to determine condition.

Guidance for GVI / Zonal Inspection of EWIS

EWIS Discrepancies Detectable by GVI / Zonal Inspection

Wiring / Wire Bundles

- Wire-to-wire or wire-to-structure contact/chafing
- Wire bundle sagging or improperly secured
- Wires damaged (obvious damage due to mechanical impact, overheat, localized chafing, etc.)
- Lacing tape and/or ties missing/incorrectly installed
- Wiring protection sheath/conduit deformity or incorrectly installed
- End of sheath rubbing on end attachment device
- Grommet missing or damaged

EWIS Discrepancies Detectable by GVI / Zonal Inspection

Wiring / Wire Bundles (continued)

- Dust and lint accumulation
- Surface contamination by metal shavings/swarf
- Contamination by liquids
- Deterioration of previous repairs (e.g., splices)
- Deterioration of production splices
- Inappropriate repairs (e.g., incorrect splice)
- Inappropriate attachments to or separation from fluid lines

EWIS Discrepancies Detectable by GVI / Zonal Inspection

Connectors

- External corrosion on receptacles
- Backshell broken
- Rubber pad or packing on backshell missing
- No backshell wire securing device
- Fool-proofing chain broken
- Missing or broken safety wire
- Discoloration/evidence of overheat on terminal lugs/blocks
- Torque stripe misalignment

Maintenance Practices

Learned Complacency

- **Institutionalized acceptance of discrepant conditions**

Common Sense

“…Clean and protect as you go”

EZAP Logic Chart