



# Federal Aviation Administration

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## Memorandum

Date: **DEC 13 2007**

To: ACO Managers

Cc: ACMT

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Subject: Authorization and Delegation of Functions Related to the Enhanced Airworthiness Program for Airplane Systems/Fuel Tank Safety Rule (EAPAS/FTS).

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This memo provides guidance for utilizing Designated Engineering Representatives (DERs) and delegated organization engineering staff members (Authorized Representatives (ARs) or Unit Members (UMs)) to support implementation of the new Title 14 Code of Federal Regulations (CFR) part 25 and part 26 requirements in the Enhanced Airworthiness Program for Airplane Systems/Fuel Tank Safety (EAPAS/FTS) Rule. This memo describes the proper use of delegated functions and authorized areas related to Electrical Wiring Interconnection Systems (EWIS) for Electrical Systems (Chart C2) DERs/ARs/UMs. The guidance in this memo should be shared with all relevant DERs and delegated organizations.

The new part 25 and part 26 requirements treat electrical wiring and associated components as a system and mandate that wiring designs meet specific requirements as supported by analysis, installation, and maintenance requirements. It is very important that design approval holders address the continued airworthiness of wiring. This includes developing EWIS related Instructions for Continued Airworthiness (ICA) that are FAA-approved. Although DERs and delegated organizations cannot approve these ICAs, they can significantly reduce the FAA burden by providing recommendations for approval to the FAA through their technical involvement. Each Aircraft Certification Office (ACO) and Aircraft Evaluation Group (AEG) should use their established procedures for coordinating ICAs. Additionally, ACOs are responsible for working with design approval holders, designees, and AEG personnel to identify needs and expectations for the EWIS ICAs. This should happen in the beginning of the project planning stage. The ACO will ultimately approve the EWIS ICAs and coordinate them with the AEG for acceptance.

Electrical Systems (Chart C2) DERs and corresponding delegated organization engineering staff members can be authorized with specific delegated EWIS authority under the delegated functions of Detail Design and Installation, and Safety Analysis. Each of these functions can include multiple EWIS specific compliance activities.

Existing DERs/ARs/UMs should apply for specific EWIS authority, even if they already have the delegated functions of Detail Design and Installation and/or Safety Analysis. Each DER/AR/UM with the delegated functions of Detail Design and Installation and/or Safety Analysis would then be specifically authorized for the EWIS areas of Design, Analysis, Installation and/or Maintenance, as suitable to their qualifications. Because of the complexity of the EWIS certification requirements it is rare that a DER/AR/UM will fully qualify in all areas of EWIS delegated authority. The Transport Airplane Directorate has developed criteria that will help define how to properly set up the authorization scope for a DER/AR/UM. That information is provided in Attachments 1 and 2 to this memo.

The EWIS rules may be delegated as shown in the Attachment 1 Table. Section 25.1701 is the definition of EWIS and does not require a finding of compliance. However, a determination that the system meets the definition of 25.1701 would be made through the finding of compliance of the other requirements that are applicable to EWIS. In other words, it is expected that the EWIS undergoing certification would first be identified in the compliance plan using the definition in 25.1701 before compliance to EWIS related requirements can be found. The compliance plans required by the design approval holder (DAH) § 26.11 cannot be delegated. Also, the FAA does not delegate findings of compliance to the part 26 EWIS requirements and certain areas of authority are limited to only recommend approval (R). As EWIS ICAs arise from technical data, they can be delegated for recommend approval, but approval is reserved for the ACO.

The table in Attachment 1, should be tailored for each DER/AR/UM who will have EWIS authority. The tailored table will show the specific delegated authority for each DER/AR/UM. For DERs, this table and any associated limitations or specific delegations should be provided to the DER and also captured in the Designee Information Network (DIN) as an attachment under “additional information.”

The delegation information in this memo will be included in future revisions to FAA Order 8110.37, *Designated Engineering Representative (DER) Guidance Handbook*; Order 8110.54, *Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents*; and Order 8100.8, *Designee Management Handbook*. We expect that this guidance will serve to standardize all future DER/AR/UM appointments that involve the EWIS related delegated functions and authorized areas, as well as their use in EWIS ICA approvals.

David Hempe

Attachment 1: Qualifications and Areas of Delegated Authority for EWIS Designees  
Attachment 2: Extra Application Requirements for EWIS Related Delegation Authority

## Attachment 1

### Qualifications and Areas of Delegated Authority for EWIS Designees

#### Qualifications for DERs/ARs/UMs with Delegated Functions Related to EWIS Areas

An applicant for the delegated functions related to EWIS must satisfy the general requirements for delegated authority specified in FAA Order 8100.8, *Designee Management Handbook*, and have the specific qualifications described below. The applicant's qualifications must include a work history that demonstrates "hands-on" experience in performing and reviewing various aircraft EWIS activities at the detailed level. We expect that it will be rare for a DER/AR/UM to not have any limitations in the approved areas delegated to him. The limits in authority should compensate for any deficiencies in the qualifications needed for EWIS authority. An applicant's knowledge and experience with each of the applicable regulations and each applicable advisory circular must be considered when determining the specific authority that will be delegated.

An applicant for EWIS related delegated authority must complete the forms in Attachment 2 to this memo and include them in the application package. The applicant must attach supporting evidence of his experience and familiarity that meets the specific requirements in each area requested. This supporting evidence should demonstrate his working knowledge and understanding of the specific part 25 sections related to EWIS, and the applicable advisory circulars. An applicant should also be able to demonstrate that he understands why we are treating electrical wiring and its associated components as a system.

#### Areas of EWIS Delegated Authority

Any applicant for EWIS related delegated authority must specify the areas for which he is seeking authorization and must meet all of the requirements for those areas. The table below shows the four EWIS areas that are available for authorization and delegation.

**Note:** To satisfy the compliance needs for each regulation listed in the Table, statements must exist for each area marked "X." An "R" in the column indicates that only a "recommend approval" may be submitted to the ACO. Only the ACO may approve EWIS ICAs. For instance, compliance statements for Design, Analysis, and Installation are required for § 25.1709; and recommend approval compliance statements from the designees with delegation authority in EWIS areas of Design, Installation, and Maintenance are required for § 25.1729.

## Attachment 1

**Table: EWIS Areas of Delegated Authority**

	Electrical Wiring Interconnection Systems (EWIS)				
	Design	Installation	Analysis	Maintenance	Note
<b>Part 25, Subparts D,E,F</b>					
25.611	X	X			
25.855	X	X		X	
25.869	X	X			
25.899	X	X			HIRF/ Lightning / EMC
25.1203	X	X			
25.1301	X	X	X		Added to current delegation
25.1309	X	X	X		Added to current delegation
25.1310	X	X	X		Added to current delegation
25.1353					Current delegation applies
25.1357					Current delegation applies
25.1360	X	X			
25.1362	X	X			
25.1365	X	X	X		
<b>Part 25, Subpart H</b>					
25.1701	N/A	N/A	N/A	N/A	
25.1703	X	X		X	
25.1705	X	X	X		
25.1707	X	X	X	X	
25.1709	X	X	X		
25.1711	X	X		X	
25.1713	X	X			
25.1715	X	X		X	
25.1717	X	X			
25.1719	X	X			
25.1721	X	X		X	
25.1723	X	X			
25.1725	X	X			
25.1727	X	X			
25.1729	R	R		R	
25.1731	X	X			
25.1733	X	X			
<b>Part 25, Appendix H</b>					
H25.4	X			R	
H25.5(a)(1)	R	R	R	R	
H25.5(a)(2)	R	R		R	
H25.5(a)(3)	R	R		R	
H25.5(a)(4)	R			R	
H25.5(a)(5)	R		R	R	

## Attachment 2

### Additional Application Requirements for EWIS Related Delegation Authority

Any applicant for EWIS related authority must complete this sheet in addition to 8100.8 requirements when requesting EWIS related delegated functions. Provide supporting evidence of experience/familiarity in each required area.

Name \_\_\_\_\_

Date \_\_\_\_\_

Describe experience that demonstrates thorough working knowledge and understanding of the EWIS rules. This includes a thorough understanding of the intent of the regulations.

**Qualifications for each of the specific authorized areas for EWIS (attach supporting information for each):**

#### DESIGN

- Yes No** Have an Electrical Engineering degree plus four years employment experience in aircraft wire design.
- Yes No** Have a thorough working knowledge and experience in each of the following areas:
1. electrical systems types and characteristics for transport airplanes
  2. designing wiring in a factory setting for transport airplanes
  3. developing test producers for testing and inspecting electrical wiring
  4. wire and cable selection
  5. wire connection and associated hardware
  6. aspects of DO-160E and Advisory Circular (AC) 43.13-1B

#### INSTALLATION

- Yes No** Have 4 years employment with practical experience in wire installations for aircraft.
- Yes No** Have a thorough working knowledge and experience in each of the following areas:
1. wire installations in a factory setting in transport airplanes
  2. performing wiring inspection
  3. aircraft wire types and their unique characteristics.
  4. aircraft zones and unique characteristics. (e.g., temperature, vibration, moisture, etc.).
  5. wire connection and installation hardware
  6. aircraft wiring separation standards and wiring best practices

#### ANALYSIS

- Yes No** Have an Electrical Engineering degree.
- Yes No** Have a thorough working knowledge and experience that includes the application or development of each of the following:
1. safety analysis
  2. industry EWIS design standard
  3. aircraft Functional Hazard Assessment
  4. system Functional Hazard Assessments
  5. System Safety Assessments (Fault Tree Analysis/Dependence Diagrams)
  6. Failure Modes and Effects Analysis Common Cause Analyses (Zonal Analysis/Common Mode Analysis)

#### MAINTENANCE

- Yes No** Have a thorough working knowledge and experience in each of the following areas:
1. performing electrical wiring maintenance at a maintenance facility
  2. performing wiring tests, inspections, troubleshooting,
  3. wire and cable selection
  4. wiring components and installation hardware
  5. Standard Wiring Practice Manual
  6. aircraft zonal analysis
  7. wiring inspection techniques (e.g., visual inspection, detailed visual inspection, etc.).
  8. Understanding of and experience with the aspects Advisory Circular (AC) 43.13-1B