

Federal Aviation Administration
Aviation Rulemaking Advisory Committee

Transport Airplane and Engine Issue Area
Electromagnetic Effects Harmonization Working Group

Task 3 – Harmonize 25.581

Task Assignment

[Federal Register: November 26, 1999 (Volume 64, Number 227)]
[Notices]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee; Transport Airplane and
Engine Issues--New and Revised Tasks

AGENCY: Federal Aviation Administration (**FAA**), DOT.

ACTION: Notice of new and revised task assignments for the Aviation
Rulemaking Advisory Committee (ARAC).

SUMMARY: Notice is given of new tasks assigned to and accepted by the
Aviation Rulemaking Advisory Committee (ARAC) and of revisions to a
number of existing tasks. This notice informs the public of the
activities of ARAC.

FOR FURTHER INFORMATION CONTACT: Dorenda Baker, Transport Airplane
Directorate, Aircraft Certification Service (ANM-110), 1601 Lind
Avenue, SW., Renton, WA 98055; phone (425) 227-2109; fax (425) 227-
1320.

SUPPLEMENTARY INFORMATION:

Background

The **FAA** has established an Aviation Rulemaking Advisory Committee
to provide advice and recommendations to the **FAA** Administrator, through
the Associate Administrator for Regulation and Certification, on the
full range of the **FAA**'s rulemaking activities with respect to aviation-
related issues. This includes obtaining advice and recommendations on
the **FAA**'s commitment to harmonize its Federal Aviation Regulations
(FAR) and practices with its trading partners in Europe and Canada.

One area ARAC deals with is transport airplane and engine issues.
These issues involve the airworthiness standards for transport category

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airplanes and engines in 14 CFR parts 25, 33, and 35 and parallel
provisions in 14 CFR parts 121 and 135. The corresponding Canadian
standards are contained in Parts V, VI, and VII of the Canadian
Aviation Regulations. The corresponding European standards are
contained in Joint Aviation Requirements (JAR) 25, JAR-E, JAR-P, JAR-
OPS-Part 1, and JAR-26.

As proposed by the U.S. and European aviation industry, and as

agreed between the Federal Aviation Administration (**FAA**) and the European Joint Aviation Authorities (JAA), an accelerated process to reach harmonization has been adopted. This process is based on two procedures:

(1) Accepting the more stringent of the regulations in Title 14 of the Code of Federal Regulations (FAR), Part 25, and the Joint Airworthiness Requirements (JAR); and

(2) Assigning approximately 41 already-tasked significant regulatory differences (SRD), and certain additional part 25 regulatory differences, to one of three categories:

<bullet> Category 1--Envelope

<bullet> Category 2--Completed or near complete

<bullet> Category 3--Harmonize

The Revised Tasks

ARAC will review the rules identified in the ``FAR/JAR 25 Differences List,' ' dated June 30, 1999, and identify changes to the regulations necessary to harmonize part 25 and JAR 25. ARAC will submit a technical report on each rule. Each report will include the cost information that has been requested by the **FAA**. The tasks currently underway in ARAC to harmonize the listed rules are superseded by this tasking.

New Tasks

The **FAA** has submitted a number of new tasks for the Aviation Rulemaking Advisory Committee (ARAC), Transport Airplane and Engine Issues. As agreed by ARAC, these tasks will be accomplished by existing harmonization working groups. The tasks are regulatory differences identified in the above-referenced differences list as Rule type = P-SRD.

New Working Group

In addition to the above new tasks, a newly established Cabin Safety Harmonization Working Group will review several FAR/JAR paragraphs as follows:

ARAC will review the following rules and identify changes to the regulations necessary to harmonize part 25 and JAR:

- (1) Section 25.787;
- (2) Section 25.791(a) to (d);
- (3) Section 25.810;
- (4) Section 25.811;
- (5) Section 25.819; and
- (6) Section 25.813(c).

ARAC will submit a technical report on each rule. Each report will include the cost information that has been requested by the **FAA**.

The Cabin Safety Harmonization Working Group would be expected to complete its work for the first five items (identified as Category 1 or 2) before completing item 6 (identified as Category 3).

Schedule

Within 120 days of tasking/retasking:

<bullet> For Category 1 tasks, ARAC submits the Working Groups' technical reports to the **FAA** to initiate drafting of proposed rulemaking documents.

<bullet> For Category 2 tasks, ARAC submits technical reports, including already developed draft rules and/or advisory materials, to the **FAA** to complete legal review, economic analysis, coordination, and issuance.

June 2000: For Category 3 tasks, ARAC submits technical reports including draft rules and/or advisory materials to the **FAA** to complete legal review, economic analysis, coordination, and issuance.

ARAC Acceptance of Tasks

ARAC has accepted the new tasks and has chosen to assign all but one of them to existing harmonization working groups. A new Cabin Safety Harmonization Working Group will be formed to complete the remaining tasks. The working groups serve as staff to ARAC to assist ARAC in the analysis of the assigned tasks. Working group recommendations must be reviewed and approved by ARAC. If ARAC accepts a working group's recommendations, it forwards them to the **FAA** and ARAC recommendations.

Working Group Activity

All working groups are expected to comply with the procedures adopted by ARAC. As part of the procedures, the working groups are expected to accomplish the following:

1. Document their decisions and discuss areas of disagreement, including options, in a report. A report can be used both for the enveloping and for the harmonization processes.
2. If requested by the **FAA**, provide support for disposition of the comments received in response to the NPRM or review the **FAA**'s prepared disposition of comments. If support is requested, the Working Group will review comments/disposition and prepare a report documenting their recommendations, agreement, or disagreement. This report will be submitted by ARAC back to the **FAA**.
3. Provide a status report at each meeting of ARAC held to consider Transport Airplane and Engine Issues.

Participation in the Working Groups

Membership on existing working groups will remain the same, with the formation of subtask groups, if appropriate. The Cabin Safety Harmonization Working Group will be composed of technical experts having an interest in the assigned task. A working group member need not be a representative of a member of the full committee.

An individual who has expertise in the subject matter and wishes to become a member of the Cabin Safety Harmonization Working Group should write to the person listed under the caption FOR FURTHER INFORMATION CONTACT expressing that desire, describing his or her interest in the tasks, and stating the expertise he or she would bring to the working group. All requests to participate must be received no later than December 30, 1999. The requests will be reviewed by the assistant chair, the assistant executive director, and the working group chair, and the individuals will be advised whether or not the request can be accommodated.

Individuals chosen for membership on the Cabin Safety Harmonization Working Group will be expected to represent their aviation community segment and participate actively in the working group (e.g., attend all meetings, provide written comments when requested to do so, etc.). They also will be expected to devote the resources necessary to ensure the ability of the working group to meet any assigned deadline(s). Members are expected to keep their management chain advised of working group activities and decisions to ensure that the agreed technical solutions do not conflict with their sponsoring organization's position when the subject being negotiated is presented to ARAC for a vote.

Once the working group has begun deliberations, members will not be added or substituted without the approval of the assistant chair, the assistant executive director, and the working group chair.

The Secretary of Transportation has determined that the formation and use of ARAC are necessary and in the public interest in connection with the performance of duties imposed on the **FAA** by law.

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Meetings of ARAC will be open to the public. Meetings of the working groups will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. No public announcement of working group meetings will be made.

Issued in Washington, DC, on November 19, 1999.
Anthony F. Fazio,
Executive Director, Aviation Rulemaking Advisory Committee.
[FR Doc. 99-30774 Filed 11-24-99; 8:45 am]
BILLING CODE 4910-13-M

Recommendation Letter



April 4, 2000

Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

Attention: ✓ Mr. Tom McSweeney, Associate Administrator for Regulation and
Certification

Subject: ARAC Recommendations

Reference: ARAC Tasking, Federal Register, November 19, 1999

Dear Tom,

The Transport Airplane and Engine Issues Group is pleased to submit the following
"Fast Track" report as a recommendation to the FAA in accordance with the reference
tasking. This report has been prepared by the Electromagnetic Effects Harmonization
Working Group.

- 25.581

Sincerely yours,

Craig R. Bolt
Assistant Chair, TAEIG

TASK 3
ANM-00-094-A

Attachment

Copy: Kris Carpenter - FAA-NEW
*Joe Cross - Raytheon
*Effie Upshaw - FAA Washington, DC

*letter only

Acknowledgement Letter



U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave S W
Washington, D C 20591

MAY 3 2004

Mr. Craig R. Bolt
Manager, Product Development and Validation
Pratt & Whitney
Mail Stop 162-12
East Hartford, CT 06108

Dear Mr. Bolt:

In an effort to clean up pending Aviation Rulemaking Advisory Committee (ARAC) recommendations on Transport Airplane and Engine Issues, the recommendations from the following working groups have been forwarded to the proper Federal Aviation Administration offices for review and decision. We consider your submittal of these recommendations as completion of the ARAC tasks. Therefore, we have closed the tasks and placed the recommendations on the ARAC website at <http://www.faa.gov/avr/arm/arac/index.cfm>

Date	Task	Working Group
December 1999	Interaction of Systems and Structure - <i>TASL #11</i> Part 33 Static Parts - <i>TASL #13</i>	Loads and Dynamics Harmonization Working Group
March 2000	Part 35/JARP: Airworthiness Standards Propellers <i>11/18</i>	Engine Harmonization Working Group
April 2000	Flight Characteristics in Icing conditions <i>11/18</i>	Flight Test Harmonization Working Group
May 2000	Thrust Reversing Systems	Powerplant Installation Harmonization Working Group
September 2000	Lightning Protection Requirements	Electromagnetic Effects Harmonization Working Group
July 2001 <i>only TASL</i>	Main Deck Class B Cargo Compartments	Cargo Standards Harmonization Working Group
April 2002 <i>TASL only TASL</i>	Design Standard for Flight Guidance	Flight/Guidance Systems Harmonization Working Group

ANM-97-435-A
21264

I wish to thank the ARAC and the working groups for the resources they spent in developing these recommendations. We will continue to keep you apprised of our efforts on the ARAC recommendations at the regular ARAC meetings.

Sincerely,

A handwritten signature in black ink, appearing to read "Tony Razio". The signature is stylized with a long horizontal stroke at the beginning and a large, looped "R" at the end.

Anthony F. Razio
Executive Director, Aviation Rulemaking
Advisory Committee

Recommendation

As approved by EEWG Executive Committee January 27, 2000

**ARAC EEWG Report
For FAR/JAR 25.581**

1 - What is underlying safety issue addressed by the FAR/JAR?

FAR/JAR 25.581 defines the requirement to protect airplane structure from catastrophic damage that result from lightning strikes. Lightning strikes to transport airplanes are common, and this regulation provides the requirement to protect from the effects of lightning strikes. Service history, which includes transport airplane accidents, shows the need for structure lightning protection.

2 - What are the current FAR and JAR standards?

Sec. 25.581 Lightning protection.

- (a) The airplane must be protected against catastrophic effects from lightning.
- (b) For metallic components, compliance with paragraph (a) of this section may be shown by--
 - (1) Bonding the components properly to the airframe; or
 - (2) Designing the components so that a strike will not endanger the airplane.
- (c) For nonmetallic components, compliance with paragraph (a) of this section may be shown by--
 - (1) Designing the components to minimize the effect of a strike; or
 - (2) Incorporating acceptable means of diverting the resulting electrical current so as not to endanger the airplane.

Amdt. 25-23, Eff. 5/8/70

JAR 25.581 Lightning protection

- (a) The aeroplane must be protected against catastrophic effects from lightning. {See JAR 25X899 and ACJ 25.581.}
- (b) For metallic components, compliance with sub-paragraph (a) of this paragraph may be shown by--
 - (1) Bonding the components properly to the airframe; or
 - (2) Designing the components so that a strike will not endanger the airplane.
- (c) For nonmetallic components, compliance with sub-paragraph (a) of this paragraph may be shown by--
 - (1) Designing the components to minimize the effect of a strike; or
 - (2) Incorporating acceptable means of diverting the resulting electrical current so as not to endanger the airplane.

3 - What are the differences in the standards and what do these differences result in?:

The only difference between FAR 25.581 and JAR 25.581 is that JAR 25.581 references JAR 25X899 and ACJ 25.581 in paragraph (a).

FAR 25 does not have a regulation the same as JAR 25X899. This is being addressed by the ARAC Electrical Systems Harmonization Working Group. FAA also does not have an advisory circular equivalent to ACJ 25.581. These differences do not result in differences in design capability, safety margin, or stringency. This is because the lightning

As approved by EEWHG Executive Committee January 27, 2000

requirements in JAR 25X899 and its associated ACJ 25X899 have been superseded by updated lightning environments in AC 20-53A and AC 20-136. Also, the guidance in ACJ 25.581 is quite general, is accepted as good design practice by airplane manufacturers, and is supplemented by the FAA Aircraft Lightning Protection Handbook DOT/FAA/CT-89/22.

4 - What, if any, are the differences in the means of compliance?

There is no substantive difference complying with FAR 25.581 and JAR 25.581. See the discussion above on the ACJ 25.581.

5 - What is the proposed action?

The proposal is to make a minor change to JAR 25.581 to revise the reference to JAR 25X899 to be JAR 25.899. Revise FAR 25.581 to refer to FAR 25.899. In addition, ACJ 25.581 should be modified to replace the reference to ACJ 25X899 with references to the updated lightning environment and test waveform documents from SAE and EUROCAE. FAA should then adopt an AC 25.581 equivalent to ACJ 25.581.

FAA and JAA should request SAE and EUROCAE lightning technical committees prepare updated technical guidance on structures lightning protection, which may be considered for a future revision to AC/ACJ 25.581.

6 - What should the harmonized standard be?

Proposed Rule:

FAR/JAR 25.581 Lightning protection

- (a) The airplane (aeroplane) must be protected against catastrophic effects from lightning. {See FAR/JAR 25.899 and (for JAR only) ACJ 25.581.}
- (b) For metallic components, compliance with (sub-)paragraph (a) of this section (paragraph) may be shown by--
 - (1) Bonding the components properly to the airframe; or
 - (2) Designing the components so that a strike will not endanger the airplane.
- (c) For nonmetallic components, compliance with (sub-)paragraph (a) of this section (paragraph) may be shown by--
 - (1) Designing the components to minimize the effect of a strike; or
 - (2) Incorporating acceptable means of diverting the resulting electrical current so as not to endanger the airplane.

Proposed AC/ACJ Revision:

AC/ACJ 25.581

Lightning Protection (Acceptable Means of Compliance and Interpretative Material) (Section 2.1 only shown, other sections unchanged)

2.1 External non-metallic parts should be so designed and installed that -

As approved by EEWHG Executive Committee January 27, 2000

- a. They are provided with effective lightning diverters which will safely carry the lightning discharges described in SAE ARP 5412/EUROCAE ED-84 "Aircraft Lightning Environment and Related Test Waveforms".
- b. Damage to them by lightning discharges will not endanger the aeroplane or its occupants, or
- c. A lightning strike on the insulated portion is improbable because of the shielding afforded by other portions of the aeroplane. Where lightning diverters are used the surge carrying capacity and mechanical robustness of associated conductors should be at least equal to that required for primary conductors.

7 - How does this proposed standard address the underlying safety issue (identified under #1)?

No change.

8 - Relative to the current FAR, does the proposed standard increase, decrease, or maintain the same level of safety? Explain.

No change. Only the advisory material would change, and this would reflect the currently accepted means of compliance.

9 - Relative to current industry practice, does the proposed standard increase, decrease, or maintain the same level of safety?

No change. The rules are not changing, there are no significant changes to the advisory material, and there is no significant change to industry practice.

10 - What other options have been considered and why were they not selected?

Option 1. Have JAA delete ACJ 25.581. This was rejected because ACJ 25.581 provides good general guidance that is acceptable to regulatory authorities and industry.

Option 2. Develop new advisory material. This was rejected at this time, because the existing ACJ 25.581 provides adequate general guidance, and new advisory material would take 3 to 5 years to develop and adopt.

11 - Who would be affected by the proposed change?

The proposed change would have minor effects to manufacturers. Their certification plans would now reference AC 25.581.

12 - To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) needs to be included in the rule text or preamble?

No advisory material needs to be included in the rule text or preamble. No significant US rule change is expected.

As approved by EEHWG Executive Committee January 27, 2000

13 - Is existing FAA advisory material adequate? If not, what advisory material should be adopted?

No FAA advisory material exists. ACJ 25.581 should be adopted as a FAA advisory circular, with minor changes to update references.

14 - How does the proposed standard compare to the current ICAO standard?

There is no existing equivalent ICAO standard.

15 - Does the proposed standard affect other HWG's?

This proposal reflects agreement between ESHWG and EEHWG to revise and adopt FAR/JAR 25.899.

16 - What is the cost impact of complying with the proposed standard?

There is no cost impact.

17 - Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?

Yes.

18 - In light of the information provided in this report, does the HWG consider that the "Fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the Fast Track Process.

Yes. The changes are minor and not controversial.