Federal Aviation Administration – Regulations and Policies
Aviation Rulemaking Advisory Committee

Transport Airplane and Engine Issue Area
Electrical Systems Harmonization Working Group

Task 2 – Electrical Bonding and protection Against Lightning and Static Electricity

Task Assignment

[Federal Register: September 11, 1998 (Volume 63, Number 176)]
[Notices]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

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

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

ACTION: Notice of new 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). This notice informs the public of the activities of ARAC.

FOR FURTHER INFORMATION CONTACT:
Stewart R. Miller, Transport Standards Staff (ANM-110), Federal Aviation Administration, 1601 Lind Avenue, SW., Renton, WA 98055-4056; phone (425) 227-1255; 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 airplanes and engines in 14 CFR parts 25, 33, and 35 and parallel provisions in 14 CFR parts 121 and 135.

The Tasks

This notice is to inform the public that the **FAA** has asked ARAC to

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provide advice and recommendation on the following harmonization tasks:

Task 1: Electrical Generating and Distribution System Requirements

Phase I--The following differences between Part 25 and JAR 25 and their associated guidance material have been identified as having a potentially significant impact on airplane design and cost.

1. FAR/JAR 25.1351(b)--FAR 25.1351(b) defines minimum requirements for generating system power sources, distribution busses and cables, and associated control, regulation and protection devices. JAR 25.1351(b), with its related ACJ 25.1351(b)(5), adds accessibility requirements for means to disconnect power sources from the electrical system.

2. FAR/JAR 25.1351(c)--FAR 25.1351(c) defines minimum requirements for connecting external power to the airplane electrical power system. JAR 25.1351(c) introduces additional parameters for external power protection.

3. FAR/JAR 25.1351(d)--FAR 25.1351(d) defines minimum requirements for a standby power system that can enable safe operation in VFR conditions for a period of not less than five minutes to enable engine relight. JAR 25.1351(d), with its related ACJs, requires provision for a high integrity standby power system with a duration for time limited systems compatible with JAR-OPS and ICAO Annex 8. These ACJs also provide Interpretive Material for non-time limited standby power sources and specifies services that must remain powered following loss of normal electrical power.

For each of the above tasks the working group is to review airworthiness, safety, cost, and other relevant factors related to the specified differences, and reach consensus on harmonized Part 25/JAR 25 regulations and guidance material.

The **FAA** expects ARAC to submit its recommendation(s) from Phase I by July 31, 2001.

Phase II--The following additional differences between Part 25 and JAR 25 and their associated guidance material have been identified as having a lesser impact on airplane design and cost:

4. FAR/JAR 25.1353(a) & 25.1431(d)--JAR 25.1353(a) provides an additional sentence for consideration of the effects of interference on systems with associated interpretative material. JAR 25.1431(d) has additional requirements on the survivability of essential electronic equipment during electrical power transients. Such paragraph does not exist in the FAR's. Neither **FAA** advisory nor JAA guidance material currently is available. This guidance material needs to be generated.

5. FAR/JAR 25.1353(c)(5)--JAR 25.1353(c)(5) is different to FAR 25.1353(c)(5) in that it requires any Nickel-Cadmium battery (receiving a direct charge from the aircraft electrical system) to be subjected to this requirement. Past experience has shown that damage has been caused to structure (from defective batteries and their installations) from batteries irrespective of whether utilized for engine or APU starting or not.

6. FAR/JAR 25.1353(c)(6)--See also item 5 above. In addition, interpretative material is provided in JAR's concerning maintenance check intervals for over temperature sensing devices.

7. FAR/JAR 25.1353(d)--JAR 25.1353(d) contains additional paragraphs for electrical cables. Note: Paragraph 1 of ACJ to JAR 25.1301(b) in effect duplicates JAR 25.1353(d)(2) and could be deleted after harmonization of FAR/JAR 25.1353(d).

8. FAR/JAR 25.1355(c)--JAR 25.1355(c) introduces interpretative material concerning segregation of electrical feeders to minimize the possibility of cascade or multiple failures. The ACJ to JAR 25.1355(c)

should be reviewed in conjunction with current ACJ No. 6 to JAR 25.1309 with a view to combining the two ACJs and forming new interpretative material to FAR/JAR 25.1355(c).

9. FAR/JAR 25X1360--Precautions against injury. This JAR requirement and corresponding ACJ was created following reported injuries to service and maintenance personnel.

10. JAR 25X1362--Electrical supplies for emergency conditions. This JAR requirement and corresponding ACJ was created to ensure that electrical supplies are maintained to emergency services (such as fuel and hydraulic shut-off valves) so that these may be closed after the main power sources have been switched off by the Flight Crew.

11. FAR/JAR 25.1363--JAR 25.1363 requires tests to be performed under specific criteria with (ACJ) additional means of compliance.

12.Tasks coming from the System Design and Analysis Harmonization Working Group (SD&A HWG): Harmonize and update 25.1310 (previous 25.1309(e) and (f)) as proposed by the SD&A HWG. Consider also JAA specific AMJ 25.1309(b) on heated domestic appliances and electric overheat protection equipment design/ failures considerations.

For each of the above tasks the working group is to review the current standards of the FAR and JAR requirements concerning electrical generating and distribution system requirements and any associated advisory material, to review also any relevant service experience and consider the increased reliance of aircraft and systems dependent on electrical power and distribution systems. In the light of this review, recommend changes to harmonize the above FAR and JAR requirements and develop related advisory material as necessary.

The **FAA** expects ARAC to submit its recommendation(s) from Phase II by July 31, 2003.

Task 2: Electrical Bonding and Protection Against Lightning and Static Electricity

JAA regulations include JAR 25X899 and ACJ 25x899 or consideration of electrical bonding and protection against lightning and static electricity. **FAA** regulations do not include this requirement. This initiative will consider the material contained in the JAR and ACJ, revise this information (as appropriate), develop new **FAA** requirements, revise JAA requirements as applicable, including regulations and advisory material, to achieve a harmonized result. Part 23, 27, 29 and 33 requirements will be reviewed to assure consistency in requirements and modified a applicable. The use of the phrase ``as applicable'' provides the responsible working group with the prerogative to recommend changes to any or all identified FAR's, JAR's, or none. Suitable representative from industry and regulatory authorities is necessary to accomplish this assignment.

The **FAA** expects ARAC to submit its recommendation by March 31, 2001.

The **FAA** requests that ARAC draft appropriate regulatory documents with supporting economic and other required analyses, and any other related guidance material or collateral documents to support its recommendations. If the resulting recommendation is one or more notices of proposed rulemaking (NPRM) published by the **FAA**, the **FAA** may ask ARAC to recommend disposition of any substantive comments the **FAA** receives.

ARAC Acceptance of Tasks

ARAC has accepted the tasks and has chosen to establish a new Electrical systems Harmonization Working Group. The working group will serve as staff to ARAC to assist ARAC in the analysis of the assigned task. Working group

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recommendations must be reviewed and approved by ARAC. If ARAC accepts the working group's recommendations, it forwards them to the **FAA** as ARAC recommendations.

Working Group Activity

The Electrical Systems Harmonization Working Group is expected to comply with the procedures adopted by ARAC. As part of the procedures, the working group is expected to:

1. Recommend a work plan for completion of the tasks, including the rationale supporting such a plan, for consideration at the meeting of ARAC to consider transport airplane and engine issues held following publication of this notice.
2. Give a detailed conceptual presentation of the proposed recommendations, prior to proceeding with the work stated in item 3 below.
3. Draft appropriate regulatory documents with supporting economic and other required analyses, and/or any other related guidance material or collateral documents the working group determines to be appropriate; or, if new or revised requirements or compliance methods are not recommended, a draft report stating the rationale for not making such recommendations. If the resulting recommendation is one or more notices of proposed rulemaking (NPRM) published by the **FAA**, the **FAA** may ask ARAC to recommend disposition of any substantive comments the **FAA** receives.
4. Provide a status report at each meeting of ARAC held to consider transport airplane and engine issues.

Participation in the Working Group

The Electrical Systems Harmonization Working Group will be composed of technical experts having an interest in the assigned tasks. 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 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 October 12, 1998. The requests will be reviewed by the assistant chair and the assistant executive director, and the individuals will be advised whether or not the request can be accommodated.

Individuals chosen for membership on the 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.

Meetings of ARAC will be open to the public. Meetings of the Electrical Systems Harmonization Working Group 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 September 4, 1998.

Joseph A. Hawkins,

Executive Director, Aviation Rulemaking Advisory Committee.

[FR Doc. 98-24419 Filed 9-10-98; 8:45 am]

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Recommendation Letter

Pratt & Whitney
400 Main Street
East Hartford, CT 06108

Pratt & Whitney
A United Technologies Company

March 10, 2000

Federal Aviation Administration
800 Independence Avenue
Washington, DC 20591

Attention: Thomas McSweeny, Associate Administrator for Regulation and Certification

Subject: ARAC Recommendations

Reference: ARAC Tasking, Federal Register, November 26, 1999

Dear Tom:

In accordance with the reference the ARAC Transport Airplane and Engine Issues Group is pleased to forward the following "fast track" reports as recommendations to the FAA:

25.869(a)
25.899
25.1309(b) – Note: It was agreed that this item should remain a "fast track" Category 1 project
25.1310
25.1351(b)
25.1351(c)
25.1353(a)
25.1353(c)(5)
25.1353(c)(6)
25.1353(d)
25.1355(c)
25.1357
25.1431(d)

These reports have been prepared by the Electical Systems Harmonization Working Group.

Sincerely yours,

Craig R. Bolt

Craig R. Bolt
Assistant Chair, TAEIG

cc : Kris Larsen – FAA – NWR
*Dorenda Baker – FAA – NWR
Effie Upshaw – FAA – Washington, DC – ARM
*Brian Overhuls – Boeing

*Letter only

Recommendation

TASK 2

ARAC ESHWG REPORT 25X899

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

JAR 25X899 addresses the requirement for electrical bonding and protection of the aircraft from the effects of lightning and static electricity.

2 - What are the current FAR and JAR standards?

Current FAR text:

FAR Text does not exist

Current JAR text:

JAR 25X899: Electrical Bonding and protection against lightning and static electricity

The electrical bonding and protection against Lightning and Static Electricity systems must be such as to:

(a) Protect the aeroplane, including its systems and equipment, against the dangerous effects of lightning discharges;
(b) Prevent dangerous accumulation of Electro-static charge;
(c) Minimize the risk of electrical shock to crew, passengers and servicing personnel and also to maintenance personnel using normal precaution, from the electricity supply and distribution system;
(d) Provide an adequate electrical return path under both normal and fault condition, on aeroplanes having earthed electrical systems;
(e) Reduce to an acceptable level interference from these sources with the function of essential electrically powered or signaled services.

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

The JAR 25X899 requirement for electrical bonding and protection from the effects of lightning and static electricity are stated explicitly in the JAR text, with specific Interpretative Material and Acceptable Means of Compliance given in ACJ 25X899.

The FAR provides some equivalent requirements in FAR paragraphs 25.581, 25.954 and 25.1316 for protection from lightning discharges. However, JAR 25X899 and its related ACJ 25X899 have additional requirements relating to protection from electrical shock, fuel vapor ignition or electromagnetic interference caused by accumulation of electrostatic charge and for aircraft having a ground return path through structure. Electrical bonding must be adequate for both normal and fault conditions.

JAR 25X899 and its associated ACJ, as it is currently written, duplicates some of the requirements found in other JAR paragraphs and specifications given for use in assessing adequacy of protection from lightning discharges are out of date.

The differences in the standards of the FAR and JAR result in inconsistency and confusion because compliance for features relating to bonding and protection from effects of lightning discharges and accumulation of static electricity must be shown using different paragraphs in each standard.

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

For JAR 25X899, compliance requirements are given by ACJ 25X899 and interim policies. In the FAR, there are other paragraphs that are applicable to much of this subject matter but there are no specific guidelines given to show compliance.

5 – What is the proposed action?

The ESHWG recommends that the JAR 25X899 should be revised as follows:

"Note add references to ACJ 25.899" or to FAR

(1) Delete JAR 25X899(a) because it is addressed in FAR/JAR paragraphs 25.581,25.954 and 25.1316.
(2) The intent of JAR 25X899(b) should be retained to address protection from the accumulation of static electricity, but it should be rewritten to clearly state the requirement.
(3) Delete JAR 25X899(c) because it is addressed in JAR 25X1360(a), which will also be adopted into the FAR as part of this harmonization project.
(4) Move the requirement of JAR 25X899(d) to a new FAR/JAR sub-paragraph 25.1353(e). This will place this requirement with related requirements and provide for improved consistency and coordination of both FAR and JAR.
(5) Delete JAR 25X899(e) because it is addressed in FAR/JAR 25.1353(a) and JAR 25.1431(d). JAR 25.1431(d) will also be adopted into the FAR as part of this harmonization project.
(6) Modify ACJ 25X899 to provide specific Interpretative Material and Acceptable Means of Compliance for the new FAR/JAR 25.899, which will address bonding and static electricity. This new ACJ should also reference and be applicable to the other paragraphs that relate to bonding and static electricity.
(7) There is a reference to ACJ 25X899 in JAR 25.581(a), which should be revised to refer to the new ACJ 25.899. Also, for FAR 25.581(a), a reference to FAR 25.899 or a new AC should be added.

6 - What should the harmonized standard be?

The following FAR/JAR paragraphs would be affected by the proposed harmonized standard:

FAR/JAR 25.899 Electrical Bonding and Protection Against Static Electricity
For JAR See ACJ 25.899)
(Note: The FAR will not reference the AC)

(a) Electrical bonding and protection against static electricity must be designed to minimise accumulation of electrostatic charge, which would cause:

(1) Human injury from electrical shock,

(2) Ignition of flammable vapours, or

(3) Interference with installed electrical/electronic equipment.

(b) Compliance with sub-paragraph (a) of this paragraph may be shown by

(1) Bonding the components properly to the airframe, or

(2) Incorporating other acceptable means to dissipate the static charge so as not to endanger the aeroplane, personnel or operation of the installed electrical/electronic systems.

FAR/JAR 25.1353 Electrical equipment and installations

(e) Electrical bonding must provide an adequate electrical return path under both normal and fault conditions, on aeroplanes having earthed electrical systems (see FAR/JAR 25.899).

FAR/JAR 25.1360 Precautions against injury

(a) Shock. The electrical system must be designed to minimise the risk of electric shock to crew, passengers and servicing personnel and also to maintenance personnel using normal precautions.
(See ACJ 25.1360(a) and FAR/JAR 25.899.)

(Note: The FAR will not reference the AC)

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

The proposed standard addresses the underlying safety issue by highlighting the requirement of electrical bonding and static electricity as a full aircraft requirement and by placing cross references within the specific section which deals with electrical systems and lightning protection.

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

The proposed standard increases the level of safety by decreasing the confusion of redundant requirements and ensuring the requirement of electrical bonding and static protection is addressed as a full aircraft requirement.

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

The proposed standard maintains the same level of safety because it is believed that the current industry practice is in compliance with the proposed standard.

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

The following options were considered:

1) To adopt the current JAR 25X899; This option was not selected because the current JAR 25X899 is redundant to several other JAR/FAR; Is not specific (i.e. vague) in regard to static electricity requirements and is not addressed properly in the electrical section of the FAR/JAR;

2) To delete the current JAR 25X899: This option was not selected because it was felt that the requirement to address electrical bonding and static electricity protection was needed to ensure the safety of the aircraft

11 - Who would be affected by the proposed change?

Airplane manufacturers will be affected by the proposed change by requiring compliance to the new sections proposed.

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?

There is no current advisory material that is proposed to be included in the rule.

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

The advisory material relating to bonding and static electricity protection is proposed to be a new AC/ACJ as shown below and should be published concurrently with the rule:

AC/ACJ 25.899 Electrical Bonding and Protection Against Static Electricity
See FAR/JAR 25.899

1 Protection against Lightning Discharges.

Reference: FAR/JAR 25.581; 25.954; 25.1316 and associated Advisory Material

2 Characteristics of Lightning Discharges

Reference Advisory Circular 20.XXX: Lightning Environment and Associated Test Waveforms.

3 Protection against the Accumulation of Static Charges

3.1 General. All items, which by the accumulation and discharge of static charges may cause a danger of electrical shock, ignition of flammable vapours or interference with essential equipment (e.g. radio communications and navigational aids) should be adequately bonded to the main earth systems.

3.2 Intermittent Contact. Design should ensure that no fortuitous intermittent contact can occur between metallic and/or metallized parts.

3.3 High Pressure Refuelling and Fuel Transfer. Where provision is made for high pressure refuelling and/or for high rates of fuel transfer it should be established, by test, or by consultation with the appropriate fuel manufacturers, that dangerously high voltages will not be induced within the fuel system. If compliance with this requirement involves any restriction on the types of fuel to be used or on the use of additives, this should be established.

3.3.1 With standard refuelling equipment and standard aircraft turbine fuels, voltages high enough to cause sparking may be induced between the surface of the fuel and the metal parts of the tank at refuelling rates above approximately 250 gal/min. These induced voltages may be increased by the presence of additives and contaminants (e.g. anti-corrosion inhibitors, lubricating oil, free water), and by splashing or spraying of the fuel in the tank.

3.3.2 The static charge can be reduced as follows:

a. By means taken in the refuelling equipment such as increasing the diameter of refuelling lines and designing filters to give the minimum of electrostatic charging, or

b. By changing the electrical properties of the fuel by the use of anti-static additives and thus reducing the accumulation of static charge in the tank to negligible amount.

3.3.3 The critical refueling rates are related to the aeroplane refueling installations, and the designer should seek the advice of fuel suppliers on this problem.

4. Primary and Secondary Bonding Paths
(Reference 25.581; 25.954; 25.1316; 25.1353; 25.1360;)

4.1 Primary bonding paths are those paths, which are required to carry lightning discharge currents. These paths should be of as low an electrical impedance as is practicable. Secondary bonding paths are those paths provided for other forms of bonding.

4.2 Where additional conductors are required to provide or supplement the inherent primary bonding paths provided by the structure or equipment, then the cross-sectional area of such primary conductors made from copper should be not less than 3 mm2 except that, where a single conductor is likely to carry the whole discharge from an isolated section, the cross-sectional area would be not less than 6 mm2. Aluminum primary conductors should have a cross-sectional area giving an equivalent surge carrying capacity.

4.3 Primary bonding paths should be used for -
a. Connecting together the main earths of separable major components which may carry lightning discharges,
b. Connecting engines to the main earth,
c. Connecting to the main earth all metal parts presenting a surface on or outside of the external surface of the aeroplane, and
d. Conductors on external non-metallic parts.

4.4 Where additional conductors are required to provide or supplement the inherent secondary bonding paths provided by the structure or equipment then the cross-sectional area of such secondary conductors made from copper should be not less than 1 mm2. Where a single wire is used its size should be not less than 1·2 mm diameter.

5 Resistance and Continuity Measurements. Measurements should be made to determine the efficacy of the bonding and connection between at least the following:

5.1 Primary Bonding Paths.

5.1.1 The extremities of the fixed portions of the aeroplane and such fixed external panels and components where the method of construction and/or assembly leads to doubt as to the repeatability of the bond, e.g. removable panels.
5.1.2 The engines and the main aeroplane earth.
5.1.3 External movable metal surfaces or components and the main aeroplane earth.
5.1.4 The bonding conductors of external non-metallic parts and the main aeroplane earth.
5.1.5 Internal components for which a primary bond is specified and the main aeroplane earth.

5.2 Secondary Bonding Paths.

5.2.1 Metallic parts, normally in contact with flammable fluids, and the main aeroplane earth.
5.2.2 Isolated conducting parts subject to appreciable electrostatic charging and the main aeroplane earth.
5.2.3 Electrical panels and other equipment accessible to the occupants of the aeroplane and the main aeroplane earth.
5.2.4 Earth connections, which normally carry the main electrical supply and the main aeroplane earth. The test on these connections should be such as to ensure that the connections can carry, without risk of fire or damage to the bond, or excessive volt drop, such continuous normal currents and intermittent fault currents as are applicable.
5.2.5 Electrical and electronic equipment and the aeroplane main earth, where applicable, and as specified by the aeroplane constructor.

5.2.6 Static discharger wicks and the main aeroplane structure.

6 Electrical Properties of Composite Structure

6.1 In the case of lightning protection, for the partial conductors the method of surface protection will vary with the criticality of the structure in question. Deterioration of the means of protection or possible hidden damage to the material which may affect its structural integrity, need to be considered. While such materials provide a measure of electro-magnetic screening, the need for additional measures will be a function of the location of the material in relation to critical equipment and wiring in the aircraft. Particular attention will also have to be given to the protection required near fuel systems - e.g. fuel tanks. For non-conducting materials which have no intrinsic lightning protection or screening properties, the measures taken will again depend on the relative locations of the material and critical systems or fuel and the possible loss of the components due to internal air pressures in the event of a strike.

6.2 The partial conducting materials should present no problem in dissipating P-static but problems can arise with the non-conductors. Depending upon the location of the material, protection may be required.

6.3 Electrical currents, other than lightning, can flow in some partial conducting materials and means may be required to limit this by provision of alternative current paths if the effect of large voltage drop is important or if such currents can damage the material.

6.4 Particular care has to be taken that all joints, permanent and temporary, are capable of carrying any currents which may flow particularly those resulting from lightning strikes. Structural damage and loss of screening capabilities may occur if these are not adequately controlled.

6.5 The adequacy of the material in supplying a ground plane for antenna may have to be considered. Again it will vary with the material and the radio frequency of the system.

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

The proposal is in line with ICAO standards

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

No

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

The cost impact of complying with the proposed standard should be insignificant due to the fact that current industry standards result in compliance with this proposed change.

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

Yes. In addition, the ESHWG would like to review the draft advisory material.

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. Explain.

The "Fast Track" process is appropriate for this rulemaking. All affected sections are under the control of this working group.

FAA Action: Fire Protection of Electrical System Components on Transport Category Airplanes; NPRM -- FAA-2001-9637
and
Electrical Installation, Nickel Cadmium Battery Installation, and Nickel Cadmium Battery Storage; NPRM -- FAA-2001-9634