



U.S. Department
of Transportation

**Federal Aviation
Administration**

Advisory Circular

**Subject: ELECTRICAL SYSTEM
FIRE AND SMOKE
PROTECTION**

Date: 3/25/04

AC No: 25.869-1

Initiated By: ANM-100 Change:

1. PURPOSE. This advisory circular (AC) describes an acceptable means for showing compliance with the requirements of § 25.869(a), “Fire protection: systems,” of Title 14, Code of Federal Regulations (CFR) part 25. Part 25 contains the airworthiness standards applicable to transport category airplanes. The means of compliance described in this document provides guidance to supplement the engineering and operational judgment that must form the basis of any compliance findings relative to protection of electrical systems from fire and smoke.

2. APPLICABILITY.

a. The guidance provided in this document is directed to airplane manufacturers, modifiers, foreign regulatory authorities, and Federal Aviation Administration (FAA) transport airplane type certification engineers and their designees.

b. As of the issuance date, the guidance provided in this AC is harmonized with that of the European Joint Aviation Authorities (JAA). It provides a method of compliance that both the FAA and JAA have found acceptable.

c. This material is neither mandatory nor regulatory in nature and does not constitute a regulation. It describes acceptable means, but not the only means, for demonstrating compliance with the applicable regulations. The FAA will consider other methods of demonstrating compliance that an applicant may elect to present. While these guidelines are not mandatory, they are derived from extensive FAA and industry experience in determining compliance with the relevant regulations. On the other hand, if we become aware of circumstances that convince us that following this AC would not result in compliance with the applicable regulations, we will not be bound by the terms of this AC, and we may require additional substantiation as a basis for finding compliance.

d. This AC does not change, create any additional, authorize changes in, or permit deviations from regulatory requirements.

3. RELATED SECTIONS OF TITLE 14, CODE OF FEDERAL REGULATIONS (CFR), PART 25.

§ 25.863 Flammable fluid fire protection

4. DEMONSTRATION OF COMPLIANCE. Applicants may show compliance with the requirements of § 25.869, and those of § 25.863 applicable to electrical equipment, by demonstrating the following:

a. Electrical components in regions immediately behind firewalls and in engine pod attachment structures should be made of such materials and installed at such a distance from the firewall that they will not suffer damage that could hazard the airplane if the surface of the firewall adjacent to the fire is heated to 1100° C (2012° F) for 15 minutes.

b. Electrical equipment should be constructed and/or installed so that in the event of failure, no hazardous quantities of toxic or noxious products (for example, smoke) will be distributed in the crew or passenger compartments.

c. Electrical equipment that may come into contact with flammable vapors should be designed and installed so as to minimize the risk of the vapors exploding under both normal and fault conditions. This can be satisfied by meeting the Explosion Proofness Standards of Radio Technical Commission for Aeronautics (RTCA) Document DO-160/EUROCAE ED-14.

/s/ Kalene C. Yanamura

Kalene C. Yanamura
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service