MIL-B-5087B(ASG)
Amendment 2
31 August 1970
Superseding
Amendment 1
6 February 1968

MILITARY SPECIFICATION

BONDING, ELECTRICAL, AND LIGHTNING PROTECTION, FOR AEROSPACE SYSTEMS

This amendment forms a part of Military Specification MIL-B-5087B(ASG), 15 October 1964, and has been approved by the Department of the Air Force and by the Naval Air Systems Command.

Page 2, paragraph 2: Add the following information:

"American National Standards Institute, Incorporated

C1-1968 National Electrical Code

(Application for copies should be addressed to the National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts 02110.)"

Page 4, paragraph 3.1.1.1.1, item (c). After "MS25083-3 (Quick Disconnect)" delete "Prohibited for airborne applications" and substitute "Prohibited for Air Force airborne applications."

Page 6, paragraph 3.3.2.4: Delete and substitute:

"3.3.2.4 Bonding in hazard areas. In areas prone to explosion or fire hazards, the resistance between the equipment case and structure shall not exceed the values shown on figure 6. The fault current shown is the maximum current that the electrical system is capable of delivering to the fault in the event that an internal power-to-ground fault takes place and high current passes through the equipment housing to structure. Since bonding in itself cannot eliminate all possible sources of ignition, the equipment shall be designed to minimize hot spots, sparking, and expulsion of molten metal when an internal power fault occurs.

Page 6, paragraph 3.3.4:

a. First sentence: Delete and substitute: "Lightning protection shall be provided at all possible points of lightning entry into the aircraft and shall be proven by test."

b. Following item (f), add:

"(g) Radomes

"(h) Canopies

FSC 6150

"(i) Pitot-static booms
"(j) Wiring not protected by metal or body structure."

c. At the end of the paragraph, add: "When flight safety is not a factor, 100,000 amperes peak with a rate rise of 50,000 amperes per microsecond may be used at the discretion of the procuring activity."

Page 13, figure 6: Delete and substitute the attached figure 6. Figure 6 forms page 3 of this amendment.

Page 17, paragraph 3.3.5.1, line 5: Delete "impedance" and substitute "resistance".

Page 17, paragraph 3.3.6, line 3: Between "external" and "to," insert "or internal".

Page 17, add:

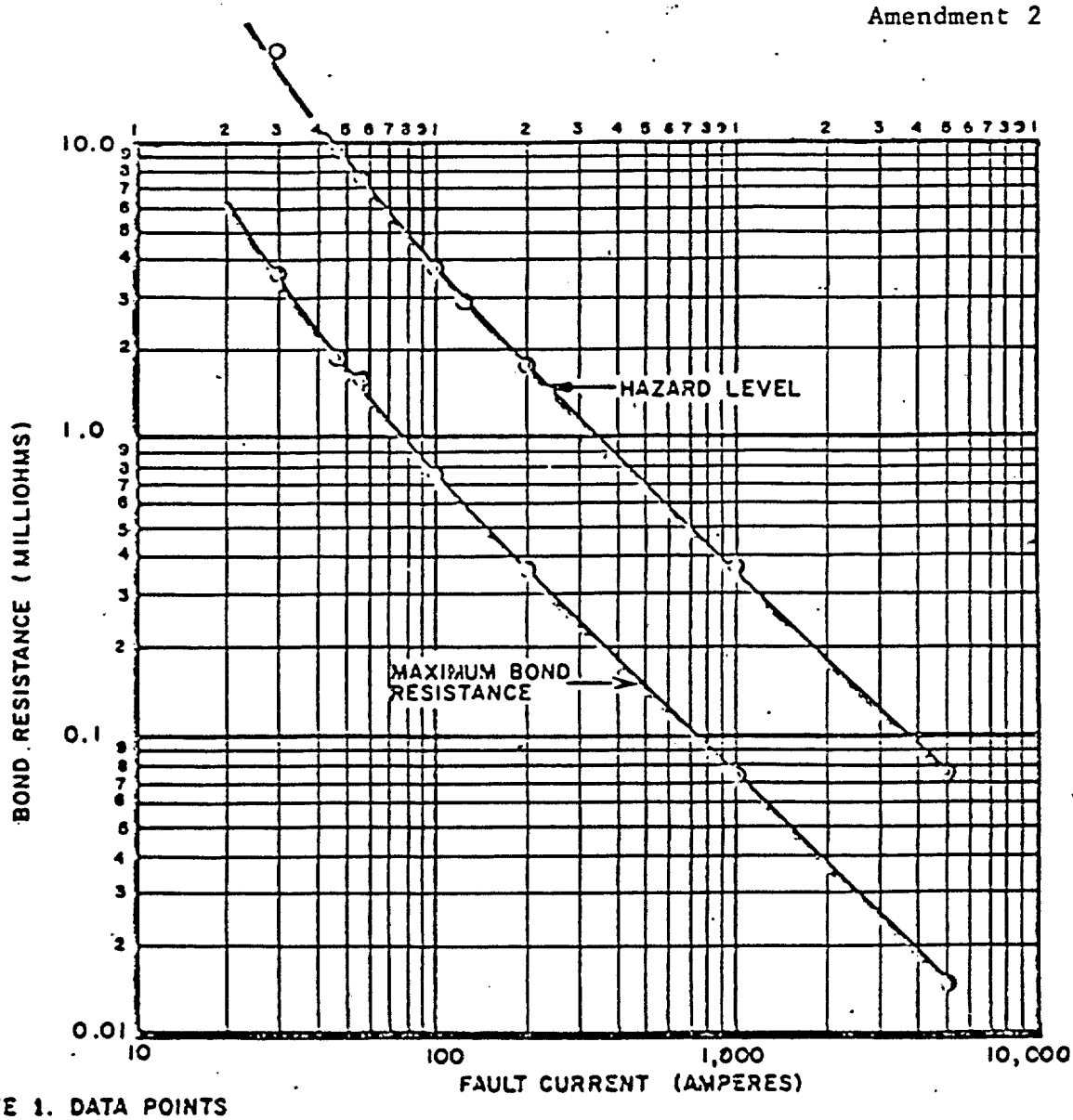
"3.3.6.1 Pipe and hose bonding. All metallic pipes, tubes, and hoses that carry petroleum products or other fluids shall have a mechanically secure connection to the structure that will measure 1 ohm or less. The pipe, tube, or hose installation shall be so designed that it will not be a path for primary electrical power under normal or fault conditions. Nonmetallic plumbing installations shall be so designed that the static voltage generated by fluid flow will not exceed 350 volts at any point outside the pipes, tubes, or hoses."

Page 17, paragraphs 3.3.7 and 3.3.7.1: Delete and substitute:

"3.3.7 Bases, fixed and mobile missile sites, bonding, grounding, and lightning protection criteria. Bonding and grounding provisions for fixed and mobile missile sites and other installations, such as fueling, defueling, weapon handling, and other hazardous areas, must be determined specifically at each site and as a minimum shall meet the requirements of USAS C1-1965, National Electrical Code. General techniques recommended for use at each side are as follows; however, the overall requirements shall not necessarily be limited to the techniques listed:

a. A good electrical ground reference is obtained by providing a ground grid matrix. The quantity and spacing of the driven ground rods should be as dictated by the requirements at each site.

b. All metallic structures, including cable trays, steel stanchions, structural platforms, etc., should be connected electrically to the ground grid. Except in special cases, steel reinforcement in concrete would noramlly not be grounded.



NOTE 1. DATA POINTS

AMPS	HAZARD RESISTANCE (MILLIOHMS)	MAX RESISTANCE (MILLIOHMS)
5000	0.074	0.0148
1000	0.37	0.074
200	1.35	0.37
120	2.33	—
100	3.7	0.74
58	7.7	1.54
49	9.3	1.36
30	18	3.6

FIGURE 6. Fault current (Amperes)

c. Tie-points or stub-ups should be provided so that instrumentation and check-out equipment can be connected to the ground grid with an electrical lead length of not more than 14 inches. Longer leads are useless for grounding and tend to introduce extraneous noise.

d. For protection against external rf interference, the shields of shielded cables should be grounded to the equipment cases, or the facility ground, at each end and at as many intermediate points as necessary. Instrument and audio grounds using the single-point ground concept for low-frequency protection should be compatible with the grounding system at the site.

e. Neutral and common terminals of the missile site power distribution system should be connected to the facility ground, unless specific reasons dictate that another method should be used."

Page 24, paragraph 6.3.7: Delete and substitute:

"6.3.7 Missile site bonding and grounding. The techniques for bonding and grounding of missile sites will be as listed in 3.3.7."

Custodians:
Navy - AS
Air Force - 11

Review activities:
Navy - AS
Air Force - 82, 85

User activity:
Army - EL

Preparing activity:
Air Force - 11

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