MIL-I-83456(USAF)
AMENDMENT 2
2 June 1976

SUPERSEDING
AMENDMENT 1
24 July 1975

MILITARY SPECIFICATION

INSTALLATION OF SEGMENTED LIGHTNING DIVERTER STRIPS ON AIRCRAFT RADOMES, GENERAL SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-I-83456(USAF), dated 20 December 1974, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 4

Paragraph 3.3.3.2.4.2, Delete the last two sentences and substitute:

"Each installed diverter strip shall be capable of transferring at least four (4) multiple component waveforms without replacement of the strip. The induced voltages in wiring within the radome shall be controlled or reduced to a level as close as possible to the maximum allowable sinewave voltage on the circuit."

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Paragraph 4.3.3.4.2, Delete the last sentence and substitute:

"Each unique strip shall be tested over its entire length, if possible. Those strips of lengths exceeding the capabilities of existing test facilities for ionization voltage shall be tested over the maximum length possible including attachment hardware to determine the adequacy of the installation. The indirect effects of lightning shall be measured."

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Appendix B, paragraph 20, Delete and substitute:

"Tests of radomes require application of multiple waveform components I-A and I-B in one discharge and of waveform I-C

in a separate discharge, see figure 2. The level of charge transfer (I-C) for nose radomes and other radomes in Zone 1A** area shall be determined for each individual weapon system and radomes from the equation

$$K \frac{L_E}{S_e} = C_T \quad *$$

C_T = Charge transfer, in coulombs, required for continuous current test where 10 coulombs $\leq C_T \leq$ 200 coulombs.

* L_E = Equivalent radome length in feet for protection devices from pitot tube to airframe equivalent length includes radome length and pitot boom length. For protection devices not originating at (protecting) the pitot boom equivalent length is the length of the protection device.

S_e = Minimum aircraft stall speed in knots, possible in a lightning environment.

K = 475 amps conversion factor, includes conversions to standardize units and maximum charge transfer coefficient.

** Zone 1A = Initial attachment point with low probability of flash hang-on, such as a leading edge.

*** Zone 1B = Initial attachment point with high probability of flash hang-on, such as a trailing edge.

For radomes in Zone 1B*** area the levels specified in figure 2 shall apply."

"To measure the indirect effects of lightning, the waveform and specifications of figure 3 shall be used. The current risetime shall be the maximum available from the generator. The results of the measurement shall be extrapolated linearly to the 200 KA peak, 100 KA per microsecond risetime levels."

Add figure 3. Figure 3 forms page 4 of this amendment.

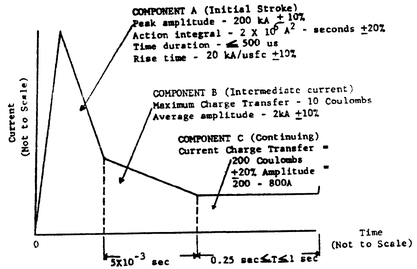

FIGURE 2. Current test waveform components for evaluation of direct effects.

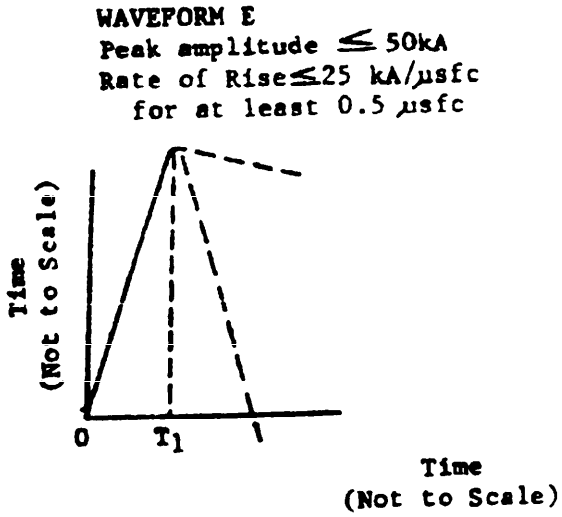

FIGURE 3. Fast rate of change current waveforms for evaluation of indirect effects.

Paragraph 30.2, Delete entire paragraph and substitute:

"For multiple component tests, the test electrode should be placed as far from the test object surface as the driving voltage of intermediate current component (B) will allow. When this component is preceeded by the high peak current component (A) the high driving voltage of this generator initiates the arc and component (B) follows the established arc even though driven by a lower voltage."

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Appendix B, paragraph 30.3, line 1, Delete the words "and restrike (D)" and substitute "and intermediate current (B)".

Appendix B, paragraph 40. Add the following to the end of last paragraph:

"Measurements of the voltages appearing at electrical terminals of the test object should be made by a cathode ray oscilloscope with a horizontal sweep rate of one centimeter per microsecond or faster and vertical deflection sensitivity adequate to measure all of the induced voltage. The measurements should be made both differentially, terminal to terminal, and common mode, terminal to airframe. The measured voltages shall be controlled or reduced to a level as close as possible to the maximum allowable sinewave voltage on the circuit using available and acceptable voltage suppression techniques".

Asterisks are not used in this amendment to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodian:
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equipment shall operate