

MIL-D-81980(AS)

Amendment 1

14 August 1975

## MILITARY SPECIFICATION

### DESIGN AND EVALUATION OF SIGNAL TRANSMISSION SUBSYSTEMS: GENERAL SPECIFICATION FOR

*This amendment forms a part of Military Specification MIL-D-81980(AS)  
dated 24 September 1974 and is approved for use by the Naval Air Systems  
Command, Department of the Navy.*

Page 1

Title: After "SUBSYSTEMS " add "FOR AIRCRAFT WEAPON SYSTEMS".

Page 3

2.1: Under STANDARDS, Military, add the following:

"MIL-STD-882	System Safety Program for Systems and Associated Subsystems and Equipment; Requirements for"
--------------	--

"MIL-STD-1385	Preclusion of Ordnance Hazards in Electro- magnetic Fields; General Requirement for"
---------------	---

2.1: Under STANDARDS, Navy Department, add the following:

"NAVWEPS OD-30393	Design Principles and Practices for Controlling Hazards of Electromagnetic Radiation to Ordnance [HERO Design Guide] "
-------------------	---

2.1: Under PUBLICATIONS, add the following:

"Naval Air Systems Command (Code Ident 30003)

AR 46	HERO (Hazards of Electromagnetic Radiation to Ordnance) Requirements for HERO Tests, Analysis and Documentation"
-------	--

MIL-D-81980 (AS)  
Amendment 1

Page 5

3.6: Line 1, after "ensure" add "safe,".

Page 6

3.6.4: Line 2, delete "and reliability", and substitute "reliability and safety".  
Line 3, add "system safety," after "complexity,".

Page 7

3.6.9: At the end of the first sentence, add "(see 3.6.10.2)".

3.6.10: Last line, delete "personnel".

3.6.10.2: At the end of the first sentence, add "(see 3.6.9)". Delete the second and third sentences.

Page 8

3.6.13: Line 2, delete "meet all additional", and substitute "also meet all".  
Line 3, delete "additional testing required by MIL-E-9426", and substitute "demonstration and test requirements of MIL-E-9426 prior to the release of the escape system for installation and service use".

Add the following:

"3.6.14 Precaution for electrical signal transmission subsystems. An electrical STS shall be protected from the hazards of electromagnetic radiation to ordnance in accordance with the guidelines of NAVWEPS OD-30393. Circuits shall be independently shielded, secured against vibration and protected against short circuits or grounds resulting from chafing. Junctions shall be individually shielded connections designed to eliminate current leakage from other aircraft circuits, and to minimize the hazards of electromagnetic radiation from radio and radar transmitters and other electrical components aboard ship, shore station, or aircraft."

"3.6.15 Signal transmission subsystem reliability/maintainability and traceability programs. STS reliability/maintainability and traceability programs (see 6.3.5) shall be established, implemented, and documented in accordance with the requirements defined by the system contract document. The programs shall be submitted to the cognizant design agency for approval."

MIL-D-81980 (AS)  
Amendment 1

"3.6.16 Signal transmission subsystem design safety. To ensure STS safety, the design shall conform to the general requirements of MIL-STD-882. In identifying potential problems/hazards, the probability of this problem/hazard occurrence shall be documented."

3.8: Line 5, delete "federal stock number" and substitute "national stock number".

3.8.1: Line 1, delete "Inlet/outlet ports" and substitute "Transmission line inlet/outlet ports". After the first sentence, add "Utilization of female end fittings for transmission lines is preferred. Use of transmission line end fittings of different thread diameters is mandatory."

3.9: Line 3, delete "the following data requirements".

3.9.1: Line 2, delete "test objectives and descriptions", and substitute ", but need not be limited to, test objectives, descriptions, and failure analysis procedures (see 4.4)".

Page 9

3.9.3: Delete "requirements shall be as follows".

Page 10

3.10: Line 2, delete "maintainability (see 3.6.9), reliability", and substitute "reliability/maintainability (see 3.6.9 and 3.6.15), safety (see 3.6.16)".

Page 11

Add the following:

"3.13.6 Electromagnetic susceptibility. The electrical STS shall withstand exposure to electromagnetic radiation as specified in 4.7.6. Acceptance criteria for electro-explosive device susceptibility shall be as stated in MIL-STD-1385."

3.17: Line 6, delete "tests".

Page 12

3.18: Line 2, add "(1)" following "after". Line 4, after "Table II" add "; and (2) all cartridges, CADs, electric initiators, and/or associated equipment, as applicable, employed in the STS meet all requirements of MIL-D-21625, MIL-D-23615, MIL-I-23659 and the detailed design specification, respectively. For capsules and ejection seat types, see 3.6.13."

MIL-D-81980 (AS)  
Amendment 1

Add the following:

"3.19 Photographic coverage. Photographic coverage shall be in accordance with 4.6."

"3.20 Government witnesses. The contractor shall notify the cognizant design agency a minimum of two weeks in advance of each test to permit government witness attendance (see 4.7 and 4.8)."

"3.21 Workmanship. Workmanship shall be of the highest quality to assure optimum performance, reliability, and safety."

Page 13

Table II: Delete Table II and substitute the following:

Table II  
SERVICE RELEASE TESTING

Test <sup>1</sup>	Number of STS test articles required	Applicable section for test procedures	Functional test at indicated temperature	Discard
Inspection	12 Expend to test listed below	4.5.1		
Electromagnetic susceptibility <sup>2</sup>	1	4.7.6		1
High temperature (200° F)	3	4.8.2	3 at 200° F	
Normal temperature (70° F)	3	4.8.3	3 at 70° F	
High altitude	3	4.8.4	3 at -65° F	

<sup>1</sup>The two or three STS test articles (see note 2) not allocated to the destructive test of Table II are to be used for instrumentation verification and/or investigative purposes, as appropriate. Upon Table II completion, any test articles not expended to functional testing shall be retained or furnished to a designated Navy activity. The master STS test article mock-up shall be made available to the testing facility (contractor, independent testing laboratory, or government) for Table II tests.

<sup>2</sup>Nonelectrical STS will not be subjected to this test.

## Page 14

4.4: Line 4, delete "components(s)", and substitute "component(s)". Line 6, at the end of the sentence, add "(see 3.9.1)".

## Page 15

4.5.2: Line 4, at the end of the sentence, add "(see 3.21)".

4.6: Line 3, at the end of the last sentence, add ", i. e. , high speed photographic coverage of functioning CADs and/or associated equipment containing moving parts (thrusters, pin pullers, catapults, etc.)".

## Page 18

Add the following:

"4.7.6 Electromagnetic susceptibility. Instrumented tests in accordance with AR-46 shall be conducted on one test article for each electrical STS to ensure that the STS will not be degraded by the anticipated electromagnetic environment specified in MIL-STD-1385, and to ensure STS conformance with 3.13.6."

4.8.1: Line 2, delete "where possible". Delete the second sentence.

4.8.2: Delete the second sentence.

4.8.3: Delete the second sentence.

## Page 19

4.8.5: Delete the last sentence.

Add the following:

"4.8.6 Reliability/maintainability tests. Tests necessary to demonstrate compliance with reliability/maintainability requirements shall be conducted in accordance with the approved test plan(s) (see 3.6.15)."

5.1: Delete the last sentence and substitute, "For associated equipment including transmission lines, packaging, packing, and marking shall be subject to the approval of the cognizant design agency. See 3.9.3.4.1 and 6.4."

6.2: Delete and substitute the following:

"6.2 Ordering Data.

6.2.1 Signal transmission subsystem ordering data. Procurement documents should specify the following:

MIL-D-81980(AS)  
Amendment 1

- a. Title, number, and date of this specification.
- b. Selection of applicable level of packaging and packing and marking requirements for service release testing. See section 5.
- c. Quantity (see table II).
- d. Data requirements (see 3.9).

6.2.2 Associated equipment ordering data. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Selection of applicable level of packaging and packing and marking requirements. See section 5.
- c. Quantity per pack.
- d. Data requirements (see 3.9.3 and 3.9.4). "

Page 20

Add the following:

"6.3.5 Signal transmission subsystem traceability. To ensure the exact location [aircraft model number, aircraft bureau number, system application (see 1.1), etc.] of each installed STS cartridge, CAD, electric initiator, transmission line, and/or associated equipment, as applicable, all appropriate information marked on each individual item (nomenclature, national stock number/federal supply code number, contract number, lot number, serial number, and date of manufacture) shall be recorded and submitted to the cognizant design agency or designated Navy activity responsible for maintaining the STS traceability program."

6.5: Delete the first sentence.

Add the following:

"6.5.3 For cartridge and CAD CFE, refer to MIL-D-21625 and MIL-D-23615, respectively."

Custodian:

Navy - AS

Preparing activity:

NAVY - AS

