DATA ITEM DESCRIPTION

Title: Shock Test Report

Number: DI-ENVR-80708A
AMSC Number: N10054
DTIC Applicable: No
Preparing Activity: SH
Applicable Forms: N/A

Approval Date: 20190723
Limitation: N/A
GIDEP Applicable: No
Project Number: ENVR-2019-004

Use/relationship: The Shock Test Report provides the results of equipment shock tests, post-shock test inspections, and functional tests when equipment is subjected to the standard shock test methods in MIL-DTL-901. The report is used to determine whether tested items meet the requirements of MIL-DTL-901.

a. This data item description (DID) contains the format, content, and intended use information for the data deliverable resulting from the work task described in 3.1.8.7, 3.1.12, and 6.7.2 of MIL-DTL-901.

This report applies to shock testing equipment in accordance with MIL-DTL-901.

Sections 1 and 2 of the report will include input provided by the shock test facility and the activity performing post-shock test inspection. If the shock test facility and post-test inspection facility are other than the contractor, arrangements to ensure that this input is obtained are required.

b. Test reports for alternate shock test vehicles/machines shall be as required by the Technical Authority.

c. This DID supersedes DI-ENVR-80708.

Requirements:

1. Reference Documents. The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices, and revisions, shall be as specified in the contract.

2. Format. The test report shall be in the contractor's format.

3. Content.

3.1 Distribution Statement. When information within the Shock Test Report constitutes Scientific and Technical Information (STINFO), as defined by DoDI 5230.24, the test report shall be marked with the appropriate distribution statement as assigned by the Technical Authority in accordance with DoDI 5230.24.

3.2 General Requirements. The test report shall contain the following three sections:

a. Section 1: Test installation and conduct. This section describes the test installation, conduct, and results of the test, including the applicable information of 3.3 below. This section shall also include:

(1) Description of the material, size, and type of hold-down bolts (and of any other hold-down or locating devices) used to secure or locate the tested items to their foundations or test fixtures during shock tests.

(2) Clear photographs of each equipment mounting configuration used during the shock test.

(3) Drawings of the fixtures, including all modifications to standard fixtures. The modifications to the standard fixtures may be included as marked-up drawings.

(4) If shock test instrumentation is employed, a description of such instrumentation and a clear copy of data recorded during the test.

(5) Reference to the applicable equipment military specifications or acquisition document, including the applicable revision and date of issue.

b. Section 2: Post-test inspection. This section describes the conduct and results of the post-test inspection, including the applicable information in 3.3 below.

c. Section 3: Acquisition requirements. This section states the applicable acquisition requirements and supplemental ordering data specified in the acquisition documents in accordance with 6.2 of MIL-DTL-901. This may be accomplished by extracting pertinent pages or sections of the purchase specifications or acquisition document and including this material as an appendix to the report. This section shall include the contractor's recommendations for shock test acceptance of the item tested. For each item of damage (or malfunction) that occurred as a result of shock testing, at least one of the following shall be included:

(1) Recommendation and rationale for design modifications believed to be required to correct any deficiencies found during the test or the post-test inspection to achieve acceptable shock resistance.

(2) Illustration that the damage or malfunction in question does not violate applicable shock test acceptance criteria.

Where matters involving shock test failures were resolved with the Technical Authority prior to submission of the test report (see 3.1.12 of MIL-DTL-901), a record of these agreements shall include detailed descriptions of any damage incurred during each blow, shot, or drop and, where practicable, clear photographs of each instance of damage. This section shall also describe in detail any design modifications, repairs, or adjustments made to the item during shock tests or prior to post-test functional testing and shall provide the equipment identification information delineated in 3.3.5 below.

3.3. Specific Requirements. Each piece of equipment to be tested shall be identified with the information delineated in 3.3.6 below. Tests shall be numbered and dated.

3.3.1 Lightweight Shock Machine Test. The following information shall be included for all lightweight shock machine tests as defined by MIL-DTL-901:

a. Type of test fixture as defined by MIL-DTL-901.

(1) If using type 4C, indicate the mounting platform.
(2) If using type 6E, indicate the panel number.
(3) If nonstandard, provide photographs.

b. Total weight supported by the lightweight shock machine anvil plate.

c. Instrumentation.
(1) Gauge type
(2) Location
(3) Orientation
(4) Results

d. Monitored performance. See table I for a sample tabulation format for required information.
(1) Blow number
(2) Drop feet
(3) Axis
(4) Operating condition
(5) Reference measurements
(6) Post-test measurements or corrections

e. Survey findings, noting any damage and providing damage photographs.

f. Modifications, if any, accomplished prior to or during test with applicable rationale, description, etc.

g. If witnessed by a designated Government representative, the report shall include the signature of the witness and certification that the results were accurately recorded. The Government representative signature and certification do not indicate approval or acceptance of the test report.

h. Certification of report by the test laboratory.

i. Remarks.

TABLE I. Lightweight shock machine test monitored performance.

Blow no.	Drop feet	Axis	Operating condition (on, off, open, closed, etc.)	Reference measurements 1/	Post-test measurements 1/ or conditions 2/
1	1				
2	3				
3	5				
4	1				
5	3				
6	5				
7	1				
8	3				
9	5				

FOOTNOTES:

1/ Volts, amperes, revolutions per minute, pounds per square inch, alignment, clearances, bolting torques, etc.

2/ Yielding, cracking, short-circuiting, separating, unlatching, unbalanced, etc.

NOTE:

1. Nine blows are listed; however, MIL-DTL-901 may specify fewer or more blows, depending upon ship type, equipment class, operating conditions, mounting location, and mounting orientation.

3.3.2 Medium Weight Shock Machine Test. The following information shall be included for all medium weight shock machine tests as defined by MIL-DTL-901:

a. Type of test fixture. If nonstandard, include description and photographs.

b. Total weight supported by the medium weight shock machine anvil table in accordance with 3.1.2.b of MIL-DTL-901.

c. Medium weight shock machine mounting requirements in accordance with 3.1.6.3.2 of MIL-DTL-901.

d. Instrumentation.

(1) Gauge type

(2) Location

(3) Orientation

(4) Results

e. Monitored performance. See table II for a sample tabulation format for required information.

(1) Blow number

(2) Group number

(3) Drop feet

(4) Operating condition

(5) Reference measurements

(6) Post-test measurements or conditions

f. Survey findings, noting any damage and providing damage photographs.

g. Modifications, if any, accomplished prior to or during test with applicable rationale, description, sketches, etc.

h. Remarks.

i. If witnessed by a designated Government representative, the report shall include the signature of the witness and certification that the results were accurately recorded. The Government representative signature and certification do not indicate approval or acceptance of the test report.

j. Certification of the report by the test laboratory.

TABLE II. Medium weight shock machine test monitored performance.

Blow no.	Group no.	Drop feet	Operating condition (on, off, open, closed, etc.)	Reference measurements [1/]	Post-test measurements [1/] or conditions [2/]
1	I Vertical				
2	II Vertical				
3	III Vertical				
4	I Inclined [3/]				
5	II Inclined [3/]				
6	III Inclined [3/]				

FOOTNOTES:

[1/] Volts, amperes, revolutions per minute, pounds per square inch, alignment, clearances, bolting torques, etc.

[2/] Yielding, cracking, short-circuiting, separating, unlatching, unbalanced, etc.

[3/] Provide angle of inclination.

NOTE:

1. Six blows are listed; however, MIL-DTL-901 may specify fewer or more blows, depending upon ship type, equipment class, operating conditions, mounting location, and mounting orientation.

3.3.3 Heavyweight Shock Test on a Standard Floating Shock Platform (FSP), Extended FSP (EFSP), Intermediate FSP (IFSP), or a Large FSP (LFSP). The following information shall be included for all FSP tests as defined by MIL-DTL-901:

a. Test platform as defined by MIL-DTL-901.

(1) Standard FSP or EFSP

(2) IFSP

(3) LFSP

b. Test fixture description, including details of the installations. Photographs or sketches of the foundation and installation.

c. Total weight on the platform.

d. Instrumentation.

(1) Gauge type

(2) Location

(3) Orientation

(4) Results

e. Monitored performance. See table III for a sample tabulation format for required information.

(1) Shot number

(2) Charge standoff (range) and deck simulating fixture (DSF) frequency, as necessary, in accordance with MIL-DTL-901

(3) Operating condition

(4) Reference measurements

(5) Post-test measurements or conditions

f. Survey findings, noting any damage and providing damage photographs.

g. Modifications, if any, accomplished prior to or during test with applicable rationale, description, sketches, etc.

h. Remarks.

i. If witnessed by a designated Government representative, the report shall include the signature of the witness and certification that the results were accurately recorded. The Government representative signature and certification do not indicate approval or acceptance of the test report.

j. Certification of the report by the test laboratory.

TABLE III. Heavyweight shock test monitored performance.

Shot no.	FSP data		Operating condition (on, off, open, closed, etc.)	Reference measurements [2/]	Post-test measurements [2/] or conditions [3/]
	Charge standoff (range) distance [1/] (feet)	DSF target frequency, as necessary (Hz or n/a)			
1					
2					
3					
4					

FOOTNOTES:

[1/] Charge standoff (range) distance is dependent on barge type (FSP, IFSP, EFSP, etc.)

[2/] Volts, amperes, revolutions per minute, pounds per square inch, alignment, clearances, bolting torques, etc.

[3/] Yielding, cracking, short-circuiting, separating, unlatching, unbalanced, etc.

NOTE:

1. Four shots are listed; however, MIL-DTL-901 may specify more shots, depending upon ship type, equipment class, operating conditions, mounting location, including DSF frequency(ies), and mounting orientation.

3.3.4 Deck Simulating Shock Machine (DSSM) Test. The following information shall be included for all DSSM tests as defined by MIL-DTL-901:

a. Description of test fixture, if used, including figure(s) (drawings, sketches, photographs, etc.).

b. Class II payload center-of-gravity (CG), total isolated payload weight, and fixture weight plus additional weight.

c. Instrumentation.

(1) Gauge type

(2) Location

(3) Orientation

(4) Results

d. Monitored performance. See table IV for a sample tabulation format for required information.

(1) Drop number

(2) Test orientation

(3) Drop height (inches)

(4) Swing arm settings, measured from the horizontal

(5) Tray configuration
(6) Operating condition
(7) Reference measurements
(8) Post-test measurements or conditions

e. Survey findings, noting any damage and providing damage photographs.

f. Modifications, if any, accomplished prior to or during test with applicable rationale, description, sketches, etc.

g. Remarks.

h. If witnessed by a designated Government representative, the report shall include the signature of the witness and certification that the results were accurately recorded. The Government representative signature and certification do not indicate approval or acceptance of the test report.

i. Certification of the report by the test laboratory.

TABLE IV. Deck simulating shock machine test monitored performance.

Drop no.	Test orientation (shipboard or rotated)	Drop height (inches)	Tray configuration [1/]	Operating condition [2/]	Swing arm settings [3/]		Reference measurement [4/]	Post-test measurements [4/] or conditions [5/]
					Upper	Lower		
1 [6/]								
2								
3								
4								
5								
6								
7								

FOOTNOTES:

[1/] See figures 24, 25, and 26 of MIL-DTL-901.

[2/] Use Operating Condition Key in accordance with MIL-DTL-901, tables XV, XVI, and XVII.

[3/] "Standard" swing arm settings in accordance with MIL-DTL-901 are as follows:
Upper arm (gamma) – 20 degrees
Lower arm (beta) – 7.5 degrees

Otherwise, swing arm settings are "non-standard"; specify drop height and settings of upper arm and lower arm during testing.

[4/] Volts, amperes, revolutions per minute, pounds per square inch, alignment, clearances, bolting torques, etc.

[5/] Yielding, cracking, short-circuiting, separating, unlatching, unbalanced, etc.

[6/] Prior to drop 1, confirm whether class II deck mounted, and, if applicable, class I/II and class III equipment meets MIL-DTL-901, 3.1.8.4.b equipment isolator requirements.

NOTE:

1. Seven drops are listed; however, MIL-DTL-901 may specify fewer or more drops, depending upon ship type, equipment class, operating conditions, mounting location, and mounting orientation.

3.3.5 Post-Shock Test – Testing and Inspection. The following information shall be included for all tests:

a. Identification of item being inspected through the use of such information as component name, manufacturer, and drawing number.

b. Type of shock test performed.

(1) Machine

(2) Platform

c. Inspection and functional tests. Type of test accomplished and approval by the appropriate inspectors.

d. Repairs that were necessary during test.

e. Condition of the item being tested/inspected.

(1) Breakage
(2) Deformation
(3) Misalignment
(4) Unbalance
(5) Yielding
(6) Cracks
(7) Momentary malfunction

f. Comparison with operational requirements. Report the results of the comparison of the specified test item operational requirements prior to the test with the results of the post-shock functional testing.

g. Disposition of unit.

h. If witnessed by a designated Government representative, the report shall include the signature of the witness and certification that the results were accurately recorded. The Government representative signature and certification do not indicate approval or acceptance of the test report.

i. Certification of the report by the test laboratory.

3.3.6 Equipment Identification and Test Installation Requirements. The following information shall be included for all tests:

a. Item.

(1) Name
(2) Type
(3) Nomenclature
(4) Rating
(5) Service
(6) Military specification and technical manual numbers

b. Manufacturer (name and address).

c. Model number, part number, and serial number (as applicable).

d. Size or capacity (if applicable).

e. Plan numbers (sectional assembly and outline; revision and date).

f. Approximate overall size of equipment.
   (1) Length
   (2) Height
   (3) Width
   (4) Diameter

g. Weight (wet, dry, and total weight including test fixture, wet and dry).

h. Height of CG above base of equipment.

i. Contract or purchase order number.

j. Requirements of MIL-DTL-901 (see classifications in 1.2 of MIL-DTL-901).
   (1) Test category
   (2) Shock grade
   (3) Equipment type
   (4) Equipment class
   (5) Shock test type
   (6) Mounting location and ship type
   (7) Mounting plane aboard ship represented during shock test
   (8) Mounting orientation aboard ship represented during shock test

k. Hold-down bolts (and any other hold-down or locating devices) used for attachment of items to their foundation or test fixture during shock tests.
   (1) Grade
   (2) Size
   (3) Materials
   (4) Specifications

l. Hold-down bolt torque.

m. Description of external or internal resilient mounts, if used.
   (1) Size
   (2) Type
   (3) Location

(4) Specification
(5) Mount manufacturer

n. Major components and attached items in test (name, identification, manufacturer).

o. Test laboratory and address.

End of DI-ENVR-80708A.