

# DATA ITEM DESCRIPTION

*Form Approved*  
OMB No. 0704-0188

|   |  |                                 |                             |
|---|--|---------------------------------|-----------------------------|
| <b>2. TITLE</b>   |  | <b>1. IDENTIFICATION NUMBER</b> |                             |
| ENVIRONMENTAL STRESS SCREENING (ESS) REPORT   |  | DI-RELI-80249                   |                             |
| <b>3. DESCRIPTION/PURPOSE</b>   |  |                                 |                             |
| 3.1 This report is a formal record of the contractor's environmental stress screening results. It is used by the procuring activity to evaluate the effectiveness of the contractor's ESS program, to monitor ESS results, and as a basis for ESS-related evaluations and decisions.  |  |                                 |                             |
| <b>4. APPROVAL DATE (YYMMDD)</b>  | <b>5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)</b> | <b>6a. DTIC APPLICABLE</b>      | <b>6b. GIDEP APPLICABLE</b> |
| 861017  | EC   |                                 |                             |
| <b>7. APPLICATION/INTERRELATIONSHIP</b>   |  |                                 |                             |
| 7.1 This DID contains preparation instructions for ESS reports generated under Task 401 of MIL-STD-781D, Task 301 of MIL-STD-785B, or other contractual ESS requirements.   |  |                                 |                             |
| 7.2 This DID is applicable to contracts which specify environmental stress screening.   |  |                                 |                             |
| 7.3 This DID relates to DI-RELI-80250 , Reliability Test Plan; and DI-RELI-80251 , Reliability Test Procedures.   |  |                                 |                             |
| 7.4 It is not intended that all requirements contained herein should be applied to every program phase. Portions of this DID are subject to deletion tailoring, dependent upon the program in which it is applied as specified in the contract.   |  |                                 |                             |
| 7.5 This DID supersedes DI-ENVR-80172.  |  |                                 |                             |
| <b>8. APPROVAL LIMITATION</b>   |  | <b>9a. APPLICABLE FORMS</b>     | <b>9b. AMSC NUMBER</b>      |
|   |  |                                 | N3981                       |
| <b>10. PREPARATION INSTRUCTIONS</b>   |  |                                 |                             |
| 10.1 <u>Reference documents</u> . The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments and revisions, shall be as reflected in the contract.   |  |                                 |                             |
| 10.2 <u>General</u> . The ESS report shall consist of three sections. The first section, "Random Vibration", and the second section, "Temperature Cycling", shall be included in the initial and each subsequent submittal of the report. The third section, "Laboratory Equipment Data", shall be included in the initial submittal of the report, and as indicated in 10.3.3. |  |                                 |                             |
| 10.3 <u>Content Requirements</u> . The ESS report shall consist of laboratory equipment identification and data recorded during random vibration and temperature cycling. It shall be formatted as described in the following paragraphs.   |  |                                 |                             |
| 10.3.1 <u>Random Vibration</u> . The following random vibration data shall be reported in the initial and each subsequent submittal of the ESS report. Figure 1 may be used as a guide for reporting random vibration data. Any acronyms, symbols or codes used shall be fully defined.   |  |                                 |                             |
| a. Report period (dates of the time period covered by ESS report).  |  |                                 |                             |
| b. Equipment nomenclature (e.g. AN/URC-XXX).  |  |                                 |                             |
| c. Equipment part number.   |  |                                 |                             |
| d. Subassembly part number (if ESS is performed at the subassembly level).  |  |                                 |                             |
| e. Date of the vibration screen.  |  |                                 |                             |
| f. Serial number of the unit(s) subjected to vibration screen.  |  |                                 |                             |
| <b>11. DISTRIBUTION STATEMENT</b>   |  |                                 |                             |
| DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.   |  |                                 |                             |

## 10. PREPARATION INSTRUCTIONS (Cont'd)

- g. Axis of vibration.
- h. Time at the start of vibration.
- i. Time when vibration stopped.
- j. Duration of the vibration screen.
- k. Elapsed time from the start of vibration screen to each failure (if any).
- l. Failed component (circuit card, module or assembly).
- m. Part number or name of failed part.
- n. Reference designation of failed part.
- o. Failure mode of failed part.
- p. Cause of failure of part.
- q. Corrective action req'd, taken or planned.
- r. Analysis of results to determine screening effectiveness.
- s. Any recommended changes to the ESS procedures or program.

10.3.2 Temperature Cycling. The following temperature cycling data shall be reported in the initial and each subsequent submittal of the ESS report. Figure 2 may be used as a guide for reporting temperature cycling data. Any acronyms, symbols, or codes used shall be fully defined.

- a. Report period (date(s) of the time period covered by ESS report).
- b. Equipment nomenclature (e.g. AN/URC-XX).
- c. Equipment part number.
- d. Subassembly part number (if ESS is performed at the subassembly level).
- e. Date and time of temperature cycling (at the start of each cycle).
- f. Serial number of the unit(s) subjected to temperature cycling.
- g. Elapsed time from start of temperature cycling to each failure (if any).
- h. Number of the cycle during which each failure occurred.
- i. Indication of point in cycle when failure occurred (hot or cold).
- j. Failed component (circuit card, module or subassembly).
- k. Part number or name of failed part.
- l. Reference designation of failed part.

10. PREPARATION INSTRUCTIONS (Cont'd)

- m. Failure mode of failed part.
- n. Cause of failure of part.
- o. Corrective action req'd, taken or planned.
- p. Analysis of results to determine screening effectiveness.
- q. Any recommended changes to the ESS procedures or program.

10.3.3 Laboratory Equipment Data. The following data regarding laboratory equipment used to perform the environmental stress screen shall be included in the initial ESS report submittal. This data shall be included in a subsequent submittal only if any laboratory equipment is replaced prior to completion of the screening phase.

a. Random Vibration Equipment.

- (1) Identification by model number and manufacturer of equipment in the vibration system.
- (2) Photographs of mounting fixture and mounting arrangement for each item to be vibrated. The photographs must include enough detail to show mounting arrangements and accelerometer locations.
- (3) A plot of the actual random vibration spectrum recorded during vibration and used for control purposes, identifying frequencies, power spectral density, and degrees of freedom (or actual filter bandwidths used in the analyses of the spectrum).
- (4) Description of procedure used to perform the vibration.

b. Temperature Cycling Equipment.

- (1) Identification by model number and manufacturer of the temperature chamber.
- (2) Maximum and minimum temperatures.
- (3) Maximum and minimum rate of change of temperature.
- (4) Description of procedure used to perform the temperature cycling.



10. PREPARATION INSTRUCTIONS (Cont'd)

TEMPERATURE CYCLING

SHEET \_\_\_ of \_\_\_ PART NUMBER \_\_\_\_\_  
 Report Period \_\_\_\_\_ EQUIPMENT NOMENCLATURE \_\_\_\_\_ SUBASSY P/N \_\_\_\_\_

| DATE OF TEMPERATURE CYCLING | EQUIP. SERIAL NUMBER (S/N) | TIME TO FAILURE | CYCLE 1 -10 | F A I L U R E S |                 |                         |                      | REMARKS |              |
|-----------------------------|----------------------------|-----------------|-------------|-----------------|-----------------|-------------------------|----------------------|---------|--------------|
|                             |                            |                 |             | TEMP Hot/Cold   | Failed Comp/Mod | Failed Part Name or P/N | Reference Designator |         | Failure Mode |
|                             |                            |                 |             |                 |                 |                         |                      |         |              |
|                             |                            |                 |             |                 |                 |                         |                      |         |              |
|                             |                            |                 |             |                 |                 |                         |                      |         |              |
|                             |                            |                 |             |                 |                 |                         |                      |         |              |
| ADDITIONAL COMMENTS:        |                            |                 |             |                 |                 |                         |                      |         |              |

FIGURE 2. Temperature cycling data sheet (sample format)