DATA ITEM DESCRIPTION

Form Approved
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Public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. TITLE

Mishap Risk Assessment Report (MRAR)

2. IDENTIFICATION NUMBER

DI-SAFT-81300A

3. DESCRIPTION/PURPOSE

3.1 The MRAR provides a comprehensive identification and evaluation of the mishap risks assumed during the processing and operation of a system(s) throughout its life cycle. It provides a means of confirming the compliance with program safety requirements. It summarizes all system safety analyses and testing performed on each system. The results of this assessment identify design and operation limits to be imposed upon system elements to preclude or minimize mishaps which could cause injury or damage. (Continued on Page 2)

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
950731	F/AFMC-SE		

7. APPLICATION/INTERRELATIONSHIP

7.1 This Data Item Description (DID) identifies the content and format preparation instructions for the data product generated by the specific and discrete task requirements as delineated in the contract.

7.2 It is applicable to all space, missile, and associated activities that include direct contractor support or management of system design, integration, test, or operations.

7.3 Data items which relate to this DID are DI SAFT-80101B, System Safety Hazard Analysis Report; DI-SAFT-80102B, Safety Assessment Report; (Continued on Page 2)

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER
		F7145

10. PREPARATION INSTRUCTIONS

10.1 Source document. 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 Contents. The MRAR content shall be as follows:

10.2.1 General preparation instructions:

a. The level of detail for each submittal of the MRAR shall be commensurate with the level of design effort and safety analysis performed to date.

b. Changes to the MRAR shall be identified by change bars or other means acceptable to the approving agency. Existing change bars shall be removed upon subsequent submittals and new change bars inserted as necessary.

c. All data pertaining to a particular subject matter shall be consolidated or cross referenced.

d. All pages of the MRAR shall be numbered. Each page of each hazard report shall be labeled with the hazard report number.

(Continued on Page 2)

11. DISTRIBUTION STATEMENT

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

Block 3, Description/Purpose

It will be used for the life of the program as a baseline for safety decisions involving changes to the system, operational concepts and procedures.

Block 7, Application/ Interrelationship (Continued)

DI-SAFT-80103B, Engineering Change Proposal System Safety Report; DI-SAFT-80104B, Waiver or Deviation System Safety Report; DI-SAFT-80105B, System Safety Program Progress Report; and DI-SAFT-80106B, Health Hazard Assessment Report.

7.4 This DID supersedes DI-SAFT-81300.

Block 10, Preparation Instructions (Continued)

e. The MRAR shall be signed by the contractor program manager and the contractor system safety engineer.

10.2.2 Table of contents

10.2.3 List of tables and figures

10.2.4 List of system unique acronyms and definitions

10.2.5 Introduction

10.2.5.1 Purpose. This section is used to identify compliance documents being satisfied by the submittal of an MRAR; identify safety related compliance documents applicable to system design, test, processing, and operation; and certify that an evaluation of compliance with test documents has been made.

10.2.5.2 Scope. This section identifies the primary system, support systems, operational interfaces and facilities. It also identifies major similarities and differences with previous versions of the primary system.

10.2.6 Safety certification. This section shall state that management approval and submittal of the MRAR constitutes certification of the MRAR's completeness (commensurate with the program phase), accuracy and validity by a qualified system safety engineer. It states that the system complies with contractual safety requirements and can be safely operated within the parameters specified.

10.2.7 Program safety status summary. This is an executive summary of the program safety status. At final approval of the MRAR, this section shall reflect resolution of all previously identified safety concerns and noncompliance items, and summarize all risks deemed "acceptable" by the approving agency and the corresponding contractor position.

10.2.8 Non-compliant items. This section shall include all waivers and deviations with a discussion of their disposition. Supporting documentation is not required in the MRAR if it is adequately summarized and referenced. Reference to technical agreements and understandings shall either identify the approved minutes of a meeting or include a copy of the approving correspondence.

Block 10, Preparation Instructions (Continued)

10.2.9 General system description. This section includes:

a. Include a brief description of the primary system in terms of its significant characteristics and the functions performed.

b. Illustrations of the primary system in all major configurations.

c. A description of the primary system and support systems in terms of their hazardous subsystems.

10.2.9.1 Ground operations. This section includes:

a. A brief description of the in-line and off-line sequencing of ground processing tasks to include transport, receipt, assembly, test/checkout and ultimate usage.

b. A condensed flow chart of the integrated ground flow showing movement of systems/elements/components through government facilities.

10.2.9.2 Flight operations. This section includes:

a. A brief description of the sequence of events for flight operations with an emphasis on hazardous operations.

b. Ascent, on-orbit, deployment through safe distance, retrieval, and landing operations, including abort for Space Transportation System (STS) payload elements.

10.2.10 Summary system description. A separate section shall be provided in the MRAR for the primary and its support systems (i.e., primary system, flight and ground support equipment and facilities). Within each of these sections, the following subsections shall be established as applicable:

a. Structural/mechanical subsystems.

b. Ordnance subsystems.

c. Pressurized subsystems.

d. Propulsion and propellant subsystems.

e. Ionizing radiation producing subsystems.

f. Non-ionizing radiation - RF and command subsystems.

g. Non-ionizing radiation - optical and laser subsystems.

h. Electrical/electronics subsystems.

i. Software.

Block 10, Preparation Instructions (Continued)

10.2.10.1 Subsystems design, operating characteristics and safety analysis. This section briefly describes each subsystem and summarizes the hazard analyses that were conducted for each subsystem. A lead-in paragraph for each subsystem lists all major elements. Information required for major elements include:

a. A brief description of the major element(s) and its function.

b. A sketch of the major element(s) which shows its physical location in the system. A single sketch can be used to show all major elements.

c. A mechanical and electrical schematic of the major element(s) with its major components identified as appropriate.

d. An electrical schematic of the control circuitry for the major element(s).

e. A flow chart or block diagram of the critical software components (CSCs) in the subsystem or element.

f. How the major element(s) is controlled/powered and how it operates, using the provided schematics.

g. A description of the safety critical design and operation parameters of the major element(s).

h. When necessary to fully describe a major element (e.g., a helium pressure unit), its major components (e.g., regulators, valves, etc.) shall be identified and described, including their safety critical design and operating parameters.

i. A summary of the hazard analyses for the major elements. Use sketches and schematics showing hazardous operations and/or interfaces to support the analyses.

j. A description of the sequence of major tasks involving each major element, subsequent to arrival on government property. These tasks shall be traceable to the flow chart required in the procedures paragraph.

10.2.10.2 Hazardous materials. This section shall contain a listing of all materials used in primary systems, support systems, and facilities, which in themselves or in how they are used, are hazardous. An assessment shall be made of their safe usage with regard to flammability, odor, out- gassing, toxicity, asphyxiant properties, static electricity bleed capability, propellant compatibility, quantities, controls, etc. Test results and supporting analyses shall be referenced and available upon request.

10.2.10.3 Personnel protective equipment. This section shall include the identification of all tasks requiring personnel protective equipment, and the identification of that equipment by manufacturer/supplier and performance characteristics. Include test data supporting performance characteristics if not verifiable by the approving agency.

10.2.10.4 Hazard report sheets. This section shall include hazard report sheets as an integral part of the MRAR that are generated for hazardous events identified in the analyses. Related hazard report sheets shall be cross referenced. Supporting data shall be included with the hazard report sheet or summarized and cross referenced to information in 10.2.10.1. Contractor format acceptable for the supporting data. Each hazard report sheet shall include:

a. Information on how the hazardous condition can propagate into an accident.

b. The potential effects.

Block 10, Preparation Instructions (Continued)

c. Whether any established safety requirement has been violated.

d. Recommended corrective action initiated or to be initiated.

e. Illustrations with critical paths or pertinent areas identified.

f. Status of actions taken.

10.2.11 Procedures. This section shall contain the title and numerical designations of all planned and contingency/ emergency ground and flight operations procedures. Each procedure is listed with a summary of major tasks sufficient to assess hazard potential. Include a flow chart which shows the integration of the major tasks. Hazardous procedures and tasks are identified.

10.2.12 Failure/mishap record. This section shall contain a record of all safety related failures or mishaps related to program hardware or software acceptance, installation, test and checkout. This section also includes an assessment of the impact on flight and ground safety, and those action(s) taken to prevent recurrence of the failure/mishap.

10.2.13 References. This section includes a list of all pertinent references such as test reports, meeting minutes, agreements, etc.

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