

| DATA ITEM DESCRIPTION | | | Form Approved OMB No. 0704-0188 | |
|--|---|---|------------------------------------|--------------------------|
| 2. TITLE Safety Engineering Analysis Report | | 1. IDENTIFICATION NUMBER DI-MISC-80370 | | |
| 3. DESCRIPTION / PURPOSE 3.1 Safety Engineering Analyses (SEAs) are performed to identify safety procedures and equipment needed to minimize or eliminate hazards associated with task activities performed by other than user organization personnel at operational Intercontinental Ballistic Missile (ICBM) sites and supporting test, trainer and depot facilities. The SEA Report documents SEA results. | | | | |
| 4. APPROVAL DATE (YYMMDD) 870608 | 5. OFFICE OF PRIMARY RESPONSIBILITY (OPR) F/OO-ALC-MMG | 6a. DTIC REQUIRED | 6b. GIDEP REQUIRED | |
| 7. APPLICATION / INTERRELATIONSHIP 7.1 This data item description contains the format and content preparation instructions for the data product generated by the specific and discrete task requirement delineated in the contract. 7.2 This data item may be applied in any contract and during any program phase to acquire Safety Engineering Analyses. (Continued on Page 2) | | | | |
| 8. APPROVAL LIMITATION | | 9a. APPLICABLE FORMS | | 9b. AMSC NUMBER F4134 |
| 10. PREPARATION INSTRUCTIONS 10.1 <u>General</u> . The SEA Report shall contain seven (7) sections. 10.1.1 <u>Table of Contents</u> . This section shall contain a tabulation in numerical order of each SEA Report section, paragraph and subparagraph (by number and full title) and associated starting page number. 10.1.2 <u>Acronyms and abbreviations</u> . This section shall contain a listing in alphabetical order of each acronym and abbreviation used in the SEA Report, together with its definition. In the body of the SEA Report, each acronym and abbreviation shall be defined the first time it is used, with the same definition as listed in this section. 10.1.3 <u>Engineering data</u> . This section shall contain a listing in numerical order of Engineering Data pertinent to the SEA. The listing shall include the identifying number, title, and date for each data product. For purposes of this DID, Engineering Data is defined as "engineering documents (such as drawings, lists or other documents) prepared by or for a design activity, and related to the design, manufacture, procurement, supply, maintenance, test, or inspection of items and services." Engineering Data shall be listed for Programmed Depot Maintenance (PDM), Replacement, Modification and Test/Validation activities accomplished or conducted at operational ICBM launch and launch control facilities, Strategic Missile Support Bases and test, trainer, and depot facilities. (Continued on Page 2) | | | | |
| 11. DISTRIBUTION STATEMENT DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited. | | | | |

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Block 7, Application/Interrelationship (Continued)

7.3. This data item description supersedes DI-A-30015A. ←

Block 10, Preparation Instructions (Continued)

10.1.4 Introduction. This section shall state the authority for and purpose of the project being analyzed, discuss project background as needed to place planned tasks in the appropriate historical perspective, and summarize expected site or facility status at the start of and immediately following activities associated with the SEA Report.

10.1.5 System/Activity description. This section shall include or reference a detailed description of the system or subsystem upon which SEA-associated tasks will be performed. If a detailed system description is referenced, a summary description will suffice for this section, but only if reference is made to existing, contractually applicable descriptive documents (which shall be included with SEA Report delivery, if practical). Task activities shall be described to the same level as included in the task breakdown structure of Section 10.1.6, Analysis Report. Task descriptions (including references) shall be sufficiently detailed to allow a reasonable independent analysis to be conducted.

10.1.6 Analysis report. This section shall include a description of analysis techniques and criteria used in performing the SEA, and a complete tabulation of SEA results using one of the alternative formats detailed in 10.2 below.

10.1.7 Summary data. SEA results shall be briefly summarized in this section, which shall include the status (as of SEA Report publication date) of any safety recommendations not yet implemented, action being taken, and a suspense date by which implementation will be completed on each.

10.2 Format. The SEA Report shall include a front cover page as illustrated in Figure 5. The contractor may develop the format to be used in each section of the SEA Report except the Analysis Report section. The Analysis Report section tabulation of SEA results shall be prepared using either of the two formats illustrated in Figures 1 and 2, respectively. The alternative SEA result tabulations (Figures 1 and 2) columns shall be completed based upon the following criteria.

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10.2.1 Task description. The "Task" or "Task Description" column shall contain a breakdown of the work involved to a task level which can be fully analyzed from a safety standpoint. A tentative task sequence shall be established in order to accomplish the initial analysis. This tentative task sequence may be changed as a result of the analysis. Tasks shall be identified in the SEA in their final mandatory sequence, which shall be incorporated into procedures documents for field implementation. Safety sequence charts may be prepared as part of the SEA report, at the Contractor's discretion, using the methods illustrated in Figures 3 and 4. Tasks involving standard procedures as listed in Air Force Technical Orders shall be referenced when appropriate. Analyses of technical activities involving the incorporation of a number of changes as part of one program shall fully consider all possible interactions between tasks. Incompatibilities or interactions too complex to be positively controlled shall be eliminated by changes in schedules or task structure.

10.2.2 Hazards/Undesirable events. The "Hazard" or "Hazards/Undesirable Events/Safety Requirements" column shall list the hazards which are involved in each task or which may result from faulty task accomplishment. Hazards may be determined from system safety analyses, Technical Orders, previous experience, and thorough study of each task. Hazards to the system, to supporting equipment, and to personnel shall be identified and shall be specific and definitive.

10.2.3 Safety requirements. The "Safety Requirements and Correlation" or "Hazards/Undesirable Events/Safety Requirements" column shall list equipment, procedures, and information required to reduce hazards to an acceptable level of safety. Safety requirements shall be stated such that they can be readily identified to the task with which they are associated, and can be incorporated into working drawings and procedures documents. Maximum allowable facility manloading permissible during performance of the task shall be stated as the first item for a given task in this column. Manloading permitted in work areas for each task or sequence of tasks, if less than the overall facility manloading limitation, shall consider available egress and existing hazards.

10.2.4 Correlation. The "Safety Requirements and Correlation" or "Cross Reference" column shall reference each safety requirement to the working drawing, applicable paragraph and page in Engineering Data, installation instructions, test procedures, or other appropriate documentation where the requirement is specifically implemented.

10.3 Numbering system. The SEA shall identify tasks, hazards and safety requirements by a unique numbering system, i.e., Task X, Hazard X.Y, Requirement X.Y.Z. A hazard identifier (X.Y) will therefore always include its associated task identification (X). Similarly, a requirement identifier (X.Y.Z) will always include its associated hazard identification (X.Y).

10.4 Common tasks. SEAs for complex field activities may contain certain tasks and operations which will be performed repeatedly. These may be contained in a separate SEA section for common activity and called out by reference in specific task analyses upon specific Government approval.

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| TASK | HAZARD | SAFETY REQUIREMENTS AND CORRELATION |
|---|--------|-------------------------------------|
| V | V | V |
| <p>X Task descriptions or titles shall begin at the left margin, directly under the "TASK" heading. Tasks shall be numbered consecutively. The sequence in which tasks are entered into the SEA shall be that in which they will be performed. (The document which details the task shall be referenced in parentheses after the task description statement.)</p> <p>X.Y. Hazards associated with a task shall be entered immediately following its description, indentured directly under the "HAZARD" heading. Hazards shall be numbered consecutively after the associated task description.</p> <p>X.Y.Z Safety requirements to abate a hazard shall be entered after the hazard statement, indentured directly under the "SAFETY REQUIREMENTS AND CORRELATION" heading. They shall be numbered consecutively. (The implementing task document, paragraph to the first indenture only, and page shall be referenced in parentheses following the requirement statement being implemented by the reference.)</p> | | |

FIGURE 1. Alternate SEA Analysis Report section format

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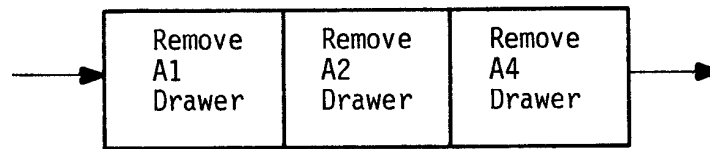
| SAFETY ENGINEERING ANALYSIS | | PROGRAM | FACILITY | CROSS REFERENCE |
|-----------------------------|--|---------|----------|-----------------|
| TASK DESCRIPTION | HAZARDS/UNDESIRABLE EVENTS/ SAFETY REQUIREMENTS | | | |
| | | | | |

FIGURE 2. Alternate SEA Analysis Report section format

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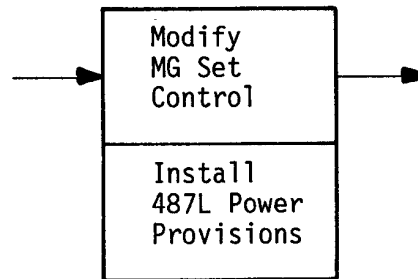
EXAMPLE 1

Operations which may be performed in any sequence but not concurrently.



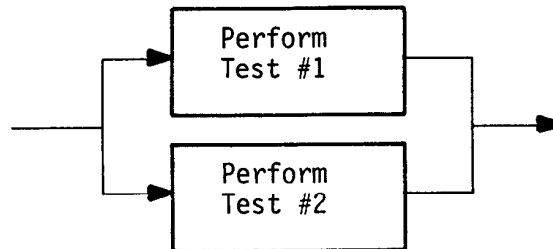
EXAMPLE 2

Operations which may be performed concurrently or in any sequence.



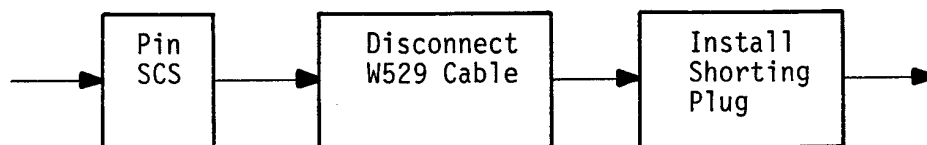
EXAMPLE 3

Operations which must be performed concurrently.

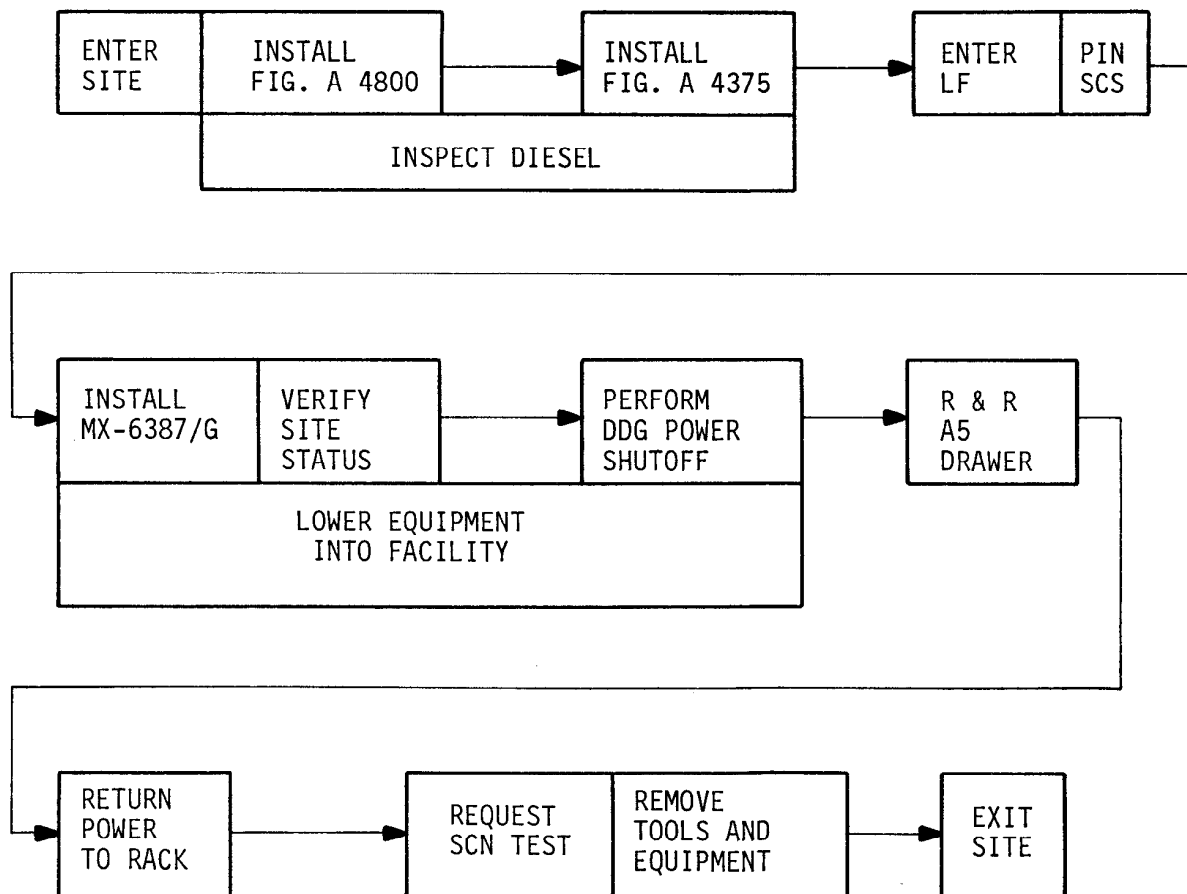


EXAMPLE 4

Operations which must be performed in a mandatory sequence.
 (All operations prior to an arrow must be accomplished before proceeding.)

FIGURE 3. Example safety sequence charting methods

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FIGURE 4. Example safety sequence chart

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UNITED STATES AIR FORCE SAFETY ENGINEERING ANALYSIS

(PROGRAM/PROJECT TITLE)

(APPLICABLE SYSTEM CONFIGURATION, WING,
AND/OR SITE/FACILITY)

IDENTIFICATION NUMBER MMG- (Specified Upon Request by OO-ALC/MMGRW)

(Contractor SEA Release Date, Military Format)



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FIGURE 5. SEA cover