DATA ITEM DESCRIPTION

Form Approved
OMB No 0704 0188

1. TITLE
System Engineering Management Plan (SEMP)

2. IDENTIFICATION NUMBER
DI-MGMT-81024

3. DESCRIPTION/PURPOSE

3.1 The SEMP shall describe the contractor's proposed efforts for planning, controlling and conducting a full integrated engineering effort.

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4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
900827	A/MICOM		

7. APPLICATION/INTERRELATIONSHIP

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

7.2 It is not intended that all the requirements contained in this DID should be applied to every program or program phase. Portions of the DID are subject to deletion tailoring depending on the scope and purpose of the requirements.

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8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER
		A4980

10. PREPARATION INSTRUCTIONS

10.1 Format. The SEMP format shall be contractor selected. Unless effective presentation would be degraded, the initially used format arrangement shall be used for all subsequent submissions.

10.2 Content. The SEMP shall contain the following parts:

10.2.1 Part I - System Engineering. This part of the SEMP shall describe the contractor's system engineering process as it is proposed to be applied to the definition of system design and test requirements during the contractual effort. It shall include the system engineering required to define the system performance parameters and to define the system performance parameters and preferred system configuration to satisfy the contractual requirements; the planning and controls of the technical program tasks; and management of a totally integrated effort of design engineering (all disciplines), test engineering, logistics engineering and production engineering to meet cost, technical performance, and schedule objectives.

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11. DISTRIBUTION STATEMENT

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

Block 3 Description/Purpose (Continued)

3.2 The Plan will be used to understand and evaluate the contractors engineering work efforts as part of the contract monitoring process.

Block 7, Application/Interrelationship (Continued)

7.3 This DID supersedes DI-S-3618 and DI-E-7144.

Block 10, Preparation Instructions (Continued)

A narrative shall be included, supplemented by graphical presentations, describing the contractor's proposed plans, processes, and procedures for the following elements of the system engineering process:

a. Functional allocation.

b. Trade studies.

c. Design optimization and effective analysis.

d. Synthesis.

e. Technical interface compatibility.

f. Logistics Support analysis.

g. Producibility analysis.

h. Training programs for users.

i. Requirements allocation. This section shall include the methods for documenting the allocated requirements for designers, integrators, and test personnel as well as for Government review. It shall also include how the requirements allocation is developed, maintained and used throughout the life of the program.

j. Generation of specifications. This section shall discuss baseline control, including the procedure to be used during requirements allocation, design, configuration management and test. Particular attention shall be paid to hardware/software/firmware integration.

Block 10, Preparation Instructions (Continued)

k. Other system engineering tasks. This section shall describe the contractor's plans and procedures for other system engineering tasks proposed to be accomplished.

10.2.2 Part II Technical Program Planning and Control. This part of the SEMP shall identify organization responsibilities and authority for system engineering management including control of subcontracted engineering; levels of control established for performance and design requirements and control methods to be used; plans and schedules for the design, development, assembly, integration, test and evaluation functions; and control of documentation. These areas are applicable to both the hardware and software engineering activities.

a. Program risk analysis. This section shall include an analysis of any risks which may be associated with the design, development, test and evaluation requirements. The analysis shall identify critical areas and shall further investigate the need for additional prototyping, testing or back up development to minimize technical risk. The risk analysis shall also identify test requirements, technical performance measurement parameters and critical milestones.

b. Engineering program integration. This section shall describe the contractor's proposed technical program planning and control functions for assuring the conduct of a totally integrated engineering effort.

c. Contract work breakdown structure and specification tree. This section shall describe the manner in which the contractor's system engineering management shall develop the technical elements of the contract work breakdown structure (CWBS) and how the enclusion of other contractual tasks required to form a complete CWBS shall be assured. The contractor shall develop a specification tree (not limited to contractual specifications/that relates to the CWBS.)

d. Assignment of responsibility and authority. This section shall identify the proposed organization(s) and key personnel for each of the technical work breakdown structure (WBS) elements, clear definition of their responsibilities, the vehicles or documents used to state these assignments, and their standardes or measures of accomplishment. Existing and proposed procedures establishing the authority, lines of communication and specific functions of these and other organizations associated with engineering policies and their implementation shall be referenced or attached.

Block 10, Preparation Instructions (Continued)

e. Program reviews. This section shall describe the manner in which the contractor's program reviews shall assess, reoptimize, and redirect the technical program effort during the course of the contractual effort.

f. Design reviews. This section shall set forth the contractor's proposed plan and schedule for all design reviews required under terms of the contract. This section shall describe what kinds of documentation shall be provided prior to and at the various design reviews, how this data relates to other contractually required data (e.g. technical manuals, drawings, specifications, software/firmware documentation, users manuals, and how all these final products relate to each other. The total documentation release system shall be discussed including signoff.

g. Interface control. This section shall describe the contractor's proposed procedures for interface control of the contracted segment with other system segments performed by other system participants including the Government agencies who furnish equipment, facilities, software and personnel.

h. Documentation control. This section shall describe the contractor's proposed methods for controlling change to that internal technical data not subject to control by the configuration management system. This description shall be in sufficient detail to establish its consistency with the configuration management and change control requirements of the contract.

i. Engineering testing. This section shall identify what engineering efforts shall be accomplished leading to the contractual system test documentation. This section shall also include a discussion of test engineering effort not included in the other contractual documentation.

j. Tradeoff studies. This section shall identify the major tradeoff studies to be accomplished and the general plan for their accomplishment. The basic method(s) for identifying, performing, and documenting the results of tradeoff studies shall be included.

k. Technical performance measurement. This section shall describe the plan for technical performance tracking and reporting to include the following:

Block 10, Preparation Instructions (Continued)

(1) The identification of technical performance characteristics and technical program achievement parameters for each of the identified work elements of the CWBS. Those parameters proposed for routine reporting shall be denoted.

(2) The methods, equations or models for transforming parameter values of lower-level elements to that of higher-level elements and their sensitivities.

(3) A planned profile for each of the parameters, the profile being an anticipated and time-phased variation, if any, for this parameter during the design, development, fabrication assembly and testing period. Events significant to the technical performance measurement shall be noted on these profiles.

(4) A description of the means by which technical performance measurement shall be related to cost and schedule performance measurement.

(5) A sample technical performance report for an "out-of-tolerance" technical parameter. This shall include a planned value profile, the planned value, demonstrated value, specification requirement, current estimate and variance analysis.

(6) A proposed compilation of the technical performance report(s) through which reporting shall be accomplished. This compilation shall denote whether one report shall be used for all reportable parameters or whether separate reports shall be employed on a subsystem or individual parameter basis or combinations thereof.

(7) The identification of technical performance achievements by developing parameters which address the following areas:

(a) Subsystem hardware delivery and operation.

(b) Computer equipment delivery and operation.

(c) Subsystem software (programs) development thru each phase of activity.

(d) Subsystem hardware/software integration.

Block 10, Preparation Instructions (Continued)

(e) Specification and statement of work (SOW) requirements.

(f) Computer program documentation plan.

(g) Identification and acquisition of all design critical data.

1. Plan for other technical program tasks. This section shall describe the contractor's plans and procedures for other technical program planning and control tasks to be accomplished.

10.2.3 Part III - Engineering Integration. This part of the SEMP shall describe the methods by which the contractor proposes to integrate the engineering efforts. It shall include a summary of each specialty program and cross reference the individual plans covering such specialty programs. Engineering specialty integration shall be discussed as well as the relationship of the engineering with the overall logistic efforts, including fault isolation methods (automatic, semiautomatic, manual) and their documentation, and how support equipment is identified.