

M67854-10-R-xxxx
23 Sep 2010

**STATEMENT OF WORK
FOR
MARINE CORPS - INSTRUMENTATION TRAINING SYSTEM
VERSION 2
(MC-ITS V.2)**



**PROGRAM MANAGER TRAINING SYSTEMS
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Statement of Work
For
Marine Corps - Instrumentation Training System (MC-ITS)
Version 2 (V.2)

1. SCOPE

This Statement of Work (SOW) defines the effort required for the design, development, testing, and evaluation, production, and fielding of the MC-ITS V.2.

2. APPLICABLE DOCUMENTS

The following documents of the issue listed form a part of this SOW to the extent specified herein. In the event of a conflict between documents referenced herein and the contents of this SOW, the contents of this SOW take first precedence. Nothing in this SOW, however, supersedes applicable laws and regulations, unless a specific exemption has been obtained.

2.1 Government Documents

2.1.1 Specification

M67854-10-R-xxxx - Performance Specification for Marine Corps-Instrumentation Training System Version 2

2.1.2 Military Handbooks

MIL-HDBK-217F, Notice 2 - Reliability Prediction of Electronic Equipment

MIL-HDBK-472, Notice 1 - Maintainability Prediction

(Copies of the above handbooks are available online at
<http://assistdocs.com/search/search_basic.cfm> or from the Standardization Document Order Desk, 700 Robins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.1.3 Military Standards

MIL-STD-130N, Change 1, December 2004 - Military Standard Practice Identification Marking of U.S. Military Property

DoD 5000.2R - Mandatory Procedures for Major Defense Acquisitions programs (MDAPS) and Major Automated Information System (MAIS) Acquisition Programs.

FAR 2.101 - Definitions

MIL-DTL-31000C - Detail Specification, Technical Data Packages

2.1.4 Defense Federal Acquisition Regulations Supplement (DFARS)

DFARS 252.211-7003 - Item Identification and Valuation (Jun 2005)

(DFARS Clauses are downloadable from
<<http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/fardfars/dfars/Dfar1TOC.htm#TopOfPage>>)

DD250 - Material Inspection and Receiving Report

(DD250 form and instructions are downloadable from:
<http://guidebook.dema.mil/77/dc05-244DD%20Form%20250%20Guidance%20for%20the%20Contractor.htm>

2.1.5 Department of Defense Instructions

- DODI 8500.2 - Information Assurance (IA) Implementation
- DOD 8570.01-M - Information Assurance Workforce Improvement Program timeline

2.1.6 Live Training Transformation Product Line Portal

CTIA-TS-0006, Live Training Transformation (LT2) /Common Training Instrumentation Architecture (CTIA) Product Line Development Task Order, Product Line Architecture Framework (PLAF), Version 1.5, 22 May 2006

Live Training Transformation Product Line (LT2) and Common Training Instrumentation Architecture (CTIA) current data artifacts can be obtained at www.lt2portal.org

2.2 Non-Government Documents

INDUSTRY STANDARDS

American National Standards Institute (ANSI)/American Society for Quality Control (ASQC)

- ANSI/ASQC-Q9000: 2000 - Quality Management Systems - Fundamentals and Vocabulary
- ISO – 9000:2005
- ANSI/ASQC-Q9001: 2000 - Quality Management Systems - Requirements
- ISO – 9001:2000
- ANSI/ASQC-Q9004: 2000 - Quality Management Systems - Guidelines for Performance Improvements/Requirements
- ISO – 9004:2000

(Copies of the above documents are available from www.ansi.org or Global Engineering Documents, 15 Inverness Way, East Englewood, CO 80112.)

- ASTM D3951 - Standard Practice for Commercial Packaging

3. REQUIREMENTS

3.1 General

The MC-ITS V.2 shall maximize the use of Non-Developmental Item products and Commercial Off-the-Shelf (COTS) (See DoD 5000.2R and FAR 2.101 for detailed definitions of "commercial" and NDI items).computer equipment, while utilizing open architecture. The contractor shall organize, coordinate, and control all program activities to ensure compliance with the contract requirements and the delivery schedule of required products and services. The contractor shall provide program management, systems engineering, design engineering, materials, services, equipment, facilities, testing, technical, logistics, manufacturing, and clerical support for the efforts described in this SOW and MC-ITS V.2 Performance Specification M67854-10-R-xxxx . The contractor shall research, organize, coordinate, propose solutions, and control all program activities. The contractor shall monitor the progress of all the work performed and costs incurred under the contract.

3.2 System Development Tasks

The contractor shall design, develop, and integrate MC-ITS V.2. The design, development, and integration effort of all of the tasks listed in the following sub-paragraphs shall be conducted in a four-Phase process, during which the Government will perform the evaluation and will approve the progressions for each of the four listed Phases (4 through 6). The specific efforts and time frames for each of the Phases will be provided by the Government.

3.2.1 Modeling and Simulation

The contractor shall provide emulators and data feed repeaters for each system MC-ITS V.2 with, if at all possible.

3.2.2 Test and Training Enabling Architecture (TENA) Integration

The contractor shall integrate MC-ITS V.2 with the most current version of TENA.

3.2.3 Joint After-Action Review (JAAR) - Resource Library (RL) Integration

The contractor shall integrate MC-ITS V.2 with JAAR-RL.

3.2.4 Instrumentation Issue and Recovery (IIR)

The contractor shall create a battle raster interface and generate battle roster through this interface. The battle roster shall include multiple data output types imported and processed from multiple types of Instrumentation and hardware.

3.3 Update Current Version of MC-ITS

The current version of the MC-ITS hardware design and software are provided as Government Furnished Items. Due to obsolescence or other issues, the hardware or software design may become outdated. When this happens, the contractor shall promptly notify the Government team of the issue(s). The contractor shall modify the current version of the MC-ITS configuration and provide an updated MC-ITS V.2 Configuration Package.

3.4 Production of MC-ITS V.2

The contractor shall produce, test, and deliver MC-ITS V.2 using the Government furnished MC-ITS (Version 1) hardware design and software documentations (Product Drawings/Models and Associate List), and In Accordance With (IAW) MC-ITS V.2 Performance Specification and SOW.

3.5 Detailed Tasks

3.5.1 Obsolescence

The Contractor shall develop a plan for managing the loss or impending loss of manufacturers or suppliers for the spare and repairable items covered under the MC-ITS V.2 program. The Contractor obsolescence management plan shall prevent impact to contract performance metrics and shall prevent additional costs being incurred by the Government due to obsolescence. The Contractor shall prepare and deliver the Parts Management Plan IAW C001 (MIL-STD-3018).

3.5.2 Integrated Program Management

The contractor shall integrate and manage all of the program management, engineering disciplines and resources necessary to research, design, prototype, develop, demonstrations, and produce the MC-ITS V.2 devices described in this statement of work.

3.5.2.1 Status Reporting

The contractor shall monitor the progress of all the work performed and costs incurred under the contract. The contractor shall prepare and deliver the contractor Progress, Status, and Management Report IAW CDRL B001 (DI-MGMT-80227). For the Cost Plus Fixed Fee CLINs of the contract, the contractor shall collect and report costs at Work Breakdown Structure Level V. The contractor shall prepare and deliver a Contract Funds Status Report (CFSR) IAW CDRL B002 (DI-MGMT-81468).

3.5.2.2 Integrated Master Schedule (IMS)

The contractor shall prepare and deliver the Integrated Master Schedule (IMS) IAW CDRL B003, (DI-MGMT-81650). The IMS shall present a finalized tiered scheduling system showing all critical milestones and prerequisite events. Subcontractor schedules shall be integrated into the contractor's scheduling system. The IMS shall include all specified program milestones, conferences, reviews, major team meetings, data submittals, demonstration events, and deliveries. The contractor shall develop a detailed schedule to assure all project milestones will be met and to assure deliveries as specified in the contract.

MILESTONE Schedule (Estimates):

Post Award Conference – 7 days After Contract Award (ACA)

Program Level System Requirements Review (PLSRR)

Phase 4

- Spiral System Requirements Review (SSRR)
- Critical Design Review (CDR)
- In-Progress Review (IPR)
- Test Readiness Review (TRR)
- System Acceptance Testing (GPI)
- System Acceptance Testing (GFI)

Phase 5

- Spiral System Requirements Review (SSRR)
- Critical Design Review (CDR)
- In-Progress Review (IPR)
- Test Readiness Review (TRR)
- System Acceptance Testing (GPI)
- System Acceptance Testing (GFI)

Phase 6

- Spiral System Requirements Review (SSRR)
- Critical Design Review (CDR)
- In-Progress Review (IPR)
- Test Readiness Review (TRR)
- System Acceptance Testing (GPI)
- System Acceptance Testing (GFI)

3.5.2.3 Integrated Product Teams (IPT)

The contractor shall establish and sustain Integrated Product Teams (IPT) appropriate to MC-ITS V.2 program management, products, and tasks. Multidisciplinary (IPT) teams shall include Government participation.

3.5.2.4 Risk Management (RM)

A sound risk management plan, which mitigates programs risks and provides for special emphasis for software development efforts through integration of metrics to monitor program status are to be discussed. The contractor shall implement an integrated risk management system to improve technical, cost, and schedule performance. This system shall include a continuous and comprehensive risk analysis effort to ensure that all risks are identified and prioritized. The contractor shall define alternatives or a "workaround" to mitigate the effects of identified risks, and shall define criteria for initiation of alternatives. Risk Management shall be an agenda item and reviewed at each scheduled conference and technical review.

3.5.2.5 Metrics and Statistics

The contractor along with PM TRASYS MC-ITS V.2 Software Engineer shall identify and collect software performance metrics and statistics. The contractor shall provide monthly software performance metrics and statistics to the Government. Metrics and statistics shall be an agenda item and reviewed at each conference and scheduled technical review. All metrics captured shall be represented as percentages and numerically. Metrics to be captured and presented shall include Total SLOC, Total SLOC of developed software vs. reused software, number of software issues identified, number of software issues identified vs. total SLOC, number of software issues identified vs. developed software, and number of software issues resolved within the current reporting period.

3.5.3 Contract Management

The contractor shall perform all tasks necessary to complete this contract.

3.5.3.1 Subcontractor Management

The contractor shall integrate subcontractor efforts into program management and tracking systems such as the Integrated Master Schedule. The contractor shall ensure the requirements of this SOW and subsequent modifications are consistently applied to all subcontracts and associated contracts. The contractor shall institute procedures to ensure that subcontractors and vendors have incorporated necessary program elements to ensure compatibility of supplied equipment or services.

3.5.4 Quality Assurance (QA)

The program Quality System shall be structured and maintained according to the contractor's quality assurance processes. Quality Control personnel shall be involved in all facets of system design. The contractor's Quality Control personnel shall monitor all testing during Contractor Test. The contractor's Quality Control personnel shall annotate all pass/fail results or deviations of all steps of the Acceptance Test Procedure (ATP). The contractor shall perform the following tasks:

- Select the proper methods to analyze the processes to continuously improve the MC-ITS V.2 system.
- Metrics shall be developed to assist management visibility into adequate process control system.
- Non-conforming material documentation disposition.

- Participate in Material Review Boards (MRB).
- Perform audits, track metrics, participate in Corrective Action Boards (CAB), and participate in continuous process improvements.
- Provide manufacturing support of QA and Quality Engineering (QE) manufacturing issues.
- Support Defense Contracts Management Agency (DCMA) in-process and final acceptance at the facilities.
- You shall implement a software quality assurance process to prevent the introduction of errors that could impact the MC-ITS V.2 performance. (See DODI 8500.2, IA Control – DCSQ-1.)

3.6 Conferences, Reviews, and Demonstrations

The contractor shall conduct, attend, and participate in conferences, reviews, and demonstrations to be held at both the contractor and Government facilities. The specific locations dates and duration of the conferences, reviews, and demonstrations shall be as specified in the contract schedule or as mutually agreed upon. Conferences and reviews will be co-chaired by a Government and contractor representative. The contractor shall be prepared to explain the reasoning, assumption, and methodologies in arriving at particular conclusions, recommendations, or alternatives in the accomplishment of the tasks required by the contract. The contractor shall have key personnel and support available to carry out the conference, review, and demonstration. The contractor shall make available facilities for Government only meetings during all conferences and reviews at the contractor's facility. Subcontractors shall attend conferences and reviews when required to address key elements. The contractor shall prepare the Conference Agenda IAW CDRL B004, (DI-ADMN-81249A), and Conference Minutes in accordance with CDRL B005, (DI-ADMN-81250A), and Presentation Material in accordance with CDRL B006, (DI-MISC-80508A) for all conferences and reviews.

3.6.1 Post Award Conference (PAC)

The first conference will be the PAC and shall occur after contract award. The purpose of the conference shall be to establish the framework of the contractor and Government interaction during the performance period of the contract. This meeting shall include the presentation and discussion of information and data relating to:

- a. Introduction and Contract Overview
- b. Action item reporting and status
- c. Updated IPT contact list (names, work location, IPT memberships, phone numbers, and email addresses)
- d. Information Assurance (IA) and Information Support Plan (ISP)
- e. Identification of all critical paths within the IMS and detailed schedule
- f. CDRL delivery schedule, Data Item Description (DID) tailoring, and status
- g. Integrated Logistic Support Overview
- h. Systems Engineering (SE) Overview
- i. Program Specific Configuration Management (CM) Overview (to include Data Management)
- j. Program Specific Software Development (SD) Overview
- k. Program Specific Quality Assurance (QA) Management Overview

- l. Program Specific Risk Management (RM)
- m. Metrics collection process, analysis, and reporting
- n. Any other program related topics

3.6.1.1 PAC Entry Criteria

Entry criteria for the PAC shall consist of:

- a. Government concurrence that the contractor-submitted PAC agenda is complete and acceptable
- b. Government concurrence that the contractor has documented and implemented preliminary analysis of the program specific SE, CM, SD, QA, RM, and ILS
- c. Delivery and acceptance (as applicable) of all CDRL items scheduled to be delivered prior to PAC
- d. All presentation materials has been submitted to the Government in advance of this meeting
- e. Government preliminary review indicates that the presentation material is sufficient to support the PAC

3.6.1.2 PAC Exit Criteria

Exit criteria for the PAC shall consist of:

- a. Government concurrence that all required PAC topics have been satisfactorily presented, discussed, and documented
- b. Government concurrence that the IMS and detailed schedule are complete, accurate, and realistic
- c. Government concurrence that the IPT structure, membership, and charters are satisfactorily defined, documented, and implemented
- d. Government concurrence that the contractor has documented and implemented processes and procedures and analysis for program specific SE, CM, SD, QA, RM, and ILS
- e. Submittal and acceptance of the PAC minutes and presentation materials
- f. All action items have been assigned with suspense date for closure

3.6.2 System Requirements Reviews (SRR)

The SRR shall be conducted initially for the overall MC-ITS V.2 program and subsequently for each of the Phases. Subsequently, the SRRs shall be repeated for each of the proposed Phases within (TBD) days after initiation of the Phase developments.

The purpose of the initial SRR shall ensure that all MC-ITS V.2 overall system requirements have been completely and properly identified using the contractor prepared Requirements Traceability Matrix (RTM) and there is mutual understanding between the Government and contractor. The purpose of the Phase SRRs shall ensure that all MC-ITS V.2 Phase requirements have been completely and properly identified using the contractor updated Requirements Traceability Matrix (RTM) and there is mutual understanding between the Government and contractor. The SRRs shall include the presentation and discussion of information and data relating to:

- a. Action item reporting and status
- b. Discussion and clarification of performance requirements using RTM.

- c. Assess system requirements and allocations to ensure that requirements are unambiguous, consistent, complete, feasible, verifiable, and traceable to top-level requirements.
- d. Complete allocation of all system requirement to their functional allocation (e.g., hardware, software, documentation, process, security, and quality)
- e. System/subsystem external interface requirements
- f. System test requirements and strategy
- g. Information Assurance (IA) and Information Support Plan (ISP)
- h. Draft test and integration plan/process
- i. Identification of all critical paths within the IMS and detailed schedule
- j. CDRL delivery schedule and status
- k. Integrated Logistic Support Overview
- l. Systems Engineering (SE) Overview
- m. Program Specific Configuration Management (CM) Overview (to include Data Management)
- n. Review Software Development Plan
- o. Program Specific Quality Assurance (QA) Management Overview
- p. Program Specific Risk Management (RM)
- q. Metrics collection process, analysis, and reporting
- r. \Human System/ergonomics considerations
- s. Requirements traceability matrix and verification methods
- t. DoD Item Unique Identification (IUID) requirements
- u. Simulation Integration Facility (SIF) Software Engineering Environment Logistics Planning
- v. Production support status
- w. Hazard considerations
- x. Software Support Environment
- y. Life Cycle Support and Maintenance Requirement
- aa. Phase Development and Associated Tasks (Initial SRR only)
- ab. Update of Phase Development and Associated Tasks (Phase SRRs only)

3.6.2.1 SRR Entry Criteria

Entry criteria for the SRR shall consist of:

- a. Government concurrence that the contractor-submitted SRR agenda is complete and acceptable
- b. Government concurrence that the contractor has documented and implemented preliminary analysis of the program specific SE, CM, SD, QA, and ILS
- c. Delivery and acceptance (as applicable) all CDRL items scheduled to be delivered prior to SRR
- d. All presentation materials has been submitted to the Government in advance of this meeting

- e. Government preliminary review indicates that the presentation material is sufficient to support the SRR
- f. SRR technical products listed below for both hardware and software system elements have been made available to the cognizant SRR participants prior to the review:
 - i. System specification
 - ii. System software functionality description
 - iii. Preferred system solution definition
 - iv. Updated risk assessment
 - v. Updated cost and schedule data
 - vi. Updated logistics documentation
 - vii. Updated Human Systems Integration related documentation
 - viii. Software Development Plan is complete. May be a standard organizational or company document tailored to the program
 - ix. System architecture (hardware, software, human, material as necessary)

3.6.2.2 SRR Exit Criteria

Exit criteria for the SRR shall consist of:

- a. Government concurrence that all required SRR topics have been satisfactorily presented, discussed, and documented
- b. Submittal and acceptance of the SRR minutes and presentation materials
- c. All action items have been assigned with suspense date for closure
- d. Government concurrence that the system requirements baseline is well supported by thorough analysis, test, and other technical data.
- e. Government concurrence that the IMS and detailed schedule are complete, accurate, and realistic.
- f. Government concurrence that all program risks are known and manageable for production and testing.
- g. Government concurrence that the MC-ITS V.2 system requirements, as disclosed, traceable back to the performance specification.
- h. Government concurrence that the MC-ITS V.2 system requirements sufficiently detailed and understood to enable system functional definition and functional decomposition.
- i. Government concurrence that the MC-ITS V.2 has an approved sub-system specification.
- j. Government concurrence that the MC-ITS V.2 has adequate processes and metrics in place for the program to succeed.
- k. Government concurrence that the MC-ITS V.2 has Human Systems Integration requirements been reviewed and included, where needed, in the overall system design.
- l. Government concurrence that the MC-ITS V.2 risks are known and manageable for design and development.

- m. Government concurrence that the MC-ITS V.2 program schedule executable (technical/cost risks).
- n. Government concurrence that the MC-ITS V.2 program properly staffed.
- o. Government concurrence that the MC-ITS V.2 program executable within the existing budget.
- p. Government concurrence that the Improved MC_ITS software functionality in the system specification consistent with the software sizing estimates and the resource-loaded schedule.
- q. Government concurrence that the MC-ITS V.2 technology Development Phase sufficiently reduce development risks.

3.6.3 Critical Design Review (CDR)

The contractor shall conduct a CDR for hardware and software for each of the Phase developments. The contractor shall present and describe the finalized training system design, program status, and schedule. The contractor shall address all design changes made since the SRR. The CDR shall also include as applicable:

- a. Training system hardware and software design, including as applicable:
 - 1) Computational System
 - 2) Visual System
 - 3) Networks
 - 4) Data collection databases
 - 5) Software tools
 - 6) Hardware and software interfaces
 - 7) Design modularity and commonality
 - 8) Open System Architecture
 - 9) Interoperability
- b. Software Development Plans
- c. Reliability, Availability, and Safety Program
- d. Logistics Design, Logistics Management Information, and Technical Documentation
- e. System test and evaluation
- f. Information Assurance and Information Support Plans
- g. Requirements Traceability Matrix (RTM)
- h. Review of updated software and interface design documentation
- i. Configuration Management and Control
- j. Review Final Product Drawing/Models and Associated Lists
- k. Spectrum Certification
- l. Software Support Environment Status
- m. Identify all of the program risks (technical & cost) and associated impacts to the program schedule
- n. Open action item status
- o. Software build plan

3.6.3.2 CDR Entry Criteria

Entry criteria for the CDR shall consist of:

- a. Government concurrence that the SRR exit criteria have been met
- b. Delivery and acceptance (as applicable) of all the CDRL items scheduled to be delivered prior to CDR.
- c. Government concurrence that the contractor submitted CDR agenda is complete and acceptable.
- d. All SRR action items requiring contractor response have been disposition to the satisfaction of the Government.
- e. CDR presentation material has been submitted to the Government in advance of the CDR. Government preliminary review indicates the presentation material is sufficient to support the CDR
- f. Final hardware and software design complete
- g. CDR technical products (hardware and software elements of the product baseline to be reviewed and approved at the CDR) have been made available to the cognizant CDR participants prior to the review:
 - 1) Product Updates to the systems specification
 - 2) Product specifications for each hardware and software configuration item, along with supporting trade-off analyses and data
 - 3) Software Design Description complete and ready to be placed under configuration management
 - 4) Preliminary test procedures for software integration and systems testing
 - 5) Human Systems Integration related documentation has been updated
 - 6) Interface Design Description(s) (IDD, ICD) is complete and ready to be placed under configuration management
- h. CDR programmatic products have been updated and have been made available prior to the review or will be reviewed at the CDR.
 - 1) Program risk assessment
 - 2) Systems Engineering Plan changes
 - 3) Updated logistics documentation (MC-SAMP Chapter 7, Software Support Plan (SSP))
 - 4) Updated program schedule

3.6.3.3 CDR Exit Criteria

Exit criteria and final acceptance of the CDR shall consist of:

- a. Government concurrence that all required CDR topics have been satisfactorily presented, discussed, and documented.
- b. Government concurrence that the IMS and detailed schedule are complete, accurate, and realistic.
- c. Submittal and acceptance of the CDR minutes and presentation materials.

- d. All action items have been assigned with suspense date for closure.
- e. Government concurrence that the detailed design, as disclosed, satisfy the entire MC-ITS V.2 performance specification requirements.
- f. Critical safety items and critical application items identified.
- g. Government concurrence that adequate processes and metrics in place for the MC-ITS V.2 program to succeed.
- h. Government concurrence that the MC-ITS V.2 program is properly staffed.
- i. Government concurrence that the MC-ITS V.2 program can be executed with acceptable technical, & cost risk.
- j. Government concurrence that the MC-ITS V.2 risks are known and manageable for DT/OT.
- k. All hardware and computer software configuration items (HWCI & CSCI) are under CM control
- l. Government concurrence that the MC-ITS V.2 program executable with the existing budget and the approved product baseline.
- m. Government concurrence that the MC-ITS V.2 detailed design producible within the production budget.
- n. Government concurrence that the MC-ITS V.2 updated cost estimate fit within the existing budget.
- o. Government concurrence that the MC-ITS V.2 software functionality in the approved product baseline consistent with the updated software metrics and resource-loaded schedule.
- p. Government concurrence that the MC-ITS V.2 key product characteristics having the most impact on system performance, assembly, cost, reliability, or safety been identified.
- q. Government concurrence that the MC-ITS V.2 critical manufacturing processes that impact the key characteristics been identified and their capability to meet design tolerances determined.
- r. Government concurrences that the MC-ITS V.2 process control plans have been developed for critical manufacturing processes.

3.6.4 Test Readiness Review (TRR)

The purpose of the TRR is to determine the MC-ITS V.2 readiness for Government Preliminary Inspection (GPI). The TRR shall be conducted prior to the testing of each of the Phase developments GPIs. The TRR shall include addressing the results of the current Phase's coding and unit testing. The contractor shall provide the resources, including facilities, equipment, and personnel to support the TRR. The TRR will include a review of the T&E program. The TRR will cover the type of tests to be performed, including internal testing performed by the contractor to ensure the operation performance of the MC-ITS V.2. The contractor shall present the updated requirement traceability matrix, to verify that all specification requirements have been tested. The

TRR shall be repeated as necessary until the MC-ITS V.2 has been determined by the Government to be acceptable. During the TRR, the following shall be reviewed and discussed:

- a. Test Procedures (TP) for various systems and subsystems
- b. Updated RTM to verify that all system/subsystem specification requirements have been tested
- c. Reliability and Maintainability (R&M) data
- d. Contractor demonstration/test logs
- e. Test discrepancy reporting process and applicable test discrepancy report form to be used during demonstration/test
- f. Demonstration/Test discrepancy reports
- g. Identification of software test tools to be used
- h. Phase Cold start procedures
- i. Draft Software Users Manual (SUM) complete
- j. Draft Operations and Maintenance Manuals complete
- k. Safety Assessment Report
- l. Status update of New Equipment Training
- m. Summary of software problems status
- n. Status of software timing and memory size
- o. Status of spare memory

3.6.4.2 TRR Entry Criteria

Entry criteria for the TRR shall consist of:

- a. Government concurrence that the CDR exit criteria have been met
- b. Delivery and acceptance (as applicable) of all the CDRL items scheduled to be delivered prior to TRR.
- c. Government concurrence that the contractor submitted TRR agenda is complete and acceptable.
- d. All action items requiring contractor response have been disposition to the satisfaction of the Government.
- e. TRR presentation material has been submitted to the Government in advance of the TRR. Government preliminary review indicates the presentation material is sufficient to support the TRR.
- f. Configuration of system under test, including software, has been defined and agreed to. All interfaces have been placed under configuration management or have been defined in accordance with an agreed to plan and a Version Description Document has been made available to TRR participants (minimum of 7 working days prior to review)
- g. All applicable functional, unit level, subsystem, system, and qualification testing has been conducted successfully

- h. All TRR specific materials such as test plans, test cases, and procedures have been available to all participants prior to conducting the review (minimum of 7 working days)
- i. All known system discrepancies have been identified and dispositioned in accordance with an agreed to plan
- j. All previous review exit criteria and key issues have been satisfied in accordance with an agreed to plan
- k. Test requirements have been documented and are fully traceable to system, engineering, operational or program requirements
- l. All required test resources (people, facilities, test articles, test instrumentation) have been identified and are available to support required tests
- m. Roles and responsibilities of all test participants are defined and agreed to
- n. All hardware and computer software configuration items (HWCI & CSCI) are under CM control
- o. Delivery of updated RTM

3.6.4.3 TRR Exit Criteria

Exit criteria and final acceptance of the TRR shall consist of:

- a. Government concurrence that all required TRR topics have been satisfactorily presented, discussed, and documented.
- b. Government concurrence that all program risks are known and manageable for testing.
- c. Submittal and acceptance of the TRR minutes and presentation materials.
- d. All action items have been assigned with suspense date for closure.
- e. The identified program and technical risks are accepted by the Government.
- f. Test requirements are traceable, documented and approved. Adequate test plans based on these traceable requirements are completed and approved for the system under test
- g. Software and hardware test descriptions and procedures are defined, verified and baselined
- h. Planned testing is consistent with defined incremental approach including regression testing
- i. Software and hardware metrics show readiness for testing
- j. Software and hardware problem report system is defined and implemented
- k. Software and hardware test baseline is established and controlled
- l. Software and hardware development estimates are updated
- m. Requirements that cannot be adequately tested at the CSCI and HWCI level (and thus require testing at the subsystem or system levels) are identified.
- n. Testers have a high degree of confidence that the system under test will pass the testing successfully and agree that the anomalies, limitations, and vulnerabilities will not impact this
- o. The developers are aware of the testers' plans and have a high degree of confidence that the system under test will pass the testing successfully.

3.6.5 System Verification Review (SVR)

The SVR shall be a multi-disciplined product and process assessment to ensure that the MC-ITS V.2 can proceed into Low-Rate Initial Production and full-rate production within cost (program budget), schedule (program schedule), risk, and other system constraints. The SVR shall be an audit trail from the SRR. SVR shall assess the system functionality, and determine if it meets the functional requirements as stated in the updated RTM. The SVR shall establish and verify final product performance. The SVR shall cover the GPI & GFI test results, including test results of the internal testing performed by the contractor to ensure the operation performance of the MC-ITS V.2. The SVR will be repeated for each of the MC-ITS V.2 Phase developments. During the SVR, the following shall be reviewed and discussed:

- a. Does the status of the technical effort and system indicate operational test success (operationally effective and suitable)?
- b. Can the system, as it exists, satisfy the Capabilities Development Document/draft Capability Production Document?
- c. Are adequate processes and metrics in place for the program to succeed?
- d. Are the risks known and manageable?
- e. Is the program schedule executable within the anticipated cost and technical risks?
- f. Are the system requirements understood to the level appropriate for this review?
- g. Is the program properly staffed?
- h. Is the program's non-recurring engineering requirement executable with the existing budget?
- i. Is the system producible within the production budget?
- J. Corrective action, if any, to be executed before proceeding with the next Phase development plan.
- k. Review tailoring of underlying programmatic and technical process to scope complexity of next Phase development.

3.6.5.2 SVR Entry Criteria

Entry criteria shall consist of:

- a. Delivery of all the CDRL items scheduled to be delivered prior to SVR
- b. Availability of an updated Requirements Traceability Matrix
- c. Availability of updated risk assessment and risk mitigation plans
- d. Submittal and acceptance of the SVR agenda

3.6.5.3 SVR Exit Criteria

Exit criteria shall consist of:

- a. Satisfactory discussion of the CDRL items that were part of the SVR entry criteria
- b. Satisfactory discussion of the updated Requirements Traceability Matrix
- c. Satisfactory discussion of updated risk assessments and risk mitigation plans
- d. Successful resolution and closure of all action items
- e. Availability of the SVR presentation materials
- f. Submittal and acceptance of the SVR minutes

3.6.6 In-process Reviews (IPR)

The IPR shall occur when it is deemed necessary by the Government.

IPR shall address the software and interface requirements that pertain to the Phase being developed. At a minimum the contractor shall present the following items for review at the IPR:

- a. Review the schedule
- b. Review system requirements and updated system design
- c. Discussion of the Software Requirements Specification (SRS)
- d. Component CTIA Compliance (level)
- e. Software functional requirements
- f. Software external interface requirements
- g. Architectural component design
- h. Software component reuse
- i. Testing plans
- j. Security scanning plans
- k. Demonstration plans
- l. Review of CDRL items
- m. Review of metrics
- n. Review of action items
- o. Review of risk management

3.6.6.2 IPR Entry Criteria

Entry criteria shall consist of:

- a. Delivery of all the CDRL items scheduled to be delivered prior to IPR
- b. Availability of an updated Requirements Traceability Matrix
- c. Availability of updated risk assessment and risk mitigation plans
- d. Submittal and acceptance of the IPR agenda

3.6.6.3 IPR Exit Criteria

Exit criteria shall consist of:

- a. Satisfactory discussion of the CDRL items that were part of the IPR entry criteria
- b. Satisfactory discussion of the updated Requirements Traceability Matrix
- c. Satisfactory discussion of updated risk assessments and risk mitigation plans
- d. Successful resolution and closure of all action items
- e. Availability of the IPR presentation materials
- f. Submittal and acceptance of the IPR minutes

3.6.7 Systems Engineering (SE)

The contractor shall implement their documented systems engineering processes to accomplish the performance objectives of the project. The contractor shall implement a system engineering program to ensure that total system performance including quality, safety, security, reliability, maintainability, and availability are addressed throughout the development of the MC-ITS V.2, and

other devices identified within this SOW. The contractors overall Systems Engineering and Management efforts shall encompass the following areas:

- Requirements Traceability
- Requirements Verification
- Quality Assurance
- Configuration Management
- Engineering Specialties
- Conference and Design Reviews
- Integrated Logistics Support
- Data Management
- System Design
- Risk Identification & Management
- System Safety
- Program Cost Management
- Life Cycle Sustainment

3.6.7.1 Systems Engineering Management

The contractors overall Systems Engineering process shall ensure that all the requirements are successfully transformed into an operational system meeting all criteria described in the specifications. The contractor shall manage the systems engineering program and process. Systems Engineering shall be an agenda item and reviewed at each scheduled technical review.

3.6.7.2 System/Subsystem Specification (SSS)

The contractor shall analyze the technical requirements of the MC-ITS V.2 to identify new system requirements. The contractor shall update the earlier version of the MC-ITS SSS and deliver the MC-ITS V.2 System/Subsystem Specification (SSS) IAW CDRL A001, (DI-IPSC-81431A).

3.6.7.3 System/Subsystem Design Description (SSDD)

The contractor shall define detailed design requirements of the MC-ITS V.2 devices System Subsystem Specification. The contractor shall develop and deliver a System/Subsystem Design Description (SSDD) IAW CDRL A002, (DI-IPSC-81432A).

3.6.7.4 Requirements Traceability Matrix (RTM)

The contractor shall generate a Master RTM 1 from the initial MC-ITS V.2 SRR and separate RTMs for each Phase of the MC-ITS V.2 program. The Phase RTMs shall identify applicability to each Phase development requirements. Each individual deliverable products requirement shall be traced back to its source requirement. The Master RTM, and the Phase RTMs shall be used to verify that all of the specification requirements have been tested. The contractor shall maintain and update all of the RTMs for the life of the contract. The contractor shall prepare and deliver the Requirements Traceability Matrix In Accordance With (IAW) CDRL A003, Technical Report - Study/Services, (DI-MISC-80508B).

3.6.7.5 System Security Engineering Program Management

The contractor shall establish a SSE program to support economical achievement of overall program objectives. To be considered efficient, the SSE program: (1) enhances the operational readiness and mission success of the defense resource; (2) identifies and reduces potential

vulnerabilities to security threats; (3) provides management information essential to system security planning and;(4) minimizes its own impact on overall program cost and schedule. Contractor personnel performing tasks under this contract may require access to information in technical data, films, specification and related equipment having security classifications up to and including CONFIDENTIAL. The DD254, if required shall provide the appropriate security level for the information used in the proposed effort. All contractor personnel shall control access, receipt, transmission, protection and destruction of classified information and documentation in accordance with the DD254.

3.6.8 Information Assurance (IA)

3.6.8.1 Information System Security Engineering (ISSE) Process Analysis

All I-TESS II equipment shall meet the requirements for a Mission Assurance Category (MAC) III system, Confidentiality Level (CL) sensitive, per DoDI 8500.2. Enclosure 3, paragraph 4.4 (E3.4.4) the Contractor shall conduct system security engineering planning and analysis using the ISSE Process to determine the scope of Information Assurance Controls (IAC) for a Mission Assurance Category (MAC) Level – [Three] or MAC-III system with a Confidentiality Level (CL) of [Sensitive] apply to the system and/or system components, to be installed, and/or controlled by the training systems acquired under this contract in various configurations and at various deployment sites. After completion of the ISSE Process Analysis, the Contractor, with the assistance from the Government IA Representative, shall prepare and deliver the DoD Information Assurance Certification and Accreditation Process (DIACAP) Executive Package, document IAW CDRL A004 (DI-MISC-80508B). The focus of this effort shall parallel the development of ISSE Plan of Action and Milestones (POA&M).The ISSE process shall explicitly address all DODI 8500.2 MAC-III, Sensitive IACs by providing traceability from the IACs to the derived requirements, the corresponding design, and the security testing. The focus of this effort shall parallel the training system development schedule with the Information System Security Engineering (ISSE) Process and includes all the areas of systems integration and interoperability.

The Contractor shall provide all management, labor, materials and other services necessary to complete the tasks listed below:

When directed by PM TRASYS, the Contractor shall prepare a DIACAP Executive Package consisting of System Identification Plan (SIP), DIACAP Implementation Plan (DIP), Scorecard, and an ISSE POA&M to support the system C&A. The Contractor shall provide the technical support necessary to plan, create the DIACAP Executive Package artifacts, coordinate, and execute the Security Test and Evaluations (ST&E) as a sub-set of GPI and support Independent Validation and Verifications (IV&V) required for C&A. The Contractor shall also support PM TRASYS in the areas of systems integration and interoperability, as well as in the development of Information Assurance (IA) documentation and assist the PM in the DIACAP activities. The Contractor shall prepare and deliver the following System Security Plan (SSP), which includes the following elements to the Government IAW CDRL A005 (DI-MISC-80508B):

- I-TESS II system description

System description shall include an overview of the I-TESS II system with a detailed description of each of its components including block diagrams, and interface descriptions.

- **Hardware Baseline**

The hardware baseline for all I-TESS II hardware shall include nomenclature, quantity, unit of measurement, and next higher assembly for each hardware configuration item (i.e., serviceable part).
- **Software Baseline**

The Software baseline for all I-TESS II software shall include nomenclature, version, and location in the system that the software resides for each software configuration item.
- **Interconnections & Interfaces.**

Interconnections shall include a graphical representation of the physical linking of separate enclaves or systems.

Interfaces shall include a graphical representation of the logical connection of separate enclaves or systems.
- **Data Flow Accreditation Boundary**

The boundary shall clearly identify the components of the application that will be assessed as part of the certification and include a description of the operating environment for the system.
- **Network Topology**

The network topology shall include physical interconnection of the various elements (links, nodes, etc.) of the I-TESS II components. Network Topologies shall be physical or logical. Physical Topology shall include the physical design of a network including the devices, location and cable installation. Logical topology shall include details of how data actually transfers in a network as opposed to its design. The network topology shall also include the graphical mapping of the configuration of physical and/or logical connections between nodes.
- **Ports, Protocols & Services**

The Ports, Protocols, and Services (PPS) shall include implementation guidance on the use of IA protocols, vulnerability and risk assessment information, compliance guidance, and technical assistance to achieve compliance for all requirements of information assurance. It shall also assess and evaluate the inherent vulnerabilities associated with the use of specific PPS across network boundaries. In addition, the PPS shall perform Vulnerability Assessments (VA) on ports, protocols, and services entered into the PPS Registry, assigning each protocol, or service a Category Assurance Level and establishing the minimum required mitigations based on common assessment criteria. When coupled with the appropriate Security Technical Implementation Guide (STIG), the VA reports enhance network security by creating an authoritative source for known vulnerabilities and minimum mitigating controls required for all ports, protocols, and services.
- **User Roles & Responsibilities**

User roles align users to what functions they will perform on the system. A security user role assigns security personnel to security functions to be performed on the system.

3.6.8.2 DIACAP SIP Review and Update

The contractor shall assist the Government system engineer in updating the System Identification Profile (SIP) as required to reflect all changes in the system's hardware/software design. Under this task the Contractor shall conduct a detailed review of all previous ISSE and IA related documentation, analysis, the system's current development and/or production status and the existing system development documentation to ensure full compliance with current versions of DoD 8510.01, DoD 8500.01E and DoD 8500.2, applicable DoN (i.e. DON DIACAP Handbook) & USMC regulations, and the training system Performance Specification. Revisions to this documentation shall be made in support of the ISSE Process to accomplish PM TRASYS C&A goals.

3.6.8.3 IA Controls and Requirements Support

Assign IA Controls and other requirements support in accordance with the results of the ISSE Process. The Contractor shall develop a list and implement all necessary IA Controls per the applicable DODI 8500.2 MAC and CL Checklist, other requirements. The Security Requirements Traceability Matrix (SRTM) shall include the ISSE analysis, all applicable Security Technical Implementation Guide(s) STIGs, STIG Checklists and/or NSA Security Configuration Guides (i.e. DISA's Network STIG, Application Security and Development Checklist, Network Security Checklists, Database Security Checklist, and Windows XP Federal Desktop Core Configuration, etc.) or acceptable independent benchmarks such as CISecurity.org benchmarks or Sun Solaris Blueprints to PM TRASYS, and PM TRASYS IA PMO will make a determination regarding the SRTM system configuration and acceptable scope of IA requirements for the system. The Contractor shall prepare and deliver the SRTM to the Government IAW CDRL A006 (DI-MISC-80508B).

3.6.8.4 Analysis of the System Development Life Cycle (SDLC)

The contractor shall conduct an analysis of the System Development Life Cycle (SDLC) stages and integrate the ISSE Process, the DIACAP Executive Package, and perform test and evaluation activities necessary to support C&A activities. At a minimum, these activities shall include the development of the Work Breakdown Structure (WBS) for the ISSE Process and the Security Test and Evaluation (ST&E) and the update of the SIP to reflect these activities. The end result of this analysis should be the ISSE POA&M within the DIACAP Executive Package.

3.6.8.5 System Contingency Plan (CP)

The Contractor shall provide a CP to support IA related programmatic, implementation, analysis, test and evaluation activities necessary to support C&A. The results of these activities shall be documented and the required CP documentation shall be prepared for presentation to receive PM TRASYS IA PMO concurrence. The CP shall consist of a System Back-Up Procedures and Disaster Recovery Procedures for all system components. The Contractor shall develop and deliver the System Contingency Plan (CP), to the Government IAW CDRL A007 (DI-MISC-80508B).

3.6.8.6 Information Security

IAW DOD 8570.01-M, Appendix 3, paragraph 1.6 (AP3.1.6) the Contractor shall maintain information security engineering and IA Technical (IAT) staff qualifications to a level necessary to meet the operating system requirements of this task (e.g. Server Administrators shall be applicable vendor OS administrator certified – Microsoft, Linux, Solaris, etc; and Network Administrators shall be applicable vendor IOS certified – Cisco, Juniper, HP, etc.) in addition to the baseline IAT baseline certification and qualifications for at least IAT Level II.

The Contractor shall also advise PM TRASYS as to all applicable Federal information security mandates (i.e. Federal Information Security Management Act 2002, DFAR 239.71 requirements, DOD regulations, DON DIACAP Handbook and USMC IA Guidance and Bulletins).

The Contractor's work shall not be classified.

3.6.8.7 IA Network Scans

The contractor shall:

Conduct separate initial network scans on the entire I-TESS II system components using both the Gold Disk and the Retina software. The contractor shall deliver the scan results IAW CDRL A006 (DI-MISC-80508B). The focus of this effort shall parallel the development of ISSE Plan of Action and Milestones (POA&M). The contractor shall conduct network scans on the entire I-TESS II system components using both the Gold Disk and the Retina software on the I-TESS II system to be used for the Government Preliminary Inspection (GPI). The final scans shall be conducted at GFI and repeated as necessary during follow-on testing. The scan results shall be delivered to the Government IAW CDRL A008 (DI-MISC-80508B).

3.6.9 Software Development

This software development effort is supported by the development of:

- Software and Interface Requirement Specifications,
- Software, Interface, and Database Design Descriptions,
- Software Product Specification including all developmental, third party, and commercial software and associated software licenses.

The contractor shall ensure that all MC-ITS V.2 development processes for software, firmware, and associated documentation are consistent with the requirements specified in the Requirements Documents. The contractor shall maximize the use of COTS software. All software and data developed under this contract shall become the property of the Government.

3.6.9.1 Software Engineering

The contractor shall use a proven systematic and documented software engineering method to perform the required analysis, design, coding, integration, and demonstration of all deliverable software and firmware. The contractor shall maximize the use of COTS software. All software and data developed under this contract shall become the property of the Government. The contractor shall not develop proprietary software and data.

3.6.9.2 Software Development Plan (SDP)

The contractor shall prepare, and deliver the Software Development Plan (SDP) CDRL A009 (DI-IPSC-81427A) for any new software development. The SDP shall be an agenda item and reviewed at each scheduled technical review.

3.6.9.3 Software Product Specification (SPS)

The contractor shall identify and document the executable software, source files, compilers (and assemblers, if applicable), third-party development applications, and software support information, including "as built" design information and compilation, build, and modification procedures, for all software items. The contractor shall develop nonproprietary software and data. The contractor shall also identify and document all Computer Software Configuration Items (CSCI) with the version number from initial development to subsequent releases of that CSCI to release, track, and control software versions. Source code and source code listings, and release version information shall be delivered to the Government IAW Software Product Specification (SPS) CDRL A00A, (DI-IPSC-81441A).

3.6.9.4 Software Requirements Definition

Based on the analysis of system requirements, system design, and other considerations, the contractor shall define and record the software requirements to be met by each software item, the methods to be used to ensure that each requirement has been met, and the traceability between the software item requirement and system requirements.

3.6.9.5 Software Requirements Specification (SRS)

System requirements shall be allocated by the contractor to software configuration items. Software configuration items shall be analyzed by the contractor to define software, interface, and database requirements. For Phases 4 through 6 the contractor shall develop and deliver a Software Requirements Specification (SRS) IAW CDRL A00B, (DI-IPSC-81433A).

3.6.9.6 Software Design Description (SDD)

The contractor shall enhance the MC-ITS V.2 database design, structures, and schemas based upon the earlier version MC-ITS baseline. The contractor shall prepare and deliver the Software Design Description (SDD) IAW CDRL A00C, (DI-IPSC-81435A).

3.6.9.7 Component Agreement (CA)

For each CTIA software component developed, the contractor shall prepare and deliver a Component Agreement (CA) IAW CDRL A00D, Component Agreement Description (Annex to Exhibit A). The CA shall be based on the SRS and developmental baseline accepted at the IPR. The contractor shall change the existing CA and deliver it IAW the above CDRL if an existing (reusable) CTIA software component requires a change and the PM TRASYC MC-ITS V.2 Lead System Engineer requests a new CA.

3.6.9.8 Software User Manual (SUM)

The contractor shall identify all information needed by persons who will operate the system software. This information shall be documented in the Software User's Manual (SUM) IAW CDRL A00E (DI-IPSC-81443A).

3.6.9.9 Software Licenses and Data Rights

Software licenses shall be transferred and assigned to the Government at each system acceptance completion demonstration. The Government shall receive unlimited and unrestricted rights to the software developed and delivered under this contract.

3.6.9.10 Engineering and Process Standards

The contractor shall be certified Capability Maturity Model Integration (CMMI) level 3 or higher and ISO 9000 compliant. The contractor shall submit proof of compliance and certification as an addendum to the proposal package.

3.6.10 Configuration Management (CM) Program

The contractor shall use an internal configuration management process to monitor, update and control all configuration documentation, physical media, or physical parts representing or comprising the training system configuration items for the life of the contract. The contractor's configuration management process shall consist of configuration identification, control and status accounting procedures. The configuration management process shall control all levels of the product and process integration to build the product as well as manage the sequence of significant events. The contractor shall allow Government remote access to configuration managed documents, software, and hardware. The contractor's configuration management process shall consist of:

- configuration identification
- configuration control
- configuration status accounting
- Configuration Verification and Audit

The contractor shall prepare and deliver the Configuration Status Accounting Information IAW CDRL C002 (DI-CMAN-81253A).

3.6.10.1 Configuration Identification

The contractor shall establish configuration baselines (Hardware and Software), assign identifiers for Configuration Items (CIs) and their component parts and associated documentation, including revision and version numbers and serial and lot numbers; and ensure that applicable identifiers are embedded in any software source and object code. The contractor shall select and document CIs.

3.6.10.2 Configuration Control

The product baseline shall be controlled by form, fit, function, and interchangeability in consonance with the Government maintenance concept. The product baseline shall be controlled and changed using the contractors change process and engineering release process. Configuration control shall ensure that proposed engineering changes to configuration items are fully coordinated and documented by means of the Engineering Change Proposal (ECP) and Request for Deviations (RFDs). All software modules are to be under configuration control from initial development to subsequent release and acceptance by the Government. The contractor shall maintain a Software Change Request (SCR) process. Software Change Requests shall be submitted to the Government for approval before the contractor performs any work. Only approved changes shall be incorporated.

3.6.10.3 Software Version Control

The contractor shall assign version numbers to approved software releases using the following guidance. Version numbers shall consist of a sequence of 4 integers, separated by decimal points, in the form "N.N.N.N". Each of these integers has a specific meaning.

- a. The first integer from the left is a major release number and indicates a significant change in the architecture or operation of the software

- b. The second integer from the left indicates a minor release in which new features are added to the software, but the fundamental architecture remains unchanged
- c. The third integer from the left is a maintenance release number. New features may be added to the software, but the emphasis is on optimizations, feature enhancements, or modifications to improve stability and usability. Application Programming Interfaces (API) are preserved and do not generally require segments to recompile or re-link during successive releases
- d. The fourth integer from the left is a developer build number

3.6.10.4 Engineering Change Proposals

An Engineering Change Proposal (ECP) shall be generated when there is a design change to the system based on added tasking that increases the scope of the requirements of the System Specification. Design changes made by the contractor before CDR to meet the system requirements are not acceptable criteria for ECP submittal.

3.6.10.5 Deviations

A Request for Deviation (RFD) shall be designated as minor, major, or critical. Requests for major or critical deviations will be treated and processed the same as Class I ECP.

An Engineering Change Proposal (ECP) shall be requested for recurring deviations that are indicative of inherent design problems or over-restrictive performance requirements (Cannot be submitted as deviation). Deviations do not require cost and funding summaries.

3.6.10.6 Configuration Status Accounting

The contractor shall document all baselines, ECPs, and deviations in the contractor's configuration status accounting baseline. The contractor shall identify and document all items incorporated in the system during development.

3.6.10.7 Configuration Verification and Audit

The Contractor shall verify and audit the system configuration information to ensure that requirement attributes are met and accurately documented. The Contractor shall;

- a. Verify that system attributes through a systematic comparison with the associated results of system tests, analyses, inspections, demonstrations or simulation models.
- b. Maintain surveillance over the configuration management process to ensure it is being followed and remains in compliance with requirements.

3.6.11 Data Management (DM)

The contractor shall perform data management according to their documented processes. The contractor shall maintain all updated Contracts Data Requirements List (CDRL) documentation. All CDRLs shall be submitted IAW with each individual CDRL.

3.6.12 Quality Management System (QMS) Requirements

The contractor shall provide and maintain a QMS that satisfies program objectives and meets the requirements of ANSI/ASQC-Q9001: 2000 / ISO – 9001:2000 or an equivalent QMS. ANSI/ASQC-Q9000: 2000 / ISO 9000:2005 and ANSI/ASQC-Q9004: 2000 / ISO 9004:2000 may be used for guidance. The QMS procedures, planning, and all other documentation and data that comprise the QMS, shall be made available to the Government for review. Existing quality

documents that meet the requirements of the contract may continue to be used. The Government may perform the inspections, verifications, and evaluations necessary to ascertain conformance to requirements and the adequacy of the implementing procedures. Third-party certification of the contractor's QMS is not required. The contractor shall require subcontractors to maintain a QMS that achieves control of the quality of the services and supplies provided.

3.6.12.1 Control of GFE

The contractor's QMS shall include at least the following procedures to control GFE:

- a. Examination upon receipt, consistent with practicality, to detect damage in transit
- b. Inspection for completeness and proper type
- c. Periodic inspection and precautions to assure adequate storage conditions and to guard against damage from handling and deterioration during storage
- d. Functional testing prior to installation to determine satisfactory operation
- e. Identification and protection from improper use or disposition
- f. Verification of quantity

3.6.12.2 Contractor's Inspection Equipment

The contractor's measuring and testing devices shall be made available for use by the Government when required to determine conformance with contract requirements. If conditions warrant, the contractor's personnel shall be made available for operation of such devices and for verification of their accuracy and condition.

3.6.12.3 Inspection and Test Records

Inspections and test records shall indicate, as a minimum, the nature of the observations, number of observations made, and the number and type of deficiencies found. Data included in inspection and test records shall be complete and accurate, and shall be used for trend analysis and to assess corrective action effectiveness.

3.6.12.4 Product Assurance Source Audits and Surveillance Inspections

The Government reserves the right to perform audits and surveillance inspections of contractor conformance to contractual requirements, including product assurance programs such as reliability, maintainability, parts management, safety, ESD control, CM, and QMS, at any time during the performance of the contract. During these source audits and surveillance inspections, non-deliverable program documentation and data shall be made available to the Government upon request. Due notice will be provided to the contractor before conducting source audits or surveillance inspections.

3.7 Integrated Logistics Support (ILS) Requirements

The contractor shall establish an ILS program designed to provide timely planning, implementation, verification, and life cycle support. The ILS program shall include logistics elements to ensure cost effective logistic support over the life cycle of the delivered system. The ILS process shall also assign responsibilities and establish milestones for executing the ILS program. The contractor shall describe the process, involving both the Government and the contractor, which shall be employed in planning, developing, and acquiring the logistics resources for test support and operational support at all specified maintenance levels. The ILS process shall ensure MC-ITS V.2, when fielded, will satisfy all supportability criteria. The contractor's program/process shall be available for Government review, upon request.

3.7.1 Logistics Supportability Analysis (LSA)

The contractor shall conduct repair level analyses, develop diagnostic, preventative maintenance and repair procedures, conduct facilities analyses, refine hardware and software maintenance and support concepts, and identify support resource requirements including required spares and support equipment. The contractor shall develop a listing of which items should be repaired and which should be discarded and the level of maintenance at which the repair should be performed with the associated cost. The contractor shall document the following in the integrated database:

- a. All input data and their corresponding value and source of the data
- b. Operational scenario modeled, assumptions made, constraints assumed, and non-economic factors imposed
- c. Maintenance alternatives considered
- d. Analytical method and models used to perform the economic evaluations
- e. Discussion of the sensitivity evaluation performed and results obtained

3.7.1.1 Logistics Management Information (LMI)

The contractor shall develop and submit Logistics Management Information Summaries Tailored IAW CDRL C003, (DI-ALSS-81530).

3.7.1.2 Item Unique Identification (IUID).

The IUID markings and readability requirements shall comply with MIL-STD-130N and DFARS 252.211-7003. The IUID marking and identification plates, tags, etching, or labels when used on equipment, parts, assemblies, subassemblies, units, sets, groups, or kits shall be as permanent as the normal life expectancy of the item and be capable of withstanding the environment, test, cleaning, repair, and rebuild procedures specified for the item. Marking of items shall be accomplished in a manner that will not adversely affect the life and utility of the item. Marking materials creating hazardous conditions shall not be used. The markings shall be located such that they are visible during item use, provided that sufficient space is available, and does not interfere with equipment operations. The contractor shall submit diagrams showing placement and description of the IUID marking and applicable installation and processing instructions for government review and approval IAW with CDRL C004 (DI-MGMT-80177B).

All spare parts, secondary repairable and consumables that exceed \$5,000 when purchased separately will also be marked with the IUID prior to delivery to the Government.

3.8 System Safety

The contractor shall establish and maintain an active and effective System Safety Program (SSP) that meets program objectives and ensures that the training system meets the system safety identify, document, analyze, and resolve (e.g., eliminate or reduce the associated risk to a level acceptable to the Government) safety hazards to both personnel and equipment. Safety shall be an agenda item and reviewed at each scheduled technical review.

3.8.1 Safety Assessment (SA)

The contractor shall perform a safety assessment of the system. The SA shall be a comprehensive evaluation of the safety risks being assumed before testing or operation of the system. The contractor shall develop and document the specific hazard controls or the precautions to be followed

to use the system. The contractor shall provide verification of compliance to the safety requirements of the contract. Compliance or noncompliance to the safety requirements shall be presented, along with justification or explanation for noncompliant items, during the TRR. The contractor shall prepare and submit the Safety Assessment Reports (SAR) IAW CDRL A00F, (DI-SAFT-80102B).

3.9 Reliability and Maintainability (R&M)

The contractor shall establish and maintain active and effective R&M programs that meet program objectives. The R&M programs shall ensure that the training system equipment, including Commercial Items, Non-Developmental Items, and System Peculiar Equipment (SPE) meet the R&M requirements specified in the System/Subsystem Specification. The contractor shall include the R&M programs as topics of discussion during the scheduled program reviews.

3.9.1 R&M Predictions

The contractor shall develop R&M predictions for the MC-ITS V.2 equipment to examine the probability, early in the program, that the R&M requirements of MC-ITS V.2 System/Subsystem Specification will be met with the proposed design. MIL-HDBK-217F, Notice 2 may be used as guidance for reliability prediction methods and MIL-HDBK-472, Notice 1 may be used as guidance for the maintainability prediction methods. Manufacturer's data, documented engineering analysis, verifiable field data, MIL-HDBK-217F, Notice 2, and MIL-HDBK-472, Notice 1 may be used as sources of failure rate, Mean-Time-Between-Failures (MTBF), and Mean-Time-To-Repair (MTTR) data. The contractor shall update the R&M predictions throughout the duration of the contract and shall present the prediction results at the scheduled technical reviews.

3.10 Commercial and Non-Developmental Items (CaNDI)

The contractor shall fulfill the requirements of the contract through acquisition of CaNDI to the maximum extent practical. CaNDI proposed by the contractor will be reviewed by the Government to determine whether each proposed CaNDI component is, in fact, CaNDI. The Government will also determine the extent to which the proposed CaNDI is practical for off-the-shelf use within the Government's logistical environment. The Government reserves the right to perform inspections and tests as deemed necessary to verify the practicability of items proposed as CaNDI for off-the-shelf use in the MC-ITS V.2.

3.11 Electrostatic Discharge (ESD) Control

The contractor shall ensure that ESD sensitive electrical and electronic parts, assemblies, and equipment are protected from damage due to ESD. Applicable functions where ESD control elements are to be applied are design, production, inspection and test, storage and shipment, installation, maintenance, and repair. The ESD control elements to be considered are classification, design protection (SPE only), protected areas, handling procedures, protective coverings, training, marking of hardware, documentation, packaging, QMS requirements, audits and reviews, and failure analyses.

3.12 Maintenance Concept

The maintenance concept consists of onsite (organizational) maintenance. The onsite maintenance consists of preventive maintenance and corrective maintenance. The onsite corrective maintenance shall include any fault detection, fault isolation, and removal and replacement to the Lowest Replaceable Unit (LRU) to restore the MC-ITS V.2 to operational status in minimal time. The maintenance concept for MC-ITS V.2 is defined below.

3.12.1 Operator/Crew Level Maintenance

Operator/Crew level maintenance is the critical element to Marine Corps maintenance. Its intent is to perform Preventative Maintenance Checks and Services (PMCS) from the applicable Technical Manuals (TM). This insures that equipment is fully mission capable and in most cases is the first source of identifying equipment problems. This may include limited diagnosis, fault isolation and repair/replacement authorized by applicable manuals. No special purpose tools or test equipment shall be required at the operator/crew maintenance level.

The intent of Operator/Crew level maintenance is sustaining equipment in a mission capable status and is both preventative and corrective in nature. Operator/Crew level maintenance normally entails inventory, cleaning, inspecting, preserving, lubricating, adjusting and testing as well as replacing parts and components with common shop tools.

Operator/Crew level maintenance shall consist of the following:

- a. Preventive maintenance includes visual inspection, testing, cleaning, tightening, and other minor adjustments, making external adjustments on equipment and performing operational checks using authorized tools, manuals and test equipment. Examples would include changing oil in a motor vehicle, checking tire inflation, and checking critical fluid levels if feasible.
- b. Corrective maintenance includes the performance of minor cable and cable connector repair, isolating the cause of equipment malfunction to the defective Line Replaceable Unit (LRU) by the use of Built-in test (BIT), removing and replacing LRUs, and returning equipment to full operational capability with minimum downtime.

3.13 Supply Support

The contractor shall implement a supply support strategy that provides for the availability of spare parts and repairs to minimize MC-ITS V.2 equipment down-time. Supply support planning includes the analysis required to ensure that the reduction of operational and support costs are considered throughout the entire system life cycle.

3.14 Product Drawings/Models and Associate List

Product Drawings/Models and Associate List shall meet the requirements of MIL-DTL-31000C. Product Drawings/Models and Associate List shall provide the design disclosure information necessary to enable a manufacturer of similar products at the same or similar state of the art to produce and maintain quality control of items that the resulting physical and functional characteristics duplicate those of the specified item. The contractor shall prepare and submit the following:

- a. Product Drawings/Models and Associate List – MC-ITS V.2 Fixed and Portable IAW CDRL A00G, (DI-SESS-81000D).

3.15 Technical Documentation and Spares Part Lists

The contractor shall prepare and submit the following documentation:

- a. Commercial Off-The-Shelf Manuals (COTS) for MC-ITS V.2 IAW CDRL E001, (DI-TMSS-80527B)
- b. Operation and Maintenance for MC ITS V.2 IAW CDRL E002, (MIL STD 40051 – 2).

3.16 Copyright Release

The contractor shall identify copyrighted material, if any, and shall obtain the written approval of the copyright owner. The contractor shall furnish appropriate copyright release giving the Government permission to reproduce and use copyrighted information. When the contractor uses a manual, which covers a vendor's component(s) or a portion thereof, and the vendor's manual contains copyrighted material, the contractor shall be responsible for obtaining a copyright release from the vendor and providing the copyright release to the Government.

3.17 Change Pages/Modification Instructions

The contractor shall provide change pages/modification instructions to the manuals as a result of approved changes to the baseline system. The Government requires notification of all changes and revisions to the manuals for the duration of this contract. Notice of new models/equipment, when they are available, is also required for Government information.

3.18 Training Products and Services

The contractor shall provide a training program to train operation, repair, installation, maintenance, assembly, and disassembly of MC-ITS V.2 to all applicable levels of MC-ITS V.2 Operators and Maintainers (i.e., Operator/Crew, Field, and Sustainment) in the following areas: Instructor and Key Personnel Training (IKPT) and New Equipment Training (NET), , in accordance with (IAW) MIL-PRF-29612B, and guidance from MIL-HDBK-29612-2A Instructional Systems Development/Systems Approach to Training and Education (ISD/SATE) (Parts 1-5)

3.18.1 Training Development Management

The contractor shall appoint a Training Manager who shall be the single point of contact for courseware development and training delivery matters. The Training Manager shall have three or more years of training and managerial experience with military training, and shall have an understanding of all tasks to be taught under this contract, with expertise in one or more of the areas. Sixty days prior to the conduct or delivery of any training course, the contractor shall provide written certification of the proficiency and skill of the instructors to conduct the required training. Sufficient proficiency and skill is defined as either two years experience conducting military training in the specific area of instruction, or an equivalent level of civilian teaching experience. The Government will consider waivers to proficiency and skill levels on a case-by-case basis. The Government will review and approve contractor proposed instructors thirty days prior to the start of training. The duties of this Training Manager shall include, but shall not be limited to, the coordination of training courseware analysis, design, development and delivery.

3.18.2 General

All training materials shall be designed, developed, written and delivered using proper English language, including technical language and terms associated with the operation, repair, installation, maintenance, assembly, and disassembly of MC-ITS V.2.

The contractor will use, to the maximum extent possible, all previously developed training data and materials that can be applied toward satisfying the training products and services requirements of this specification. This includes Government furnished data and data developed by the contractor incident to other contractual requirements.

3.18.3 Curriculum Analysis, Design, and Development

The contractor shall develop a job and task list for MC-ITS V.2, to identify and validate tasks that are required for IKPT and NET. The contractor shall link Mission Essential Tasks to job and task lists and identify individual and collective tasks. The contractor shall identify knowledge, skills, and attitudes, related technical data, tools and job aids for each task. The contractor shall develop a Training Task List from the approved job and task list, identify tasks requiring training and tasks requiring performance support tools, classify training tasks as over-train, train and no training, map job and task data across a career continuum, and classify tasks as training progression level events. The contractor shall evaluate the performance and learning requirements for the tasks selected for training and identify optimal instructional strategies for each learning objective, learner assessment strategies, level of learning, and level of interactivity for learning. The contractor shall develop learning objectives from training tasks, develop a matrix that links job tasks and training tasks to learning objectives, classify learning objectives, and develop a learning hierarchy. The contractor shall document the processes and results of the job, task, and learning analyses in the Instructional Performance Requirements Document IAW the CDRL F001 (DI-SESS-81518B-Parts 1-4). Based on the outcome of the Instructional Performance Analysis, the contractor's recommended course of action must describe a comprehensive training solution that addresses any and all training and education objectives. The contractor analysts should consider all types of learning strategies and media, and propose for each learning objective the most effective and cost-efficient learning solution possible. For those learning outcomes that can effectively and efficiently be achieved via computer-based instruction, consideration should be given to the potential use of interactive courseware. The contractor shall deliver the final Instructional Performance Requirements document within a period not to exceed 60 working days after contract award.

3.18.4 Training Program Structure Document

The contractor shall develop a training program structure document which provides training planning data, training course control data, and documents the detailed configuration baseline of the MC-ITS V.2 courseware, IAW CDRL F002 (DI-SESS-81521B-Part 2: Training Course Data). The contractor shall deliver the final Training Program Structure document within a period not to exceed 60 working days after contract award.

3.18.5 Media Analysis

The contractor shall develop media analyses for MC-ITS V.2 using a Government-approved media selection model. The contractor shall define and document physical, functional, and physiological fidelity requirements for each learning objective, determine top two optimal delivery methods and media for each learning objective, verify that delivery methods and media mix are compatible within phases, lessons, and topics, and develop a cost and trade-off analysis for performance and training requirements. The contractor shall prepare the Instructional Media Requirements Document IAW the CDRL F003, (DI-SESS-81526B, Instructional Media Package). The contractor shall deliver the final Media Requirements document within a period not to exceed 60 working days after contract award.

3.18.6 Training Conduct Support Document.

The contractor shall develop training materials (i.e., Instructor Guides, Student Guides, and Training Aids) for all MC-ITS V.2 IKPT and NET learning objectives to be delivered via instructor-led and/or practical application (hands-on). The contractor shall develop a training

conduct support document which provides specific definition and direction to the instructor and trainees on learning objectives, equipment and instructional media for use during the conduct of MC-ITS V.2 training, IAW CDRL F004 (DI-SESS-81523B- Part 1: Lesson Plan Data Requirements & Part 2 Trainee Guide Data Requirements), Training Conduct Support Document.

3.18.7 Training System Support Document.

For any MC-ITS V.2 IKPT and NET learning objectives to be delivered via instructor-led and/or practical application (hands-on), the contractor shall develop a training system support document which shall provide complete procedures to aid user personnel in operating and achieving full use of MC-ITS V.2 during the presentation of the MC-ITS V.2 course of instruction, training exercises, or missions, IAW CDRL F005 (DI-SESS-81527B- Part 2: Training System Operating Data), Training System Support Document.

3.18.8 Computer-Based Training (CBT) Content Development

. For any MC-ITS V.2 IKPT and NET learning objectives to be delivered via CBT, the Contractor shall develop, revise and enhance all CBT content using commercial off-the-shelf (COTS) software avoiding any proprietary systems or software. The CBT content shall be capable of playing on any system that uses Microsoft Windows and shall be SCORM 2004 V1.compliant.

3.18.9 Applicable Training Documents

The following documents form a part of this SOW to the extent specified herein.

MIL-PRF-29612B	Training Data Products
MIL-HDBK-29612-3A	Development of Interactive Multimedia Instruction (Part 3 of 5)
MIL-HDBK-29612-4-	Glossary (Part 4 of 5)
MIL-HDBK-29612-5	Advanced Distributed Learning (ADL) Products and Systems (Part 5 of 5)
MIL-HDBK-881A	Work Breakdown Structures for Defense Materiel Items

NOTE: Copies of the above DoD specifications and handbooks can be obtained online from the DoD Single Stock Point or from the Acquisition Streamlining and Standardization Information System (ASSIST) Web Site. Electronic copies can be downloaded from the ASSIST Web Site located at: <http://assist.daps.dla.mil/quicksearch/>.

3.19 MC-ITS V.2 Warranty

The contractor shall provide a minimum of three years of extended warranty for MC-ITS V.2 equipment beginning upon delivery. The warranty shall cover the shipment (to/from), replacement, or repair of all inoperable, defective or damaged MC-ITS V.2 equipment. The Contract Logistic Support (CLS) contractor will issue and receive all MC-ITS V.2 items. The contractor shall establish and maintain a warranty performance system that identifies and documents all items to be warranted under this contract. Each item warranted shall be indexed and identified by serial number, model or part number, and date of acceptance by the Government. Warranties shall

become effective based upon a negotiated agreement between the Government and the contractor. All pertinent data required for the Government to pursue warranty provisions, remedy, and relief for each item shall be maintained by the contractor for the duration of the warranty period. All warranty claims and transactions shall be documented and made available for Government review during scheduled meetings and / or reviews.

3.20 Packaging, Handling, Storage and Transportation (PHS&T)

The contractor shall provide preservation and packaging in accordance with best commercial practice of ASTM D3951. The contractor shall package all MC-ITS V.2 equipment for shipment. All shipments shall be preserved, packaged, and marked. The Government will store and stack MC-ITS V.2 equipment at a secure storage area at each of the fielding locations and the contractor packaging shall provide protection for all hardware and software from environmental deterioration and damage. The contractor shall provide protection of MC-ITS V.2 components during transportation, storage, and handling by being placed in containers.

3.21 System Test and Evaluation (T&E) Requirements

The contractor's Test and Evaluation plan shall be designed to verify that the delivered systems meet the technical and operational requirements. The contractor shall plan, coordinate, establish, and implement a comprehensive Test and Evaluation (T&E) plan.

3.21.1 Test & Evaluation Planning

The contractor shall manage the Test and Evaluation (T&E) IAW the Test Plan. The contractor shall prepare and deliver the Test Plans for MC-ITS V.2 software tests, and all of the MC-ITS V.2 system tests including Government Preliminary Inspection (GPI), Government Final Inspection (GFI), IA ST&E IAW CDRL A00H(DI-NDTI-80566A). The contractor shall update the T&E plan as required throughout the contract to reflect changes in concepts, test responsibilities, mission and systems descriptions, ground rules, schedules, documentation, and resource requirements. The T&E shall be an agenda item and reviewed at each scheduled technical review.

3.21.1.1 Test Responsibility

Unless otherwise specified in the contract, the contractor shall be responsible for the performance of all demonstrations and tests. The Government reserves the right to perform tests that are deemed necessary to ensure that the contract requirements are met.

3.21.1.2 Test Authority

The contractor shall identify their organization's responsible officer for inspections, demonstrations, and tests. Test results shall be recorded by the organization responsible officer during contractor's inspections, demonstrations, and tests and certified by a Procuring Contracting Officer's (PCO's) representative. Government inspection results will be recorded by the PCO's representative.

3.21.1.3 Test Resources and Facilities

The contractor shall furnish the inspection and testing facilities, equipment, and personnel required to ensure that the training system meets the requirements of the System Specification and the contract. The inspection and testing facilities shall provide the environmental conditions required by the test as specified. The contractor shall ensure that all contractor personnel, test equipment, test facilities, other supporting equipment, spare assemblies and parts, test and data logs, and other items necessary for testing are available for the start and during all Phases of testing.

3.21.1.4 Test Methods

Test, examination, demonstration, inspection, and verification procedures shall be documented in Software Test Descriptions for software requirements and Test Procedures for system level requirements. The test methods and procedures shall be written so that a qualified technician can perform the tests. When two or more quantitative readings are required simultaneously, the test method shall provide an automated means for data collection to the maximum extent practical.

3.21.1.5 Test Procedures (TP)

The contractor shall conduct tests IAW the Government-accepted Test Procedures (TP) CDRL A00J (DI-NDTI-80603A). Software tests shall be performed during each software development Phase. The contractor shall demonstrate and verify all MC-ITS V.2 software for the Government. The GPI test procedure shall include appendices for IA ST&E tests. Test, examination, demonstration, inspection, and verification procedures shall be documented in the TP. The test methods and procedures shall be written so that a qualified technician can perform the tests. When two or more quantitative readings are required simultaneously, the test method shall provide an automated means for data collection to the maximum extent practical.

3.21.1.6 Test/Inspection Report (T/IR)

Test results of each Phase software testing, and the system level integration testing shall be documented in a Test/Inspection Report. The contractor shall prepare and deliver the Test/Inspection Reports IAW CDRL A00K (DI-NDTI-80809B). The GPI Test/Inspection results report shall include appendices for ST&E.

3.21.1.7 Test Criteria

The test criteria for tests and examinations shall include both quantitative and qualitative performance data of the operational system(s). Quantitative test criteria shall be used to the maximum extent possible. Where appropriate, test criteria for individual inspections, tests, demonstrations, and examinations shall consist of both quantitative and qualitative test criteria. As a compliment to quantitative test results, qualitative comparisons of visual, video, and aural presentations shall be provided.

3.21.1.8 Tolerance Data

Test tolerances shall be identified for all test criteria. Each test tolerance and the source from which the specified tolerances are derived shall be identified. Specified tolerances shall be derived from the specifications, design criteria reports, and operational equipment data.

3.21.1.9 Alignment and Calibration

The contractor shall perform all necessary equipment alignments and calibration before the initiation of each increment of the T&E program.

3.21.1.10 Test Log

The contractor shall maintain a log of all subsystem and system tests conducted in-plant, at their SIF, and onsite. Entries into the test log shall begin with the start of contractor/subcontractor engineering verification testing and continue until the completion of testing. The test log shall show (by date) all equipment adjustments, modifications, failures, removal, replacements, and scheduled

and unscheduled maintenance. The log shall be made available to the Government technical representative upon request.

3.21.2 Changes & Modifications

Changes and modifications made during or after testing shall be recorded as follows:

3.21.2.1 During Testing

Changes made during testing shall be recorded in the contractor's test log. Tests conducted before such changes shall be repeated unless a Government technical representative determines that such changes have not invalidated the related test data.

3.21.2.2 After Testing

Modifications or changes in design, which are determined to be necessary as a result of testing, shall be recorded in the contractor's test log. Tests run before such modifications shall be repeated unless a Government technical representative determines that such changes have not invalidated the related test data.

3.21.2.3 Deficiency Reporting System

The contractor shall establish and implement a Deficiency Reporting System for the identification, tracking, and resolution of all hardware and software problems (including tactical subsystem) discovered during formal test and inspections.

3.21.3 T&E Components

The T&E plan shall include In-Process Inspections, Incremental Contractor Preliminary Inspections (ICPI), and conformance inspections.

3.21.3.1 In-Process Inspections

The contractor shall perform in-process inspections to ensure conformance to all requirements of the System/Subsystem Specification and Software Requirements Specification.

3.21.3.2 Incremental Contractor Preliminary Inspections (ICPI)

Before initiation of Government Preliminary Inspection, the contractor shall perform a complete inspection of the system. Incremental Contractor Preliminary Inspections (ICPI) shall be performed during each Phase IAW the Government-accepted, Software Test Descriptions. The contractor shall conduct the tests for each Phase incrementally under the direction of the contractor's QMS representative who certifies by his or her signature that the specific test(s) have been completed and the documented results are correct and comply with the specification requirements. The contractor shall annotate in the Software Test Descriptions (STD) procedural changes made as a result of the ICPI. The contractor shall provide a copy of the annotated STD to the Government before the start of GPI. The contractor shall document the ICPI results in a Software Test Report. The contractor shall record test results that do not comply with specification requirements as deficiencies. The contractor shall correct the deficiencies found during ICPI before the commencement of GPI. The documented ICPI results, including open deficiencies, shall be presented to the Government on an incremental basis at the next scheduled T&E IPT meeting and in final total form at the TRR.

3.21.4 Conformance Inspections

The Conformance Inspections shall be conducted at times and places specified in the contract and IAW the following paragraphs. The Conformance Inspections shall consist of a Functional Configuration Audit (FCA) and a Physical Configuration Audit (PCA) performed to the extent specified herein. A FCA shall be performed for both Government Preliminary Inspection (GPI) and Government Final Inspection (GFI).

3.21.4.1 Functional Configuration Audit (FCA)

The FCA shall consist of tests, assessments, inspections, demonstrations, and verifications performed to demonstrate that training system performance satisfies the System/Subsystem Specification requirements. The FCA tests shall be performed IAW the Government-accepted, Software Test Descriptions and Test Procedures. The tests shall exercise the training system at the subsystem, system, intersystem, and combined levels. The tests shall be designed to validate the simulation and stimulation performance throughout the entire performance envelope, in all configurations and all modes of operation. The tests shall exercise the simulation and stimulation in the most complex and demanding computational configurations. Tests shall be conducted without alignment or adjustment of controls, other than the accessible controls employed for normal system operation. No repairs or adjustments, other than those approved by the Government test director, will be permitted during the conduct of tests. If repairs or adjustments are required, the test in question, and other tests whose results may be affected thereby, shall be repeated after repairs or adjustments have been made. The FCA shall include tests developed to evaluate the integration of all GFE and their interfaces with other equipment. The FCA shall consist of the following Phases: Government Preliminary Inspection (GPI) for each Phase and a Government Final Inspection (GFI) at the conclusion of Phase development.

3.21.4.2 Government Preliminary Inspection (GPI)

GPI will commence upon notification by the representative of the PCO that the system is ready for inspection. The GPI, as a sub-set, shall include the Security Test and Evaluation (ST&E) based on the MAC-III Sensitive Information Assurance Controls (IACs) in support of the in support of the IA Certification and Accreditation (C&A) of the system. GPI shall be conducted in-plant by the Government test team as defined in the TP. GPI shall consist of Government-conducted tests to demonstrate compliance with the specified performance requirements. GPI shall be conducted IAW the Government-accepted TP. The Government reserves the right to require the contractor to perform such additional tests as deemed necessary to ensure compliance with the specified requirements. The contractor shall provide the necessary resources, personnel, equipment, and facilities to support the tests. Deficiencies found during these tests shall be recorded as Test Discrepancy (TD). The Contractor shall establish a suspense system to ensure timeliness of analysis and corrective action of each test discrepancy. These test discrepancies shall be corrected by the contractor and verified by the Government test team prior to shipment.

3.21.4.2.1 GPI entry criteria

Entry criteria for the GPI shall consist of:

- a. Government concurrence that the TRR exit criteria have been met
- b. Government determines that the MC-ITS V.2 is ready for GPI.
- c. Delivery and acceptance (as applicable) of the CDRL items (test plan, test procedure, and SAR) scheduled to be delivered prior to GPI.

- d. Government concurrence that the contractor submitted GPI agenda is complete and acceptable.
- e. All action items requiring contractor response have been disposition to the satisfaction of the Government.
- f. GPI presentation material has been submitted to the Government in advance of the GPI. Government preliminary review indicates the presentation material is sufficient to support the GPI.

3.21.4.2.2 GPI exit criteria

Exit criteria for the GPI shall consist of

- a. Government concurrence that all required GPI topics have been satisfactorily presented, discussed, and documented.
- b. Government concurrence that all program risks are known and manageable for testing.
- c. A GPI test deficiency reporting document has been completed and accepted by the Government.

3.21.4.3 Government Final Inspection (GFI)

GFI will commence upon completion of the contractor installation and checkout of the system onsite. GFI will be conducted onsite by a joint contractor/Government test team and will consist of tests conducted to verify compliance with the specified system requirements. Testing will commence with the establishment of a software baseline resulting from a software cold-start IAW the Government-accepted, Test Procedures. Deficiency correction verification and validation, including additional cold-starts, will be at the discretion of the Government. The typical test schedule may consist of a ten (10) hour test day followed by the contractor's deficiency cleanup and system maintenance periods. The contractor shall provide the resources, personnel, and equipment necessary to support the tests. Hardware and software configuration item testing and design documentation verification and validation will be conducted as an integral part of GFI. The Government reserves the right to perform such additional tests as deemed necessary to ensure compliance with the specified requirements. Deficiencies found during GFI shall be corrected by the contractor and verified by the Government test team before Government acceptance of the system.

3.21.4.3.1 GFI entry criteria

Entry criteria for the GFI shall consist of:

- a. Government concurrence that the GPI exit criteria have been met
- b. Government concurrence that the changes made to the MC-ITS V.2 in the design, programming, or adjustments during the GPI testing have been satisfactorily incorporated.
- f. Government determines that the MC-ITS V.2 is ready for GFI.
- g. Delivery and acceptance (as applicable) of all the CDRL items scheduled to be delivered prior to GFI.
- h. Government concurrence that the contractor submitted GFI agenda is complete and acceptable.
- i. Government concurrence that all of the GPI test deficiency identified has been satisfactorily resolved.

- j. All action items requiring contractor response have been disposition to the satisfaction of the Government.
- k. GFI presentation material has been submitted to the Government in advance of the GFI. Government preliminary review indicates the presentation material is sufficient to support the GFI.

3.21.4.3.2 GFI exit criteria

Exit criteria for the GFI shall consist of

- a. Government concurrence that all required GFI topics have been satisfactorily presented, discussed, and documented.
- b. Government concurrence that all program risks are known and manageable for testing.
- c. A GFI test deficiency reporting document has been completed and accepted by the Government.

3.21.4.4 Physical Configuration Audit (PCA)

The PCA will be conducted IAW the IMS. The contractor shall notify the Government 30 days prior to the scheduled PCA. The contractor shall prepare and deliver a PCA Plan IAW CDRL C005, (DI-SESS-81646). The PCA will consist of nonfunctional examinations performed to demonstrate that the system as-built design satisfies System/Subsystem Specification requirements, and that the deliverable hardware and software documentation accurately reflect the configuration items. Non-deliverable documents may be in contractor format and will be examined only to determine contractor compliance with configuration management requirements. The PCA will be conducted by a Government team on the as-built system with power off. The contractor shall provide the personnel and facilities necessary to support the Government-conducted examinations. The contractor shall be responsible for the disassembly of system equipment and for providing access to areas of the system not normally accessible. The Government reserves the right to perform other examinations deemed necessary to determine compliance with System/Subsystem Specification and design documentation requirements. The PCA will start upon successful completion of the FCA to establish the product baseline before system acceptance as indicated by a signed DD250 Material Inspection and Receiving Report (MIRR). This Phase of the PCA will consist of software and hardware examinations defined in selected sections of the Government-accepted Test Procedures. The hardware PCA will consist of an examination of the as-built system against its design documentation and the software PCA will consist of an examination of the as-built version of the computer system configuration items against the software technical documentation. Deficiencies recorded by the Government shall be corrected by the contractor before the signing of the DD250 MIRR.

Comment [s1]: Add reference in Section 2.

3.21.4.4.1 PCA entry criteria

Entry criteria for the PCA shall consist of:

- a. Government concurrence that all of the GFI test deficiencies have been properly resolved.
- b. Delivery and acceptance (as applicable) of all the CDRL items scheduled to be delivered prior to PCA.
- c. Government concurrence that the contractor submitted PCA agenda is complete and acceptable.

- d. All action items requiring contractor response have been dispositioned to the satisfaction of the Government.
- e. PCA presentation material has been submitted to the Government in advance of the PCA. Government preliminary review indicates the presentation material is sufficient to support the PCA.

3.21.4.4.2 PCA exit criteria

Exit criteria for the PCA shall consist of

- a. Government concurrence that all required PCA topics have been satisfactorily presented, discussed, and documented.
- b. Government concurrence that all documentation, hardware, and software comply with the technical documentation.

3.22 Transition Planning

The Contractor shall provide support for the transfer of interim Life Cycle Customer Support (LCCS) responsibility to the Government or another contractor. Support shall include those services required to insure the effective, efficient transfer of responsibility as well as technical data, tools and test equipment and repair/spare parts, in sufficient detail and coverage to enable other personnel with comparable skills to maintain the system. The transition effort shall include an analysis of all failures and maintenance actions undertaken during the interim support and revising technical publications to reflect actual fielded experience. The interim LCCS transfer shall include 100 percent of provisioned items.