



UNITED STATES MARINE CORPS
MARINE CORPS SYSTEMS COMMAND
2200 LESTER STREET
QUANTICO, VIRGINIA 22134-5010

IN REPLY REFER TO

4200
075/CINS 027AP
27 October 2005

General Dynamics

Attn: (b)(6)

Subject: Request for Proposal (RFP) Number M67854-06-R-7004 for Radio
Controlled Improvised Explosive Device (RCIED), Ground Electronic
Counter Measures (Ground ECM) Equipment

(b)(6)

The purpose of this letter is to request a pricing proposal for the following CLINS and
Sub-CLINS:

CLIN 0001 - Primary Unit (Jammer) (Minimum (b)(2) Maximum (b)(2))

CLIN 0002 - Shipping/Storage Containers (Minimum (b)(2) Maximum (b)(2))

CLIN 0003 - Vehicle Installation Kits

0003AA - (b)(2) (Minimum (b)(2) Maximum (b)(2))

0003AB - (b)(2) (Minimum (b)(2) Maximum (b)(2))

CLIN 0004 - Remote Control for CLIN 0001 (Minimum (b)(2) Maximum (b)(2))

CLIN 0005 - Antenna(s) w/cables and mounts for CLIN 0003 (Minimum (b)(2) Maximum (b)(2))

0005AA - (b)(2) MHz to (b)(2) MHz (Minimum (b)(2) Maximum (b)(2))

0005AB - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))

0005AC - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))

0005BA - (b)(2) MHz to (b)(2) GHz (Minimum (b)(2) Maximum (b)(2))

0005BB - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))

0005BC - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))

CLIN 0007 - Test Equipment for CLIN 0001 (Minimum (b)(2) Maximum (b)(2))

CLIN 0011 - Testing

0011AA Inspection at Yuma Proving Grounds, AZ

CLIN 0001 Quantity 4

CLIN 0002 Quantity 4

CLIN 0003AA Quantity 2

CLIN 0003AB Quantity 1

CLIN 0004 Quantity 4

CLIN 0005AA Quantity 4

CLIN 0005AB Quantity 3

CLIN 0005AC Quantity 2

CLIN 0005BA Quantity 4
CLIN 0005BB Quantity 3
CLIN 0005BC Quantity 2
CLIN 0007 Quantity 4
CLIN 0018 Quantity 1
FSR Support (1 per system – 4 systems)

CLIN 0012 - Documentation/Data (CDRL)
0012AA - 0012 TBD (Manual, Training, SAR)

CLIN 0013 - Shipping
0013AA - Destination Charleston, SC or Yuma Proving Grounds (CLIN 0011)

CLIN 0018 - Laptop w/Controlling Software
0018AA - 1 for every 50 Primary Units CLIN 0001 (Minimum (b)(2) Maximum (b)(2))

CLIN 0019 - Technical Support Representative (Minimum 1 Representative/Maximum 2 Representatives at each event).

0019AA - Antenna IPT (Charleston, SC or Laurel, MD. Duration will be approximately 14 days).

0019AB - Communications IPT (Charleston, SC or Laurel, MD. Duration will be approximately 45 days).

0019AC - Antenna/Communications Evaluation/Testing (Charleston, SC or Laurel, MD or Camp Lejeune, NC or Quantico, VA. Duration will be approximately 14 days).

0019AD - Training IPT (Charleston, SC or Laurel, MD or Quantico, VA or Stafford, VA. Duration will be approximately 90 days).

0019AE - Threat IPT (Charleston, SC or Laurel, MD or Quantico, VA or Stafford, VA. Duration will be approximately 60 days).

This proposal should be priced as Firm Fixed Price (FFP) with the exception of CLIN 0003AA and 0003AB, which shall be Cost Plus Fixed Fee (CPFF). You are also requested to provide any/all warranty information at the time of submission of your proposal. Please refer to the subject RFP number in your proposal and any related correspondence. This proposal is requested as soon as possible but not later than nine a.m. (9:00) Eastern Standard Time (EST) on 31 October 2005. Should this date not be achievable, please contact me immediately.

Should you have any questions regarding this request, please contact

(b)(6)

(b)(6)

(b)(6)

CONTRACTING OFFICER
UNITED STATES MARINE CORPS

cc:

(b)(6)



UNITED STATES MARINE CORPS
 MARINE CORPS SYSTEMS COMMAND
 2200 LESTER STREET
 QUANTICO, VIRGINIA 22134-5010

IN REPLY REFER TO

4200
 081/CINS 027AP
 28 October 2005

(b)(6)

General Dynamics
 128 Lakeside Avenue
 Burlington, VT 05401

Subject: Modification P00001 to Request for Proposal (RFP) Number M67854-06-R-7003 for Radio Controlled Improvised Explosive Device (RCIED), Ground Electronic Counter Measures (Ground ECM) Equipment, Undefined IDIQ Letter Contract

(b)(6)

The purpose of this letter is to revise the request for pricing proposal for the following CLINS and Sub-CLINS:

- CLIN 0001 - Ground ECM
 - 0001AA Primary Unit (Min (b)(2) Max (b)(2) Each \$ _____
 - 0001AB Vehicle Installation Kit - (b)(2) Min (b)(2) Max (b)(2) Each \$ _____
 - 0001AC Vehicle Installation Kit - (b)(2) Min (b)(2) Max (b)(2) Each \$ _____
- CLIN 0002 - Shipping/Storage Containers (Min (b)(2) Max (b)(2) Each \$ _____
- CLIN 0003 - System Integration/Optimization (Jammer, Antenna, Vehicle Installation Kit, etc.)
 - 0003AA - (b)(2) (1 Lot) \$ _____
 - 0003AB - (b)(2) (1 Lot) \$ _____
- CLIN 0004 - Remote Control for CLIN 0001 (Minimum (b)(2) Maximum (b)(2) Each \$ _____
- CLIN 0005 - Antenna(s) w/cables and mounts for CLIN 0003 (Minimum (b)(2) Maximum (b)(2) Each \$ _____)
 - 0005AA - (b)(2) to (b)(2) (Minimum (b)(2) Maximum (b)(2))
 - 0005AB - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))
 - 0005AC - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))
 - 0005BA - (b)(2) z (Minimum (b)(2) Maximum (b)(2))
 - 0005BB - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))
 - 0005BC - (b)(2) Mounts (Minimum (b)(2) Maximum (b)(2))
- CLIN 0007 - Test Equipment for CLIN 0001 (Minimum (b)(2) Maximum (b)(2) Each \$ _____)

CLIN 0011 - Testing 1 Lot \$ _____
Inspection at Yuma Proving Grounds, AZ (Vendor shall ship the following quantities of CLINs to Yuma Proving Grounds for Inspection Testing – The price above shall include the price for FSR Support)

- CLIN 0001AA, AB, AC Quantity 4
- CLIN 0002 Quantity 4
- CLIN 0003AA Quantity 2
- CLIN 0003AB Quantity 1
- CLIN 0004 Quantity 4
- CLIN 0005AA Quantity 4
- CLIN 0005AB Quantity 3
- CLIN 0005AC Quantity 2
- CLIN 0005BA Quantity 4
- CLIN 0005BB Quantity 3
- CLIN 0005BC Quantity 2
- CLIN 0007 Quantity 4
- CLIN 0018 Quantity 1
- FSR Support (1 per system – 4 systems)

CLIN 0013 - Shipping 1 Lot \$ _____
0013AA - Destination Charleston, SC or Yuma Proving Grounds (CLIN 0011)

CLIN 0018 - Laptop w/Controlling Software Each \$ _____
0018AA - 1 for every 50 Primary Units CLIN 0001 (b)(2)

CLIN 0019 - Technical Support Representative (Minimum 1 Representative/Maximum 2 Representatives at each event).

0019AA - Antenna IPT (Charleston, SC or Laurel, MD. Duration will be approximately 14 days). Each \$ _____

0019AB - Communications IPT (Charleston, SC or Laurel, MD. Duration will be approximately 45 days). Each \$ _____

0019AC - Antenna/Communications Evaluation/Testing (Charleston, SC or Laurel, MD or Camp Lejeune, NC or Quantico, VA. Duration will be approximately 14 days). Each \$ _____

0019AD - Training IPT (Charleston, SC or Laurel, MD or Quantico, VA or Stafford, VA. Duration will be approximately 90 days). Each \$ _____

0019AE - Threat IPT (Charleston, SC or Laurel, MD or Quantico, VA or Stafford, VA. Duration will be approximately 60 days). Each \$ _____

This proposal should be priced as Firm Fixed Price (FFP) with the exception of CLIN 0003AA and 0003AB, which shall be Cost Plus Fixed Fee (CPFF). You are also requested to provide any/all warranty information at the time of submission of your proposal. Please refer to the subject RFP number in your proposal and any related

correspondence. This proposal is requested as soon as possible but not later than nine a.m. (9:00) Eastern Standard Time (EST) on 31 October 2005. Should this date not be achievable, please contact me immediately.

Should you have any questions regarding this request, please contact

(b)(6)

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(b)(6)

CONTRACTING OFFICER
UNITED STATES MARINE CORPS

cc:

(b)(6)

SECTION B - SUPPLIES/SERVICES/PRICES

CLIN	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
0001	Ground ECM				
0001AA	Primary Unit	xxxx	EA	NTE	(b)(4)
0001AB	Vehicle Installation Kit - M1114	xxx	EA		
0001AC	Vehicle Installation Kit - MTRV	xxx	EA		
0002	Shipping/Storage Containers	Xxxx	EA	NTE	(b)(4)
0003	PLEASE SEE END OF CHART				
0004	Remote Control for CLIN 0001	Xxx	EA	NTE	
0005	Antenna(s) w/cables and mounts for CLIN 0001			NTE	
0055AA	(b)(2) MHz to (b)(2) MHz	xxxx	EA		(b)(4)
0005AB	M1114 Mounts (b)(2) MHz to (b)(2) MHz)	xxx			
0005AC	MTRV Mounts (b)(2) MHz to (b)(2) MHz)	xxx			
0005BA	(b)(2) MHz to (b)(2) GHz	xxxx			
0005BB	M1114 Mounts (b)(2) MHz to (b)(2) GHz)	xxx			
0005BC	MTRV Mounts (b)(2) MHz to (b)(2) GHz)	xxx			
0007	Test Equipment for CLIN 0001	X	Lot		
0011	Acceptance Testing/Inspection at Yuma Proving Grounds	x	Lot	NTE	
	CLIN 0001 (Qty 4)				
	CLIN 0002 (Qty 4)				
	CLIN 0003AA (Qty 2)				
	CLIN 0003AB (Qty 1)				
	CLIN 0004 (Qty 4)				
	CLIN 0005AA (Qty 4)				
	CLIN 0005AB (Qty 3)				
	CLIN 0005AC (Qty 2)				
	CLIN 0005AD (Qty 4)				
	CLIN 0005AE (Qty 3)				
	CLIN 0005AF (Qty 2)				
	CLIN 0007 (Qty 4)				
	CLIN 0018 (Qty 1)				
	FSR Support (Qty 4)				
	NOTE 1*				
0012	Documentation/Data (CDRL)	X	Lot	TBD	TBD
0012AA	0012 TBD (Manual, Training, SAR)				
0013	Shipping	X	Lots	NTE	(b)(4)
0013AA	Destination Charleston, SC				
0013AB	Destination Yuma Proving Grounds, AZ				
0018	Laptop with Controlling Software			NTE	
0018AA	1 for every 50 Primary Units CLIN 0001	Xx	EA		(b)(4)
0019	Technical Support Representative			NTE	
0019AA	Antenna IPT (Charleston SC or Laurel MD) (Duration approx. 14 days)	x	EA		(b)(4)
0019AB	Communications IPT (Charleston SC or Laurel MD) (Duration approx 45 days)	x	EA		
0019AC	Antenna/Communications Evaluation/Testing (Charleston, SC or Laurel, MD or Camp Lejeune, NC or Quantico, VA or Stafford, VA) (Duration approx. 14 days)	x	EA		
0019AD	Training IPT (Charleston, SC or Laurel, MD or Quantico, VA or Stafford, VA) (Duration approx 90 days)	x	EA		
0019AE	Threat IPT (Charleston, SC or Laurel, MD or Quantico, VA or Stafford, VA) (Duration approx 60 days)	x	EA		

CLIN	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
0003	System Integration/Optimization (Jammers, Antenna, Vehicle, Installation Kits, etc.) (CPFF)				
0003AA	M1114				
	Cost				
	Fixed Fee				
	CPFF				
0003AB	MTVR				
	Cost				
	Fixed Fee				
	CPFF				
ESTIMATED TOTAL DOLLAR VALUE					

NTE

(b)(4)

NOTE 1 - Contractor to provide stated quantity of all CLINS. Government will test and retain title to all equipment.

NOTE 2 - Under this contract, equipment and services shall be ordered by the issuance of Delivery Orders. Exact Quantities will be established on each Delivery Order. The total minimum ordering requirement under this contract is (b)(4) and the maximum (ceiling) is (b)(4).

NOTE 3 - This contract includes a \$xxx million advance payment and progress payments at 80%. Exact terms to be negotiated within 7 days.

[END OF SECTION]

Statement of Work (SOW)
for
Ground Electronic Counter Measures (ECM) System

Created: 9/13/2005

Revised: 10/27/2005

1 **SCOPE.** This effort is in response to an Urgent Universal Needs Statement (U-UNS), an Universal Needs Statement and an associated Statement of Need (SON) for an operational capability to prevent and/or defeat Radio Controlled Improvised Explosive Device (RCIED) and detonation ambushes that are a pervasive threat throughout the Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) theaters of operation. This Statement of Work (SOW) defines the contractor's work efforts required to develop/design, integrate, test, produce and install a RCIED Electronic Counter Measures (ECM) high powered jammer hereafter referred to as Ground Electronic Counter Measures (ECM) System. Additionally, it requires the contractor to prepare associated engineering, support, maintenance documentation and to provide logistic, technical and field service support.

2 **APPLICABLE DOCUMENTS.** The following documents of the exact date and issue specified form a part of this Statement of Work (SOW) to the extent specified herein. In the event of conflict between the applicable documents and this SOW, the SOW shall take precedence. All second tier and below references cited in mandatory compliance documents shall be considered as guidance only. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained. The contractor is encouraged to review and further tailor/refine the requirements and provide recommended alternatives to those documents (mandatory or otherwise) cited herein.

2.1 **Military Standards and Specifications - Mandatory Compliance.**

The listed standards are invoked in this SOW, and have DON waivers or have been identified as a standard practice/interface standard/performance specification.

MIL-PRF-29612B	31 Aug 01	Training Data Products
MIL-PRF-49506	11 Nov 96	Logistics Management Information
MIL-STD-129P	29 Oct 04	Military Marking
MIL-STD-130L(1)	20 Dec 04	Identification Marking of U.S. Military Property
MIL-STD-196E	17 Feb 98	Joint Electronics Type Designation System
MIL-STD-882D	10 Feb 00	Standard Practice for System Safety
MIL-STD-2073/1D(1)	10 May 02	DoD Standard Practice for Military Packaging

2.2 Military Standards and Specifications - Guidance Only.

MIL-PRF-63002H 5 Jan 99 Manuals, Technical: Requirements for Preparation of Modification Work Orders

2.3 Handbooks - Guidance Only.

MIL-HDBK-61A 7 Feb 01 Configuration Management Guidance

MIL-HDBK-512A 31 Oct 01 Parts Management

MIL-HDBK-1785 01 Aug 95 System Security Engineering Program Management Requirements

MIL-HDBK-29612A 31 Aug 01 Guidance for Acquisition of Training Data Products and Services (Parts 1-5)

2.4 Other Government Documents. Unless otherwise stated, the following documents may be obtained from the Document Automation and Production Service, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094 or visit <http://dodssp.daps.mil>.

DoD 8510.1-M, 31 July 2000 Department of Defense Information Technology Security Certification and Accreditation Process (DITSCAP)

DoDI 8500.2, 6 Feb 2003 Information Assurance (IA) Implementation

DoDD 4650.1, 8 June 2004 Policy for Management and Use of the Electromagnetic Spectrum

CJCSI 6510.01D, 15 Jun 2004 Information Assurance (IA) and Computer Network Defense (CND)

MCO 5239.2, 18 Nov 2002 Marine Corps Information Assurance Program (MCIAP)

NAVSEAINST 9310.1B 13 Jun 91 Naval Lithium Battery Safety Program

NTIA Manual National Telecommunications and Information Administration

MCO 4855.10B 26 Jan 93 Product Quality Deficiency Reports

DON Document Sep 05 Diminishing Manufacturing Sources and Material Shortages, Contractual Guidance

USMC Training Jul 04

TM S9310-AQ-SAF-010

U.S. Marine Corps Systems Approach
to Training Manual
Technical Manual for Batteries, Navy Lithium
Safety Program Responsibilities and Procedures

(Application for copies of TM S9310-AQ-SAF-010 should be addressed to the Naval Weapons Support Center, Code 3057, Building 36, Crane, IN 47522-5060. The USMC Systems Approach to Training Manual can be obtained from the following website:
www.tecom.usmc.mil/gtb/tme/index.htm)

2.5 Non-Government Documents.

ASME Y14.34M	1996	Associated Lists
ASME Y14.100	2000	Engineering Drawing Practices
ASME Y14.24	1999	Types and Application of Engineering Drawings

(Application for copies of ASME documents should be addressed to the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017-2392 or visit www.asme.org.)

ASTM D3951-98	1998	Standard Practice for Commercial Packaging
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(Application for copies of ASTM D3951-98 should be addressed to the American Society for Testing and Materials, 100 Burr Harbor Drive, West Conshohocken, PA 19428-2959 or visit www.astm.org.)

EIA-649	Aug 98	National Consensus Standard for Configuration Management
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(Application for copies of EIA documents should be addressed to Electronic Industries Alliance Corporate Engineering Department, 2500 Wilson Boulevard, Arlington, VA, 22201 or visit www.eia.org.)

NAS 411	11 Mar 94	Hazardous Materials Management Program
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(Application for copies of NAS 411 should be addressed to the Aerospace Industries Association of America, 1250 Eye Street, NW, Suite 1200, Washington, DC 20005-3924 or visit www.aia-aerospace.org.)

ISO 9001		Quality Management
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3 REQUIREMENTS. The contractor shall perform all tasks required and delineated in this SOW to develop/design, integrate, test, produce, manufacture, deliver and prepare associated engineering, documentation, provide logistic support, provide technical support, provide field service support, provide training, develop technical manuals and deliver the Ground ECM System in the quantity specified in the contract. The contractor shall provide all materials, equipment, hard tooling, personnel, and facilities necessary to manufacture, fabricate, integrate, produce, and deliver the types and quantities of deliverables specified by the contract. Government and contractor(s) shall coordinate, as required, in the design/selection of the antenna(s) and remote control unit. Upon successful completion of First Article Inspection, the Government may exercise contract options for integration, production, fielding

3.1 Program and Data Management.

3.1.1 Program Management. The contractor shall establish and maintain program management practices throughout the period of performance. Program management practices shall provide visibility into the contractors' organization and techniques used in managing the program, specifically subcontractor and data management. Documentation shall be readily available to Government representative(s) during planned visits.

DI-MGMT-80227, Contractor's Progress, Status and Management Report

3.1.2 Subcontractor Management. The contractor is responsible for performance of requirements delineated in this SOW, and shall institute appropriate management actions relative to subcontractor performance. Requirements that are contractually specified shall apply to subcontractor performance; however, the contractor shall be accountable for compliance of subcontractors and is responsible for ensuring all deliverable products comply with the contract requirements.

3.1.3 Data Management. The contractor is responsible for managing all data required under this contract. The contractor, in developing information that will be furnished to the Government, shall make the maximum use of existing data and provide maximum multiple use of technical information. The data system shall provide equal access to data by the Government. The contractor shall ensure all data is centrally available for Government review to ensure continuity of the system fabrication and supporting documentation. If the contractor desires to use electronic means, they shall be compatible with Navy/Marine Corps Internet (NMCI) products or be provided via web-based repository. The Government reserves the right to review all data associated with and developed for the Ground ECM System.

3.1.3.1 Technical Proposal. The contractor's Technical Proposal, as negotiated and accepted by the Government, shall be incorporated by reference into the resultant contract. Information contained in the offeror's proposal regarding organization, staffing, manning levels, and experience or education qualifications of personnel that are to be utilized in performance of this contract shall also be incorporated into the resultant contract. The Contractor shall notify the

Government of any changes in these personnel. In the event of any conflict or ambiguity between the contractor's technical proposal and the Government statement of work, the statement of work shall take precedence.

3.1.3.2 Schedule Planning. The contractor shall maintain an accurate schedule of program events and recommend program schedules, including review and evaluation techniques, which provide for the earliest delivery schedule while at the same time satisfying all requirements in a cost effective manner concurrent with the proposal. The program schedule shall include all significant events, and a Program Planning Milestone Chart shall depict major tasks and events from start to completion of the contract. As a minimum, the program schedule shall include: First Article Inspection schedules, production schedule, contract deliverable timelines, acceptance testing, ILS scheduled events, field support events, and various program reviews. The contractor shall notify the Government in writing of any anticipated or projected work stoppages or delays that will impact schedules.

3.1.3.3 Assignment of Responsibility and Authority. The contractor shall identify the organizational elements responsible for the conduct of the activities delineated in this SOW. Responsibilities shall be assigned and clear lines of authority defined for determining and controlling the resources necessary to satisfy each element of this SOW. The contractor shall designate a Program Manager (PM) who shall possess sufficient corporate authority to manage, direct, execute and control all elements of the contract. The PM shall serve as the primary point of contact between the contractor and the Government, and be responsible for the coordination of all contractor activities related to the contract. The Contractor shall notify the Government of any changes in key personnel.

3.2 Government Furnished Property.

3.2.1 Government Furnished Equipment. The Government will notify the contractor of the availability of Government Furnished Equipment (GFE) or Government Furnished Information (GFI). The contractor's proposals shall list required delivery date of GFE/GFI to meet proposed delivery schedules. The contractor shall provide for accountability, security and storage for the GFE/GFI provided. The contractor shall inspect and inventory all GFP/GFI received and identify and report any discrepancies/deficiencies to include associated costs (materials, labor and test (if applicable)) for repair of the GFE to like new conditions. Upon approval by the Government, the contractor shall conduct the necessary repair actions. The Government will forward an accountability agreement to the contractor for signature on an annual basis.

DI-MGMT-80389B, Receipt of Government Materiel Report
DI-MGMT-80596, Government Furnished Information Deficiency Report

3.3 Meetings, Formal Reviews, Conferences, and Audits.

3.3.1 Contractor Responsibilities. The contractor shall plan, host, attend, coordinate, support and conduct the meetings, formal reviews, conferences, and audits (hereinafter called "reviews").

The reviews shall be conducted at Government and contractor facilities. Reviews requiring demonstration and/or examination of equipment shall be conducted at the contractor's facility. All such reviews shall be included in the program schedule and may be held concurrently with the Government's approval. The contractor shall prepare agendas and conference presentation materials, and provide minutes and reports following each review. The Government reserves the right to cancel any review or to require any review to be scheduled at critical points during the period of performance. Action item documentation, assignment of responsibility for completion and due dates shall be determined prior to adjournment of all reviews. A summary of all action items, responsible parties, and estimated completion dates shall be included with the minutes.

DI-ADMN-81249A, Conference Agenda
DI-ADMN-81250A, Conference Minutes

3.3.2 Post Award Conference. A post award conference shall be held at the contractor's facility within 10 days after contract award. The purpose of this review is for the contractor to review and demonstrate to the Government the management procedures, provide progress assessments, review of technical and other specialty area status, and to establish schedule dates for near term critical meetings/actions. The contractor shall present management, key personnel, and program implementation processes.

3.3.3 In-Process Review. In Process Reviews (IPR) will be held on a monthly basis or as needed basis, at a date and location mutually agreed upon. The Government reserves the right to cancel any review or to require any review to be scheduled during the period of performance. The contractor's progress, management, technical support services (if any), integrated logistics support, administrative, assurance of compliance with contract requirements, program status, funding, problem identification and resolutions shall be agenda items. Actual versus expected performance of each area shall be addressed. The contractor shall prepare presentation materials providing an overview of all agenda items.

3.4 System Engineering. The contractor shall establish and maintain an effective system engineering program throughout the design, testing, production, integration and support processes. The systems engineering program shall include the following tasks:

3.4.1 Reviews.

3.4.1.1 Preliminary Design Review. The Preliminary Design Review (PDR) shall be used to resolve any issues in the Performance Specification, however it will not be used as an opportunity to impose additional requirements nor impact the detailed internal design of the primary unit (jammer). The PDR shall include each equipment, hardware, and software configuration items, related peculiar support equipment and vehicle installation kits. The contractor shall show and/or demonstrate that evaluations of materials, lead times, tooling, fabrication techniques, assembly methods, test equipment, skills, processes, and inspection techniques have been accomplished for each equipment, hardware, and software configuration items and related support equipment, and the producibility objectives have been achieved. The reviews will evaluate the progress, technical adequacy, and risk resolution (on a technical, cost, and schedule basis) of the integration design and will assess the technical risk associated with the

selected manufacturing (assembly) methods (processes). The PDR shall identify the contractor's approach to satisfying applicable information assurance requirements. The PDR also shall identify all single source, sole source, and diminishing source(s). The PDR may be held concurrently with the Critical Design Review (CDR).

3.4.1.2 Critical Design Review. The Critical Design Review (CDR) shall present a final system design that incorporates all deficiencies identified from the PDR. The CDR shall be a detailed review of the system design for the Ground ECM System and all data items required by the contract. The contractor shall provide a trace capable of demonstrating the design furnished at CDR implements the performance requirements of the Ground ECM System, and present the methods used to verify and validate the design. An assessment of the results of producibility analyses conducted on system hardware will be made to ensure detailed producibility design solutions satisfy the established requirements. **The CDR may be held concurrent with the PDR.** Topics covered at the CDR shall include, but not be limited to the following:

- a. Evaluation of Program Plan indicating Design, Fabrication, Test Phases and Specification/Interface specification/drawings
- b. Evaluation of System Design
- c. Information Assurance
- d. EMI
- e. Reliability/Maintainability Analysis
- f. Environment, Safety and Health (ESH) Analysis
- g. NBC Survivability
- h. Packaging/Handling/Storage/Transportability
- i. Testing documents
- j. Interoperability
- k. Supportability

3.4.1.3 Production Readiness Review. The Production Readiness Review (PRR) shall be performed to formally evaluate the contractor's production readiness, identify existing or projected manufacturing problems, and areas of risk

3.4.2 Open Systems Design. Where appropriate, and to the extent allowed by non-developmental designs, the contractor shall use an open systems approach as the preferred design strategy to: (1) choose commercially supported specifications and standards for selected system interfaces (external, internal, functional and physical), products, practices, and tools; and (2) build open system architectures as the primary foundation in developing the proposed system and its elements. Open systems is a system design philosophy that uses widely-accepted, industry-approved interface standards that will allow technological upgrades in system components to be easily inserted in the future. The contractor shall identify the means for ensuring conformance to open systems standards and profiles throughout the development process and provide evidence that the process being used to manage the open systems approach support open system benefits such as portability, interoperability, technology insertion, vendor independence, reusability, scalability, and commercial product based maintainability. Deviations

from this approach shall be identified at the PDR/CDR.

3.4.3 Corrosion Prevention and Control. The contractor shall develop a corrosion prevention and control strategy that addresses the contractor's specific measures to be implemented for equipment/items provided under this contract. The contractor's specific measures to be implemented shall be presented during the PDR/CDR. Information regarding DoD requirements for corrosion prevention can be found at www.dodcorrosionexchange.org.

3.4.4 Human Systems Integration. The contractor shall apply effective Human Systems Integration (HSI) principles during Ground ECM System design, production and integration for equipment/items provided under this contract. The contractor shall ensure manpower, personnel, training, personnel survivability and habitability, and human factors engineering requirements have been incorporated into the layout, design, and arrangement of equipment having an operator or maintainer interface. The contractor shall also integrate HSI principles into their systems safety program. To the extent allowed by non-developmental equipment designs, the HSI program shall ensure the Ground ECM System can be operated, maintained, supported and controlled in its intended environment, including Nuclear, Biological, and Chemical Mission Oriented Protective Posture IV (MOPP IV).

a. Manpower. The manpower requirements shall ensure that the most efficient and cost effective use of manpower and contractor support is being utilized and identify any cost or schedule issues that could adversely impact the Ground ECM System program.

b. Training. The contractor shall apply principles that will enhance the user's capabilities and reduce individual and collective training costs. The contractor shall maximize the use of new learning techniques, simulation technology, embedded training, and instrumentation systems to provide anytime, anyplace training that reduces the demand on the training establishment and reduces Total Ownership Cost (TOC).

c. Personnel Survivability and Habitability. For systems with missions that might expose it to combat threats, the contractor shall ensure personnel survivability issues including protection against fratricide and detection; the integrity of the crew compartment; and provisions for rapid egress when the system is severely damaged or destroyed have been incorporated into the design and integration of the Ground ECM System. The contractor shall also ensure habitability requirements that are necessary for meeting and sustaining system performance, avoiding personnel retention problems, maintaining quality of life, and minimizing total system costs have been incorporated into the Ground ECM System.

d. Human Factors Engineering. Human factors design requirements shall be established to develop effective man-machine interfaces and preclude system characteristics that require extensive cognitive, physical, or sensory skills, or complex manpower or training intensive tasks or result in frequent or critical errors.

3.4.5 Reliability and Maintainability Program. The contractor shall execute a tailored Reliability and Maintainability (R&M) program to ensure the Ground ECM System meets supportability and sustainment objectives. The system shall be monitored throughout the entire period of performance to identify and assess any changes, which would impact product data, sustainment planning and sustainment execution derived from R&M analysis. The program shall encompass all aspects of reliability with respect to the selection of components, predictions, and

testing. The contractor shall maintain and make available to the Government all R&M data on any vendor or subcontractor supplied item and shall inform the Government of any part or component, which will degrade system R&M requirements. Pre-existing R&M data shall be used to the maximum extent possible. The R&M program shall minimally include the following tasks:

3.4.5.1 Procedures and Controls. The contractor shall maintain procedures and controls, which ensure products, obtained from suppliers, vendors and subcontractors meet reliability requirements. The contractor shall establish, implement, and maintain documented procedures, which detect and/or preclude the use of substandard or counterfeit parts in the production process, and impose similar requirements on subcontractors.

3.4.5.2 Reliability Predictions. The contractor shall provide reliability predictions based on a defined configuration baseline. Reliability data shall be predicted and/or adjusted to apply a ground mobile environment and shall account for end-user environmental conditions, including the affects of sun load conditions. Where equipment reliability history data exists, this data shall take precedence over predicted data. The predictions shall be allocated down to the lowest indenture level and updated each time design or mission profile changes significantly impact the Ground ECM System. The contractor shall prepare and deliver a top-down indented reliability report to include the identification of the Mean-Time-Between Failure (MTBF) for each maintenance-worthy item in addition to identification of the system MTBF using Best Commercial Practices (BCP).

DI-RELI-81497, Reliability Prediction and Documentation of Supporting Data

3.4.5.3 Failure Reporting, Analysis, and Corrective Action System (FRACAS). The contractor shall develop a closed loop failure reporting system, procedures for analysis of failures to determine cause, and documentation for recording corrective actions taken. The Failure Reporting, Analysis, and Corrective Action System (FRACAS) shall include uniform failure reporting, failure analysis reports and corrective actions. All hardware/software failures from system level down to the subassembly level shall be subject to these requirements throughout the testing period including production and integration testing, and during the post-production support period (to include warranty, depot and Contractor Logistics Support (CLS) period). The contractor shall execute a single FRACAS database to encompass in-factory (testing) and in-field (contractor logistics support) failure reporting. The contractor shall notify the Government of any failure which impacts cost, schedule, producibility, supportability, cost of ownership or interface/performance. All failures, critical and non-critical, shall be reported monthly to the Government for review and acceptance. All failures shall be categorized as in-field or in-factory failures. System operational hours (Time Meter readings) shall be identified for each failure occurrence and included in the FRACAS data structure. Time meter(s) may be integrated into the transit/storage/shipping container. Methodology for acquiring time meter readings will be discussed during the Post Award Conference and be mutually agreeable to both the Government and contractor. The contractor shall assess the failure data for the identification of trends (5 or more failures of the same root cause) and identify those trends in the monthly report. Each FRACAS report shall identify the root cause and detail the remedial action taken including parts replaced. The Government reserves the right to conduct a Failure Review Board (FRB)

throughout the contracted period of performance.

DI-RELI-80255, Failure Summary and Analysis Report

3.4.5.4 Environmental Stress Screening (ESS). The contractor shall implement an Environmental Stress Screening (ESS) program as part of each system acceptance. At a minimum, the contractor shall environmentally screen each system to eliminate infant mortality of components, assemblies and units, and to validate the system will achieve Mission Availability/Operational Availability in its intended environment. The ESS test scenario(s) shall replicate the end-user thermal environment. The contractor shall prepare and ESS test procedure using BCP.

DI-NDTI-80603, Test Procedure - ESS

3.4.5.5 Failure Modes, Effects and Criticality Analysis (FMECA). The contractor shall prepare a Failure Modes, Effects and Criticality Analysis (FMECA) to identify system failure modes. Failure modes resolved by inherent Built-in Test (BIT) capabilities shall be identified in the analysis. For all failure modes not resolved by BIT, this analysis shall identify the Single Point of Failure (SPOF) or fault group maintenance-worthy items applicable to the mode. The failure effects to the system shall be identified in addition to the criticality level of each failure (inoperable or degraded). In the event of a degraded effect, the contractor shall identify the operational/inoperable functional capabilities. FMECA findings shall be applied during the conduct of maintainability task analysis. The contractor shall prepare a FMECA report using BCP.

DI-MISC-80508A, Technical Report – Study/Services (FMECA)

3.4.5.6 Maintainability Task List. The contractor shall prepare an organizational Task List (TL) using inherent equipment data, operational task data, and results of the FMECA. The TL shall incorporate operational tasks, preventive maintenance tasks, fault isolation tasks, and corrective maintenance tasks using BCP. The TL shall provide source data to the requirements presented in paragraph 3.13.1.1 of this document.

DI-MISC-80508A, Technical Report – Study/Services (TL)

3.4.5.7 Maintainability Task Analysis. The contractor shall prepare a Task Analysis (TA) based upon the Task List. The contractor shall identify all Tools and Test Equipment (T&TE) and consumables required to maintain the Ground ECM System, detail step-by-step procedures, calculate the Mean Time To Repair (MTTR) for each task, and validate accessibility to maintenance-worthy end items. In the event where special purpose T&TE are identified as required for maintenance of the Ground ECM System, the Government shall be notified upon identification. A system-level MTTR and Maximum Time To Repair (MaxTTR) shall be computed and included in the TA report. The contractor shall prepare the TA report using BCP.

DI-MISC-80508A, Technical Report – Study/Services (TA)

3.4.6 Electromagnetic Interference Testing. The contractor shall document the procedures

and test results of the Electromagnetic Interference (EMI) during First Article Inspection and any follow-on conformance test/Production Acceptance Testing (PAT). The contractor shall also discuss in the test report the resolution(s)/EMI fix(es) for all of the EMI performance requirements for which the Ground ECM System was not in compliance.

3.4.7 Electromagnetic Radiation. The Contractor shall provide procedures/process for ensuring operators and other personnel and on-board weapons/systems are protected from the effects of electromagnetic radiation to the extent allowed by the Government/contractor agreed to common antenna(s). Electromagnetic radiation effects shall be documented in the Safety Assessment Report (SAR).

3.4.8 Radio Frequency Spectrum Compatibility. The Ground ECM System and subsystems shall comply with DoD, National and International regulations for the use of the electromagnetic spectrum (such as the NTIA Manual and DoDD 4650.1). The contractor shall ensure that Ground ECM System operates using the assigned or allocated frequencies. The contractor shall submit the data required to complete DD Form 1494 for obtaining an approved frequency assignment for the Ground ECM System.

3.4.9 Quality Management System. The contractor's quality management system shall ensure product conformation to contractual requirements. The contractor shall have implemented, documented, and have previously demonstrated the ability to maintain the quality management system to be used on the contract. The contractor shall make available all quality management documentation for the Government to review upon request. The contractor shall comply with ISO 9001 Quality System and shall provide a copy of the Level I and Level II procedures as part of the proposal.

3.5 Environmental Safety and Health.

3.5.1 System Safety. The contractor shall identify and evaluate safety and health hazards, define risk levels, and determine the probability and severity of all hazards associated with development, use, and disposal of the system in accordance with MIL-STD-882D. Residual risks will be evaluated by the Government in accordance with Tables A-I through A-IV of MIL-STD-882D and accepted as appropriate. The contractor must identify all explosive safety risks in the Safety Assessment Report (SAR).

3.5.1.1 Safety Assessment. The contractor shall perform and document a Safety Assessment to identify all safety features of the hardware, software, and system design and to identify procedural, hardware and software related hazards that may be present in the Ground ECM System including specific procedural controls and precautions that should be followed. In addition, the contractor shall make recommendations applicable to hazards at the interface of his system with the other system(s) as contractually required.

3.5.1.2 Safety Assessment Report. The contractor shall provide a Safety Assessment Report

(SAR) that documents the Safety Assessment and clearly identifies any residual risks of the Ground ECM System. The SAR shall include a signed statement that all identified hazards have been eliminated or their associated risks controlled to acceptable levels and that the Ground ECM System is ready to test, field and operate. In addition, the contractor shall make recommendations applicable to hazards at the interface of this Ground ECM System with other systems. All safety precautions shall be documented within supportability data products.

DI-SAFT-80102B, Safety Assessment Report (SAR)

3.5.1.3 System Hazard Analysis. The contractor shall perform and document a System Hazard Analysis (SHA) to identify hazards and assess the risk of the total system design, including software, batteries and specifically of the subsystem interfaces. The SHA shall verify system compliance with safety requirements contained in system specifications; identify previously unidentified hazards associated with the subsystem interfaces and system functional faults; and recommend actions necessary to eliminate identified hazards and/or control their associated risk to acceptable levels. The SHA shall include any selected hazards, hazardous areas, or other specific items to be examined or excluded.

3.5.1.4 System Safety Hazard Analysis Report. The contractor shall provide a System Safety Hazard Analysis (SSHA) report to the Government and identify any residual hazards that require Government acceptance.

DI-SAFT-80101B, System Safety Hazard Analysis (SSHA) Report

3.5.2 Lithium Batteries.

3.5.2.1 Lithium Battery Safety Qualification. If other than government standard/approved lithium batteries are used in the design of the Ground ECM System, the contractor shall assist the Government in developing a safety data package that shall demonstrate the validity of the lithium battery selection, to the Naval Ordnance Safety and Security Activity (NOSSA). NAVSEAINST 9310.1B, Naval Lithium Battery Safety Program requires that the Government conduct safety qualification tests as specified in Chapter 2 of TM S9310-AQ-SAF-010. The pass/fail criteria specified in the TM are platform specific and must be applied to the overall system.

DI-MISC-80508A, Technical Report/ Study Services (LB)

3.5.2.2 Lithium Battery Safety Assessment. The contractor shall document the lithium battery safety assessment in the Safety Assessment Report (SAR). The SAR shall include the lithium battery risk assessment, recommendations, procedures and other corrective actions to reduce hazards to an acceptable level.

3.5.3 Hazardous Materials Management Program. The contractor shall implement a Hazardous Materials Management Program (HMMP) in accordance with or similar to NAS 411. The contractor shall avoid the use of toxic chemicals, hazardous materials and ozone depleting substances in the design, operational support and disposal of the Ground ECM System.

Manufacturing processes that will have a detrimental impact upon the environment shall be avoided. More information on chemicals and hazardous materials to be avoided can be obtained from the Environmental Protection Agency (EPA). The contractor shall make available Material Safety Data Sheets (MSDS) to the Government for review.

3.5.4 Environmental Safety and Occupational Health. The contractor shall provide the Government with an assessment of applicable Environmental Safety and Occupational Health (ESOH) laws and regulations, identifying any potential compliance issues.

DI-MISC-80508A, Technical Report, Study/Services (ESOH)

3.6 Configuration Management (CM) Process. The contractor shall implement and maintain a configuration management process, as outlined in the proposal, for the control of all configuration items representing or comprising the Ground ECM System and various platform configurations to ensure each item delivered conforms to the approved CM product baseline. The principles contained in EIA-649 and MIL-HDBK-61A may be used for guidance. The contractor's CM process shall consist of configuration identification, configuration control, configuration status accounting, and configuration audits. The contractor shall notify the Government of any changes at the contractor's facility, which affect the contractor's established CM process. CM requirements shall be flowed down to subcontractors.

3.6.1 Configuration Identification. The contractor shall participate in a joint Government/contractor integrated team to designate configuration items (CIs) to be managed by the Government and those to be managed by the contractor. For those CIs that have been identified for Government control, the contractor shall provide form, fit, function, and interface documentation necessary for configuration status accounting.

3.6.2 Configuration Management Meetings/Audits. **If acceptable to the Contractor and Government, the Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA) will be conducted concurrently.**

3.6.2.1 Functional Configuration Audit. The Functional Configuration Audit (FCA) shall be performed to verify the Ground ECM System and its configuration items (CIs) are accurate, complete, and compatible, and the CI has achieved the performance and functional characteristics delineated in the Performance Specification. The Government and the contractor shall conduct the FCA jointly, at a time and place mutually agreed to, with the Government chairing the audit. As part of the configuration management plan/process submitted with the proposal, the contractor shall provide an approach and proposed schedule for conducting the FCA and identification of the CIs/CSCIs to be audited. The contractor shall participate and assist the Government in the development of the FCA, using the guidelines contained in MIL-HDBK-61A, section 8. The contractor shall be responsible for providing the system to be audited, facilities, personnel, documentation (including drawings), and other support as may be required. The contractor shall develop a configuration audit summary report after each audit. The contractor shall correct all audit discrepancies as documented in the configuration audit summary reports. The functional baseline will be validated upon completion of the FCA and resolution of audit discrepancies.

DI-CMAN-81022C, Configuration Audit Summary Report (Functional)

3.6.2.2 Physical Configuration Audit. The Physical Configuration Audit (PCA) shall be performed to verify the Ground ECM System and its configuration items (CIs) are accurate, complete, compatible, and that the CI has achieved the performance and functional characteristics defined in the functional configuration baseline. The Government and the contractor shall conduct the PCA jointly, at a time and place mutually agreed to, with the Government chairing the audit. The PCA shall verify the drawings reflect the "as-built" configuration of all newly developed or modified portions of the system; accurate form, fit, function information is provided on control drawings for nondevelopmental/commercial off-the-shelf items; and confirm the drawings accurately represent the "as-built" production configuration. Whenever possible, the PCA shall be conducted incrementally, concurrent with hardware fabrication and assembly of the first production system. The contractor shall participate and assist the Government in the development of the FCA/PCA, using the guidelines contained in MIL-HDBK-61A, section 8. The contractor shall document the results of the PCA after each audit and shall correct all audit discrepancies documented in the configuration audit summary reports. In the event the Government finds evidence the drawings and/or documents do not adequately represent the equipment, production shall cease until all discrepancies are corrected and the Government approves the configuration audit summary report. The product baseline will be established upon completion of the PCA and resolution of audit discrepancies.

DI-CMAN-81022C, Configuration Audit Summary Report (Physical)

3.6.3 Parts Management Program. The contractor shall establish and maintain a Parts Management Program that will ensure the use of parts that meet contractual requirements, reduce proliferation of parts through standardization and enhance equipment reliability and supportability, and proactively manage obsolescence. The procedures, planning and all other documentation media and data that define the Parts Management Program and the parts selected for use shall be made available to the Government for their review and use. The contractor may utilize MIL-HDBK-512A as a guide for developing and maintaining the parts management program.

3.6.3.1 Diminishing Manufacturing Sources and Material Shortages (DMSMS). The contractor shall implement Diminishing Manufacturing Sources and Material Shortages (DMSMS) and obsolescence planning to mitigate production/system integration and sustainment risks. The contractor shall participate in the Government/Industry Data Exchange Program (GIDEP). Proactive application of GIDEP is encouraged.

3.6.3.2 DMSMS Planning. The contractor shall prepare a DMSMS Plan. The plan shall identify CI risks, project and identify when the CI risk may affect the configuration baseline and recommend risk mitigation action(s). The contractor shall deliver to the Government a Bill of Materials (BOM) to the lowest indenture level documented within the configuration management system.

DI-MISC-80508A, Technical Report, Study/Services (DMSMS Plan)

**DI-SESS-81656, Source Data for Forecasting Diminishing Manufacturing Sources
and Material Shortages (DMSMS)**

3.6.4 Baseline Management. The contractor shall be responsible for maintaining the currency and accuracy of the established baseline to ensure form, fit, function and interface of the Ground ECM System. The contractor shall establish definitive processes, which identify how the baseline will be managed/maintained. These processes shall be defined in the contractor's configuration management process.. The Government shall be notified of any changes to the contractor's processes/procedures.

3.6.4.1 Product Baseline. The product baseline will be established upon successful completion of First Article Inspection (FAI). Any Class I (hardware, software or firmware) changes proposed by the contractor that impact the product baseline, cost or schedule shall require Government approval prior to implementation. The contractor shall make changes to the product baseline only through the Engineering Change Proposal (ECP) process. The contractor shall manage the development, generation or alternations to the waveforms; release of specific waveforms require Government approval. Process for managing waveform data will be defined and mutually agreed to between the Government and Contractor at the CDR.

3.6.5 Configuration Control. The contractor shall maintain configuration control methods and procedures which maintain the integrity and traceability of an established baseline. Changes to established baselines shall only be made after Government approval of Engineering Change Proposals (ECP) and Request for Deviation (RFD). Sufficient supporting data to evaluate the proposed change, such as drawings, supplemental drawings, sketches, specifications, or manufacturer's data sheets, shall be submitted with ECP's and RFD's. Changes shall be identified to the affected assembly serial number, or if not part of an assembly, to the affected equipment serial number.

3.6.5.1 Engineering Release System. The contractor shall maintain an engineering release system and shall use the system to issue configuration documentation to functional activities (e.g. manufacturing, logistics, quality control, engineering) and to authorize the use of configuration documentation associated with an approved configuration. The contractor shall submit an Engineering Release Record (ERR) to release new or revised configuration documentation to the Government for approval. The contractor shall ensure all Government approved ERR information/documentation is reflected in the Configuration Status Accounting (CSA) database.

DI-CMAN-80463C, Engineering Release Record (ERR)

3.6.5.2 Engineering Change Proposals. Engineering Change Proposals (ECP) shall be submitted by the contractor, and shall be limited to those, which are necessary or offer significant benefit to the Government. MIL-HDBK-61A, Table 6-2 provides guidance concerning the classification of ECPs. Class I ECPs shall be submitted when changes are required to: (a) Correct deficiencies that impact form, fit, function or interface; (b) Add or modify interface or interoperability requirements; (c) Make a significant and measurable

effectiveness change in the operational capabilities or logistics supportability of the system; (d) Effect substantial life cycle costs/savings; and (e) Prevent slippage in an approved production schedule. Class II ECPs shall be submitted by the contractor to the Administrative Contracting Officer (ACO) for approval for those engineering changes, which impacts none of the factors listed above. As a minimum, Class I ECPs shall contain the following information: (a) Date prepared; (b) Originator; (c) ECP Classification; (d) ECP Number; (e) Reason/need for change; (f) System designation (nomenclature, model, P/N); (g) Name of part (or lowest assembly) affected to include part numbers; (h) Baselines affected (to include drawings, specifications, CAGE, revision level, etc.); (i) Title of change; (j) Description of change; (k) Effect on interfaces (Interchangeability and Interoperability); (l) Total costs/savings w/breakout; (m) Retrofit information; (n) Ozone Depleting Substances; (o) Impact on any engineering disciplines (such as quality, environmental, safety, health, reliability, maintainability, etc.); (p) Justification for change; (q) Priority of change; (r) Impacts to any logistics support elements (such as software, manuals, spares, tools, etc.) being utilized by Government personnel in support of the product; and (s) Alternatives evaluated or considered.

DI-CMAN-80639C, Engineering Change Proposal (ECP)

3.6.5.3 Requests for Deviation. The contractor shall process Requests for Deviation (RFD) from current approved configuration documentation. Authorized deviations are a temporary departure from the requirements and do not constitute a change in an approved baseline. Submission of recurring deviations is discouraged and shall be minimized. Where it is determined that a change should be permanent, the contractor shall process an Engineering Change Proposal. MIL-HDBK-61A, paragraph 6.3.1a provides guidance concerning the classification of RFDs. As a minimum, the RFD shall contain the following information: (a) Date prepared; (b) Originator; (c) RFD Classification (critical, major or minor); (d) Designation for deviation (model/type, CAGE code, system designation, and deviation number); (e) Class of deviation; (f) Part Number affected; (g) Cost/Price data; (h) Effectivity; (i) Description of deviation; (j) Need for deviation; (k) Effect on delivery schedule; (l) Recommended corrective action; and (m) Alternatives evaluated.

DI-CMAN-80640C, Request for Deviation (RFD)

3.6.5.4 Notices of Revision. The contractor shall generate and submit Notices of Revision (NOR) concurrently with Engineering Change Proposals (ECPs) when technical documentation controlled by another contractor or Government agency requires changes following approval of an ECP. As a minimum, the NOR shall contain the following information: (a) Date; (b) CAGE code; (c) NOR number; (d) Document number; (e) Title of document; (f) Revision letter (current and new), related ECP number; (g) Configuration item (or system) to which ECP applies; and (h) Description of revision.

DI-CMAN-80642C, Notice of Revision (NOR)

3.6.5.5 Notification of Changes to Commercial Equipment, Software and Firmware. The contractor shall submit notification to the Government when changes occur to commercial equipment or software/firmware, which is being procured or fabricated by the contractor off-the-

shelf, and the Government does not control the developer's design.

DI-MISC-80508A, Technical Report - Study/Services (CN)

3.6.6 Configuration Status Accounting. The contractor shall establish and maintain a Configuration Status Accounting (CSA) program, which represents the configuration of the Ground ECM System. The CSA system shall provide baseline documentation, delineate the status of changes to the baseline, record implementation of approved changes, and provide an audit trail for engineering changes, drawings and associated lists, software, and other related technical documentation. The CSA system shall provide status accounting reports on all products in the baseline. All approved changes, which have been installed in the Ground ECM System, shall be recorded.

DI-CMAN-81253A, Configuration Status Accounting Information

3.6.6.1 Item Unique Identification (UID). The contractor shall implement item Unique Identification (UID) marking, as defined in MIL-STD-130L(1) and DoD Guide to Uniquely Identifying Tangible Items. The two-dimensional item UID marking shall be incorporated into existing data plates, shall be machine-readable with common optical scanning devices and be accompanied by the corresponding human readable markings when practical.

3.6.6.2 Item Unique Identification (UID) Plan. The contractor shall develop a plan that identifies all items requiring UID markings in accordance with DFARS 252.211-7003 to include maintenance-worthy subassemblies, components and parts below \$5,000. The plan shall also describe the marking process and identify marking locations for each item identified.

DI-MISC-80508A, Technical Report – Study/Services (UID Plan)

3.6.6.3 UID Bar Code Identification Report. The contractor shall provide a Bar Code Identification Report for UID marked items.

DI-MGMT-80177A, Bar Code Identification Report - UID

3.6.7 Engineering Drawings. The contractor shall provide a complete Product Level Drawing Package. The Product Drawing Package shall comply with ANSI Y14.100, ASME Y14.24 and ASME Y14.34M. These product drawings shall include assembly drawings and detail drawings down to the piece part for items designed and developed at government expense. The assembly and detail drawings shall provide necessary design, engineering, manufacturing and quality

assurance requirements necessary to enable the procurement or manufacture of an interchangeable item, which duplicates the physical and performance characteristics of the original product, without additional design engineering or recourse to the original design activity. The product drawings shall also include control drawings for all commercial off the shelf (COTS) items that do not conform to a recognized government or industry specifications, non-developmental items (NDI), and items developed at private expense for which the government has not acquired unlimited rights. These control drawings shall provide the applicable performance specification form, fit, function and interface information needed for competitive re-procurement of that item or an interchangeable item.

DI-SESS-81001C, Product Drawings and Associated Lists

3.7 Testing/Verification.

3.7.1 Master Test Plan. The contractor's proposal shall define a master test plan (MTP) that encompasses all testing. The MTP shall be the top-level working document that ties all contractor and subcontracting test activities together. The following areas shall be emphasized in the MTP:

- a. Test event
- b. Purpose of the test
- c. Date of test start and end
- d. Location of the test
- e. Need for Government test support (i.e., personnel, facilities, etc.)
- f. Overall schedule of test
- g. Interoperability analysis/testing

Revisions to the MTP may be necessary between milestones if the program undergoes significant changes and platform configurations. The Government will advise the contractor whenever significant program changes are necessary. The Government shall reserve the right to review and provide comments to the MTP and all applicable updates.

3.7.1.1 Government Test Facilities. If required by the contractor in the MTP, the contractor shall notify the Government of the need for Government test facilities in order to conduct testing. Government test facilities, such as laboratories shall be requested well in advance of their need. The DoD Major Range and Test Facilities Base (MRTFB) may be used to the maximum extent possible for assistance in requesting test facilities.

3.7.2 Contractor Support to Government Testing (OPTION). The contractor shall support Government test efforts by providing on-site personnel and in-house support. The contractor shall support each Government test by providing on-site maintenance, training, logistics, and technical support for the period duration of the test. Test support requirements will be tailored to the test being conducted. The contractor shall provide all required organizational, intermediate, and depot level support equipment and spare parts needed to maintain the Ground ECM System and ancillary equipment during each test.

3.7.3 Test Readiness Review. The contractor shall conduct a Test Readiness Review (TRR) prior to the First Article Inspection. The purpose of the TRR is for the contractor to conduct a formal review of the contractor's readiness for testing. Results of the TRR shall be documented and be made available to the Government immediately following the review and prior to the First Article Inspection. Emphasis shall be placed on system requirements using test results and their analysis. Remaining "problem areas" and their projected "get-well" dates shall be addressed.

3.7.4 First Article Inspection. The contractor shall develop and implement First Article Inspection (FAI) procedures to demonstrate the adequacy and suitability of the contractor's production processes and procedures for achieving the requirements in the Performance Specification. The Government will provide test procedures for paragraphs 4.4.1 through 4.4.4 of the Performance Specification to be incorporated into the FAI procedures. The results of the test shall demonstrate the manufacturing and production techniques employed do not negatively impact established requirements.

3.7.4.1 System Integration/Qualification Test for Vehicle Integration Kits (VIKs). As part of FAI, the contractor shall demonstrate the adequacy and suitability of the contractor's integration processes and procedures for achieving the performance inherent in the design of the VIKs for each platform type. The results of the test shall demonstrate the techniques and processes employed do not degrade the design and meet all requirements in the Performance Specification. If the approved system is not destroyed in testing, the contractor may refurbish and deliver the approved system as part of the contract quantity, provided it meets production acceptance test requirements.

DI-NDTI-80603, Test Procedure (FAI)
DI-NDTI-80809B, Test/Inspection Report (FAI)

3.7.4.2 Nonconformance of First Article. In the event the first articles fail to meet requirements as described in the Performance Specification, the contractor shall submit plans for the corrective action or disposition to the Government for approval. Minor failures may be corrected during the testing, with Government approval. Production shall not be initiated without Government approval.

3.7.4.3 First Article Refurbishment. If the approved first article is not destroyed in testing, the contractor shall refurbish first article units as part of the first article effort, and deliver these units as part of the contract quantity, provided they meet production acceptance test requirements.

3.7.5 Production Acceptance Test. The contractor shall develop and implement Production Acceptance Test (PAT) procedures to demonstrate the adequacy and suitability of the contractor's production processes and procedures for achieving the performance inherent in the design. The results of the test shall demonstrate the system meets all requirements identified in the Performance Specification. The contractor shall conduct testing, which will ensure that the manufacturing processes, equipment, and procedures are effective. These tests shall be conducted on a number of samples taken at random from the first production lot, and will be repeated if the manufacturing process or design change significantly, or when a second source is brought on line.

DI-NDTI-80603, Test Procedure (PAT)
DI-NDTI-80809B, Test/Inspection Report (PAT)

3.7.6 Software Test (OPTION). The contractor shall plan and conduct a software stress test. The contractor shall determine the scope of software stress testing required to ensure the software meets all specified technical, operational, and performance requirements and the acceptance criteria. Test data shall include normal and abnormal, legal and illegal inputs. All test plans and procedures shall be subject to review and approval by the Government. Test results shall be provided to the Government.

DI-NDTI-80809B, Test/Inspection Report (S/W) - OPTION

3.8 Integrated Logistic Support. The contractor shall conduct a tailored Integrated Logistics Support (ILS) effort is an integral part of the development, integration and post production processes to define the range and depth of the required support, and address all applicable and related elements of logistics.

3.8.1 Contractor Logistics Support (CLS). The contractor shall provide recommendation for CLS as part of the proposal. The contractor shall administer and provide logistics support services necessary to maintain the operational readiness of the Ground ECM System throughout its life cycle. The operational phase shall include the following:

- a. Maintenance
 - * Organizational Maintenance
 - * Intermediate Maintenance
 - * Depot Maintenance/Rebuild
- b. Supply Chain Management
- c. Spares Management, replenishment, and DMSMS
- d. Component Exchange
- e. Calibration
- f. Maintenance Float
- g. Technical Assistance
- h. Failure Analysis (FRACAS/PQDR)
- i. Warranty Administration
- j. Training: Operation, safety, maintenance
- k. Field Service Representative (FSR) Support and Administration

3.8.1.1 CLS Planning. The contractor's CLS Planning Document shall address all aspects of the contractor's plan to provide installation, training, maintenance, hardware, software and firmware support; FSR support and presence at two (2) CONUS maintenance/training locations, one (1) deployed Installation location, one (1) deployed Software modification/maintenance

(b)(2)

(b)(2)

Additionally, this document shall address, supply chain management, spares management and contractor depot maintenance approach. FSR deployment to the CENTCOM AOR must comply with the MARCORSYSCOM Contractor Deployment Processing procedures, Deployment Responsibilities Checklist, the Mobilization Support Battalion Deployment Readiness Checklist for Civilian Contractors and receive Invitational Travel Orders. Deploying contractors must process through either the II MEF (Camp Lejeune) or I MEF (Camp Pendleton) locations (5 day process), accomplish Anti-Terrorism briefing, and perform in-country processing at Camp Doha Kuwait. Kuwait requires a Visa. Contractor's planning will include the Support Site at Camp Al Taqaddam per the MARCORSYSCOM letter of 18 Aug 2005. Contractor FSR's are responsible for providing routine, non-secure communication equipment/capability (for example: iridium phones). Until the Ground ECM System acquires an Interim Authority to Operate (IATO), the contractor shall provide a U.S. Government approved intra-theater encrypted communications system/network.

DI-MISC-80508A, Technical Report – Study/Services (CLS)

3.8.1.2 Field Representative (OPTION). The Contractor will function as the single field representative/point of contact (i.e. single sustainment source for deployed IED assets of all types) and will perform all paragraph 3.8.1 support services for associated and similar IED Jamming systems obtained by the Government and provided to the Operating Forces in the CENTCOM AOR, CONUS and OCONUS locations. This includes, but is not limited to, other IED Countermeasures Equipment known as ICE, Modified ICE, H2K, CREW-2 and other devices acquired, obtained or supplied to military units. Contractor shall provide a plan that addresses the approach to support these items that includes FSR, Supply Chain Management, Spares Management and OEM repair.

DI-MISC-80508A, Technical Report – Study/Services (CLS) – OPTION

3.8.2 Standard Commercial Warranty. The contractor shall propose a standard commercial warranty covering workmanship, materials, design, and all essential performance characteristics that would effect the Performance Specification requirements of the Ground ECM System.

3.8.2.1 Warranty Extension (OPTION).

(b)(2)

DI-MISC-80508A, Technical Report – Study/Services (WET) – OPTION

3.8.3 Reliability-Centered Maintenance (RCM) (OPTION). The contractor shall assess the system configuration items for application of preventative measures. The contractor shall identify inherent maintenance tasks derived from vendor data. Derived from the FMECA, additional maintenance-worthy hardware configuration items may be defined. The contractor shall conduct a trade-off assessment of each maintenance-worthy hardware items failure mode, effects, criticality and consequences to determine if preventative measures will mitigate the failure occurrence and enhance mission and/or operational availability. All identified preventative measures shall be identified within the maintainability task list prepared as part of the maintainability analyses.

3.8.4 Level of Repair Analysis (LORA) (OPTION). The contractor shall examine the Military Occupational Specialty (MOS) skill set(s) and conduct a comparative non-economic analysis against the maintainability task list. (TL). The contractor shall make recommendations identifying tasks to be performed by the Organizational Level versus Intermediate (CLS) and the Depot Level along with supporting rationale. Deployment positions and mission/operational availability shall be considered. The contractor shall use BCP.

DI-MISC-80508A, Technical Report – Study/Services (LORA) - OPTION

3.8.5 Performance-Based Logistics (PBL) (OPTION). The contractor shall propose Performance-Based Logistics (PBL) strategies. A Business Case Analysis (BCA) shall be prepared presenting economical and non-economical analyses supporting PBL strategies to support an Operational Availability (Ao) of 98% (0.98). The BCA shall address a PBL approach versus a standard support approach. PBL guidance may be found at the Office of the Secretary of Defense (OSD) website located at <http://www.acq.osd.mil>.

DI-MISC-80508A, Technical Report – Study/Services (PBL BCA) – OPTION

3.8.6 Recommended Buy List (RBL). The contractor shall prepare a Recommended Buy List (RBL) for spares covering the first two years of fielding. Minimum data to be presented in the RBL include, but are not limited to:

- National Stock Number.
- Part Number.
- Nomenclature.
- MTBF.
- Source, Maintenance and Recoverability (SM&R) Code.
- Item Cost.
- Total Cost.
- Recommended Quantity (Peace Time/Time(s) of Conflict).
 - Organizational.
 - Intermediate (CLS).
 - Depot.
- Rationale.

The RBL shall consider the following:

-
-

(b)(2)

DI-MISC-80508A, Technical Report – Study/Services (RBL)

3.8.7 Request for Nomenclature. The contractor shall submit a Request for Nomenclature in accordance with MIL-STD-196E for the system. This requirement is mandatory for use in type designation of communications and electronic materiel.

DI-CMAN-81254A, Request for Nomenclature

3.9 Maintenance Planning. The contractor shall conduct maintenance planning to define optimal maintenance activities, which fully support the Ground ECM System maintenance concept. The Ground ECM System maintenance concept currently envisioned is for limited organizational maintenance to be performed by Government personnel with Contractor personnel (CLS/FSR) performing the remaining organizational through depot maintenance. Design influence for maintenance planning shall be affected to the most practical extent. For information, the standard Marine Corps maintenance concept for ground systems is defined below.

3.9.1 Organizational Maintenance. The intent of organizational level maintenance is sustaining equipment in a mission capable status and is both preventative and corrective in nature. Organizational level maintenance includes expeditious assessment and maintenance conducted under battlefield conditions. Organizational level maintenance normally entails inventory, cleaning, inspecting, preserving, lubricating, adjusting, and testing as well as replacing parts and components with common shop tools per individual training standards (ITS) and/or training and readiness event (TRE) and technical publications. Organizational maintenance shall consist of simple tasks performed by the user and simple repairs performed by organizational maintenance technicians; a) Preventative Maintenance (inspection, testing, cleaning, adjustments, operational checks using authorized tools, manuals and test equipment b) Corrective Maintenance (minor cable/connector repair, fault isolation to Line Replaceable Unit (LRU) using internal Built In Test (BIT), remove/replace of LRU.

3.9.2 Intermediate Maintenance. The intent of intermediate level maintenance is to return equipment to a mission capable status and is both preventative and corrective in nature. Intermediate level maintenance actions include inspection/in-depth diagnosis, modification, replacement, adjustment, and limited repair or evacuation/disposal of principal end items and their selected reparable and component/sub-components. Intermediate level maintenance also includes calibration and repair of test, measurement and diagnostic equipment (TMDE) as well as fabrication of items, precision machining, and various methods of welding. Intermediate level maintenance is performed by specially training mechanics and technicians per individual training standards (ITS) and/or training and readiness events (TRE) and technical publications. Intermediate maintenance shall consist of repair tasks performed by trained technicians. Repairs authorized are the continued fault isolation of the LRU to the circuit card using standard tools

and test equipment, identification and replacement of defective components, alignment (if required), calibration (if required), and the return of the equipment to full operation with minimal downtime.

3.9.3 Depot Maintenance. Depot -level maintenance and repair consists of material maintenance or repair requiring the overhaul, upgrading or rebuilding of parts, assemblies or subassemblies and end items and the testing and reclamation of equipment as necessary.

3.10 Supply Support (OPTION). This option applies to paragraphs 3.10 through 3.10.4.

3.10.1 Conferences.

3.10.1.1 Provisioning Guidance Conference. The contractor shall furnish provisioning data and clarification of any provisioning issues to the Government at a Provisioning Guidance Conference.

3.10.1.2 Provisioning Conference. The contractor shall host a Provisioning Conference(s) at the contractor's facility. The Provisioning Conference(s) may be held concurrent with other program meetings (PDR, CDR, IPR, etc.).

3.10.2 Provisioning and Other Preprocurement Screening.

a. Provisioning and Other Preprocurement Screening Data are used to identify existing National Stock Numbers (NSNs) for an item, validate currency of an NSN, and aid in maximum use of known assets. The contractor shall identify provisioning and other preprocurement data to be submitted for Government screening.

b. Screening data shall be prepared in accordance with MIL-PRF-49506.

DI-ALSS-81529, Logistics Management Information (LMI) Data Products (POPS) - OPTION

3.10.3 Provisioning Technical Documentation. The contractor shall develop/document Provisioning Technical Documentation to include a Provisional Parts List (PPL), Long Lead Time Items List (LLTIL), Tools and Test Equipment List (TTEL), Common and Bulk Items List (CBIL), and any Design Change Notices (DCN). These lists shall contain the Data Products selection list. The Government at the Provisioning Guidance Conference (PGC) shall designate the format and medium of delivery. The frequency for submission of such lists shall also be designated at the PGC.

3.10.3.1 Provisioning Parts List. The Provisioning Parts List (PPL) shall contain the end item, component or assembly and all support items which can be disassembled, reassembled, or replaced, and which, when combined, constitute the end item, component or assembly and shall include items such as parts, materials, connecting cabling, piping, and fittings required for the operation and maintenance of the end item, component, or assembly. The PPL shall be used to

determine the range and quantity of support items required to maintain the end item for an initial period of service. This includes all repairable Contractor Off-The-Shelf (COTS) items unless excluded by the provisioning requirements. It does not include a breakdown of Government furnished equipment. The PPL shall include items such as parts, materials, connecting cabling, piping, and fittings required for the operation and maintenance of the end item/equipment. The PPL shall contain all tools, test equipment, repair kits and repair parts sets required to maintain the end item, component, or assembly equipment unless excluded by the provisioning requirements or meeting the requirement for CBIL inclusion if CBIL is a contract requirement.

**DI-ALSS-81529, Logistics Management Information (LMI) Data
Products (PPL) - OPTION**

3.10.3.2 Long Lead Time Items List. The contractor shall provide a Long Lead Time Items List (LLTIL) that shall contain those items which, because of their complexity of design, complicated manufacturing process or limited production capacity, may cause production or procurement cycles which would preclude timely and adequate delivery, if not ordered in advance of normal provisioning.

**DI-ALSS-81529, Logistics Management Information (LMI) Data
Products (LLTIL) - OPTION**

3.10.3.3 Tools and Test Equipment List. The contractor shall provide a Tools and Test Equipment List (TTEL) that shall contain those support items required to inspect, test, calibrate, service, repair, or overhaul an end item.

**DI-ALSS-81529, Logistics Management Information (LMI) Data
Products (TTEL) - OPTION**

3.10.3.4 Design Change Notice. A Design Change Notice (DCN) shall be used to identify change to Provisioning Technical Documentation which add to, delete, supersede, or modify items previously listed which are approved for incorporation into the end item.

**DI-ALSS-81529, Logistics Management Information (LMI) Data
Products (DCN) - OPTION**

3.10.4 Engineering Data For Provisioning. Engineering Data For Provisioning (EDFP) is technical data used to describe parts/equipment and consists of data such as specifications, standards, drawings, photographs, sketches and descriptions, and necessary assembly and general arrangement drawings, schematic drawings, schematic diagrams, wiring and cable diagrams necessary to indicate the physical characteristics, location, and/or function of the item. EDFP shall be marked in such a manner as to identify the proprietary rights (limited or unlimited). EDFP shall also be marked with the Provisioning Line Item Sequence Number (PLISN) in the upper right hand corner. EDFP shall NOT be provided when the item is a Government specification or standard, or have previously been assigned an National Stock Number (NSN).

**DI-ALSS-81529, Logistics Management Information (LMI) Data
Products (EDFP) - OPTION**

3.11 Technical Publications.

3.11.1 Technical Manuals. The contractor shall develop Technical Manuals for Organizational Operation/Maintenance in accordance with Technical Manual Contract Requirement (TMCR) #CINS-001 which shall include all information required for the installation, operation and maintenance of the Ground ECM System. The manuals shall reference the commercial and military manuals associated with the specific equipment comprising the Ground ECM System. To support near-term fielding events, the Contractor may provide an interim, validated draft manual.

TMCR CINS-001, Technical Manual Contract Requirement (SM)

3.11.2 Commercial Manuals. The contractor shall provide Commercial Off-The-Shelf (COTS) manual(s) for the Ground ECM System, to include supplemental data as necessary. The manual(s) shall contain installation, operation, troubleshooting and maintenance instructions. The manual(s) shall include a complete repair parts list (including exploded views of all assemblies and subassemblies) and special tools lists. At a minimum, the COTS manual shall contain interactive hotlinks providing easy maneuverability within the document supporting ease of use by the Organizational Level personnel. To support near-term fielding, hard copy commercial manuals may be provided as an interim measure.

**DI-TMSS-80527A, Commercial Off-the-Shelf (COTS) Manual and Associated
Supplemental Data**

TMCR CINS-001, Technical Manual Contract Requirement (PDF)

3.11.3 Modification Work Order. It is intended for the Ground ECM System to be integrated onto various platforms. The contractor shall prepare Modification Work Order(s) (MWO) supporting Ground ECM System integration. MWOs shall be prepared using BCP and shall incorporate the content requirements presented in MIL-PRF-63002H. In support of the MWO, a MWO BOM shall be prepared and priced as part of the Product Baseline under the Configuration Management processes.

DI-MISC-80508A, Technical Report – Study/Services (MWO)

3.11.4 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.

3.11.5 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. The contractor shall develop change pages/modification instructions in accordance with Technical Manual Contract Requirements.

TMCR CINS-001, Technical Manual Contract Requirements (CPMI)

3.12 Support Equipment. The contractor shall provide a listing of support equipment, which is defined as tools, test equipment, automatic test equipment, and Built-in test/built-in test equipment (BIT/BITE) concurrent with the proposal.

3.12.1 General Purpose Support Equipment. The contractor shall provide a listing of General Purpose Support Equipment (GPSE), which is defined as tools and test equipment currently in the Marine Corps inventory.

3.12.2 Special Purpose Support Equipment (OPTION). The contractor shall provide a listing of Special Purpose Support Equipment (SPSE), which are defined as tools, and test equipment NOT currently in the Marine Corps inventory. The SPSE shall include any specific calibration and maintenance data.

DI-ILSS-80294A, Maintenance, Test and Support Equipment Requirements List (SPSE) - OPTION DI-ALSS-81530, Logistics Management Information (LMI) Summaries (SPSE) - OPTION

3.13 Manpower, Personnel and Training. The contractor shall provide a training program in accordance with (IAW) MIL-PRF-29612B. Prior to course initiation, the contractor shall meet safety standards, which are IAW local, state, and federal regulations. Training materials may require modification to reflect each platform configuration.

3.13.1 Plan of Action and Milestones (POA&M). The contractor shall provide a POA&M for the training program. The POA&M shall identify proposed course dates: *proposed Job Task Analysis (JTA) dates*; proposed 50% and 100% training development progress review dates; proposed review date for completed draft; and delivery date for final training materials. Draft training materials to support these reviews shall be submitted to the Government for review not less than 14 days prior to scheduled reviews. The contractor shall incorporate reported decisions and correct discrepancies resulting from or associated with these reviews. Each review shall include corrections from the previous review. Comments and redlines resulting from reviews shall be incorporated. Comments from any previous review shall be revisited prior to proceeding with the current review. If the previous comments have not been included, the review shall not be considered complete.

DI-SESS-81521B, Training Program Structure Document - POA&M

3.13.1.1 Job Task Analysis (JTA). The contractor shall participate in a JTA workshop for the

Ground ECM System. The workshop shall result in the generation of a job task list for the operation and operator maintenance tasks. The workshop will be held at a date, time, and place mutually agreeable to the contractor and the Government.

3.13.2 Instructional Level. The contractor shall develop courses in sufficient depth to meet the following requirements:

3.13.2.1 Operator Course Requirements. The course shall provide students with the knowledge and understanding of the system's capabilities, limitations, interfaces, operations and shall include as a minimum preventive maintenance checks and services, capabilities and function of the system, and operations/operator maintenance. The course shall allow the student to become proficient with the required operations' tasks. The course shall be of sufficient depth to ensure that students are qualified to properly operate the system. At a minimum, the hands-on instruction shall include and, upon completion, enable the student to: operate the system, subsystem, and equipment controls; demonstrate knowledge of general equipment functions and operations; and perform system checks and verification procedures.

3.13.2.2 System Administration Course Requirements (OPTION). The course shall provide students with the knowledge and understanding of the capabilities, limitations, interfacing, operations, and basic maintenance tasks of the operating system. At a minimum, the instruction shall include: adding new users, new systems, and new components; update network files, check system capacity, backup and archive functions, install additional boards, modems, and printers; provide data security, diagnose and fix software problems, manage and integrate client information. The course shall be developed to allow the student to become proficient with the required system administration tasks. The course shall be of sufficient depth to ensure that students are qualified to properly administer system software and hardware to the appropriate level using the manuals, and proven diagnostic procedures. At a minimum, the hands-on instruction shall include and, upon completion, enable the student to: administer the system and subsystem; demonstrate knowledge of general software functions and operations; perform software checks and verification procedures.

3.13.3 Methods of Instruction. The preferred methods of instruction are lectures, demonstrations, practical exercises and application. No less than seventy percent of course presentation shall be practical exercise and hands-on training. Fault isolation shall be accomplished by having students identify faults to the specific LRU and/or software CI with particular emphasis on high failure items. The trainee to instructor ratios shall be 5:1 for practical exercises and 25:1 for lectures.

3.13.4 Course Material. All course material shall be prepared per MIL-PRF-29612B and within the guidelines of the U.S. Marine Corps Systems Approach to Training Manual. The reading level at which written training material is developed generally shall be no higher than eighth grade reading level. The contractor shall provide, to each student attending Instructor and Key Personnel (I&KP) courses, a copy of all course material required to teach the course. The contractor shall provide all supplies, test equipment, common and special tools, and technical literature to each Government student while taking the course. Test equipment shall be identical to that used in the operational environment. For each course, the contractor shall prepare and

deliver the following training documentation IAW MIL-PRF-29612B. For further guidance MIL-HDBK-29612/1A (1-5) may be used.

3.13.4.1 Learning Analysis Report (LAR). The contractor shall provide a LAR containing the mission statement and course objectives. It shall also contain the Learning Objectives (Terminal Learning Objectives and Enabling Learning Objectives) and the knowledge, skills, and attitudes required to perform the tasks.

DI-SESS-81518B, Instructional Performance Requirements Document - LAR

3.13.4.2 Lesson Plan (LP). The contractor shall provide a LP to the Government that shall contain data that provides specific definition and direction to the instructor on learning objectives, method of evaluation (student), equipment, instructional media requirements, media queues (if needed), instructor notes (if needed), and the conduct of training.

DI-SESS-81523B, Training Conduct Support Document - LP

3.13.4.3 Trainee Guide (TG). The contractor shall provide a TG that shall contain data, which enhances the trainee's mastery of the knowledge, skills, and attitudes needed for a given subject. These materials may be in the form of information, diagram, job, assignment, problem, and outline sheets.

DI-SESS-81523B, Training Conduct Support Document - TG

3.13.4.4 Instructional Visual Aids (IVA). The contractor shall provide visual aids (i.e., PowerPoint, flip charts, etc.), to be used by the instructor in the conduct of classes. They shall enhance the learning process and be in accordance with Government approved production standards.

DI-SESS-81523B, Training Conduct Support Document - IVA

3.13.4.5 Test Package. The contractor shall provide the specific requirements data necessary for the examination of an individual's knowledge, skills, attitudes, and achievement of each terminal and enabling learning objectives. All examinations shall include practical exercises or demonstrated successful troubleshooting, maintenance, repair, operation, test, installation, and assembly, either be written or performance or a combination of both, and shall objectively measure the student's ability to achieve the standards of the learning objectives. Answer keys shall be provided for all written exams and performance checklists shall be used to evaluate performance exams.

DI-SESS-81525B, Test Package

3.13.5 New Equipment Training (NET). The contractor shall conduct NET to take place at Government sites at the using units' locations to be determined. Due to the response time for fielding of this equipment, NET shall be accomplished in accordance with the fielding schedule. NET training shall be developed using the USMC Systems Approach to Training Manual ensuring that the operators are trained in the operation, operational maintenance, and safety

considerations for operation of the equipment at a minimum. Also, Instructor Lesson Plans, Student Handouts, and Job Aids (Operational Checklists, Operator Trouble Shooting Checklists, etc.) shall be provided as part of the training material. Field Support Representatives (FSR) shall be prepared to provide ADHOC training classes as needed to ensure all personnel that will be operating the system are trained.

3.14 Packaging, Handling, Storage and Transportation. The contractor shall be responsible for the preservation and packaging of all items to be delivered under the terms of the contract in accordance with ASTM D3951-98 and MIL-STD-2073/1D(1). Packaging data shall be developed in accordance with MIL-STD-2073/1D(1) and subject to Government approval prior to parts being shipped. The contractor shall then package all items in accordance with the contractor prepared Government approved data. Items scheduled for shipment to continental United States (CONUS) units for immediate use or limited storage will be accepted utilizing the best commercial practices of ASTM D3951-98. Marking for shipment and storage shall be in

accordance with MIL-STD-129P. Item unique identification (UID) and radio frequency identification (RFID) shall be applied accordingly. Guidance supporting RFID application can be found at www.osd.mil/log/rfid/index.htm. Both applications of UID and RFID are DoD mandatory requirements.

3.15 Software. Software design information is required in order to support the Government's Information Assurance requirements and to obtain an Authority to Operate (ATO). It is understood that some of this information may be proprietary and will be protected.

3.15.1 Software Requirements Specification (OPTION). The contractor shall provide a Software Requirements Specification (SRS). The SRS shall specify the requirements for the Computer Software Configuration Item(s) (CSCI) and the verification methods to be used to ensure that each requirement has been met.

DI-IPSC-81433A, Software Requirements Specification (SRS) - OPTION

3.15.2 Software Design Description. The contractor shall provide a Software Design Description (SDD). The SDD shall describe the design of a Computer Software Configuration Item (CSCI), CSCI-wide design decisions, the CSCI architectural design, and the detailed design needed to implement the software.

DI-IPSC-81435A, Software Design Description (SDD)

3.15.3 Software Product Specification (OPTION). The contractor shall provide a Software Product Specification (SPS). The SPS shall contain or reference the executable software, source files, and software support information, including "as built" design information and compilation, build, and modification procedures, for a Computer Software Configuration Item (CSCI).

DI-IPSC-81441A, Software Product Specification (SPS) - OPTION

3.15.4 Software Version Description. The contractor shall provide a Software Version Description (SVD). The SVD shall identify and describes a software version consisting of one or more Computer Software Configuration Items (CSCIs) and shall be used to release, track, and control software versions.

DI-IPSC-81442A, Software Version Description (SVD)

3.15.5 Software User Manual (OPTION). The contractor shall provide a Software User Manual (SUM). The SUM shall describe to a hands-on software user how to install and use a Computer Software Configuration Item (CSCI), a group of related CSCIs, or a software system or subsystem. It may also cover a particular aspect of software operation, such as instructions for a particular position or task.

DI-IPSC-81443A, Software User Manual (SUM) - OPTION

3.15.6 Firmware Support Manual (OPTION). The contractor shall provide a Firmware Support Manual (FSM). The FSM shall provide the information needed to program and reprogram the firmware devices of a system and shall apply to read only memories (ROMs), Programmable ROMs (PROMs), Erasable PROMs (EPROMs), and other firmware devices.

DI-IPSC-81448A, Firmware Support Manual (FSM) - OPTION

3.15.7 Software Installation Plan (OPTION). The contractor shall provide a Software Installation Plan (SIP). The SIP shall detail the plan for installing software at user sites, including preparations, user training, and conversion from existing systems.

DI-IPSC-81428A, Software Installation Plan (SIP) - OPTION

3.15.8 Operational Concept Description (OPTION). The contractor shall provide an Operational Concept Description (OCD). The OCD shall describe a proposed system in terms of the user needs it will fulfill, its relationship to existing systems or procedures, and the ways it will be used.

DI-IPSC-81430A, Operational Concept Description (OCD) - OPTION

3.15.9 Interface Requirements Specification (OPTION). The contractor shall provide an Interface Requirements Specification (IRS). The IRS shall specify the requirements imposed on one or more systems, subsystems, Hardware Configuration Items (HWCIs), Computer Software Configuration Items (CSCIs), manual operations, or other system components to achieve one or more interfaces among these entities.

DI-IPSC-81434A, Interface Requirements Specification (IRS) - OPTION

3.15.10 Interface Design Description. The contractor shall provide an Interface Design Description (IDD). The IDD shall describe the interface characteristics of one or more systems, subsystems, Hardware Configuration Items (HWCIs), Computer Software Configuration Items (CSCIs), manual operations, or other system components.

DI-IPSC-81436A, Interface Design Description (IDD)

3.16 Contractor Performance Measurement

3.16.1 Contract Work Breakdown Structure. The contractor shall provide for a Level 4 Contract Work Breakdown Structure (CWBS) and dictionary concurrent with the proposal. The contractor shall use the CWBS as the framework for planning, budgeting, and reporting program status, cost, and schedule to the Government. Subcontractor data shall be incorporated into the contractor's CWBS. Application of Earned Value Management System (EVMS) to subcontractors is at the discretion of the contractor with the advice of the Administrative Contracting Officer (ACO).

3.16.1.1 Contractor Post-Production Cost and Performance Report. The contractor shall submit a monthly status report providing the following information: a) CONUS and OCONUS deployed Field Service Representatives (FSR) by name, by Geographical location, number of labor hours worked, movements/changes, etc. b) CLS expenditures by FSR, labor hours, materials, other ODC (individually & aggregate) c) individual and aggregate cost for repair of each item at 1) organizational, 2) intermediate 3) depot: returned to the OEM or other contractor for repair, and identification of any OEM factory repair item that meets the definition of paragraph 3.9.3 of this SOW, e) Warranty status and Administrative turn around time for repairs at intermediate, factory repair and depot f) spares inventory to include: on hand, in repair, additional required, in transit (outbound/inbound), and geographical location, g) UID and other descriptive data, h) location of repair/maintenance performed, i) owning military unit of system serviced (if known), j) failure reporting shall be IAW SOW paragraph 3.4.5.3.

DI-MISC-80508A Technical Report - Study/Services (CPPC/PR)

3.17 Information Assurance Support. The Contractor shall support the Government's efforts to obtain an Interim Authority to Operate or an Authority to Operate prior to fielding. The process (DITSCAP) to achieve this authorization is contained in DoDI 5200.40 and DoD 8510.1-M. Contractor shall participate in technical exchanges/meetings with the Government required to support system security lockdown and the development of an Systems Security Authorization Agreement (SSAA). The Contractor shall implement the agreed upon security lockdown prior to the Government's certification test and evaluation. Exchanges/meetings will be held during scheduled IPRs or as needed to accomplish required Government testing. The system must satisfy the Government's baseline security controls as contained in DoDI 8500.2. Additional guidance on System Security Engineering is contained in MIL-HDBK-1785.

3.17 3.18 Technical Support Representatives. The Contractor shall support the Government during scheduled meetings and tests to ensure the design and support (training) . Contractor shall provide a minimum of 1 representative with maximum of 2 representatives for each meeting. Meetings shall include, but not be limited to the following:

- a. Antenna Integrated Product Team (IPT)
- b. Communications IPT
- c. Antenna/Communications Evaluation/Testing
- d. Training IPT
- e. Threat IPT
- f. Information Assurance Technical Exchange Meetings/Testing

3.18.1 Common Remote Control. The Government and Contractor shall conduct technical exchange meetings to determine a Government/contractor approved common design of a single remote control. The purpose of these meetings is to determine if a single, common remote control can be used with all versions and vehicle platforms of the Ground ECM System. To accomplish this, the Contractor shall be required to conduct technical exchange meetings with other Contractors/vendors and Government personnel.

3.18.2 Common Antenna(s) Design. The Government and Contractor shall conduct technical exchange meetings to identify a Government/contractor approved common antenna(s) design. The purpose of these meetings is to determine if a common antenna(s) can be used with all versions and vehicle platforms of the Ground ECM System. To accomplish this, the Contractor shall be required to conduct technical exchange meetings with other Contractors/vendors and Government personnel.

SECTION C: DESCRIPTIONS/SPECIFICATIONS/WORK STATEMENT

C-1 Statement of Work/Purchase Specification

All CLINs shall be in accordance with the Statement of Work (SOW) and Performance Specification (PS), dated 27 October 2005 attached to this solicitation/contract.

C-2 Technical Data/Engineering Data

All engineering data, under CLIN 0012 and technical data, shall be prepared and delivered in accordance with the statement of work. Contractor format may be used.

[END OF SECTION]

**PERFORMANCE SPECIFICATION FOR
THE
GROUND
ELECTRONICS COUNTER MEASURE
(GROUND ECM)
SYSTEM**

**FINAL
4 November 2005**

This document incorporates the tracked/redlined changes from the Final Draft Document dated 10/27/05

PERFORMANCE SPECIFICATION FOR THE GROUND ELECTRONICS COUNTER MEASURE (GROUND ECM) SYSTEM

SECTION 1: SCOPE

1.1 General. There is an urgent and compelling need to procure and deploy up to 5,000 Ground Mobile Electronics Counter Measure (ECM) Systems. This capability is needed to protect maneuver elements and entry control points from Radio Frequency triggered IEDs (Improvised Explosive Devices). Weapons of choice for IED construction in Iraq consist mostly of ammunition left over from stockpiles amassed by the former regime. Commonly, 152mm and 122mm artillery shells are used as the explosive. Frequently, remote control devices are used to detonate these IEDs, providing the insurgents a safe stand off distance from the explosion and the ability to utilize cover and concealment in their attacks. A wide range of wireless devices have or are being used to trigger IEDs. These include commercial communications devices and a variety of field radio systems. These include a mixture of low and high power devices. The threat is evolving. New methods for remotely triggering IEDs are developed as old ways are successfully countered. For this reason, the jamming system must be adaptable to new signal types. There is a pressing need for large numbers of mobile, high power, programmable jammers that will defeat the link between the initiator and the receiver on an IED and protect friendly personnel operating in an (b)(2) environment. Ultimately, the system may also be dismantled for use at checkpoints or other vulnerable locations.

1.2 Supportability. The contractor will be expected to maintain the operational readiness of the Ground ECM System through logistics support services and field service support.

SECTION 2: APPLICABLE DOCUMENTS

The documents listed in this section are specified in sections 3, 4 or 5 of this performance specification. This section does not include documents listed in other sections of this performance specification or those that are recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4 or 5 of this purchase description, whether or not they are listed. The intent is for the system to meet the requirements specified in this document. Where exceptions are required, contractor shall specify those to the Government. Contractor at any time may propose alternatives/waiver to requirements stated herein.

MIL-STD-129N	15 May 97	DoD Standard Practice for Military Marking
MIL-STD-130	15 Jan 00	Identification Marking of U.S. Military Property
MIL-STD-461E	20 Aug 99	Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference
MIL-STD-810, Rev F 01	Jan 00	Environmental Engineering Considerations and Laboratory Tests
MIL-STD-882C, N1	19 Jan 96	System Safety Program Requirements
MIL-STD-2073-1C	1 Oct 96	DoD Standard Practice for Military Packaging
DoD 8510.1-M	31 July 2000	Department of Defense Information Technology Security Certification and Accreditation Process (DITSCAP)
DoDI 6055.11	21 Feb 1995	<u>Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers</u>
DoDI 8500.2	6 Feb 2003	Information Assurance (IA) Implementation
CJCSI 6510.01D	15 Jun 2004	Information Assurance (IA) and Computer Network Defense (CND)
MCO 5239.2	18 Nov 2002	Marine Corps Information Assurance Program (MCIAP)
DISR Release	05-2.0	DoD IT Standards Registry (for more information see https://disronline.disa.mil/a/DISR/index.jsp)

IEEE/EIA 12207

1996

Industry Implementation for International Standard
ISO/IEC 12207, Standard for Information Technology
Software Life Cycle Processes

SECTION 3: REQUIREMENTS. Government/Contractor agreement on common antenna(s) selection will determine if waiver to the requirements contained herein are necessary. Additionally, the Government and contractor(s) shall agree upon a single, common remote control device that can be interchanged between various Ground ECM configurations and vehicle platforms. Requirements contained herein should be considered threshold if not otherwise marked "objective".

3.1 Performance Characteristics.

3.1.1 Protection Radius. The system shall provide (b)(2) denial of detonation within an envelope of protection (b)(2) from vehicle/platform when the (b)(2) transmitter is (b)(2) from the (b)(2) receiver. The system shall be capable of jamming a signal in sufficient time and with sufficient force that a minimum safe distance of (b)(2) can be maintained (b)(2) the vehicle on which the system is mounted.

3.1.2 Frequency Range. The system shall operate in (b)(2) spectrum from (b)(2). Specific frequency requirements are classified and will be provided separately. The system may be configured with the specific power amplifiers required to meet the defined threat bands.

3.1.3 Signal Types. The system shall be effective against all known threat systems in the (b)(2) spectrum. The system may be configured with the specific power amplifiers that are required to meet the defined threats in the UHF band.

3.1.4 Configurable for Specific Threats. The system shall be programmable by a designated and trained individual to address specific threats in terms of (b)(2) (open communication windows).

3.1.5 Friendly Communications. (b)(2)

(b)(2)

3.1.6 Transmit Power. The system shall have a maximum transmit power of not less than (b)(2) average power per channel in the (b)(2) selection shall be accomplished during the (b)(2) and by the (b)(2)

3.1.7 Operational Field of View. The system, when installed in a vehicle, shall provide protection over a field of view of (b)(2) (b)(2)

3.1.8 Modes of Operation. The system shall have four primary modes of operation: On (threshold), Off (threshold), Zeroize (threshold), and Stand-By (objective). The On mode shall have a (b)(2)

3.1.9 Remote Control. The system shall have a remote control that allows access to all features required for basic operation of the system. It is not required to be able to reprogram the system from remote control. The remote control may be located in the vehicle cab by the driver and assistant driver. (b)(2)

(b)(2) The remote control shall support various system configuration without modifications.

3.1.10 Operation on Internal Battery Power. The system shall have an internal battery that supports full system operation for periods of up to (b)(2) when external power is interrupted (objective).

3.1.11 Internal System Battery. The system shall have an internal system battery that will maintain system configuration and data for at least (b)(2) without external power (objective).

3.2 Design Characteristics.

3.2.1 Installation Kit. The system shall include a vehicle installation kit capable of mounting the system on a range of Marine Corps vehicles without permanent modification to either the equipment or the vehicle. The vehicle installation kit may be composed of common and vehicle platform specific parts. In the event it is not possible to provide an installation kit that satisfies the "no modification" criteria, then the Government may consider waivers to this requirement. The system's primary unit shall be (b)(2)

3.2.2 Vehicle Installation Kits. The vehicle installation kits shall be portable across like vehicle platforms to allow for interchangeability without any permanent changes to the vehicle being required. Installation kits shall be provided for the following vehicles:

(b)(2)

3.2.3 Transferable. The design of the system and its vehicle installation kit shall be such that the system and the installation kit can be transferred from one vehicle to another like vehicle.

3.2.4 Modular Design. The system shall have a modular design that supports the replacement of malfunctioning or damaged subassemblies.

3.2.5 Weight. The weight of the system's primary unit shall not exceed

(b)(2)

3.2.6 Antenna Installation. The system shall include an antenna(s) that can be easily installed on the vehicles specified above without physically interfering with the operation of the vehicle or its weapons stations.

3.2.7 Antenna Operating Frequency. The antenna(s) selected shall support the operation of the system over all of the operating bands as specified in paragraph 3.1.2. .

3.2.8 Antenna Design. The system design shall accommodate the selected common antenna(s) on all vehicle platforms identified in paragraph 3.2.2. The antenna(s) shall be positioned on the vehicle platform in a Government approved location that optimizes system performance.

3.2.9 Power Requirements. The system shall operate from vehicle power at 24 VDC (threshold) and 12 VDC (objective)

(b)(2)

3.2.10 Direct Connection to Vehicle Power System. The system shall have a power cable for direct connection into the vehicle's power system. The cables shall be clearly marked for polarity to prevent misconnection.

3.2.11 NATO Slave Power Cable. The system shall interface with a power cable for connection into the vehicle's NATO Slave receptacle (objective).

3.2.12 AC-to-DC Converter. For fixed installations, the system shall interface to a 110/220 VAC, 50-60 Hz AC-to-DC Converter (objective).

3.2.13 Power Spike and Surge Protection. The system's power supply shall be protected against power surges and spikes normally associated with vehicle power.

3.2.14 Operation Mode Start-Up. Start-up time from system power off to the fully operational Operation Mode for the System shall not be greater than

(b)(2)

measured after the power switch is toggled to the "ON" position. (objective)

3.2.15 Power Failure. The system shall allow for graceful degradation in the event of an unexpected power failure without loss of system integrity and allow for automatic re-initialization within

(b)(2)

without operator intervention (objective).

3.2.16 Operational Modes. The system shall support Operation and Stand-by Modes via user-selectable switches on the primary unit and remote control (objective).

3.2.17 Stand-By Mode. The system shall have a Stand-by Mode which suspends all RF transmissions, and minimizes all RF emissions while the System remains powered (objective).

3.2.18 Reconfigurable. The system shall be rapidly [REDACTED] (b)(2)

[REDACTED] (b)(2)

3.2.19 External Programming Interfaces. The system shall support external reprogramming by a Windows-based laptop computer and an interface cable.

3.2.20 System Configuration Programming Load. The system configuration shall be contained in an encrypted file loaded into the primary unit from external programming devices file that defines the operating parameters of the system (objective).

3.2.21 System Configuration File. The system configuration files stored in the primary unit and the laptop shall be encrypted (objective).

3.2.22 Zeroize. The system shall have a zeroize function or procedure to allow the user locally to disable and render the primary unit inoperable (threshold). The system shall allow for remote zeroization (objective).

3.2.23 Zeroize Switch. The zeroize function shall be initiated on the remote control (threshold) and the primary unit (objective).

3.2.24 Anti-Tamper. The system shall implement anti-tamper functions to prevent exploitation and reverse engineering of algorithms, techniques and operating parameters from a captured System that has not been zeroized (objective).

3.2.25 Purge Capability. The system shall either be capable of purging classified waveform data or it shall include a removable storage device such that the permanently mounted portion of the system can be rendered unclassified without zeroizing the entire system (objective).

3.2.26 Connectors. The system shall provide RF and multi-pin military standard connectors for the RF antenna ports, DC power, and the remote control cable (objective).

3.2.27 Information Assurance. The system shall store and process classified waveform information up to the Secret GENSER level. As such, the design shall incorporate information systems security engineering principles supporting DoD "Defense-in-Depth" criteria outlined in CJCSI 6510.01D and CJCSM 6510.01 and satisfy all technical/logical security controls specified in DoDI 8500.2 for a classified, Mission Assurance Category I system to achieve a full Authority to Operate IAW DoDI 5200.40. The system design shall also incorporate anti-tamper protection for those technologies identified as Critical Program

Information IAW DoDD 5000.1, DoDI 5000.2 and the Defense Acquisition Guidebook. This paragraph describes requirements needed for the Government to obtain an Interim Authority to Operate (IATO). The information security associated with the dissemination, download, and programming of the waveforms will be a joint responsibility of the Contractor and the Government.

3.2.28 Technology Readiness Level. By the date of system deployment, the system shall have a Technology Readiness Level (TRL) 9 as defined by GAO/NSIADD-99-162 Best Practices Appendix.

3.2.29 Global Positioning System (GPS). The system shall utilize GPS universal timing protocol to establish system timing (objective).

3.3. Human Factors.

3.3.1 Uncomplicated Installation. The system shall be easy to install, easy to remove, and easy to transfer to another similar vehicle. This includes the primary unit, the installation kit, the antenna(s), and connections to the power source.

3.3.2 Uncomplicated Operation. The system shall have an intuitive user interface that supports both the reprogramming of the equipment and the common operation of the equipment.

3.3.3 Switches. The system's primary unit and remote control shall have switches for the following functions: On/Off (threshold), Zeroize at remote control (threshold) and at primary unit (objective), Stand-By mode (objective), and Jamming Power Level (objective). All switches and indicators shall be accessible to vehicle crew members.

3.3.4 Indicators. The primary unit shall provide a distinct visual indication for conditions including, but not limited to: Operate, Transmit, Jamming Power Level (high/low), General Fault, Stand-by Mode (objective), and Antenna/Transmission Line Fault (objective). The system shall provide a positive indication as to whether or not the system is radiating.

3.3.5 Compatibility with Night Vision Equipment. The system shall support black-out operation without degradation of night vision equipment (objective).

3.3.6 Compatibility with Protective Clothing. The system shall be capable of being operated by operators wearing NBC Defense protective clothing (MOPP IV) and cold weather gear (objective).

3.3.7 Operation in Full Sunlight. The system shall be capable of operation in full sunlight conditions.

3.3.8 System Weight Limit. In its transit case(s), the weight of any individual transit case shall not exceed 210 pounds (threshold) and 100 pounds (objective).

3.4 Safety.

3.4.1 Safe for Any Vehicle Configuration. The system shall be able to operate with vehicle doors and hatches closed (threshold), or with vehicle doors and hatches open and crew members exposed (objective) without harm to the operator or crew members.

3.4.2 Safe for Extended Exposure. The system shall be safe for personnel to operate over extended periods of time. An extended period is defined as [REDACTED] (b)(2) as defined in 3.4.1 above. Output power levels, personnel location restrictions, system effectiveness, and personnel exposure will be assessed by the Contractor and the Government to provide an agreed upon safe solution. DoDI 6055.11, February 21, 1995, Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers shall be used for exposure level guidance.

3.5 Electromagnetic Interference Suppression.

3.5.1 Grounding. The system shall be properly grounded, bonded and shielded to prevent ground loops and common ground returns for power/control circuits to minimize electromagnetic interference.

3.5.2 EMI/EMC. The system shall satisfy EMI/EMC requirements (MIL-STD-461/1275) such that it does not prevent the operation of voice or data radios, or navigation equipment within the vehicle (threshold), and does not interfere with any other equipment within the vehicle (objective).

3.5.3 Co-Site Interference. The system shall not introduce co-site interference that would preclude the operation of [REDACTED] (b)(2) [REDACTED] (b)(2) (objective) as defined in paragraph 3.1.5.

3.6 Transportability.

3.6.1 Transit/Storage/Shipping Case(s). The system shall include one or more transit/storage/shipping case(s) which may serve as both the host rack for the mounted equipment and the shipping/storage cases for the equipment.

3.6.2 Lithium Batteries. The system shall not introduce non-NATO standard lithium batteries (objective).

3.6.3 Transportation Restrictions. The system shall not inhibit transportation by rail, air or ship.

3.7 Reliability and Maintainability.

3.7.1 Mission Duration. The system shall be capable of being operated continuously for a period of (b)(2)

3.7.2 Calculated MTBF. The system's MTBF shall be calculated as specified in MIL-HDBK-217F shall not be less than (b)(2)

3.7.3 Mean Time to Repair (MTTR). The system shall have a MTTR not greater than (b)(2) for any organizational level repair task.

3.7.4 Built-In Test (BIT). The system shall have a BIT function to indicate system faults.

3.7.5 System Status. The system shall provide a clear indication (go-no go) of system status.

3.7.6 Test Equipment. The system shall provide external test equipment that shall verify the system is radiating at the desired frequency and power levels as defined herein.

3.7.7 Operational Availability. The system shall achieve a system availability of (b)(2)

3.8 Finish.

3.8.1 Primary Unit. The finish of the primary unit shall have anti-corrosion capabilities to withstand exposure to harsh environments consistent with grounding requirements (objective).

3.8.2 Remote Control. The finish of the remote control shall have anti-corrosion capabilities to withstand exposure to harsh environments consistent with grounding requirements (objective).

3.9 Environmental.

The system shall operate in wheeled and tracked vehicles under harsh environmental conditions. The system shall meet the requirements of the following environmental test criteria as installed in the vehicle platforms as identified in paragraph 3.2.2:

3.9.1 Operating Temperature. The system shall be operable, as installed in the vehicle platforms identified in paragraph 3.2.2, without degradation in specified performance throughout the temperature range of -20 °C to +50 °C (threshold) and (b)(2)

3.9.2 Storage Temperature. The system shall meet the requirements of this specification after prolonged non-operating storage at any temperature within the range of -30 °C to +70 °C (threshold) and (b)(2)

3.9.3 Solar Radiation. The system shall initialize and operate as installed in the vehicle platforms identified in paragraph 3.2.2 while exposed to direct sunlight at

(b)(2)

3.9.4 Shock. The system shall operate while subject to the shock profiles of common military wheeled (threshold) and tracked (objective) vehicles in a tactical environment. In transport mode, the system shall withstand the vehicle shocks encountered in transportation.

3.9.5 Vibration. The system shall operate while subject to the vibration of common military wheeled (threshold) and tracked (objective) vehicles.

3.9.6 Rain and Blowing Rain. The system shall initialize and operate during and after exposure to rain (threshold) and blowing rain (objective).

3.9.7 Sand and Dust. The system shall initialize and operate during and after exposure to blown sand and dust.

3.9.8 Salt Fog. The system shall initialize and operate during and after exposure to salt fog and/or spray (objective).

3.9.9 Humidity. The system shall initialize and operate when exposed to the humidity of a tropical environment (objective).

3.9.10 Fungus. The system shall initialize and operate after exposure to fungal growth.

3.9.11 Icing/Freezing Rain. The system shall initialize and operate during and after exposure to ice buildup due to rain, drizzle, fog or splash. (objective)

3.9.12 Shock-Ballistic. The system shall initialize and operate after the shock normally associated with a

(b)(2)

3.9.13 Explosive Environment. The system shall operate safely in proximity with explosives and/or munitions (threshold). The system shall operate safely in the presence of aircraft and vehicle refueling operations, but at least (b)(2) Munitions and explosives restrictions and/or location restrictions may be imposed to address any explosives and/or munitions vulnerability.

3.9.14 Low Pressure (Altitude). The system shall be transportable (non-operating) in military aircraft at altitudes of (b)(2) and shall initialize and operate at pressures associated with 0 to (b)(2)

3.9.15 NBC Decontamination. The system shall be able to withstand NBC decontamination with DS2 (Decontaminating Solution 2). (objective)

SECTION 4: VERIFICATION

In general this section specifies the criteria for verification of system performance and design characteristics and establishes the requirements for system qualification testing.

4.1 Verification Methods. Throughout the qualification period, verification may be accomplished by a combination of inspection, analysis, demonstration, and test. Verification shall be conducted in accordance with the Government approved contractors' test plan/procedures and as specified in the Section 4.2.

4.1.1 Analysis. Verification by analysis involves the manipulation of data by engineering analysis or modeling. Some of the sources of this data will be as follows:

- Data from historical records of use
- Data from previous tests
- Data from compliance tests of other intelligence systems
- Data collected specifically for analysis

4.1.2 Demonstration. Demonstration involves the observation of properties, characteristics, or parameters during actual operation, adjustment, or re-configuration of items in specific scenarios without the use of instrumentation for quantitative measurements.

4.1.3 Examination. Examination involves the inspection of an item and the comparison of its characteristics against a predetermined qualitative and quantitative standard. To perform verification by examination partial disassembly of an item may be required. Verification by examination shall consist of, but shall not be limited to the following:

- Surveillance of operations to determine that practices, methods, and procedures of the control system are being properly applied
- Product inspection to measure quality of product to be offered for acceptance
- Production inspection of delivered products to ensure compliance with all requirements of this specification

4.1.4 Test. Verification by test is achieved by repeatable measurement of a parameter (direct or otherwise), including functional operation, using established scientific principles/procedures to determine compliance with the specified requirement. The testing shall be conducted, in a stated environment, such that the test results shall be meaningful and repeatable. Testing will involve the operation of the test item, and the recording and evaluation of quantitative data. A comparison of the data shall be conducted to determine whether data statistics conform to pre-established quantitative prediction for the parameters (with their associated tolerances).

4.2 Waiver. The Government has the authority to waive any required verification. If a particular verification is waived, certified data complying with the forms of the approved test plans and test procedures shall be provided to the Government. The certified data shall verify that the equipment meets the requirements of this specification and shall be dated and signed by an authorized official.

4.3 Classification of Inspection. The system shall undergo a inspection period as specified in the following subparagraphs and Tables I and II to determine compliance with the requirements of section 3 of this specification. Table I and II provide requirement/verification cross reference matrices, which outline the verification methods that the Government perceives may be used to verify each requirement. However, if the Contractor perceives that different methods will be better to verify the requirements, then the contractor may propose alternative test methods, techniques, or equipment, including the application of statistical process control, tool control, or cost effective sampling procedures. The contractor shall utilize the most cost-effective method for ensuring the ECM meets the stated requirements. Acceptable alternative verification approaches shall be identified in the contract. Inspection shall be performed in accordance with Contractor's submitted - Government approved test plan and procedures. Inspection requirements are classified as follows:

- a. First Article Inspection (see 4.3.1)
- b. Conformance Inspection/Production Acceptance Test (CI/PAT) (see 4.3.2)

4.3.1 First Article Inspection. First Article Inspection (FAI) shall be performed on the number of production-representative units specified in the contract. FAI shall be conducted in accordance with the approved test plan/procedures. Unless otherwise approved by the Government, Table I represents the requirement/verification cross matrix that shall be performed during FAI.

Table I. Requirement/Verification Cross Reference Matrix.

Section 3	Method of Verification for FAI				Section 4
Paragraph	Analysis	Demonstration	Examination	Test	Paragraph
3.1.1	X			X	4.4.1
3.1.2	X	X		X	4.4.2
3.1.3	X	X		X	4.4.3
3.1.4	X	X		X	4.4.4
3.1.5	X	X			4.4.5
3.1.6		X		X	4.4.6
3.1.7		X			4.4.7
3.1.8		X			4.4.8
3.1.9		X	X		4.4.9
3.2.1			X		4.4.10

3.2.2		X			4.4.11
3.2.3		X	X		4.4.12
3.2.4		X	X		4.4.13
3.2.5			X		4.4.14
3.2.6		X			4.4.15
3.2.7	X			X	4.4.16
3.2.8			X		4.4.17
3.2.9	X	X			4.4.18
3.2.10		X	X		4.4.19
3.2.13	X	X			4.4.20
3.2.18	X	X			4.4.21
3.2.19	X	X			4.4.22
3.2.22	X	X		X	4.4.23
3.2.23		X			4.4.24
3.2.27	X			X	4.4.25
3.2.28	X				4.4.26
3.3.1		X	X		4.4.27
3.3.2		X	X		4.4.28
3.3.3		X	X		4.4.29
3.3.4		X	X		4.4.30
3.3.7		X			4.4.31
3.3.8	X		X		4.4.32
3.4.1	X			X	4.4.33
3.4.2	X				4.4.34
3.5.1	X			X	4.4.35
3.5.2		X		X	4.4.36
3.5.3		X			4.4.37
3.6.1		X	X		4.4.38
3.6.3	X				4.4.39
3.7.1	X			X	4.4.40
3.7.2	X				4.4.41
3.7.3		X			4.4.42
3.7.4	X	X			4.4.43
3.7.5		X	X		4.4.44
3.7.6		X	X		4.4.45

3.7.7	X				4.4.46
3.9.1				X	4.4.47, 4.4.48
3.9.2				X	4.4.47, 4.4.48
3.9.3				X	4.4.49
3.9.4				X	4.4.50
3.9.5				X	4.4.51
3.9.6				X	4.4.52
3.9.7				X	4.4.53
3.9.10	X				4.4.56
3.9.13				X	4.4.57
3.9.14				X	4.4.58

4.3.2 Conformance Inspection/Production Acceptance Test. Conformance Inspection/Production Acceptance Test (CI/PAT) shall be performed on all units. CI/PAT shall be conducted in accordance with the approved test plan/procedures. Unless otherwise approved by the Government, Table II represents the requirement/verification cross matrix shall be performed during CI/PAT:

Table II. Requirement/Verification Cross Reference Matrix.

Section 3 Paragraph	Method of Verification for CI/PAT				Section 4 Paragraph
	Analysis	Demonstration	Examination	Test	
3.1.2		X			4.4.2
3.1.3		X			4.4.3
3.1.4		X			4.4.4
3.1.8		X			4.4.8
3.1.9		X			4.4.9
3.2.5			X		4.4.14

3.2.9		X			4.4.18
3.2.10		X	X		4.4.19
3.2.13		X			4.4.20
3.2.18		X			4.4.21
3.2.19		X			4.4.22
3.2.22		X			4.4.23
3.2.23		X			4.4.24
3.3.3		X	X		4.4.29
3.3.4		X	X		4.4.30
3.3.8			X		4.4.32
3.7.4		X			4.4.43
3.7.5		X	X		4.4.44
3.7.6		X	X		4.4.45

4.4 Verification Descriptions

4.4.1 Protection Radius. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date.

4.4.2 Frequency Range. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date. The system may be configured with the specific power amplifiers required to meet the defined threat bands.

4.4.3 Signal Types. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date. The system may be configured with the specific power amplifiers that are required to meet the defined threats in the UHF band.

4.4.4 Configurable for Specific Threats. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date.

4.4.5 Friendly Communications. The contractor shall perform an analysis to verify that the system can be configured so as not to jam specific frequencies needed for friendly

communications and navigation equipment. The contractor shall demonstrate the ability to notch-out frequencies in the output waveform for radio communications.

4.4.6 Transmit Power. The contractor shall perform a demonstration of the system design to verify that the user is able to select power levels within each frequency band. A test shall be performed which measures the output power of the system's low-band jamming channels at the antenna connectors on the primary unit using a calibrated power meter. Maximum output power shall be not less than XXX watts average power per channel in the low band jamming channels.

4.4.7 Operational Field of View. The contractor shall demonstrate the ability of the installed system to provide protection over the specified field of view.

4.4.8 Modes of Operation. The contractor shall demonstrate the operation of the system installed in each of the platforms identified in section 3.2.2. This shall include verification that the system is transmitting in the "on" mode and that it is not transmitting in the "off" mode.

4.4.9 Remote Control. The contractor shall demonstrate the operation of the system using only the remote control on one of the platforms identified in section 3.2.2. This shall include verification that the system is transmitting in the "on" mode and that it is not transmitting in the "off" mode. An examination shall be performed to ensure the remote control is common across all vehicle platforms specified in paragraph 3.2.2.

4.4.10 Installation Kit. The design of the system shall be examined to verify that it has an installation kit capable of mounting the system in a vehicle without permanent modifications to the vehicle. Disallowed permanent modifications include the drilling of new holes for mounting any part of the system or the addition of a new alternator. It is expected that the system will include power cables that must be connected to the vehicle's batteries. The system shall be examined to verify that the system's primary unit is mountable in a 19 inch rack and is equal to or less than 8U (14 inches) in height.

4.4.11 Vehicle Installation Kits. The contractor shall demonstrate the installation of the system using the installation kit in both the M114 HMMWV (High Mobility Multipurpose Wheeled Vehicle) and the MTRV (Medium Tactical Vehicle Replacement). This demonstration shall be accomplished together with the demonstration requirements of section 4.4.8 (i.e., the system shall be installed and then operated on each platform to satisfy both requirements)

4.4.12 Transferable. The design of the system and its install kit shall be examined to verify that it supports easily transferring the system between like vehicles specified in section 3.2.2. The contractor shall demonstrate transferring the system between two M114 HMMWVs (High Mobility Multipurpose Wheeled Vehicles) and between two MTRVs (Medium Vehicle Vehicle Replacements).

4.4.13 Modular Design. The system shall be examined to verify that it has a modular design. The contractor shall conduct an analysis to show how this design supports field maintenance.

4.4.14 Weight. The primary unit shall be weighed on a calibrated scale and shall be equal to or less than the value specified in paragraph 3.2.5.

4.4.15 Antenna Installation. The contractor shall demonstrate that the system's antenna(s) are easily installed and do not interfere with the physical operation of the vehicle or its weapons stations. This demonstration shall be performed in conjunction with the demonstration of requirements in sections 4.4.8 and 4.4.11 above.

4.4.16 Antenna Operating Frequency. The contractor shall conduct an analysis to verify that the antenna or combination of antennas are suitable for operation over the frequency band specified in requirement 3.1.2. This analysis shall be confirmed during the testing described in sections 4.4.1 through 4.4.6 above.

4.4.17 Antenna Design. The antenna(s) installation shall be examined to verify that they do not readily, visually identify the presence of the system in the vehicle at a range of 50 meters or greater.

4.4.18 Power Requirements. The contractor shall demonstrate the operation of the system using vehicle power directly or through an AC inverter. The contractor shall conduct an analysis to confirm that the operation of the system as installed on each of the vehicle types specified in requirement 3.2.2 shall not overstress the vehicles electrical system. This analysis shall be confirmed by testing that measures both voltage drop and current draw during operation. All demonstration, analysis and testing shall assume that the vehicle is idling. The system shall not be operated while the vehicle is off.

4.4.19 Direct Connection to Vehicle Power System. The system shall be examined to verify that it has the required power cable for direct connection to the vehicle's electrical system. The contractor shall demonstrate the operation of the system in each of the vehicles specified in requirement 3.2.2 using power cables that connect to the vehicle's electrical system. The cables shall be examined to confirm that they are clearly marked for polarity.

4.4.20 Power Spike and Surge Protection. A demonstration shall be conducted to verify that the system is not damaged by the following power conditions:

- Steady state operations over the input operating range of 20 to 32 VDC.
- Steady state voltage ≥ 16 VDC but < 20 VDC for 90 seconds.
- Reverse Polarity: Inputs between 0 and -40 VDC. (objective)
- Voltage Transient: 50 VDC for 15 ms.
- Voltage Drop to 6 VDC for ≤ 1 second.

4.4.21 Reconfigurable. An analysis of the system shall be performed to verify that it is capable of accepting new data loads or software patches that enable it to counter new threat

signals within the frequency range specified in requirement 3.1.2. The contractor shall demonstrate the reconfiguration of an installed system using an external programming device as described in section 4.4.22 below.

4.4.22 External Programming Interfaces. An analysis of the system design shall be done to verify that it is reconfigurable using a standard laptop personal computer running the Microsoft Windows XP operating system and other software as required. The connection between the laptop computer and the primary unit shall be made using an industry standard port and cable (e.g., RS-232/serial, USB, RJ-45/Ethernet). The contractor shall demonstrate the use of the external programming interface together with the reconfiguration demonstration described in section 4.4.21 above.

4.4.23 Zeroize. An analysis of the zeroize function shall be made to verify that it is capable of rendering the system unusable by erasing data required for its operation. The contractor shall demonstrate how using the zeroize function renders the system unusable. A test shall be performed to establish the state of the data in the system prior to and following zeroization.

4.4.24 Zeroize Switch. Verification of the zeroize switch shall be conducted via demonstration. This may be the same demonstration described in section 4.4.23 above.

4.4.25 Information Assurance. Verification of the Information Assurance requirement shall consist of two events. The first event is an analysis of the design of the hardware, firmware and software comprising the system. This includes any system peripherals such as a laptop that may be used to load and configure the system. The second event is an intrusion test to be performed at an accredited IA testing lab. The system shall be tested in both its operational and zeroized configurations. In order to achieve an Authority to Operate, it is also necessary that the contractor provide sufficient information to complete an SSAA (System Security Authorization Agreement).

4.4.26 Technology Readiness Level. An analysis of the system shall be performed to establish that will achieve a Technology Readiness Level (TRL) of 9 as defined by GAO/NSIADD-99-162 Best Practices Appendix, by the date of system deployment.

4.4.27 Uncomplicated Installation. An examination of the ease of installation, removal, and transfer of the system shall be performed. The contractor shall demonstrate the ease of installation, removal, and transfer of the system. Transfer shall be between like vehicle types. This demonstration may be combined with the one described in section 4.4.11 and 4.4.12 above.

4.4.28 Uncomplicated Operation. An examination of the ease of operation of the system shall be performed. This examination will focus upon the user interface and the ease by which the system is loaded, configured and operated. The contractor shall demonstrate the ease of use of the system. This demonstration may be combined with the ones described in sections 4.4.8 and 4.4.9 above.

- 4.4.29 Switches. The contractor shall demonstrate the use of the On/Off and Zeroize switches. The zeroize function shall be demonstrated at the remote control only. These demonstrations may be combined with other demonstrations described above.
- 4.4.30 Indicators. The contractor shall demonstrate that the system's visual display is sufficient to provide a clear and unambiguous indication of the system's state. This includes whether the system is on or off, whether or not it is radiating, the jamming power level (high/low), and whether or not a fault condition exists.
- 4.4.31 Operation in Full Sunlight. The contractor shall demonstrate that the system's indicators (primary unit and remote) are fully legible in direct sunlight.
- 4.4.32 System Weight Limit. All of the components of the system shall be placed in their transit/shipping case(s). Each loaded transit/shipping case shall then be weighed on a calibrated scale. No single loaded transit/shipping case shall weigh more than 210 pounds.
- 4.4.33 Safe for any Vehicle Configuration. The contractor shall conduct a thorough analysis to show that the safety requirements of section 3.4.1 are met. Analysis shall be supplemented by testing to verify that radiation levels are within the parameters used for the analysis. Radiation levels shall be recorded for every crew position and the highest readings shall be used for verification.
- 4.4.34 Safe for Extended Exposure. The contractor shall conduct a thorough analysis to show that the safety requirements of section 3.4.2 are met. Output power levels, personnel location restrictions, system effectiveness, and personnel exposure will be assessed by the Contractor and the Government to provide an agreed upon safe solution. DoDI 6055.11, February 21, 1995, Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers shall be used for exposure level guidance.
- 4.4.35 Grounding. A test shall be conducted to verify that the grounding path from the system to the vehicle in which it is installed does not exceed 2 Ohms.
- 4.4.36 EMI/EMC. The installed system shall be tested for EMI compliance using the measurement techniques of MIL-STD-461/1275.
- 4.4.37 Co-Site Interference. The contractor shall demonstrate that the system, when installed on the vehicles specified in Section 3.2.2, shall not introduce co-site interference that would preclude the operation of non-frequency hopping radios or navigation systems installed on the vehicle.
- 4.4.38 Transit/Storage/Shipping Case(s). The contractor shall demonstrate that the transit/shipping case(s) are sufficient to store all of the system's various components and that these case(s) are appropriate storage containers for the system.

4.4.39 Transportation Restrictions. The contractor shall perform an analysis to show that the system does not introduce any restrictions to transportation by air, sea or land.

4.4.40 Mission Duration. Satisfactory completion of the tests in sections 4.4.46 and 4.4.41 fulfill the requirements of section 3.7.1.

4.4.41 Calculated MTBF. The contractor shall perform analysis using a standard industry reliability prediction model to verify that the calculated MTBF equals or exceeds the value in requirement 3.7.2.

4.4.42 Mean Time to Repair (MTTR).

The contractor shall demonstrate each of the system's unit level repair tasks. The mean of the times recorded to complete these tasks shall not exceed the value specified in requirement 3.7.3.

4.4.43 Built-In Test (BIT). The contractor shall perform an analysis of the system's Built-In Test (BIT) capabilities. This shall be used to verify that BIT is sufficient to identify any major system fault. It shall also be used to verify that BIT can be used to isolate faults and assist in identifying required maintenance actions. The contractor shall demonstrate the use of the system's BIT capabilities by intentionally introducing faults in an installed system that should be identified by BIT.

4.4.44 System Status. The contractor shall demonstrate how the system's indicators user interface provides an unambiguous indication of the readiness of the system to counteract threat signals.

4.4.45 Test Equipment. The contractor shall demonstrate how the external test equipment provided with the system can be used to establish that the system is transmitting and jamming target signals. A test shall be conducted to compare the performance of system test equipment against standard test instrumentation.

4.4.46 Operational Availability. The contractor shall perform analysis to verify the operational availability requirement stated in paragraph 3.7.7.

4.4.47 Operating Temperature. The system shall be tested in accordance with MIL-STD-810F, Method 501.4, Procedure II (category Hot/Dry) as installed in the vehicle. The storage temperature shall be 70°C. The operating period shall be 8 hours at a temperature of 50°C.

4.4.48 Storage Temperature (Low). The system shall be tested in accordance with MIL-STD-810F, Method 502.4, Procedure II (category Low). The storage temperature shall be -30°C. The operating period shall be 8 hours at a temperature of -20°C.

4.4.49 Solar Radiation. The system shall be tested in accordance with MIL-STD-810F, Method 505.4, Procedure I. The system shall be operational and a minimum of three 24-hour cycles shall be conducted in accordance with Table 505.4-I and Figure 505.4-I.

4.4.50 Shock. The system shall be tested in accordance with MIL-STD-810F, Method 516.5:

- Procedure I (Functional Shock). The system shall be installed and operating during the test but performance parameters shall not be measured.
- Procedure IV (Transit Drop). The system shall be packaged in its transit/shipping case configuration.

4.4.51 Vibration. The system shall be tested in accordance with MIL-STD-810F, Method 514.5, Procedure 1, Category 4 (Truck/trailer/tracked - restrained cargo) and MIL-STD-810F, Method 5.1.4.5, Procedure 1, Category 24 (Minimum Integrity).

4.4.52 Rain and Blowing Rain. The system shall be tested in accordance with MIL-STD-810F, Method 506.4, Procedure I. All unused connectors shall be capped.

4.4.53 Sand and Dust. The system shall be tested in a non-operating mode in accordance with MIL-STD-810F, Method 510.4, Procedure I (Blowing Dust) and Procedure II (Blowing Sand). All unused connectors shall be capped and the orientation of the system shall not be changed during the test. Dust penetration is allowed provided performance is not otherwise degraded.

4.4.54 Fungus. The system shall be certified to contain only non-nutrient materials.

4.4.55 Explosive Environment. The System shall be tested in accordance with MIL-STD-810F, Method 511.4.

4.4.56 Low Pressure (Altitude). The system shall be tested in accordance with MIL-STD-810F, Method 500.4, Procedure I (Storage/Air Transport) and Procedure II (Operation/Air Carriage).

SECTION 5. PACKAGING

The following mandatory paragraph from MIL-STD-961E is to be the section 5 of every purchase description. Generally, all packaging requirements should be in the contract, however if some packaging requirements are performance and necessary for the acquisition they may be stated as requirements in Section 3 and written in performance terms.

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity."

SECTION 6: NOTES This section is for general or explanatory information, such as intended use, ordering data, acronym list and definitions are contained in this section. Requirements shall not be stated in this section, as this section is not contractually binding.

Parenthetical note

Intended use

Acquisition requirements

Associated DIDs

Technical manuals

Qualification note

Definitions

Supersession information

Cross-reference of classification

Government-furnished property

Government-loaned property

Patent notice

Part or identifying number

Subject term (key word) listing

International standardization agreements

Identification of changes

**PERFORMANCE SPECIFICATION FOR
THE
GROUND
ELECTRONICS COUNTER MEASURE
(GROUND ECM)
SYSTEM**

**FINAL
4 November 2005**

This document incorporates the tracked/redlined changes from the Final Draft Document dated 10/27/05

**PERFORMANCE SPECIFICATION FOR THE GROUND ELECTRONICS
COUNTER MEASURE (GROUND ECM) SYSTEM**

SECTION 1: SCOPE

1.1 General. There is an urgent and compelling need to procure and deploy up to 5,000 Ground Mobile Electronics Counter Measure (ECM) Systems. This capability is needed to protect maneuver elements and entry control points from Radio Frequency triggered IEDs (Improvised Explosive Devices). Weapons of choice for IED construction in Iraq consist mostly of ammunition left over from stockpiles amassed by the former regime. Commonly, 152mm and 122mm artillery shells are used as the explosive. Frequently, remote control devices are used to detonate these IEDs, providing the insurgents a safe stand off distance from the explosion and the ability to utilize cover and concealment in their attacks. A wide range of wireless devices have or are being used to trigger IEDs. These include commercial communications devices and a variety of field radio systems. These include a mixture of low and high power devices. The threat is evolving. New methods for remotely triggering IEDs are developed as old ways are successfully countered. For this reason, the jamming system must be adaptable to new signal types. There is a pressing need for large numbers of mobile, high power, programmable jammers that will defeat the link between the initiator and the receiver on an IED and protect friendly personnel operating in an (b)(2) environment. Ultimately, the system may also be dismounted for use at checkpoints or other vulnerable locations.

1.2 Supportability. The contractor will be expected to maintain the operational readiness of the Ground ECM System through logistics support services and field service support.

SECTION 2: APPLICABLE DOCUMENTS

The documents listed in this section are specified in sections 3, 4 or 5 of this performance specification. This section does not include documents listed in other sections of this performance specification or those that are recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4 or 5 of this purchase description, whether or not they are listed. The intent is for the system to meet the requirements specified in this document. Where exceptions are required, contractor shall specify those to the Government. Contractor at any time may propose alternatives/waiver to requirements stated herein.

MIL-STD-129N	15 May 97	DoD Standard Practice for Military Marking
MIL-STD-130	15 Jan 00	Identification Marking of U.S. Military Property
MIL-STD-461E	20 Aug 99	Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference
MIL-STD-810, Rev F	01 Jan 00	Environmental Engineering Considerations and Laboratory Tests
MIL-STD-882C, N1	19 Jan 96	System Safety Program Requirements
MIL-STD-2073-1C	1 Oct 96	DoD Standard Practice for Military Packaging
DoD 8510.1-M	31 July 2000	Department of Defense Information Technology Security Certification and Accreditation Process (DITSCAP)
DoDI 6055.11	21 Feb 1995	<u>Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers</u>
DoDI 8500.2	6 Feb 2003	Information Assurance (IA) Implementation
CJCSI 6510.01D	15 Jun 2004	Information Assurance (IA) and Computer Network Defense (CND)
MCO 5239.2	18 Nov 2002	Marine Corps Information Assurance Program (MCIAP)
DISR Release	05-2.0	DoD IT Standards Registry (for more information see https://disronline.disa.mil/a/DISR/index.jsp)

IEEE/EIA 12207

1996

Industry Implementation for International Standard
ISO/IEC 12207, Standard for Information Technology
Software Life Cycle Processes

SECTION 3: REQUIREMENTS. Government/Contractor agreement on common antenna(s) selection will determine if waiver to the requirements contained herein are necessary. Additionally, the Government and contractor(s) shall agree upon a single, common remote control device that can be interchanged between various Ground ECM configurations and vehicle platforms. Requirements contained herein should be considered threshold if not otherwise marked "objective".

3.1 Performance Characteristics.

3.1.1 Protection Radius. The system shall provide (b)(2) denial of detonation within an envelope of protection (b)(2) from vehicle/platform when the (b)(2) transmitter is (b)(2) from the (b)(2) receiver. The system shall be capable of jamming a signal in sufficient time and with sufficient force that a minimum safe distance of (b)(2) can be maintained (b)(2) the vehicle on which the system is mounted.

3.1.2 Frequency Range. The system shall operate in (b)(2) spectrum from (b)(2). Specific frequency requirements are classified and will be provided separately. The system may be configured with the specific power amplifiers required to meet the defined threat bands.

3.1.3 Signal Types. The system shall be effective against all known threat systems in the (b)(2) spectrum. The system may be configured with the specific power amplifiers that are required to meet the defined threats in the UHF band.

3.1.4 Configurable for Specific Threats. The system shall be programmable by a designated and trained individual to address specific threats in terms of

(b)(2)

3.1.5 Friendly Communications. (b)(2)

(b)(2)

3.1.6 Transmit Power. The system shall have a maximum transmit power of not less than (b)(2) average power per channel in the (b)(2) selection shall be accomplished during the (b)(2) and by the (b)(2)

3.1.7 Operational Field of View. The system, when installed in a vehicle, shall provide protection over a field of view of (b)(2) (b)(2)

3.1.8 Modes of Operation. The system shall have four primary modes of operation: On (threshold), Off (threshold), Zeroize (threshold), and Stand-By (objective). The On mode shall have a (b)(2)

3.1.9 Remote Control. The system shall have a remote control that allows access to all features required for basic operation of the system. It is not required to be able to reprogram the system from remote control. The remote control may be located in the vehicle cab by the driver and assistant driver. (b)(2)

(b)(2) The remote control shall support various system configuration without modifications.

3.1.10 Operation on Internal Battery Power. The system shall have an internal battery that supports full system operation for periods of up to (b)(2) when external power is interrupted (objective).

3.1.11 Internal System Battery. The system shall have an internal system battery that will maintain system configuration and data for at least (b)(2) without external power (objective).

3.2 Design Characteristics.

3.2.1 Installation Kit. The system shall include a vehicle installation kit capable of mounting the system on a range of Marine Corps vehicles without permanent modification to either the equipment or the vehicle. The vehicle installation kit may be composed of common and vehicle platform specific parts. In the event it is not possible to provide an installation kit that satisfies the "no modification" criteria, then the Government may consider waivers to this requirement. The system's primary unit shall be (b)(2)

3.2.2 Vehicle Installation Kits. The vehicle installation kits shall be portable across like vehicle platforms to allow for interchangeability without any permanent changes to the vehicle being required. Installation kits shall be provided for the following vehicles:

(b)(2)

3.2.3 Transferable. The design of the system and its vehicle installation kit shall be such that the system and the installation kit can be transferred from one vehicle to another like vehicle.

3.2.4 Modular Design. The system shall have a modular design that supports the replacement of malfunctioning or damaged subassemblies.

3.2.5 Weight. The weight of the system's primary unit shall not exceed
(b)(2)

3.2.6 Antenna Installation. The system shall include an antenna(s) that can be easily installed on the vehicles specified above without physically interfering with the operation of the vehicle or its weapons stations.

3.2.7 Antenna Operating Frequency. The antenna(s) selected shall support the operation of the system over all of the operating bands as specified in paragraph 3.1.2. .

3.2.8 Antenna Design. The system design shall accommodate the selected common antenna(s) on all vehicle platforms identified in paragraph 3.2.2. The antenna(s) shall be positioned on the vehicle platform in a Government approved location that optimizes system performance.

3.2.9 Power Requirements. The system shall operate from vehicle power at 24 VDC (threshold) and 12 VDC (objective) (b)(2)

3.2.10 Direct Connection to Vehicle Power System. The system shall have a power cable for direct connection into the vehicle's power system. The cables shall be clearly marked for polarity to prevent misconnection.

3.2.11 NATO Slave Power Cable. The system shall interface with a power cable for connection into the vehicle's NATO Slave receptacle (objective).

3.2.12 AC-to-DC Converter. For fixed installations, the system shall interface to a 110/220 VAC, 50-60 Hz AC-to-DC Converter (objective).

3.2.13 Power Spike and Surge Protection. The system's power supply shall be protected against power surges and spikes normally associated with vehicle power.

3.2.14 Operation Mode Start-Up. Start-up time from system power off to the fully operational Operation Mode for the System shall not be greater than (b)(2) measured after the power switch is toggled to the "ON" position. (objective)

3.2.15 Power Failure. The system shall allow for graceful degradation in the event of an unexpected power failure without loss of system integrity and allow for automatic re-initialization within (b)(2) without operator intervention (objective).

3.2.16 Operational Modes. The system shall support Operation and Stand-by Modes via user-selectable switches on the primary unit and remote control (objective).

3.2.17 Stand-By Mode. The system shall have a Stand-by Mode which suspends all RF transmissions, and minimizes all RF emissions while the System remains powered (objective).

3.2.18 Reconfigurable. The system shall be rapidly (b)(2)
(b)(2)

3.2.19 External Programming Interfaces. The system shall support external reprogramming by a Windows-based laptop computer and an interface cable.

3.2.20 System Configuration Programming Load. The system configuration shall be contained in an encrypted file loaded into the primary unit from external programming devices file that defines the operating parameters of the system (objective).

3.2.21 System Configuration File. The system configuration files stored in the primary unit and the laptop shall be encrypted (objective).

3.2.22 Zeroize. The system shall have a zeroize function or procedure to allow the user locally to disable and render the primary unit inoperable (threshold). The system shall allow for remote zeroization (objective).

3.2.23 Zeroize Switch. The zeroize function shall be initiated on the remote control (threshold) and the primary unit (objective).

3.2.24 Anti-Tamper. The system shall implement anti-tamper functions to prevent exploitation and reverse engineering of algorithms, techniques and operating parameters from a captured System that has not been zeroized (objective).

3.2.25 Purge Capability. The system shall either be capable of purging classified waveform data or it shall include a removable storage device such that the permanently mounted portion of the system can be rendered unclassified without zeroizing the entire system (objective).

3.2.26 Connectors. The system shall provide RF and multi-pin military standard connectors for the RF antenna ports, DC power, and the remote control cable (objective).

3.2.27 Information Assurance. The system shall store and process classified waveform information up to the Secret GENSER level. As such, the design shall incorporate information systems security engineering principles supporting DoD "Defense-in-Depth" criteria outlined in CJCSI 6510.01D and CJCSM 6510.01 and satisfy all technical/logical security controls specified in DoDI 8500.2 for a classified, Mission Assurance Category I system to achieve a full Authority to Operate IAW DoDI 5200.40. The system design shall also incorporate anti-tamper protection for those technologies identified as Critical Program

Information IAW DoDD 5000.1, DoDI 5000.2 and the Defense Acquisition Guidebook. This paragraph describes requirements needed for the Government to obtain an Interim Authority to Operate (IATO). The information security associated with the dissemination, download, and programming of the waveforms will be a joint responsibility of the Contractor and the Government.

3.2.28 Technology Readiness Level. By the date of system deployment, the system shall have a Technology Readiness Level (TRL) 9 as defined by GAO/NSIADD-99-162 Best Practices Appendix.

3.2.29 Global Positioning System (GPS). The system shall utilize GPS universal timing protocol to establish system timing (objective).

3.3. Human Factors.

3.3.1 Uncomplicated Installation. The system shall be easy to install, easy to remove, and easy to transfer to another similar vehicle. This includes the primary unit, the installation kit, the antenna(s), and connections to the power source.

3.3.2 Uncomplicated Operation. The system shall have an intuitive user interface that supports both the reprogramming of the equipment and the common operation of the equipment.

3.3.3 Switches. The system's primary unit and remote control shall have switches for the following functions: On/Off (threshold), Zeroize at remote control (threshold) and at primary unit (objective), Stand-By mode (objective), and Jamming Power Level (objective). All switches and indicators shall be accessible to vehicle crew members.

3.3.4 Indicators. The primary unit shall provide a distinct visual indication for conditions including, but not limited to: Operate, Transmit, Jamming Power Level (high/low), General Fault, Stand-by Mode (objective), and Antenna/Transmission Line Fault (objective). The system shall provide a positive indication as to whether or not the system is radiating.

3.3.5 Compatibility with Night Vision Equipment. The system shall support black-out operation without degradation of night vision equipment (objective).

3.3.6 Compatibility with Protective Clothing. The system shall be capable of being operated by operators wearing NBC Defense protective clothing (MOPP IV) and cold weather gear (objective).

3.3.7 Operation in Full Sunlight. The system shall be capable of operation in full sunlight conditions.

3.3.8 System Weight Limit. In its transit case(s), the weight of any individual transit case shall not exceed 210 pounds (threshold) and 100 pounds (objective).

3.4 Safety.

3.4.1 Safe for Any Vehicle Configuration. The system shall be able to operate with vehicle doors and hatches closed (threshold), or with vehicle doors and hatches open and crew members exposed (objective) without harm to the operator or crew members.

3.4.2 Safe for Extended Exposure. The system shall be safe for personnel to operate over extended periods of time. An extended period is defined as (b)(2) as defined in 3.4.1 above. Output power levels, personnel location restrictions, system effectiveness, and personnel exposure will be assessed by the Contractor and the Government to provide an agreed upon safe solution. DoDI 6055.11, February 21, 1995, Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers shall be used for exposure level guidance.

3.5 Electromagnetic Interference Suppression.

3.5.1 Grounding. The system shall be properly grounded, bonded and shielded to prevent ground loops and common ground returns for power/control circuits to minimize electromagnetic interference.

3.5.2 EMI/EMC. The system shall satisfy EMI/EMC requirements (MIL-STD-461/1275) such that it does not prevent the operation of voice or data radios, or navigation equipment within the vehicle (threshold), and does not interfere with any other equipment within the vehicle (objective).

3.5.3 Co-Site Interference. The system shall not introduce co-site interference that would preclude the operation of (b)(2) (b)(2) (objective) as defined in paragraph 3.1.5.

3.6 Transportability.

3.6.1 Transit/Storage/Shipping Case(s). The system shall include one or more transit/storage/shipping case(s) which may serve as both the host rack for the mounted equipment and the shipping/storage cases for the equipment.

3.6.2 Lithium Batteries. The system shall not introduce non-NATO standard lithium batteries (objective).

3.6.3 Transportation Restrictions. The system shall not inhibit transportation by rail, air or ship.

3.7 Reliability and Maintainability.

3.7.1 Mission Duration. The system shall be capable of being operated continuously for a period of [(b)(2)]

3.7.2 Calculated MTBF. The system's MTBF shall be calculated as specified in MIL-HDBK-217F shall not be less than [(b)(2)]

3.7.3 Mean Time to Repair (MTTR). The system shall have a MTTR not greater than [(b)(2)] for any organizational level repair task.

3.7.4 Built-In Test (BIT). The system shall have a BIT function to indicate system faults.

3.7.5 System Status. The system shall provide a clear indication (go-no go) of system status.

3.7.6 Test Equipment. The system shall provide external test equipment that shall verify the system is radiating at the desired frequency and power levels as defined herein.

3.7.7 Operational Availability. The system shall achieve a system availability of [(b)(2)]

3.8 Finish.

3.8.1 Primary Unit. The finish of the primary unit shall have anti-corrosion capabilities to withstand exposure to harsh environments consistent with grounding requirements (objective).

3.8.2 Remote Control. The finish of the remote control shall have anti-corrosion capabilities to withstand exposure to harsh environments consistent with grounding requirements (objective).

3.9 Environmental.

The system shall operate in wheeled and tracked vehicles under harsh environmental conditions. The system shall meet the requirements of the following environmental test criteria as installed in the vehicle platforms as identified in paragraph 3.2.2:

3.9.1 Operating Temperature. The system shall be operable, as installed in the vehicle platforms identified in paragraph 3.2.2, without degradation in specified performance throughout the temperature range of -20 °C to +50 °C (threshold) and [(b)(2)]

3.9.2 Storage Temperature. The system shall meet the requirements of this specification after prolonged non-operating storage at any temperature within the range of -30 °C to +70 °C (threshold) and [(b)(2)]

3.9.3 Solar Radiation. The system shall initialize and operate as installed in the vehicle platforms identified in paragraph 3.2.2 while exposed to direct sunlight at

(b)(2)

3.9.4 Shock. The system shall operate while subject to the shock profiles of common military wheeled (threshold) and tracked (objective) vehicles in a tactical environment. In transport mode, the system shall withstand the vehicle shocks encountered in transportation.

3.9.5 Vibration. The system shall operate while subject to the vibration of common military wheeled (threshold) and tracked (objective) vehicles.

3.9.6 Rain and Blowing Rain. The system shall initialize and operate during and after exposure to rain (threshold) and blowing rain (objective).

3.9.7 Sand and Dust. The system shall initialize and operate during and after exposure to blown sand and dust.

3.9.8 Salt Fog. The system shall initialize and operate during and after exposure to salt fog and/or spray (objective).

3.9.9 Humidity. The system shall initialize and operate when exposed to the humidity of a tropical environment (objective).

3.9.10 Fungus. The system shall initialize and operate after exposure to fungal growth.

3.9.11 Icing/Freezing Rain. The system shall initialize and operate during and after exposure to ice buildup due to rain, drizzle, fog or splash. (objective)

3.9.12 Shock-Ballistic. The system shall initialize and operate after the shock normally associated with a (b)(2)

3.9.13 Explosive Environment. The system shall operate safely in proximity with explosives and/or munitions (threshold). The system shall operate safely in the presence of aircraft and vehicle refueling operations, but at least (b)(2) Munitions and explosives restrictions and/or location restrictions may be imposed to address any explosives and/or munitions vulnerability.

3.9.14 Low Pressure (Altitude). The system shall be transportable (non-operating) in military aircraft at altitudes of (b)(2) and shall initialize and operate at pressures associated with 0 to (b)(2)

3.9.15 NBC Decontamination. The system shall be able to withstand NBC decontamination with DS2 (Decontaminating Solution 2). (objective)

SECTION 4: VERIFICATION

In general this section specifies the criteria for verification of system performance and design characteristics and establishes the requirements for system qualification testing.

4.1 Verification Methods. Throughout the qualification period, verification may be accomplished by a combination of inspection, analysis, demonstration, and test. Verification shall be conducted in accordance with the Government approved contractors' test plan/procedures and as specified in the Section 4.2.

4.1.1 Analysis. Verification by analysis involves the manipulation of data by engineering analysis or modeling. Some of the sources of this data will be as follows:

- Data from historical records of use
- Data from previous tests
- Data from compliance tests of other intelligence systems
- Data collected specifically for analysis

4.1.2 Demonstration. Demonstration involves the observation of properties, characteristics, or parameters during actual operation, adjustment, or re-configuration of items in specific scenarios without the use of instrumentation for quantitative measurements.

4.1.3 Examination. Examination involves the inspection of an item and the comparison of its characteristics against a predetermined qualitative and quantitative standard. To perform verification by examination partial disassembly of an item may be required. Verification by examination shall consist of, but shall not be limited to the following:

- Surveillance of operations to determine that practices, methods, and procedures of the control system are being properly applied
- Product inspection to measure quality of product to be offered for acceptance
- Production inspection of delivered products to ensure compliance with all requirements of this specification

4.1.4 Test. Verification by test is achieved by repeatable measurement of a parameter (direct or otherwise), including functional operation, using established scientific principles/procedures to determine compliance with the specified requirement. The testing shall be conducted, in a stated environment, such that the test results shall be meaningful and repeatable. Testing will involve the operation of the test item, and the recording and evaluation of quantitative data. A comparison of the data shall be conducted to determine whether data statistics conform to pre-established quantitative prediction for the parameters (with their associated tolerances).

4.2 Waiver. The Government has the authority to waive any required verification. If a particular verification is waived, certified data complying with the forms of the approved test plans and test procedures shall be provided to the Government. The certified data shall verify that the equipment meets the requirements of this specification and shall be dated and signed by an authorized official.

4.3 Classification of Inspection. The system shall undergo a inspection period as specified in the following subparagraphs and Tables I and II to determine compliance with the requirements of section 3 of this specification. Table I and II provide requirement/verification cross reference matrices, which outline the verification methods that the Government perceives may be used to verify each requirement. However, if the Contractor perceives that different methods will be better to verify the requirements, then the contractor may propose alternative test methods, techniques, or equipment, including the application of statistical process control, tool control, or cost effective sampling procedures. The contractor shall utilize the most cost-effective method for ensuring the ECM meets the stated requirements. Acceptable alternative verification approaches shall be identified in the contract. Inspection shall be performed in accordance with Contractor's submitted - Government approved test plan and procedures. Inspection requirements are classified as follows:

- a. First Article Inspection (see 4.3.1)
- b. Conformance Inspection/Production Acceptance Test (CI/PAT) (see 4.3.2)

4.3.1 First Article Inspection. First Article Inspection (FAI) shall be performed on the number of production-representative units specified in the contract. FAI shall be conducted in accordance with the approved test plan/procedures. Unless otherwise approved by the Government, Table I represents the requirement/verification cross matrix that shall be performed during FAI.

Table I. Requirement/Verification Cross Reference Matrix.

Section 3 Paragraph	Method of Verification for FAI				Section 4 Paragraph
	Analysis	Demonstration	Examination	Test	
3.1.1	X			X	4.4.1
3.1.2	X	X		X	4.4.2
3.1.3	X	X		X	4.4.3
3.1.4	X	X		X	4.4.4
3.1.5	X	X			4.4.5
3.1.6		X		X	4.4.6
3.1.7		X			4.4.7
3.1.8		X			4.4.8
3.1.9		X	X		4.4.9
3.2.1			X		4.4.10

3.2.2		X			4.4.11
3.2.3		X	X		4.4.12
3.2.4		X	X		4.4.13
3.2.5			X		4.4.14
3.2.6		X			4.4.15
3.2.7	X			X	4.4.16
3.2.8			X		4.4.17
3.2.9	X	X			4.4.18
3.2.10		X	X		4.4.19
3.2.13	X	X			4.4.20
3.2.18	X	X			4.4.21
3.2.19	X	X			4.4.22
3.2.22	X	X		X	4.4.23
3.2.23		X			4.4.24
3.2.27	X			X	4.4.25
3.2.28	X				4.4.26
3.3.1		X	X		4.4.27
3.3.2		X	X		4.4.28
3.3.3		X	X		4.4.29
3.3.4		X	X		4.4.30
3.3.7		X			4.4.31
3.3.8	X		X		4.4.32
3.4.1	X			X	4.4.33
3.4.2	X				4.4.34
3.5.1	X			X	4.4.35
3.5.2		X		X	4.4.36
3.5.3		X			4.4.37
3.6.1		X	X		4.4.38
3.6.3	X				4.4.39
3.7.1	X			X	4.4.40
3.7.2	X				4.4.41
3.7.3		X			4.4.42
3.7.4	X	X			4.4.43
3.7.5		X	X		4.4.44
3.7.6		X	X		4.4.45

3.7.7	X				4.4.46
3.9.1				X	4.4.47, 4.4.48
3.9.2				X	4.4.47, 4.4.48
3.9.3				X	4.4.49
3.9.4				X	4.4.50
3.9.5				X	4.4.51
3.9.6				X	4.4.52
3.9.7				X	4.4.53
3.9.10	X				4.4.56
3.9.13				X	4.4.57
3.9.14				X	4.4.58

4.3.2 Conformance Inspection/Production Acceptance Test. Conformance Inspection/Production Acceptance Test (CI/PAT) shall be performed on all units. CI/PAT shall be conducted in accordance with the approved test plan/procedures. Unless otherwise approved by the Government, Table II represents the requirement/verification cross matrix shall be performed during CI/PAT:

Table II. Requirement/Verification Cross Reference Matrix.

Section 3 Paragraph	Method of Verification for CI/PAT				Section 4 Paragraph
	Analysis	Demonstration	Examination	Test	
3.1.2		X			4.4.2
3.1.3		X			4.4.3
3.1.4		X			4.4.4
3.1.8		X			4.4.8
3.1.9		X			4.4.9
3.2.5			X		4.4.14

3.2.9		X			4.4.18
3.2.10		X	X		4.4.19
3.2.13		X			4.4.20
3.2.18		X			4.4.21
3.2.19		X			4.4.22
3.2.22		X			4.4.23
3.2.23		X			4.4.24
3.3.3		X	X		4.4.29
3.3.4		X	X		4.4.30
3.3.8			X		4.4.32
3.7.4		X			4.4.43
3.7.5		X	X		4.4.44
3.7.6		X	X		4.4.45

4.4 Verification Descriptions

4.4.1 Protection Radius. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date.

4.4.2 Frequency Range. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date. The system may be configured with the specific power amplifiers required to meet the defined threat bands.

4.4.3 Signal Types. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date. The system may be configured with the specific power amplifiers that are required to meet the defined threats in the UHF band.

4.4.4 Configurable for Specific Threats. The Government will develop test procedures for this requirement based upon the criteria in Section 3. These procedures will be provided at a later date.

4.4.5 Friendly Communications. The contractor shall perform an analysis to verify that the system can be configured so as not to jam specific frequencies needed for friendly

communications and navigation equipment. The contractor shall demonstrate the ability to notch-out frequencies in the output waveform for radio communications.

4.4.6 Transmit Power. The contractor shall perform a demonstration of the system design to verify that the user is able to select power levels within each frequency band. A test shall be performed which measures the output power of the system's low-band jamming channels at the antenna connectors on the primary unit using a calibrated power meter. Maximum output power shall be not less than XXX watts average power per channel in the low band jamming channels.

4.4.7 Operational Field of View. The contractor shall demonstrate the ability of the installed system to provide protection over the specified field of view.

4.4.8 Modes of Operation. The contractor shall demonstrate the operation of the system installed in each of the platforms identified in section 3.2.2. This shall include verification that the system is transmitting in the "on" mode and that it is not transmitting in the "off" mode.

4.4.9 Remote Control. The contractor shall demonstrate the operation of the system using only the remote control on one of the platforms identified in section 3.2.2. This shall include verification that the system is transmitting in the "on" mode and that it is not transmitting in the "off" mode. An examination shall be performed to ensure the remote control is common across all vehicle platforms specified in paragraph 3.2.2.

4.4.10 Installation Kit. The design of the system shall be examined to verify that it has an installation kit capable of mounting the system in a vehicle without permanent modifications to the vehicle. Disallowed permanent modifications include the drilling of new holes for mounting any part of the system or the addition of a new alternator. It is expected that the system will include power cables that must be connected to the vehicle's batteries. The system shall be examined to verify that the system's primary unit is mountable in a 19 inch rack and is equal to or less than 8U (14 inches) in height.

4.4.11 Vehicle Installation Kits. The contractor shall demonstrate the installation of the system using the installation kit in both the M114 HMMWV (High Mobility Multipurpose Wheeled Vehicle) and the MTRV (Medium Tactical Vehicle Replacement). This demonstration shall be accomplished together with the demonstration requirements of section 4.4.8 (i.e., the system shall be installed and then operated on each platform to satisfy both requirements)

4.4.12 Transferable. The design of the system and its install kit shall be examined to verify that it supports easily transferring the system between like vehicles specified in section 3.2.2. The contractor shall demonstrate transferring the system between two M114 HMMWVs (High Mobility Multipurpose Wheeled Vehicles) and between two MTRVs (Medium Vehicle Vehicle Replacements).

4.4.13 Modular Design. The system shall be examined to verify that it has a modular design. The contractor shall conduct an analysis to show how this design supports field maintenance.

4.4.14 Weight. The primary unit shall be weighed on a calibrated scale and shall be equal to or less than the value specified in paragraph 3.2.5.

4.4.15 Antenna Installation. The contractor shall demonstrate that the system's antenna(s) are easily installed and do not interfere with the physical operation of the vehicle or its weapons stations. This demonstration shall be performed in conjunction with the demonstration of requirements in sections 4.4.8 and 4.4.11 above.

4.4.16 Antenna Operating Frequency. The contractor shall conduct an analysis to verify that the antenna or combination of antennas are suitable for operation over the frequency band specified in requirement 3.1.2. This analysis shall be confirmed during the testing described in sections 4.4.1 through 4.4.6 above.

4.4.17 Antenna Design. The antenna(s) installation shall be examined to verify that they do not readily, visually identify the presence of the system in the vehicle at a range of 50 meters or greater.

4.4.18 Power Requirements. The contractor shall demonstrate the operation of the system using vehicle power directly or through an AC inverter. The contractor shall conduct an analysis to confirm that the operation of the system as installed on each of the vehicle types specified in requirement 3.2.2 shall not overstress the vehicles electrical system. This analysis shall be confirmed by testing that measures both voltage drop and current draw during operation. All demonstration, analysis and testing shall assume that the vehicle is idling. The system shall not be operated while the vehicle is off.

4.4.19 Direct Connection to Vehicle Power System. The system shall be examined to verify that it has the required power cable for direct connection to the vehicle's electrical system. The contractor shall demonstrate the operation of the system in each of the vehicles specified in requirement 3.2.2 using power cables that connect to the vehicle's electrical system. The cables shall be examined to confirm that they are clearly marked for polarity.

4.4.20 Power Spike and Surge Protection. A demonstration shall be conducted to verify that the system is not damaged by the following power conditions:

- Steady state operations over the input operating range of 20 to 32 VDC.
- Steady state voltage ≥ 16 VDC but < 20 VDC for 90 seconds.
- Reverse Polarity: Inputs between 0 and -40 VDC. (objective)
- Voltage Transient: 50 VDC for 15 ms.
- Voltage Drop to 6 VDC for ≤ 1 second.

4.4.21 Reconfigurable. An analysis of the system shall be performed to verify that it is capable of accepting new data loads or software patches that enable it to counter new threat

signals within the frequency range specified in requirement 3.1.2. The contractor shall demonstrate the reconfiguration of an installed system using an external programming device as described in section 4.4.22 below.

4.4.22 External Programming Interfaces. An analysis of the system design shall be done to verify that it is reconfigurable using a standard laptop personal computer running the Microsoft Windows XP operating system and other software as required. The connection between the laptop computer and the primary unit shall be made using an industry standard port and cable (e.g., RS-232/serial, USB, RJ-45/Ethernet). The contractor shall demonstrate the use of the external programming interface together with the reconfiguration demonstration described in section 4.4.21 above.

4.4.23 Zeroize. An analysis of the zeroize function shall be made to verify that it is capable of rendering the system unusable by erasing data required for its operation. The contractor shall demonstrate how using the zeroize function renders the system unusable. A test shall be performed to establish the state of the data in the system prior to and following zeroization.

4.4.24 Zeroize Switch. Verification of the zeroize switch shall be conducted via demonstration. This may be the same demonstration described in section 4.4.23 above.

4.4.25 Information Assurance. Verification of the Information Assurance requirement shall consist of two events. The first event is an analysis of the design of the hardware, firmware and software comprising the system. This includes any system peripherals such as a laptop that may be used to load and configure the system. The second event is an intrusion test to be performed at an accredited IA testing lab. The system shall be tested in both its operational and zeroized configurations. In order to achieve an Authority to Operate, it is also necessary that the contractor provide sufficient information to complete an SSAA (System Security Authorization Agreement).

4.4.26 Technology Readiness Level. An analysis of the system shall be performed to establish that will achieve a Technology Readiness Level (TRL) of 9 as defined by GAO/NSIADD-99-162 Best Practices Appendix, by the date of system deployment.

4.4.27 Uncomplicated Installation. An examination of the ease of installation, removal, and transfer of the system shall be performed. The contractor shall demonstrate the ease of installation, removal, and transfer of the system. Transfer shall be between like vehicle types. This demonstration may be combined with the one described in section 4.4.11 and 4.4.12 above.

4.4.28 Uncomplicated Operation. An examination of the ease of operation of the system shall be performed. This examination will focus upon the user interface and the ease by which the system is loaded, configured and operated. The contractor shall demonstrate the ease of use of the system. This demonstration may be combined with the ones described in sections 4.4.8 and 4.4.9 above.

- 4.4.29 Switches. The contractor shall demonstrate the use of the On/Off and Zeroize switches. The zeroize function shall be demonstrated at the remote control only. These demonstrations may be combined with other demonstrations described above.
- 4.4.30 Indicators. The contractor shall demonstrate that the system's visual display is sufficient to provide a clear and unambiguous indication of the system's state. This includes whether the system is on or off, whether or not it is radiating, the jamming power level (high/low), and whether or not a fault condition exists.
- 4.4.31 Operation in Full Sunlight. The contractor shall demonstrate that the system's indicators (primary unit and remote) are fully legible in direct sunlight.
- 4.4.32 System Weight Limit. All of the components of the system shall be placed in their transit/shipping case(s). Each loaded transit/shipping case shall then be weighed on a calibrated scale. No single loaded transit/shipping case shall weigh more than 210 pounds.
- 4.4.33 Safe for any Vehicle Configuration. The contractor shall conduct a thorough analysis to show that the safety requirements of section 3.4.1 are met. Analysis shall be supplemented by testing to verify that radiation levels are within the parameters used for the analysis. Radiation levels shall be recorded for every crew position and the highest readings shall be used for verification.
- 4.4.34 Safe for Extended Exposure. The contractor shall conduct a thorough analysis to show that the safety requirements of section 3.4.2 are met. Output power levels, personnel location restrictions, system effectiveness, and personnel exposure will be assessed by the Contractor and the Government to provide an agreed upon safe solution. DoDI 6055.11, February 21, 1995, Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers shall be used for exposure level guidance.
- 4.4.35 Grounding. A test shall be conducted to verify that the grounding path from the system to the vehicle in which it is installed does not exceed 2 Ohms.
- 4.4.36 EMI/EMC. The installed system shall be tested for EMI compliance using the measurement techniques of MIL-STD-461/1275.
- 4.4.37 Co-Site Interference. The contractor shall demonstrate that the system, when installed on the vehicles specified in Section 3.2.2, shall not introduce co-site interference that would preclude the operation of non-frequency hopping radios or navigation systems installed on the vehicle.
- 4.4.38 Transit/Storage/Shipping Case(s). The contractor shall demonstrate that the transit/shipping case(s) are sufficient to store all of the system's various components and that these case(s) are appropriate storage containers for the system.

4.4.39 Transportation Restrictions. The contractor shall perform an analysis to show that the system does not introduce any restrictions to transportation by air, sea or land.

4.4.40 Mission Duration. Satisfactory completion of the tests in sections 4.4.46 and 4.4.41 fulfill the requirements of section 3.7.1.

4.4.41 Calculated MTBF. The contractor shall perform analysis using a standard industry reliability prediction model to verify that the calculated MTBF equals or exceeds the value in requirement 3.7.2.

4.4.42 Mean Time to Repair (MTTR).

The contractor shall demonstrate each of the system's unit level repair tasks. The mean of the times recorded to complete these tasks shall not exceed the value specified in requirement 3.7.3.

4.4.43 Built-In Test (BIT). The contractor shall perform an analysis of the system's Built-In Test (BIT) capabilities. This shall be used to verify that BIT is sufficient to identify any major system fault. It shall also be used to verify that BIT can be used to isolate faults and assist in identifying required maintenance actions. The contractor shall demonstrate the use of the system's BIT capabilities by intentionally introducing faults in an installed system that should be identified by BIT.

4.4.44 System Status. The contractor shall demonstrate how the system's indicators user interface provides an unambiguous indication of the readiness of the system to counteract threat signals.

4.4.45 Test Equipment. The contractor shall demonstrate how the external test equipment provided with the system can be used to establish that the system is transmitting and jamming target signals. A test shall be conducted to compare the performance of system test equipment against standard test instrumentation.

4.4.46 Operational Availability. The contractor shall perform analysis to verify the operational availability requirement stated in paragraph 3.7.7.

4.4.47 Operating Temperature. The system shall be tested in accordance with MIL-STD-810F, Method 501.4, Procedure II (category Hot/Dry) as installed in the vehicle. The storage temperature shall be 70°C. The operating period shall be 8 hours at a temperature of 50°C.

4.4.48 Storage Temperature (Low). The system shall be tested in accordance with MIL-STD-810F, Method 502.4, Procedure II (category Low). The storage temperature shall be -30°C. The operating period shall be 8 hours at a temperature of -20°C.

4.4.49 Solar Radiation. The system shall be tested in accordance with MIL-STD-810F, Method 505.4, Procedure I. The system shall be operational and a minimum of three 24-hour cycles shall be conducted in accordance with Table 505.4-I and Figure 505.4-I.

4.4.50 Shock. The system shall be tested in accordance with MIL-STD-810F, Method 516.5:

- Procedure I (Functional Shock). The system shall be installed and operating during the test but performance parameters shall not be measured.
- Procedure IV (Transit Drop). The system shall be packaged in its transit/shipping case configuration.

4.4.51 Vibration. The system shall be tested in accordance with MIL-STD-810F, Method 514.5, Procedure 1, Category 4 (Truck/trailer/tracked - restrained cargo) and MIL-STD-810F, Method 5.1.4.5, Procedure 1, Category 24 (Minimum Integrity).

4.4.52 Rain and Blowing Rain. The system shall be tested in accordance with MIL-STD-810F, Method 506.4, Procedure I. All unused connectors shall be capped.

4.4.53 Sand and Dust. The system shall be tested in a non-operating mode in accordance with MIL-STD-810F, Method 510.4, Procedure I (Blowing Dust) and Procedure II (Blowing Sand). All unused connectors shall be capped and the orientation of the system shall not be changed during the test. Dust penetration is allowed provided performance is not otherwise degraded.

4.4.54 Fungus. The system shall be certified to contain only non-nutrient materials.

4.4.55 Explosive Environment. The System shall be tested in accordance with MIL-STD-810F, Method 511.4.

4.4.56 Low Pressure (Altitude). The system shall be tested in accordance with MIL-STD-810F, Method 500.4, Procedure I (Storage/Air Transport) and Procedure II (Operation/Air Carriage).

SECTION 5. PACKAGING

The following mandatory paragraph from MIL-STD-961E is to be the section 5 of every purchase description. Generally, all packaging requirements should be in the contract, however if some packaging requirements are performance and necessary for the acquisition they may be stated as requirements in Section 3 and written in performance terms.

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity."

SECTION 6: NOTES This section is for general or explanatory information, such as intended use, ordering data, acronym list and definitions are contained in this section. Requirements shall not be stated in this section, as this section is not contractually binding.

Parenthetical note

Intended use

Acquisition requirements

Associated DIDs

Technical manuals

Qualification note

Definitions

Supersession information

Cross-reference of classification

Government-furnished property

Government-loaned property

Patent notice