e

# AWARD/CONTRACT

1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)

RATING: DX-A4

PAGE 1 OF PAGES 42

2. CONTRACT (Proc. Inst. Ident.) NO.: M67854-10-C-5063

3. EFFECTIVE DATE: 02 Jun 2010

4. REQUISITION/PURCHASE REQUEST/PROJECT NO.: SEE SCHEDULE

5. ISSUED BY — CODE M67854

MARCORSYSCOM CT025
ATTN: LAWANDA MORTON
2200 LESTER AVENUE
QUANTICO VA 22134

6. ADMINISTERED BY (If other than Item 5) — CODE

**See Item 5**

7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, state and zip code)

BAE SYSTEMS SURVIVABILITY SYSTEMS LLC
ADAM SAUNDERS
9113 LE SAINT DR
FAIRFIELD OH 45014-5453

CODE 6W728 — FACILITY CODE

8. DELIVERY
[ ] FOB ORIGIN [ X ] OTHER (See below)

9. DISCOUNT FOR PROMPT PAYMENT
Net 30 Days

10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN: — ITEM

11. SHIP TO/MARK FOR — CODE

**See Schedule**

12. PAYMENT WILL BE MADE BY — CODE HQ0337

DFAS-COLUMBUS CENTER
DFAS-CO/NORTH ENTITLEMENT OPERATIONS
PO BOX 182266
COLUMBUS OH 43218-2266

13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:
[ X ] 10 U.S.C. 2304(c)( 2 ) [ ] 41 U.S.C. 253(c)( )

14. ACCOUNTING AND APPROPRIATION DATA
**See Schedule**

| 15A. ITEM NO. | 15B. SUPPLIES/ SERVICES | 15C. QUANTITY | 15D. UNIT | 15E. UNIT PRICE | 15F. AMOUNT |
|---|---|---|---|---|---|
| | **SEE SCHEDULE** | | | | |

**15G. TOTAL AMOUNT OF CONTRACT $52,670,022.00**

16. TABLE OF CONTENTS


| (X) | SEC. | DESCRIPTION | PAGE(S) |
|---|---|---|---|
| | | **PART I - THE SCHEDULE** | |
| X | A | SOLICITATION/ CONTRACT FORM | 1 |
| X | B | SUPPLIES OR SERVICES AND PRICES/ COSTS | 2 - 4 |
| X | C | DESCRIPTION/ SPECS./ WORK STATEMENT | 5 - 21 |
| X | D | PACKAGING AND MARKING | 22 |
| X | E | INSPECTION AND ACCEPTANCE | 23 |
| X | F | DELIVERIES OR PERFORMANCE | 24 - 25 |
| X | G | CONTRACT ADMINISTRATION DATA | 26 - 28 |
| X | H | SPECIAL CONTRACT REQUIREMENTS | 29 |
| | | **PART II - CONTRACT CLAUSES** | |
| X | I | CONTRACT CLAUSES | 30 - 34 |
| | | **PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS** | |
| X | J | LIST OF ATTACHMENTS | 35 - 42 |
| | | **PART IV - REPRESENTATIONS AND INSTRUCTIONS** | |
| | K | REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS | |
| | L | INSTRS., CONDS., AND NOTICES TO OFFERORS | |
| | M | EVALUATION FACTORS FOR AWARD | |


CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17. [ X ] CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return1 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)

18. [ ] AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number M67854-10-R-5063 including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.

19A. NAME AND TITLE OF SIGNER (Type or print)

20A. NAME OF CONTRACTING OFFICER
DONALD W. SAUNDERS / CONTRACTING OFFICER
TEL: 703-432-3740 EMAIL: donald.saunders@usmc.mil

19B. NAME OF CONTRACTOR — 19C. DATE SIGNED

BY _____
(Signature of person authorized to sign)

20B. UNITED STATES OF AMERICA

BY _____
(Signature of Contracting Officer)

20C. DATE SIGNED: 04-Jun-2010

Section B - Supplies or Services and Prices

| ITEM NO | SUPPLIES/SERVICES | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 0001 | | | | | $0.00 |

Improved Turret Drive Sys Retrofit Kits
FFP
ITDS - Generation II Turret Drive System (G2TDS) - Integrated Gearbox; Drive Ring Gear; and Control Box. This system integrates the BPMTU and the MTU into one unit. This price inclues the kit, fielding, installation and G2MTU Spacer.
Kit Part #: 6452810-200M1
FOB: Destination

NET AMT $0.00

| ITEM NO | SUPPLIES/SERVICES | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 0001AA | | 5,390 | Each | $8,747.92 | $47,151,288.80 NTE |

Improved Turret Drive Sys Retrofit Kits
FFP
ITDS - Generation II Turret Drive System (G2TDS) - Integrated Gearbox; Drive Ring Gear; and Control Box. This system integrates the BPMTU and the MTU into one unit. This price inclues the kit, fielding, installation and G2MTU Spacer.
Kit Part #: 6452810-200M1. (ARMY M-ATV Vehicles)
FOB: Destination
MILSTRIP: M6785410RC00417
PURCHASE REQUEST NUMBER: M6785410RC00417

NET AMT $47,151,288.80

ACRN AA $18,860,515.52
CIN: M6785410RC004170001

| ITEM NO | SUPPLIES/SERVICES | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 0001AB | | 493 | Each | $8,747.92 | $4,312,724.56 NTE |

Improved Turret Drive Sys Retrofit Kits
FFP
ITDS - Generation II Turret Drive System (G2TDS) - Integrated Gearbox; Drive Ring Gear; and Control Box. This system integrates the BPMTU and the MTU into one unit. This price inclues the kit, fielding, installation and G2MTU Spacer.
Kit Part #: 6452810-200M1. (AIR FORCE M-ATV Vehicles)
FOB: Destination
MILSTRIP: F3QCDA7305G004
PURCHASE REQUEST NUMBER: M6785410RC00497

NET AMT $4,312,724.56

ACRN AB $1,725,089.82
CIN: M6785410RC004970001

| ITEM NO | SUPPLIES/SERVICES | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 0001AC | | 117 | Each | $8,747.92 | $1,023,506.64 NTE |

Improved Turret Drive Sys Retrofit Kits
FFP
ITDS - Generation II Turret Drive System (G2TDS) - Integrated Gearbox; Drive Ring Gear; and Control Box. This system integrates the BPMTU and the MTU into one unit. This price inclues the kit, fielding, installation and G2MTU Spacer.
Kit Part #: 6452810-200M1. (NAVY M-ATV Vehicles)
FOB: Destination
MILSTRIP: M6785410RC00368
PURCHASE REQUEST NUMBER: M6785410RC00368

NET AMT $1,023,506.64

ACRN AC $409,402.66
CIN: M6785410RC003680001

| ITEM NO | SUPPLIES/SERVICES | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 0002 | | 1 | Lot | $182,502.00 | $182,502.00 NTE |

Field Service Representatives
FFP
Subject Matter Experts (Quantity 2 for 30 days) in accordance with Part C.13 of the Statement of Work.
FOB: Destination
MILSTRIP: M6785410RC00417
PURCHASE REQUEST NUMBER: M6785410RC00417

NET AMT $182,502.00

ACRN AA $73,000.80
CIN: M6785410RC0041700010001

| ITEM NO | SUPPLIES/SERVICES | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| 0003 | | | | | NSP |

Technical Data Packages (NSP)
FFP
Not Seperately Priced
FOB: Destination

NET AMT $0.00

# STATEMENT OF WORK

## Table of Contents

C1 Purpose
C2 Management and Administration
C3 Engineering Design and Support
C4 System/Subsystem Design Engineering Support
C6 ILSC and Logistical Support Services
C7 Provisioning Technical Data Package, Engineering and Documentation Support
C9 Logistics Management Information (LMI)
C10 Technical Manuals and Publications Engineering Support
C11 Quality Engineering and Quality Assurance Support Services
C12 Training and Training Support Services
C13 Contractor Field Service Representatives (FSR's) Support and Services

INTRODUCTION:

Under certain field conditions, the Objective Gunner's Protection Kit (OGPK) will experience an imbalance off center of the turret bearing, and increased bearing resistance, both of which are a direct result from the added weight of the Overhead Protective cover (OPC) and operating environment. This imbalance has a direct impact on the drive system's ability to withstand the loads and adequately support the mission of the OGPK.

PURPOSE:

This Statement of Work is intended to identify the scope and requirements of the next generation of OGPK Turret Drive System for integration with a Mine Resistant Ambush Protected (MRAP) Family of Vehicles (FOV). The subject Drive System is intended to replace the drive system components of the existing MRAP/M1114 turret equipped with the Battery Powered Motorized Traversing Unit (BPMTU). A technical description of the Gen II Turret Drive System (G2TDS) is provided in Attachment 1.

C.2 Management and Administration:

C.2.4.6 The Contractor shall conduct informal project status meetings with the Contracting Officer Technical Representative (COR) and Functional Technical Representatives (FTRs) on a monthly basis unless otherwise directed by the COR. The purpose of the meetings shall be to review status to schedule and progress of the projects. The Contractor shall prepare electronic, written or visual presentations for such briefings or review meetings as required.

C.2.6.5 The Contractor is not authorized to incur hours, materials or other direct costs that exceed the estimate. Any hours, materials or other direct costs in excess of that authorized is at the Contractors risk and the Government has no obligation to accept the cost of hours, materials or other direct costs above that authorized. Anytime the Contractor has reason to believe that the hours, materials or other direct costs that it expects to incur in the performance shall exceed the authorized hours, materials or other direct costs, the Contactor shall notify the Contracting Officer in writing.

C.2.8.1 Except for those items that specifically require hard copy submission, all data specified in this Contract shall be provided to the Government electronically. A Contract Data Requirements List (CDRL) data Item number will be established for each data deliverable and such data items shall be prepared and submitted in accordance the CDRL to be set forth in Exhibit A of the contract. CDRLs will be added to the contract by contract modification as applicable.

C.2.9 Reports and Data

C.2.9.1 The Contractor shall prepare technical data in the format and scope specified in the applicable Data Item Descriptions (DIDs) (DD Form 1664) included in Exhibit A. This information shall be furnished in accordance with the requirements, quantities, and schedules set forth in the Contract Data requirements List (CDRL) (DD Form 1423) also in Exhibit A. Data shall be submitted in an electronic format compatible with Microsoft programs (such as Word, Access, Excel, Power Point, etc.) in Contractor format unless otherwise specified in the contract . All data deliverables required under this contract that are updates to previously existing

documents shall have change bars in the margin where revisions or updates were made by the Contractor.

C.2.9.1.1 Digital documents of standard DIDs called for under this contract can be ordered by going to the Acquisition Streamlining and standardization Information System (ASSIST) at http://assist.daps.dla.mil/online/start/.

C.2.9.1.2 Although a DID for this effort may make reference to a military standard or specification, that standard or specification is to be used by the Contractor for guidance only in accordance with current Navy, USMC and Army policy. The only exception shall be for military specifications and standards specifically called out as required within this scope of work, and then only to the extent described. All reports are to be submitted in Contractor format at the frequency described for each report:

C.2.9.2 Monthly Cost Reports. The Contractor shall submit a Monthly Cost Report identifying each line item. The report shall include but not be limited to the following categories: Period of Performance of reported data, total CLIN value, total CLIN hours, total material dollars and total subcontractor dollars where applicable. Within each category sited the following shall be reported: percent of CLIN expended, actual reported during the report period and cumulative actual expended. The required data will be required by on as needed basis. The Monthly Cost Reports shall be submitted no later than the 25th calendar day of each month following the reporting period.

C.3 Engineering Design Support

C.3.1 The Contractor shall possess 3D modeling computer aided design (CAD) and simulation capabilities to produce drawings, 3D models and CAD Model simulations under this contract. The Contractor shall identify the 3D CAD Model system and software version they are using.
C.3.1.1 The Contractor shall prepare and maintain engineering drawings and models, specifications and other technical data comprising the configuration baseline for the MRAP vehicle systems delivered under the production contract in compliance with DISESS- 81000C and MIL-DTL-31000C (Technical Data Package) and (Exhibit A Metadata Attributes) as specified by the contract. The Contractor shall complete the Product Drawings and supporting technical data using MIL-STD-100 as a guide but should use the most stringent elements of all the MIL standards and guidelines. Product data for new (initial or direct release) configuration items and or revised through ECP/RFD/RFW for modification of the affected system or equipment items shall be developed and delivered meeting DISESS- 81000C and MILDTL-31000C (Technical Data Package).

C.3.1.2 All product drawings and 2D-3D CAD models created under this contract shall provide the necessary design, engineering, manufacturing, and quality assurance requirements information necessary to enable the Government to procure or manufacture an interchangeable item that duplicates the physical, mechanical, electrical, software human, and performance characteristics of the original product, without additional design engineering effort or recourse to the original design activity. Product drawings and CAD 2D-3D models shall reflect the level of design maturity and revision level and baseline design that the item has attained at the appropriate configuration item lifecycle phase.

C.3.1.3 To the extent created under this contract, the Contractor shall prepare and maintain TDPs, IBOMs and 2D-3D Models for Contractor MRAP Family of Vehicles (FOV) to insure they

are current, legible and available for intended uses in the format the Government requires to populate their various Product Data Management and other technical data storage database applications. Intended 2D or 3D Model and simulation data uses include, but are not limited to:

a. Spare parts provisioning and related tasks
b. System and Subsystem modifications
c. System design and integration

C.4 System/Subsystem Design Engineering Support

C.4.2.1 The Contractor shall perform System/Subsystem Engineering Support to the extent described. The Contractor shall provide robust solutions to design problems, design improvement requirements and Government directed design investigations in response to field, test and system integration problems as identify by the MRAP Joint Program Office (JPO). System/Subsystem Engineering Contractor investigative visits to Government CONUS and OCONUS operational facilities or Contractors subcontractors or supply chain partners as directed by a Government issued request. The Contractor shall supply robust solutions that maintain compatibility of all physical, functional, and technical interfaces with the established system/subsystem design and definition, while coping satisfactory with variation in its operating environment with minimal damage, alteration or loss of functionality. The Contractor shall use their scientific and engineering investigations to ensure compatibility of all physical, functional and technical program interfaces are in alignment with the established design and definition.

C.4.5 General System/Subsystem Engineering Support for Critical Safety Items (CSI)

C.4.5.1 The Contractor shall identify Critical Safety Items (CSIs) within the Technical Data Package (TDP) or other means and shall provided engineering per DI-SAFT-80970A as guidance. Design analysis and testing services will allow the Government to access the field concerns or issues that may surround CSI items, as in DI-HFAC-80938A. The Contractor shall perform or use their scientific and engineering investigations to ensure compatibility of all physical, functional, software, human and technical program interfaces are in alignment with the established design and definition and configuration management impacts of all vehicles. The Contractor shall provide estimated CSI design and integration services for all components, part, sub assembly or assembly. The Contractor shall provide estimated CSI design and integration services prices for all components, part, sub assembly or assembly in a Government specified Government Competitive Cost Analysis format required of the Government Acquisition functional area format to insure that of the fidelity of information is standardized and formatted to expedite the Competitive Cost Analysis requirements of the Governments Acquisition team requirements for all CSI vendor parts including piece parts, provided 60 days before parts need to be ordered. The Government applies the following definitions to Critical Safety Items:

1. Critical Safety Item: A part, assembly, installation, or production system with one or more critical characteristics that, if not conforming to the design data or quality requirements, would result in an unsafe condition. Unsafe conditions include conditions which would cause loss or serious damage to the end item or major components, loss of control, or serious injury to personnel.

2. Critical Safety Characteristics: Any feature (i.e., tolerance, finish, material composition, manufacturing, assembly or inspection process) of product, material, or process, which if nonconforming or missing would cause the failure or malfunction of the critical item.

C.4.5.2 The Contractor shall perform design and engineering analysis of each CSI and assembly process so that these CSI items shall be clearly identified by the Contractor as such on the 3D Models, part drawing and assembly drawing in association with Contractor or Government generated Quality Assurance documentation (i.e., Quality Assurance Requirements and Quality Assurance Provisions (QAR/QAP) that meet Government or Contractor (QAR/QAP) standards, whichever is more robust, and agreed up for use by both the Contractor and the Government Contracting Officer Technical Representative (COTR). The Contractor shall ensure that all critical safety characteristic(s) for each CSI is clearly identified as such on all 3D Model metadata attributes, drawings or engineering part and assembly drawing, technical and training manual and publications, and for all Government parts provisioning activities. The 3D Models drawing numbers, etc, shall be identified in all QARs and QAPs. Critical safety characteristics will require 100% inspection per the agreed upon QAR or QAP. The specific method for marking drawings shall be as delineated in ASME Y14.100 Engineering Drawing Practices.

C.4.5.3 The Contractor shall provide CSI analysis and engineering activities to support the generation of the data sources, methods, and guidelines:

a. The Contractor shall provide sound and robust engineering analysis and judgment

b. Applicable US Federal, State, and local laws/regulations

c. The Contractor shall provide Failure Modes and Effects, criticality analysis ARP 5580 utilizing as a guide the latest version of MIL-STD-338. All FMEA shall conform to the requirements of the data elements needed to populate the Government FARCAS Risk Management Systems. The Contractor will be provided access to this system and will be required to post all performed FMEA analysis into this system and shall notify the designated Government representative that this action has been completed. The contract shall provide, if not on the FARCAS system, a form a means of identification of the associated contract number, ECP number, RFQ # and configuration baseline associated or affected by the analysis.

d. The Contractor shall provide safety assessment and safety hazard analysis (MIL-STD-882D) as a minimum standard for providing this analysis. These individual assessments are to be delivered and loaded into the Government specific forms and format and electronically loaded by the Contractor into various Government specified data repository for storage retention of this information.

e. The Contractor shall provide CSI prototyping services and development testing and operational testing results of Government requested CSI. These individual assessments are to be delivered and loaded into the Government specific forms and format and electronically loaded by the Contractor in the Government data repository for storage retention of this information.

f. The Contractor shall provide RAM engineering assessments utilizing as a guide the latest version of MIL-STD-338 as a minimum standard for providing the analysis. These individual assessments are to be delivered and loaded into the Government specific forms and format and electronically loaded by the Contractor in the Government data repository for this information. The Contractor may use Government available or Contractor previous experience using like items or designs for RAM engineering assessment activities.

g. The Contractor shall provide Logistics Management Impact engineering assessments with CSI issues as directed by a Government WD.

h. The Contractor shall provide engineering , logistic, safety, and software assessments or component qualification test and test results as requested by the Government on any CSI identified item.

i. The Contractor shall provide engineering services to the Government to support requirement gathering pertaining to CSI to help the Government validates and ensured that all critical safety aspects of the design are accurately reflected, software, parts and materials operate well below fatigue limits and stress levels, and the design allows for assessment by inspection and nondestructive inspection equipment. Whenever the Contractor is asked to perform validation testing it must be based on engineering analysis or software testing of the critical safety item characteristics and should consider changes and deterioration through time or use, fatigue life, and operating and environmental conditions.

C.4.6.1 The Contractor shall ensure and provide safety engineering analysis in all system design activities performed under this contract. The Contractor shall not degrade existing MRAP safety related design features. System Safety and Safety Engineering designs and operational procedures developed or updated by the Contractor shall be maintained and updated throughout the life of the contract and posted on the Government specified data repository. System design and operational procedures developed or updated by the Contractor shall consider the following:

a. Identifying hazards associated with the system by conducting safety analyses and hazard evaluations. Analysis shall include both operational and maintenance aspects of the vehicle along with potential interface problems with planned subsystems.

b. Eliminating or reducing significant hazards by appropriate design or material selection and software design applications.

c. Controlling or minimizing hazards to personnel which cannot be avoided or eliminated.

d. Locating equipment components and controls so that access to them by personnel during operation, maintenance or adjustments shall not require exposure to hazards such as high temperature, chemical burns, electrical shock, cutting edges, sharp points, or concentrations of toxic fumes above established threshold limit values, including all moving parts and mechanical power transmission devices,

e. Identification and safe system discharging of mechanical, electrical, pneumatic or hydraulic or liquid system designs to exhaust system components, pneumatic components and hydraulic components which are of such a nature or so located as to be a hazard to operating or maintenance personnel and the Contractor shall ensure the design solutions be either enclosed or guarded but designed so all the protective devices shall not impair operational functions.

f. The Contractor shall ensure that suitable warning and caution notes in all manuals and publications and shall specify standard Government warning labels types and placement locations as well as instructions for safe operation, maintenance, assembly and repairs and distinct markings placed on hazardous components of equipment of the Contractors FOV and

various variants. This data will be shared with the Government in the Government specified format and placed into a Government specified data storage location. The Contractor shall maintain and update throughout the life of the contract and posted on the Government specified data repository. The Contractor shall provide engineering service support CONUS and OCONUS to install or update warnings labels and caution notes in previous or newly delivered technical manuals or publications or vehicles, individual parts, components, sub assemblies or assemblies and could be sourced with the placement of the labels and instructions for safe operation, maintenance, assembly and repairs.

g. The Contractor shall ensure that safety is considered in the design for both operational and maintenance phases of the use of the system, sub-systems and components.

h. The Contractor shall ensure the vehicle and the vehicle safety systems meet the Federal Motor Vehicle Safety Standards (FMVSS) and Federal Motor Carrier Safety Regulations (FMCSR) in their design solutions or design change solutions.

i. Hazardous materials will be disposed of utilizing Contractor procedures in accordance with applicable local regulations with related costs to be charged to the contract.

C.4.7.1 The Contractor shall evaluate Test Incident Reports (TIRs), Equipment Improvement Recommendations (EIRs), Recommended Changes to Publications (DA Form 2028), Government Suggestions (DA Form 1045), Unsatisfactory Equipment Reports (UERs), and similar documents to determine whether a change is required in the MRAP Logistics Support System, to include tools, test sets, Technical Manuals (TMs), and maintenance concepts or if the Contractor determines that a change in maintenance concept is required.

C.4.7.2 The Contractor shall resolve long-term problems and develop quick fixes to field problems. The quick fixes shall provide interim solutions to field problems on an expedited basis. The resulting documentation/data shall be the minimum required to implement the fix. The Contractor shall then develop the data further through testing, cost effectiveness studies, and design reviews that shall result in a change to the documentation in the system TDP.

C.4.7.3 Support Services: The Contractor shall provide support relating to the contract items and data at Government specified locations. Such services consist of training; coordination, attendance at program, technical and logistics meetings; support of Government test; and field review of deficient or defective items, as required. The Contractor shall develop special interim or work around procedures/techniques using test sets to solve MRAP field problems as appropriate.

C.4.7.4 Fielding Coordination: MRAP FOV Technical Manuals (TMs) and Interactive Electronic Technical Manuals (IETMs) Electronic Technical Manuals (ETMs): The Contractor shall coordinate the planning of draft troubleshooting changes to the MRAP FOV TMs with retrofit of fielded test set hardware/firmware to ensure their concurrent delivery to field sites.

C.4.8 Test Measurement and Diagnostic Equipment (TMDE) Support Services

C.4.8.1 The Contractor shall maintain a continuing program for analysis of system, component and TMDE deficiencies based upon inputs obtained by field engineers or furnished by the Government. The Contractor, where necessary, shall fabricate hardware for engineering test;

conduct engineering tests, monitor user tests; prepare final designs and develop Source Data for an ECP/RFD/RFW.

a. For Hardware Corrections/Modifications:
(1) Investigate and analyze test set related deficiency reports to identify nature and source of each problem.
(2) Investigate and analyze test set related operational test problems to include failure reports and the like.
(3) Develop solutions to problems related to system operation, vehicle test, failures, hardware/firmware, performance and documentation.
(4) Conduct investigations, studies, or programs as approved by specific WDs for TMDE hardware.

b. For TMDE Physical/Function Interface Corrections/Modifications:
(1) Provide on-site support or investigation and/or field tests upon request.
(2) Work with the appropriate TMDE Contractor to perform functional or interface non-compatibility analysis where vehicle application adversely impacts test set physical/functional configuration baseline.

c. For Software Corrections/Modifications
(1) Investigate and analyze test set related deficiency reports to identify nature and source of each problem.
(2) Develop solutions related to system operation, diagnostic failures, and message interpretation.

C.4.12.3 During system analysis, definition, integration planning, and design, the Contractor shall ensure that logistics, producibility, quality, human factors safety, MANPRINT, Test RAM-D, and environmental impact are considered. All trade-off evaluations conducted shall include consideration and an estimate of production cost, schedule and, if applicable, retrofit and further development costs in the study. The Contractor shall participate in the following:

a. Systems Requirements Review
b. System Function Review
c. System Design Review
d. Preliminary Design Review
e. Other interim program reviews as required or defined by the MRAP SEP

C.4.14 System Test Program/ Overall Test Program Support

C.4.14.1 The Contractor shall coordinate the planning, execution and evaluation of all Contractors testing, the supply of support and services required for all Contractor and Government testing, monitoring at Government test sites and reporting requirement. The permanent relocation of Contractor technical representatives to remote field test sites is authorized to meet requirements of the contract in a manner that is both most economical and beneficial to the Government. In addition, the Contractor shall provide the necessary special test facilities, all effort and material necessary for conducting essential Contractor in-house testing, including subcontractors testing required in support of Government test and evaluation objectives.

C.4.14.2 The Contractor shall correct deficiencies identified by the Government Inspectors inspecting MRAPs during initial receipt at Government test sites.

C.4.14.3 The Contractor shall furnish the necessary technical management for planning and execution of support and services for conducting system tests.

C.4.14.4 The Contractor shall procure and maintain tools, timers and counters and special test equipment in test vehicles specified in the system test schedule. Included shall be equipment and software required for the downloading of documentation, distribution, and processing of test data and reports/records.

C.4.14.5 The Contractor shall provide System Support Packages (SSPs) or other maintenance and/or spare parts support for MRAP FOV and derivative test vehicles for their continued operation throughout the period of this contract. This includes repair/replacement of MRAP subsystems/components in order to bring the test vehicle(s) into satisfactory condition for test/training/logistics events.

C.4.14.5.1 The SSP is a composite package of support resources, to include spare parts, special tools, etc. SSPs shall be provided, when required. Items not furnished in sufficient quantity shall be provided by the Contractor to the specified location within 24 hours after notification of the shortage. All items comprising an SSP shall be the same configuration and source as will be used on the MRAP production vehicles.

C.4.14.5.2 The Contractor shall provide a list of the SSP items to the Government, unless otherwise agreed to by the parties, using DI-MISC-80508B as a guideline off SSP List items.
C.4.14.5.3 The Contractor shall assemble, furnish, package, and ship the SSP to the designated site(s). The SSP shall be coordinated with the Government and shall consist of some or all of the following:

C.4.14.5.4 Spare or repair parts and parts needed to meet the requirement arising from predicted failures, scheduled maintenance and anticipated wear out sufficient to support the test requirements. The SSP to support Logistic Demonstrations shall consist of mandatory replacement items and items most likely to be consumed or broken during a disassembly or assembly process, such as seals and gaskets.

C.4.14.5.5 Special Tools and TMDE: Required common tools or tool kits, equipment and TMDE identified in the Government supply catalogs shall be identified on the SSP list, but need not be physically present in the SSP. The Contractor shall identify and utilize existing Government tools and test equipment to the maximum extent feasible. Required tools and TMDE not found in the Government supply catalogs shall also be identified in the SSP list and be provided as part of the SSP. Tools and TMDE not found in the Army supply catalogs shall be designated as special tools and special TMDE.

C.4.14.5.6 Equipment Publications: The most recent version of each equipment publication shall be identified on the SSP list and shall be provided as part of the SSP. When updates are made to any publication during the course of Logistic Demonstrations or testing, those updates shall be forwarded to the appropriate site(s).

C.4.20.2.1 Contractor shall maintain a closed loop data base which incorporates details of each test incident, failure analysis and corrective action associated with system testing. Some failure

analysis and corrective action may be excluded on a test-by-test basis. The Contractor shall report all test incident, failure analysis and corrective action associated with system testing.

C.4.20.2.2 Contractor shall establish/maintain reliability and maintainability interfaces and controls with engineering, quality/product assurance, manufacturing, production, ILS and subcontractors. The Contractor shall report all maintain reliability and maintainability interfaces and controls with engineering, quality/product assurance, manufacturing, production, ILS and subcontractors.

C.4.20.2.3Contractors RAM-D Office shall continue sign-off authority and review for all ECP/RFD/RFW/NOR/ERR, drawings, deviations, waivers, part application and production process changes.

C.6 ILSC and Logistical Support Services

C.6.1 Integrated Logistics Support (ILS) Program.

C.6.1.1 The Contractor shall conduct an ILS Program in support of the MRAP Systems Program as described below. The Contractor shall integrate the efforts of its subcontractors and Government-Contractors supplying MRAP components and major items of support equipment. The Contractor is responsible for planning, managing, and ensuring ILS considerations are an integral part of the overall system.

C.6.1.2 Pollution Prevention and Integrated Logistics Support Elements. The Contractor shall include environment, hazardous and toxic material; safety and pollution prevention in development of all ILS documentation to include the Integrated Support Plan (ISP) required for each milestone throughout the acquisition Life Cycle using DI-MGMT-80899 Hazardous Waste Report as a guideline for data required.

C.6.2 Logistics Management Information (LMI)

C.6.2.1 LMI effort under this contract shall be the genesis for ILS. The LMI shall lead and drive the ILS effort as front-end analysis for all logistic support efforts and shall also apply to engineering change and software development efforts conducted under this contract, as well as Government approved logistics engineering changes necessary to change logistics support elements. Engineering Change Requests (ECRs) shall not be implemented without LMI and CM coordination and concurrence. The Contractor shall use DI-ALSS-81530 and DI-ALSS-81529 as guidance for reporting this information.

C.6.3 LMI Maintenance

C.6.3.1 The Contractor shall conduct, maintain and provide to the Government as requested, LMI as a result of ECPs, DA Forms 2028, approved suggestions, Supply and Maintenance Assessment Review Team (SMART) initiatives and as directed by the Government.
C.6.4 LMI Program

C.6.4.1 The Contractor shall conduct a full LMI Program and maintain it with continuously updated data. LMI Data Elements shall be completed and maintained.

C.6.4.2 The Contractor shall use modeling for repair level and analysis (to the piece part level) modeling by the Contractor and his subcontractors. In addition to modeling, the Contractor may be required to provide to the Government scientific programming and utilize model analysis to determine retrofit/modification recommendations, repair/discard considerations in support of design activities and existing LMI models to be employed as appropriate are: PALMAN, Repair versus Discard Model, USAPRO, and Usage Age Distribution Projection.

C.6.5 Support Equipment LMI

C.6.5.1 The LMI for major items of support equipment such as the test sets (Simplified Test Equipment Family of Vehicles (MRAP), and Direct Support electrical Systems Test Set (DSESTS) shall be conducted separately from the MRAP Vehicle LMI.

C.6.6 Maintenance Allocation Chart (MAC)

C.6.6.1 The Contractor shall maintain a MAC and develop changes as required resulting from the LMI. The MAC shall be a product of the LMI process reflective of the appropriate LMI Reports, records and data. Changes to the MACs will be provided to the Government for concurrence. Changes shall be incorporated as directed by the Government.

C.6.6.2 The Contractor shall not degrade the current MRAP maintenance plans documented by the Maintenance Allocation Chart (MAC) to include all changes thereafter, which will be provided as GFI. Additional maintenance planning necessitated from design changes, to include updates and modifications shall be based on the maintenance structure. The Contractor shall determine the most effective and efficient procedures for performing maintenance, identify the extent of maintenance action for each repairable item, and identify the maintenance level to perform maintenance tasks. Variables, such as repairable item price, down-parts price, and failure rate of repairable item, labor costs, costs of special tools and TMDE, and test program costs shall be considered. In determining maintenance level, the Contractor shall consider skill level, availability of tools at each level, and time.

C.6.6.3 The Contractor shall update the current MRAP Maintenance Allocation Chart (MAC), as required, to include all maintenance levels. The MAC shall be updated in and shall use MIL-STD-40051as a guide for the frequency of delivery.

C.6.6.4 The Contractor shall update MRAP FOV Preventive Maintenance Checks and Services (PMCS) for operator, crew and unit maintenance and shall use MIL-STD-40051 as a guide. As changes to design are made, the Contractor shall analyze the reliability characteristics of the design to determine impact on scheduled maintenance and determine if scheduled maintenance will be effective in maintaining system reliability. The applicability will depend on the failure characteristics of an item and the consequences for each failure.

C.6.7 LMI Reviews:

C.6.7.1 LMI reviews shall be conducted as required. The Contractor shall provide participation by Logistics Managers to serve on the LMI review team. The Contractor shall prepare conference minutes in a Government-Contractor agreed format for each review.

C.6.8 LMI Program Planning:

C.6.8.1 The Contractor shall prepare an update to the existing Integrated Support Plan (ISP). The ISP shall be updated to reflect changes emanating from program changes, reviews, reorganizations, and other actions affecting program logistics at the direction.

C.6.9.1 The Contractor shall update the existing MRAP LMI Plan as required by program changes, reviews or at the direction of the Government.

C.6.9.2 When notified of changes or updates, the Contractor shall consider the impact of any subcontractor or vendor changes or updates on MRAP components as part of the effort.
C.6.9.3 The Contractor shall estimate and advise the Government of the necessary quantities of dedicated hardware (end items (i.e., GFE vehicles), components, repair parts, consumable supplies, tools and support equipment) to accomplish all ILS development, reviews, validations and verifications.

C.6.10 Provisioning Conference

C.6.10.1 When requested by Government, the Contractor shall host a Provisioning Conference(s) following the Provisioning Guidance Conference at the Contractors facility. The focus of the conference is to drill down the top level assembly to determine which level of maintenance for the LRU or maintenance tasks can be completed where and by whom. To that end the Contractor shall provide and disassemble production equipment as directed by the Government to validate and verify all provisioning documentation. The Contractor shall report all Conference Agenda and Conference Minutes using DI-ADMIN-81249A as a guide for the reporting requirements.

C.6.10.2 All requests for ILSC and Logistical Support Services affecting the MRAP FOV Vehicle or GFE items and reporting activities as specified in this SOW shall follow the format, data elements and frequency of delivery .

C.6.12.1 MWOs, for fielded systems, will be managed under the direction of the MRAP Director of Logistics. The Contractor as specified shall assist in the management, development and application of MWOs to include all reporting requirements.

C.6.13.3 Wear Limit Development: The Contractor shall develop limits as required on those items in which like new specification requirements are identified as being stringent and relaxation of those limits shall not be restricted to the development/generation of wear specifications. Testing/validation shall be conducted on all items in which form, fit, and function is critical/controlled. Under this section of the work scope, the Contractor we tasked will determine data availability, determine format/content as necessary for the purpose required and analyze, reformat and deliver the data in support of the depot logistics engineering program.

C.6.14.1.1 The Contractor shall establish, manage, and execute a Provisioning Plan provided and approved by the Government. AMC-P 700- 25, MIL-STD 1388-2B, MIL-PRF-49506 and MILHDBK-502 may be used for additional guidance. The LMI shall be the basis for the integration of the logistics support element, and provide the interface between the engineering and integrated logistics effort used in the systems engineering effort. The objectives of the LMI are to provide optimum material readiness, economical logistics support, and identify/evaluate resources required to develop and manage an effective support system. All design, modification/alteration, and engineering activity shall require LMI (DI-ALSS-81529).

C.7 Provisioning Technical Data Package (TDP), Engineering and Documentation Support

C.7.1 The Contractor shall identify provisioning and other procurement screening data to be submitted for Government screening. Provisioning and other procurement 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 ensure that documentation includes drawing support for each "P" coded item (items requiring an NSN), unless accompanied by a copy of the procurement screening documentation (i.e., AMDF, Parts Master List, or DLIS) which indicates that the item has a valid NSN already assigned. This requirement shall be met using MIL-PRF-49506 and MIL-STD-1388-2B (DI-ALSS-81529). During the performance of this Contract, the Contractors staff shall be required to work with other Government Contractors and their subcontractors. These Contractors and their subcontractors have been hired to provide the JPO with a centric operational view of all theater logistics efforts associated with the MRAP program. This includes oversight and management of the individual efforts of the multiple Contractors during all activities associated with fielding, training, and sustainment operation.

C.9 Logistics Management Information (LMI)

C.9.1.1 The Contractor shall prepare LMI to provide for competitive item procurement and safe distribution. LMI data products include item-identity, size and weight data, HAZMAT classification, shelf life, special marking, packaging storage and transportation data. Instructions include additional figures and narrative data for selected special items only. Distribution performance shall meet MIL-STD- 2073-1D or ASTM D4169 and shall be sufficient for commercial and military distribution. LMI Data products and instructions shall be IAW Standard Practice for Military Packaging. The Contractor shall determine appropriate testing and inspection techniques for prototypes of packaging designs consistent with distribution performance requirement. The Contractor shall prepare LMI data products using DI-ALSS 81529(T) as guidance. The Contractor shall prepare instructions sufficient for commercial and military distribution using DI-PACK 80121 as guidance.

C.9.2.1 The Contractor may be required to assess or develop containers for shipping or storage. The Contractor shall analyze the availability of existing containers or determine if a new container is needed.

C.9.2.2 The Contractor shall develop, test and validate the technical data for needed containers using ASTM D4169, Distribution Cycle 18, Assurance Level I, Criterion 3, MIL-DTL-31000, MIL-STD-3003, ASME-Y14.100, ASMEY14.24, ASME-Y14.35M, ASME-14.34M and DI-PACK-80684A, DI-PACK-81581, DI-PACK-80880C as guidance.

C.10 Technical Manuals and Publications Engineering Support

C.10.1.1 The Government may request that the provided Supplier Manuals and Government Format Technical Manuals be updated to incorporate all changes, corrections, modifications and variant specific data.

C.10.2 Manual Development

C.10.2.1 The Contractor shall develop all publications to the format specified. The Contractor shall develop all publications IAW Provisioning plans and LMI in this contract. The Contractor

shall be responsible for incorporating all Government approved DA 2028s, ECPs and MWOs to all changes, updates and revisions to all equipment technical manuals, RPSTL parts manuals, BDAR manuals and NMWRs. A publication history file shall be maintained by the Contractor for the period of this contact. This file shall contain a record of all changes to each publication as a result of Government-approved DA Form 2028s, ECPs and MWOs. Changes/Revisions reference MIL-STD-40051-2, and MIL-PRF-63034, MIL-HDBK-503, MIL-PRF 63002 and AR 25-30.

C.10.4.1 All publications developed under this contract become the property of the Government and are not subject to copyright by the Contractor. When the Contractor uses commercial data which covers a subcontractor's components or portions thereof, and the Contractors data contains copyright material, the Contractor shall be responsible for obtaining a copyright release from the Contractor and furnishing such release to the Government. The Contractor shall provide a copyright release letter. The letter shall be on company letterhead, dated and signed by a company officer. The letter shall certify that the Government has full copyrights from Contractor and subcontractors. Copyright letter shall state all TMs developed are free from copyright restrictions and the Government can edit, reprint and distribute information in the manual as required. The required distribution statement will be provided by the Government

C.11.0 Quality Engineering and Quality Assurance Support Services

C.11.1 The Contractor shall implement and adhere to a quality assurance system acceptable to the Government (i.e., QS, ISO 9000, or any other industry-recognized and accepted quality model). The Contractor's quality system shall ensure product quality throughout all contract requirements, to include management, design, fabrication, testing, processing, shipping, storage, site installation, Failure Reporting Analysis and Corrective Action System (FRACAS) etc. The Government reserves the right to perform all required audits and surveillance inspections to assure Contractor compliance with contract requirements. Individual Plant floor level reviews of the prime Contractor and major tier one sub Contractors of the prime Contractor may be requested by the Government through the issuance of individual or bundles WD request.

C.11.2 The Contractor shall utilize the a Government specific Quality Management System ISO9001 or equivalent any quality system for inspection, validation, control and inspection results of engineering drawings and Quality Assurance Technical Documentation (QATD) changes. This system shall also provide a means for incorporating data received from Test Incident Reports (TIRs), Quality Deficiency Reports (QDRs) and Field Reported Deficiencies. The Contractor shall ensure that all drawings and documentation submitted within the Technical Data Package (TDP) on major and secondary items are coordinated with all cognizant department elements within their organization and are adequate for the manufacture and acceptance of quality material and for competitive procurement. The Contractor shall ensure that data resulting from engineering efforts and any deficiency reports which may affect the adequacy and accuracy of the QATD being developed and maintained under the contract, are coordinated with its product assurance office and included in all engineering drawing packages and QATD packages submitted for Government review.

C.11.6.2 The Contractor shall have a design for reliability process of selecting a part or material and applying it in such a manner that results in high reliability under the worst case actual use

conditions. Such an effort requires a structured approach during the part selection and design process. This process should include:

(1) Definition of operating environments
(2) Establishment of lifetime requirements
(3) Use of reliability models to estimate lifetime under use conditions
(4) Estimates of reliability during the useful life
(5) Stress derating
(6) Analysis and design modifications to ensure robustness
Several analytical techniques are useful in robust design. These include derating, failure mode and effects analysis (FMEA) (with or without criticality analysis), fault tree analysis (FTA,) and finite element analysis (FEA). This analysis will be performed as requested by the Government.

C.11.7 Quality Problem Investigation

C.11.7.1 The Contractor shall conduct investigations of quality problems originating from field activities, repair depots, supplies of Government-Furnished Equipment (GFE) items and other such activities per Government approved WDs. This effort shall include the review of problem reports, evaluation of quality deficiencies, clarification of inspection requirements and similar functions. The Contractor shall develop appropriate documentation, solutions and ECPs/RFW/RFD.

C.11.8 Quality Records

C.11.8.1 As authorized, the Contractor shall prepare and maintain complete and up-to-date records of all QE work performed or accomplished for the contract items(s) on this contract. These records shall be of such extent and detail as to allow the Government to determine the status and progress of all work being planned or accomplished. The Government shall have access to the Contractors working records when required for Government purposes.

C.11.4.9 The Contractor shall prepare draft and final instruction pamphlets and manuals required for the operation, maintenance and calibration of the inspection equipment designed and CM control.

C.11.4.10 The Contractor shall prepare the quality assurance portion of overhaul or rebuild standards for the subject system in draft form. This will include recommendations for all on-site inspection and tests to be performed during overhaul or rebuild of the contract item to insure that the item fulfills the quality requirements of applicable specifications and standards.

C.11.4.11 The Contractor shall support and develop Final Inspection Records (FIRs). FIRs shall set forth the minimum inspection characteristics deemed necessary to assure conformance to end item specifications and drawings. The FIRs shall be updated and developed using, DI-QCIC-81068 as guidance to reflect all approved configuration changes.

C.11.4.12 The Contractor shall prepare the Item Modification Inspection Requirements. Include the in-process and final acceptance inspection requirements necessary for installing industrial and field modifications.

C.12 Training and Training Support Services

C12.0 Training and Training Support Services shall be provided as defined in the work directive (MIL-PRF-5480G DI-MGMT-80911).

C.13 Contractor Field Service Representatives (CFSRs) Support and Services

C.13.1 The Contractor shall provide Field Service Representatives (FSR) to provide technical repair and assistance as required and shall advise, make recommendations, to orient and instruct key Government personnel with respect to operations, maintenance, repair and parts supply for the vehicles furnished under this contract, CONUS and OCONUS. The FSRs shall be located at field sites as authorized to meet the requirements of the contract in a manner that is both economical and beneficial to the Government. The FSRs will be thoroughly experienced and qualified to advise and instruct Government personnel in the operation, maintenance, repair and parts supply of the equipment furnished under this contract. The Contractor will make available any and all information necessary to obtain a security clearance to the degree required by the installation or area in which services are to be performed. Government approval shall be limited to granting or denying security clearance for the person(s) named.

a. The Contractor shall provide FSRs as a liaison between Contractor/subcontractor, MRAP Operations, other Military Service organizations, U.S. Marine Corps, and FMS Customers.
b. The FSRs shall investigate and recommend the need for training. The FSRs shall recommend the need for Failure Analysis (FA) of specific items under other contract work scope.
c. The CFS support shall consist of on-site back-up engineering support and advice in the investigation and resolution of Armed Service support problems.
d. The FSRs work schedule shall coincide with that of associated Government personnel.
e. The Contractor shall also provide field support for deprocessing, Stay behind Maintenance and RESET programs.

C.13.1.1 Interim Contractor Logistics Support (ICLS) Forward Repair Activity (FRA). The ICLS FRA supported units will be configured to deploy using unit provided vehicles, shelters, transportation, and power-generating equipment for all Contractor operated equipment.
The Contractor shall obtain a military equipment license for the equipment listed above, if necessary. All Contractor test equipment shall be capable of being operated in a forward deployed field location under combat conditions with DI-FNCL-80342 to be used as guidance.

C.13.1.2 Fielding Reports

C.13.1.2.1 The Contractor shall report problems, in writing; attendant to its responsibilities to the PM MRAP Team Site Supervisor, as necessary. The Contractor shall provide specific reports, as required, to include Field Problem Reports (FPRs) and Fire/Injury/Accident Reports to document MRAP FOV problems.

C.13.1.3 The Contractor shall submit a bi-weekly (twice a month) report on all CFS status in Government Defined Format, Frequency and Fidelity.

C.13.2 Additional Contract Field Services

a. The Contractor shall provide CFSRs to locations outside and within the Continental U.S. (OCONUS and CONUS) to support the fielding and sustainment of the MRAP FOV to Army, Reserve Components, U.S. Marine Corp and FMS Customers.

b. The CFSR work schedule shall coincide with that of associated Government fielding personnel.
c. The Contractor shall provide liaison logistic assistance for the MRAP FOV and its derivatives to OCONUS and CONUS using unit personnel.
d. The FSRs shall perform vehicle retrofit upgrades and kit installation at various locations.

Section D - Packaging and Marking

CLAUSES INCORPORATED BY FULL TEXT

**D1 MARKING OF SHIPMENT**

(a) Marking of all deliverables (supplies and technical documentation) shall be in accordance with the contractor's best commercial practices, using the latest version of MIL STD 129Pw/Change 4 (latest version), DOD Standard Practice: Military Marking for Shipment and Storage utilizing the Military Shipping Label. Marking requirements for export shipments shall also be IAW the FAR clause 52.247-4004.

(b) Each shipment of material and/or data shall be clearly marked to show the following information:

MARK FOR: Contract Number
Contract Delivery Order Number
Item Number

**D2 PROHIBITED PACKAGING MATERIALS**

The use of asbestos, excelsior, newspaper or shredded paper (all types including waxed paper, computer paper and similar hygroscopia or non-neutral maerial) is prohibited. In addition, loose fil polystyrene is prohibited for shipboard use.

## INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

| CLIN | INSPECT AT | INSPECT BY | ACCEPT AT | ACCEPT BY |
|---|---|---|---|---|
| 0001 | Destination | Government | Destination | Government |
| 0001AA | Destination | Government | Destination | Government |
| 0001AB | Destination | Government | Destination | Government |
| 0001AC | Destination | Government | Destination | Government |
| 0002 | Destination | Government | Destination | Government |
| 0003 | N/A | N/A | N/A | Government |

CLAUSES INCORPORATED BY REFERENCE

| | | |
|---|---|---|
| 52.246-2 | Inspection Of Supplies--Fixed Price | AUG 1996 |
| 52.246-4 | Inspection Of Services--Fixed Price | AUG 1996 |
| 52.246-16 | Responsibility For Supplies | APR 1984 |

Section F - Deliveries or Performance

## DELIVERY INFORMATION

| CLIN | DELIVERY DATE | QUANTITY | SHIP TO ADDRESS | UIC |
|---|---|---|---|---|
| 0001 | N/A | N/A | N/A | N/A |
| 0001AA | 05-SEP-2010 | 250 | DEFENSE DISTRIBUTION DEPOT RED RIVER<br>SUE GIBSON<br>MRAP OPERATIONS<br>7TH AND AVE I BLDG 552N<br>TEXARKANA TX 75507-5000<br>903-334-4946<br>FOB: Destination | SW3234 |
| 0001AA | 12-SEP-2010 | 250 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 19-SEP-2010 | 250 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 26-SEP-2010 | 250 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 03-OCT-2010 | 140 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 24-OCT-2010 | 250 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 31-OCT-2010 | 250 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 07-NOV-2010 | 500 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 14-NOV-2010 | 500 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 21-NOV-2010 | 500 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 28-NOV-2010 | 500 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 05-DEC-2010 | 500 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |

| | | | | |
|---|---|---|---|---|
| 0001AA | 12-DEC-2010 | 500 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 19-DEC-2010 | 500 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AA | 26-DEC-2010 | 250 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AB | 10-OCT-2010 | 243 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AB | 17-OCT-2010 | 250 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AC | 03-OCT-2010 | 110 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0001AC | 10-OCT-2010 | 7 | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | SW3234 |
| 0002 | POP 01-SEP-2010 TO 30-SEP-2010 | N/A | COMMANDER MARCORSYSCOM<br>2200 LESTER STREET<br>QUANTICO VA 22134-6050<br>703-432-4119<br>FOB: Destination | M67854 |
| 0003 | N/A | N/A | N/A | N/A |

CLAUSES INCORPORATED BY REFERENCE

| | | |
|---|---|---|
| 52.242-15 | Stop-Work Order | AUG 1989 |
| 52.247-34 | F.O.B. Destination | NOV 1991 |

Section G - Contract Administration Data

## ACCOUNTING AND APPROPRIATION DATA

AA: 2102035MRAP 310 67854 067443 2D 2035MR
COST CODE: 0RC00417502C
AMOUNT: $18,933,516.32
CIN M6785410RC004170001: $18,860,515.52
CIN M6785410RC0041700010001: $73,000.80

AB: 57830800000 F03000 178 47E8 82223L 010900 00000 000000 503
AMOUNT: $1,725,089.82
CIN M6785410RC004970001: $1,725,089.82

AC: 1701810M5XG 310 67854 067443 2D 6028C5
COST CODE: 0RC0036850N1
AMOUNT: $409,402.66
CIN M6785410RC003680001: $409,402.66

CLAUSES INCORPORATED BY FULL TEXT

**G1 POINTS OF CONTACT**

a) Contract Administration Office:

Contract administration functions (see FAR 42.302, DFAR 242.302).

MARCORSYSCOM
ATTN: Ms. LaWanda Morton
50 Tech Parkway, Suite 203
Stafford, VA 22556

Contract administration functions withheld, additional contract administration functions assigned, or special instructions (see FAR 42.202): NONE

b) Paying Office:

The Paying office which will make payments is designated as follows:

HQ0337
DFAS-COLUMBUS CENTER
DFAS-CO/NORTH ENTITLEMENT OPERATIONS
P.O. BOX 182266
COLUMBUS OH 43218-2266

c) Purchasing Office:

The Contracting Officer for this procurement is:

Mr. Donald Saunders

Marine Corps Systems Command
ATTN: MRAP
50 Tech Parkway, Suite 107
Stafford, VA 22556
Phone: 540-658-8588
Email: donald.saunders@usmc.mil

d) Project Officer:

The Project Officer for this procurement is:

David A. Williams
JPO MRAP - Engineering
Phone: 586-282-0285
Email: david.a.williams19@us.army.mil

**G2 ACCOUNTING CLASSIFICATION REFERENCE NUMBER (ACRN)**

The Accounting Classification Reference Number (ACRN) is the double letter prefix to the long line accounting classification citation number contained in the accounting data sheet attached to the contract, or listed below. It is used as a method for tracking expenditures against individual contract line items. In instances where multiple long line accounting classification numbers are applicable to single line items, each will be prefixed by a separate ACRN. Each line item, subline item, task and subtask listed in the schedule or Statement of Work shall have an accounting classification reference number assigned at the time of award or upon issuance of the task or delivery order.

## G3 MARCORSYSCOM WAWF INSTRUCTIONS TO CONTRACTORS

ELECTRONIC SUBMISSION OF PAYMENT REQUESTS AND RECEIVING REPORTS (MAR 2008)

In compliance with DFARS 252.232-7003, "Electronic Submission of Payment Request and Receiving Reports (March 2008)", the United States Marine Corps (USMC) utilizes WAWF-RA to electronically process vendor request for payment. The contractor is required to utilize this system when processing invoices and receiving reports under this contract.

The contractor shall (i) ensure an Electronic Business Point of Contract (POC) is designated in Central Contractor Registration at http://www.ccr.gov and (ii) register to use WAWF-RA at the https://wawf.eb.mil/ within ten (10) days after award of the contract or modification incorporating WAWF-RA into the contract. Step by step procedures to register are available at the https://wawf.eb.mil/.

The USMC WAWF-RA point of contact for this contract is **Sue Gibson** and can be reached on **(903) 334-4946**.

The contractor is directed to use the **COMBO** format when processing invoices and receiving reports. For all requirements, the contractor shall use the Marine Corps Systems Command DODAAC (M67854) as the DODAAC for all shipping addresses, even if the ship-to address is other than the Marine Corps Systems Command.

DFAS-CO/NORTH ENTITLEMENT OPERATIONS
P.O. BOX 182266
COLUMBUS, OH 43218-2266

E-Mail: CCO-KC-VPIS@DFAS.MIL (Vendor Pay)
PHONE: 1-800-756-4571 #2 then #4 (MOCAS = #1 then #4)

WAWF: https://wawf.eb.mil/

My Invoice: https://myinvoice.csd.disa.mil

Data entry information in WAWF:
Payment Office DoDAAC: HQ0337
Issue By DoDAAC: M67854
Admin Office DoDAAC: M67854
Ship To/Service Acceptor DoDAAC: M67854/EXT PG15
Contract Number: M67854-10-C-5063

Before closing out of an invoice session in WAWF-RA, but after submitting your document or documents, the contractor will be prompted to send additional email notifications. The contractor shall click on " Send Additional Email Notifications" block on the page that appears. Add the primary point of contact's email address(provided above) in the first email address block and add the alternate point of contact's email address in the following block. This additional notification to the government is important to ensure the appropriate point of contact is aware that the invoice documents have been submitted into the WAWF-RA system.

**NOTE: The POCs identified above are for WAWF issues only. Any other contracting questions/problems should be addressed to the POC identified in Section A of the contract.**

Section H - Special Contract Requirements

CLAUSES INCORPORATED BY FULL TEXT

52.211-14 NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE, EMERGENCY PREPAREDNESS, AND ENERGY PROGRAM USE (APR 2008)

Any contract awarded as a result of this solicitation will be a DX rated order certified for national defense, emergency preparedness, and energy program use under the Defense Priorities and Allocations System (DPAS) (15 CFR 700), and the Contractor will be required to follow all of the requirements of this regulation.

(End of provision)

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

| | | |
|---|---|---|
| 52.202-1 | Definitions | JUL 2004 |
| 52.203-3 | Gratuities | APR 1984 |
| 52.203-5 | Covenant Against Contingent Fees | APR 1984 |
| 52.203-6 | Restrictions On Subcontractor Sales To The Government | SEP 2006 |
| 52.203-7 | Anti-Kickback Procedures | JUL 1995 |
| 52.203-12 | Limitation On Payments To Influence Certain Federal Transactions | SEP 2007 |
| 52.204-7 | Central Contractor Registration | APR 2008 |
| 52.209-6 | Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment | SEP 2006 |
| 52.215-2 | Audit and Records--Negotiation | MAR 2009 |
| 52.215-8 | Order of Precedence--Uniform Contract Format | OCT 1997 |
| 52.215-10 | Price Reduction for Defective Cost or Pricing Data | OCT 1997 |
| 52.215-14 | Integrity of Unit Prices | OCT 1997 |
| 52.215-19 | Notification of Ownership Changes | OCT 1997 |
| 52.215-20 | Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data | OCT 1997 |
| 52.219-8 | Utilization of Small Business Concerns | MAY 2004 |
| 52.219-9 (Dev) | Small Business Subcontracting Plan (Deviation) | APR 2008 |
| 52.222-3 | Convict Labor | JUN 2003 |
| 52.222-21 | Prohibition Of Segregated Facilities | FEB 1999 |
| 52.222-26 | Equal Opportunity | MAR 2007 |
| 52.222-36 | Affirmative Action For Workers With Disabilities | JUN 1998 |
| 52.222-37 | Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans | SEP 2006 |
| 52.225-13 | Restrictions on Certain Foreign Purchases | JUN 2008 |
| 52.227-1 | Authorization and Consent | DEC 2007 |
| 52.227-2 | Notice And Assistance Regarding Patent And Copyright Infringement | DEC 2007 |
| 52.229-3 | Federal, State And Local Taxes | APR 2003 |
| 52.232-1 | Payments | APR 1984 |
| 52.232-18 | Availability Of Funds | APR 1984 |
| 52.232-23 | Assignment Of Claims | JAN 1986 |
| 52.232-33 | Payment by Electronic Funds Transfer--Central Contractor Registration | OCT 2003 |
| 52.233-1 | Disputes | JUL 2002 |
| 52.233-3 | Protest After Award | AUG 1996 |
| 52.233-4 | Applicable Law for Breach of Contract Claim | OCT 2004 |
| 52.242-13 | Bankruptcy | JUL 1995 |
| 52.243-1 | Changes--Fixed Price | AUG 1987 |
| 52.249-2 | Termination For Convenience Of The Government (Fixed-Price) | MAY 2004 |
| 52.249-8 | Default (Fixed-Price Supply & Service) | APR 1984 |
| 52.253-1 | Computer Generated Forms | JAN 1991 |
| 252.203-7000 | Requirements Relating to Compensation of Former DoD Officials | JAN 2009 |
| 252.203-7002 | Requirement to Inform Employees of Whistleblower Rights | JAN 2009 |
| 252.204-7000 | Disclosure Of Information | DEC 1991 |

| | | |
|---|---|---|
| 252.204-7003 | Control Of Government Personnel Work Product | APR 1992 |
| 252.204-7004 Alt A | Central Contractor Registration (52.204-7) Alternate A | SEP 2007 |
| 252.209-7004 | Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country | DEC 2006 |
| 252.211-7006 | Radio Frequency Identification | FEB 2007 |
| 252.225-7002 | Qualifying Country Sources As Subcontractors | APR 2003 |
| 252.225-7012 | Preference For Certain Domestic Commodities | DEC 2008 |
| 252.227-7013 | Rights in Technical Data--Noncommercial Items | NOV 1995 |
| 252.227-7016 | Rights in Bid or Proposal Information | JUN 1995 |
| 252.227-7027 | Deferred Ordering Of Technical Data Or Computer Software | APR 1988 |
| 252.227-7030 | Technical Data--Withholding Of Payment | MAR 2000 |
| 252.227-7037 | Validation of Restrictive Markings on Technical Data | SEP 1999 |
| 252.232-7003 | Electronic Submission of Payment Requests and Receiving Reports | MAR 2008 |
| 252.232-7010 | Levies on Contract Payments | DEC 2006 |
| 252.243-7001 | Pricing Of Contract Modifications | DEC 1991 |
| 252.243-7002 | Requests for Equitable Adjustment | MAR 1998 |
| 252.247-7023 | Transportation of Supplies by Sea | MAY 2002 |
| 252.247-7024 | Notification Of Transportation Of Supplies By Sea | MAR 2000 |

CLAUSES INCORPORATED BY FULL TEXT

52.216-24 LIMITATION OF GOVERNMENT LIABILITY (APR 1984)

(a) In performing this contract, the Contractor is not authorized to make expenditures or incur obligations exceeding $21,068,008.80 dollars.

(b) The maximum amount for which the Government shall be liable if this contract is terminated is $21,068,008.80 dollars.

(End of clause)

52.216-25 CONTRACT DEFINITIZATION (OCT 1997)

(a) A firm-fixed price definitive contract is contemplated. The Contractor agrees to begin promptly negotiating with the Contracting Officer the terms of a definitive contract that will include (1) all clauses required by the Federal Acquisition Regulation (FAR) on the date of execution of the letter contract, (2) all clauses required by law on the date of execution of the definitive contract, and (3) any other mutually agreeable clauses, terms, and conditions. The Contractor agrees to submit a firm-fixed price proposal.

(b) The schedule for definitizing this contract is:

| EVENT | DATE |
|---|---|
| ROM Received | 02 April 2010 |
| Proposal Received | 11 June 2010 |
| Technical Evaluations Received | 18 June 2010 |
| Pre-Negotiation Clearances Approved | 21 June 2010 |
| DCAA Full Audit Received | 17 September 2010 |
| Negotiations Commence | 20 September 2010 |

| | |
|---|---|
| Negotiations Complete | 04 October 2010 |
| Post Negotiation Clearances Approved | 08 October 2010 |
| Definitive Contract Executed | 15 October 2010 |

.

(c) If agreement on a definitive contract to supersede this letter contract is not reached by the target date in paragraph (b) above, or within any extension of it granted by the Contracting Officer, the Contracting Officer may, with the approval of the head of the contracting activity, determine a reasonable price or fee in accordance with Subpart 15.4 and Part 31 of the FAR, subject to Contractor appeal as provided with completion of the contract, subject only to the Limitation of Government Liability clause.

(1) After the Contracting Officer's determination of price or fee, the contract shall be governed by--

(i) All clauses required by the FAR on the date of execution of this letter contract for either fixed-price or cost-reimbursement contracts, as determined by the Contracting Officer under this paragraph (c);

(ii) All clauses required by law as of the date of the Contracting Officer's determination; and

(iii) Any other clauses, terms, and conditions mutually agreed upon.

(2) To the extent consistent with subparagraph (c)(1) above, all clauses, terms, and conditions included in this letter contract shall continue in effect, except those that by their nature apply only to a letter contract.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://farsite.hill.af.mil

http://arnet.gov/far

(End of clause)

252.227-7017 IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS. (JUN 1995)

(a) The terms used in this provision are defined in following clause or clauses contained in this solicitation--

(1) If a successful offeror will be required to deliver technical data, the Rights in Technical Data--Noncommercial Items clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.

(2) If a successful offeror will not be required to deliver technical data, the Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.

(b) The identification and assertion requirements in this provision apply only to technical data, including computer software documents, or computer software to be delivered with other than unlimited rights. For contracts to be awarded under the Small Business Innovative Research Program, the notification requirements do not apply to technical data or computer software that will be generated under the resulting contract. Notification and identification is not required for restrictions based solely on copyright.

(c) Offers submitted in response to this solicitation shall identify, to the extent known at the time an offer is submitted to the Government, the technical data or computer software that the Offeror, its subcontractors or suppliers, or potential subcontractors or suppliers, assert should be furnished to the Government with restrictions on use, release, or disclosure.

(d) The Offeror's assertions, including the assertions of its subcontractors or suppliers or potential subcontractors or suppliers shall be submitted as an attachment to its offer in the following format, dated and signed by an official authorized to contractually obligate the Offeror:

Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data or Computer Software.

The Offeror asserts for itself, or the persons identified below, that the Government's rights to use, release, or disclose the following technical data or computer software should be restricted:

| Technical Data or Computer Software to be Furnished With Restrictions * | Basis for Assertion ** | Asserted Rights Category *** | Name of Person Asserting Restrictions **** |
|---|---|---|---|
| (LIST) ***** | (LIST) | (LIST) | (LIST) |

*For technical data (other than computer software documentation) pertaining to items, components, or processes developed at private expense, identify both the deliverable technical data and each such items, component, or process. For computer software or computer software documentation identify the software or documentation.

**Generally, development at private expense, either exclusively or partially, is the only basis for asserting restrictions. For technical data, other than computer software documentation, development refers to development of the item, component, or process to which the data pertain. The Government's rights in computer software documentation generally may not be restricted. For computer software, development refers to the software. Indicate whether development was accomplished exclusively or partially at private expense. If development was not accomplished at private expense, or for computer software documentation, enter the specific basis for asserting restrictions.

***Enter asserted rights category (e.g., government purpose license rights from a prior contract, rights in SBIR data generated under another contract, limited, restricted, or government purpose rights under this or a prior contract, or specially negotiated licenses).

****Corporation, individual, or other person, as appropriate.

*****Enter "none" when all data or software will be submitted without restrictions.

Date _____

Printed Name and Title _____

Signature _____

(End of identification and assertion)

(e) An offeror's failure to submit, complete, or sign the notification and identification required by paragraph (d) of this provision with its offer may render the offer ineligible for award.

(f) If the Offeror is awarded a contract, the assertions identified in paragraph (d) of this provision shall be listed in an attachment to that contract. Upon request by the Contracting Officer, the Offeror shall provide sufficient information to enable the Contracting Officer to evaluate any listed assertion.

(End of provision)

PERFORMANCE SPECIFICATION

# TECHNICAL DESCRIPTION

## 1 SCOPE

This Technical Description describes the technical performance requirements for the Mine Resistant Ambush Protected (MRAP) Generation II Turret Drive System (hereafter referred to as the G2TDS). The G2TDS will replace the existing BPMTU Drive System of an existing MRAP/M1114 Turret Assembly. Replacement is limited to the following MRAP/M1114 Drive components:
Stop Ring Gear, BPMTU, Control Box, Manual Traversing Unit, and Hand Brake. The G2TDS must meet the Mission Profile as described in Attachment A.

## 2 APPLICABLE DOCUMENTS

The documents listed in paragraphs 2.1 and 2.2 are specified in paragraph 3 of this Technical Description. Effort has been made to ensure completeness of this list. However, document users are cautioned that all specified requirements documents cited in these paragraphs must be met if called out in the Technical Description.

### 2.1 Government Documents

The following Government specifications and standards form a part of this document to the extent specified herein.

| | |
|---|---|
| FED-STD-595 | Colors Used in Government Procurement |
| MIL-DTL-53072C | Detail Specification Chemical Agent Resistant Coating (CARC) System |
| MIL-STD-130 | Identification Marking of U.S. Military Property |
| MIL-STD-461 | Requirement for the control of Electromagnetic Interference Emissions and Susceptibility |
| MIL-STD-464 | Electromagnetic Environmental Effects, Requirements for Systems |
| MIL-STD-810G | Environmental Engineering Considerations and Laboratory Tests |
| MIL-STD-1275 | Characteristics of 28 Volt DC Electrical Systems in Military Vehicles |
| MIL-STD-1472F | Human Engineering |
| MIL-STD-1474D | Noise Limits |

## 2.2 Non-Government Documents

The following Non-Government specifications, standards, and handbooks form a part of this document to the extent specified herein.

| | |
|---|---|
| FMVSS 49 CFR 571.302 | Flammability of Interior Materials |

## 2.3 Order of Precedence

In the event of conflict between the text of this Technical Description and the references cited herein, this Technical Description will take precedence. Nothing in this Technical Description, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 2.4 Test Procedures

TOP 2-2-610 Slope, Military Vehicles, Test Methods, Operation, Braking, Climbing

TOP 1-2-511 EMI Emissions

# 3 REQUIREMENTS

The requirements specified in Paragraph 3 of this Technical Description are defined as thresholds unless noted as objectives. The threshold requirements must be met to satisfy the Government's minimum requirements. The objective requirements are desired performance requirements that add value and capabilities to the Turret Drive System. All system performance requirements are in the as-installed configuration.

## 3.1 Characteristics

### 3.1.1 G2TDS System

The G2TDS System shall consist of a minimum of Drive Motor Subsystem, Drive Gear, and Motor Controller. The G2TDS will provide capability to traverse a MRAP/M1114 turret (P/N 6437754-200M1) loaded with various configurations of gunner, weapon, OGPK, OPC, and gear under MRAP mission operational profiles. System components must comply with form, fit, and function of the components they replace.

### 3.1.2 Drive Motor Subsystem

The Drive Motor Subsystem shall be a direct drive including all electrical wiring and cable harnesses, mounting brackets, mounting hardware and interfaces to drive the loaded turret, and all other applicable components not listed herein.

### 3.1.3 Drive Gear Subsystem

The Drive Gear Subsystem, replaces the current stop ring gear, shall consist of a heavy duty drive gear which mounts to the vehicle's turret flange, mounting hardware, and all other applicable components not listed herein.

### 3.1.4 Motor Controller Subsystem

The Motor Controller Subsystem shall consist of a motor controller, all electrical wiring and cable harnesses, mounting brackets, mounting hardware, and all other applicable components not listed herein. The controller shall be capable of accepting input commands from two sources.

## 3.2 Technical Performance

### 3.2.1 <u>G2TDS System</u>

#### 3.2.1.1 System Weight Overview

The G2TDS system level weight shall not exceed 135 lbs. (T); as fielded in the existing turret drive system (O).

#### 3.2.1.2 Turret Traverse

The G2TDS shall be capable of continuous traverse in both directions without impeding the operator.

#### 3.2.1.3 Operating Environment Temperature

The G2TDS System shall operate at ambient temperatures of -25°F to 130°F in all environmental conditions stated herein.

#### 3.2.1.4 Operating Environment altitude

The G2TDS shall be able to operate in altitudes from 0 ft to 10,000 ft (T) 0 to 12,000 ft (O) above sea level.

#### 3.2.1.5 Sand and Dust

The G2TDS System shall be capable of operation when exposed to sand and dust conditions. MIL-STD-810G, Method 510.4, will be used to verify compliance of this requirement.

#### 3.2.1.6 Blowing Rain

The G2TDS System shall be capable of operation when exposed to blowing rain conditions. MIL-STD-810G, Method 506.4, will be used to verify compliance of this requirement.

#### 3.2.1.7 Salt Spray

The G2TDS shall be capable of operation when exposed to salt spray and salt fog conditions. MIL-STD-810G, Method 509.5 will be used to verify compliance of this requirement.

#### 3.2.1.8 Vibration

The G2TDS System shall operate when exposed to vibration conditions. MIL-STD-810G, Test Method 514.6 will be used to verify compliance of this requirement. Test Method 514.6, Category 4, Highway exposure, shall be tested for 5 hours duration. Test Method 514.6, Category 4, Secondary (also Unimproved) Road exposure, shall be tested for 1 hour duration. Test Method 514.6, Category 4, Off-Road exposure shall be tested for 1 hour. All profiles will be executed subsequently, with no pause.

#### 3.2.1.9 Noise

G2TDS System noise level shall not exceed 85 decibels (dB) maximum at the nearest cabin occupant's (inc gunner) seating position, with the turret hatch open, in accordance with MIL-STD-1474D, when operating at 100% of rated capacity, or maximum allowed by system controls, whichever is less.

#### 3.2.1.10 EMI Interference

The system shall comply with EMI requirements as stated in MIL-STD-464.

#### 3.2.1.11 Reliability

The G2TDS System shall exhibit a Mean Time Between Failures (MTBF) of no less than 750 hours (Threshold) or 1500 hours (Objective).

#### 3.2.1.12 Longitudinal Slope Operation

The G2TDS System, when installed on the vehicle, shall be capable of operating on a 60% (T) longitudinal grade as specified herein, without evidence of faulty lubrication, leakage, or other malfunction.

#### 3.2.1.13 Traverse Slope Operation

The G2TDS System, when installed on the vehicle, shall be capable of operating on a 30% (T) traverse grade as specified herein without evidence of faulty lubrication, leakage, or other malfunction.

#### 3.2.1.14 Corrosion Resistance

The G2TDS System shall be painted with desert tan. Unless otherwise specified, after cleaning, treating and priming all exterior surfaces, the Drive Motor shall be painted "Tan 686A" Color No. 33446 of FED-STD-595. Painting of the gear teeth engagement surfaces is not recommended.

#### 3.2.1.15 Preventative Maintenance Checks and Services (PMCS)

Daily PMCS tasks shall not exceed 5 man-minutes for the system.

#### 3.2.1.16 Fire Prevention

Best commercial design practice shall be used to incorporate components and materials that are either fire retardant in nature or do not support combustion in accordance with FMVSS 49 CFR 571.302.

#### 3.2.1.17 Human Engineering MIL-STD-1472F Compliance

The G2TDS System shall be designed to ensure maximum Human Engineering compliance with MIL-STD-1472F. All controls shall be compatible with use of Night Vision Goggles (NVGs).

#### 3.2.1.18 Vehicle Interface Requirements

The G2TDS system shall be designed for a vehicle equipped with a MRAP/M1114 turret and shall interface to the vehicle in accordance with Attachment B. The G2TDS system shall be designed to work with various vehicles, and various mounting flange thicknesses. Flange thicknesses vary from 1/4" to 1/2''. The G2TDS system must interface with the existing MRAP/M1114 turret electrical connection.

#### 3.2.1.19 G2TDS System Interface Requirements

The G2TDS system integration onto the vehicle shall not require any penetrations of the ballistic enclosure of the vehicle. The G2TDS shall not exceed the space claim of the existing turret drive system.

#### 3.2.1.20 System Load Configurations

The G2TDS system shall be capable of operating with an OGPK that may be equipped with or without an OPC. Must work with various weapons configurations (M2, M249, M240, Mk19). Combinations of loads can result in a system that is imbalanced. Weights of known loads are:

- OGPK ~ 770 lbs
- OPC, Gen I ~ 410 lbs
- Weapon ~ 0 – 165 lbs (inc weapon, mount, ammo)
- Spare ammo ~ 0 – 110 lbs
- Gunner ~ 300 lbs

### 3.2.2 <u>Drive Motor Subsystem</u>

#### 3.2.2.1 Electrical Power Characteristics

The Drive Motor Subsystem shall be powered by the existing OGPK's battery system in accordance with MIL-STD-1275. The system shall not increase nominal vehicle power demand over the existing turret drive system.

#### 3.2.2.2 Operational Modes

The Drive Motor Subsystem shall be capable of operating in a powered mode, manual override mode, or locked mode.

a. In powered mode, the system shall respond to operator commands to traverse from a joystick or other devices.
b. In manual override mode, the operator shall be able to manually operate the turret with the use of a hand crank in accordance with MIL-STD-1472.
c. In locked mode, the operator can lock or prevent the turret from traversing.

#### 3.2.2.3 Loss of Power

In the event of loss of power, the default operation shall be locked.

#### 3.2.2.4 Overload Protection

The Drive Motor shall be equipped with overload protection sufficient to prevent damage to the drive motor, G2TDS system components, and the vehicle electrical system.

### 3.2.3 Drive Gear Subsystem

#### 3.2.3.1 Envelope

The Drive Gear Subsystem shall interface with the vehicle as shown in Attachment B of this Technical Description, and per paragraphs 3.2.1.18 & 3.2.1.19.

### 3.2.4 Motor Controller Subsystem

#### 3.2.4.1 Integral Control System

The motor controller subsystem shall have an integral control.

#### 3.2.4.2 Remote Control System

The motor controller subsystem shall be capable of accepting commands from (2) remote controllers.

#### 3.2.4.3 Emergency Stop

The motor controller subsystem shall provide a means for the operator to initiate immediate disconnection of power.

#### 3.2.4.4 Power Inputs

The motor controller subsystem shall be capable of receiving electrical power from the existing OGPK's battery system.

## 4 SUPPORTABILITY

### 4.1 Safety

The system shall avoid sharp edges, pinch points, electrical hazards, and other safety hazards in accordance with MIL-STD-1472.

### 4.2 Identification and Markings

The item identification marking is required on the G2TDS and the development of specific item marking requirements must be in accordance with MIL-STD-130.

## 5 ATTACHMENTS

### 5.1 Attachment A: MRAP G2TDS Mission Profile

### 5.2 Attachment B: Drive Gear Subsystem Interface Drawing

See drawing 6433138 Revision A "MRAP/M1114 Turret Assy Interface Dimensions" from BAE Fairfield, OH

# Attachment A: MRAP G2TDS Mission Profile

## PURPOSE

This purpose of this document is to define the G2TDS Mission Profile.

## SCOPE

The Generation II Turret Drive System (G2TDS) development is based on the following Mission Profile.

## DESCRIPTION

The G2TDS is intended for integration and operation on the M-ATV vehicle. The MATV mission profile is: 10% Primary Roads, 40% Secondary Roads, 30% Trails and 20% Cross-Country (Table 1).

M-ATV Mission Profile

| Road Surface | Terrain | % Operation |
|---|---|---|
| Improved | Primary | 10 |
| | Secondary | 40 |
| Unimproved | Trails | 30 |
| | Cross-Country | 20 |

Table 1

The test method developed utilizes an accelerated profile defined by 50% Secondary and 50% Trails. The desired test courses are located at the Yuma Proving Grounds (YPG); Patton Hilly Gravel (PHG) is a hilly secondary profile with grades up to 30%, and Patton Level Trails (PLT) is a level trails profile resulting in significant pitching of the test vehicle.

The OGPK duty cycle during test is targeted to 50% operational usage while subjected to the vehicle mission profile miles.

## MISSION PROFILE

The OGPK on the test vehicle is traversed using a duty cycle of approximately 30 seconds traversing, 30 seconds stationary (consisting of starting at 0 degrees, 90 deg left, 180 deg right, 180 deg left, 90 deg return to 0 deg) while the vehicle is operating on the test courses.

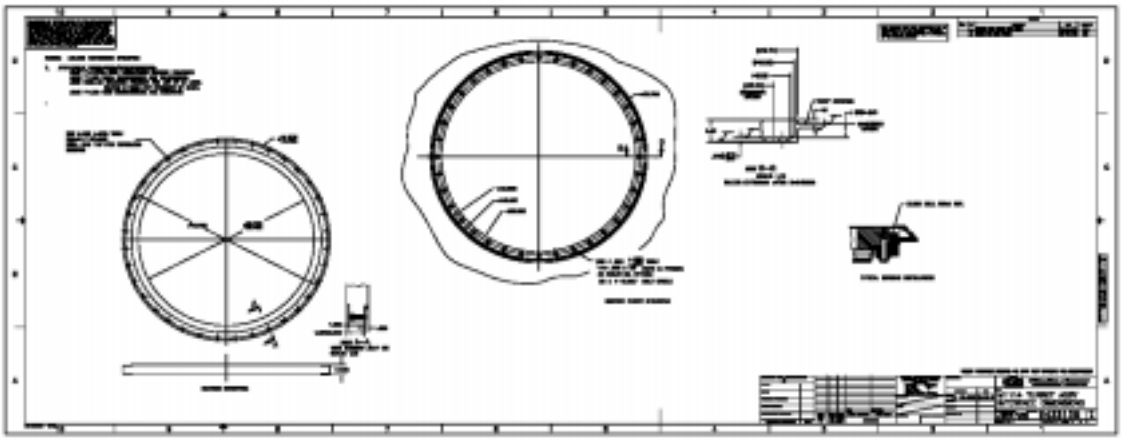
The vehicle is operated on the YPG Patton Hilly Gravel and the Patton Level Trails test courses. The miles accumulated are approximately 50/50 over the two test courses and shall total 1200 miles.

The OGPK may be loaded with different weapon configurations, or equivalent, as specified by the JPO.

## ACCEPTANCE CRITERIA

The Turret Drive System must remain operational throughout the duration of testing.

ATTACHMENT B

n

**Attachment B: Drive Gear Subsystem Interface Drawing**