AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code	Page
Firm Fixed Price	1 Of 32

2. Amendment/Modification No.	3. Effective Date	4. Requisition/Purchase Req No.	5. Project No. (If applicable)
P00010	2013DEC20	SEE SCHEDULE	

6. Issued By Code W56HZV

U.S. ARMY CONTRACTING COMMAND
JUSTIN A. KALOUSDIAN
WARREN, MICHIGAN 48397-5000
HTTP://CONTRACTING.TACOM.ARMY.MIL

EMAIL: JUSTIN.A.KALOUSDIAN@US.ARMY.MIL

7. Administered By (If other than Item 6) Code S0302A

DCMA SOLDIER SYSTEMS AND CAP - PHOENIX
TWO RENAISSANCE SQUARE
40 NORTH CENTRAL AVE, SUITE 400
PHOENIX AZ 85004-4424

8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code)

HONEYWELL INTERNATIONAL INC.
AEROSPACE - PHOENIX
111 S 34TH ST
PHOENIX, AZ 85034-2802

Code 99193 Facility Code

☐ **9A. Amendment Of Solicitation No.**

9B. Dated (See Item 11)

☒ **10A. Modification Of Contract/Order No.**

W56HZV-12-C-0344

10B. Dated (See Item 13)

2012JUL30

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ **The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers**

☐ **is extended,** ☐ **is not extended.**

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendments: (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. Accounting And Appropriation Data (If required)

ACRN: AB NET INCREASE: $1,000,000.00

13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS
It Modifies The Contract/Order No. As Described In Item 14.

☐ **A. This Change Order is Issued Pursuant To: The Changes Set Forth In Item 14 Are Made In The Contract/Order No. In Item 10A.**

☐ **B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).**

☒ **C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of:** 43.103(a)(3) and 6.302-1

☐ **D. Other (Specify type of modification and authority)**

E. IMPORTANT: Contractor ☐ **is not,** ☒ **is required to sign this document and return _____ copies to the Issuing Office.**

14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE SECOND PAGE FOR DESCRIPTION

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. Name And Title Of Signer (Type or print)		16A. Name And Title Of Contracting Officer (Type or print)	
		LISA BEHNKE LISA.BEHNKE@US.ARMY.MIL (586)282-4502	
15B. Contractor/Offeror	**15C. Date Signed**	**16B. United States Of America**	**16C. Date Signed**
_____ **(Signature of person authorized to sign)**		**By** /SIGNED/ **(Signature of Contracting Officer)**	2013DEC20

SECTION A - SUPPLEMENTAL INFORMATION

Buyer Name: JUSTIN A. KALOUSDIAN
Buyer Office Symbol/Telephone Number: CCTA-AHK-C/(586)282-5833
Type of Contract: Firm Fixed Price
Kind of Contract: Supply Contracts and Priced Orders
Type of Business: Large Business Performing in U.S.
Surveillance Criticality Designator: B
Weapon System: Tank, M1 Abrams Family of Vehicles

*** End of Narrative A0000 ***

This narrative applies to modification P00010 under contract W56HZV-12-C-0344:

I. PURPOSE:

1. The purpose of this modification is to procure an eMOT License and Technical Assistance Agreement, as described in Attachment 0014 of this contract.

II. AS A RESULT:

1. SECTION B. CLIN 0011AA is created to fund the 2014 eMOT License and Techincal Assistance Agreement identified as Attachment 0014 of Section J.

2. SECTION C. Section C.1.2.6.1 is added.

3. SECTION J.

   a. Attachment 0014, entitled "2014 e-MOT License and Technical Assistance Agreement" is added to Section J.

   b. Attachment 0015, entitled "Sub-Contracting Plan" is modified to include revised plan goals.

III. CONTRACT VALUE:

1. The total value of contract W56HZV-12-C-0344 is increased by $1,000,000.00; from $118,357,831.77 to $119,357,831.77.

IV. TERMS AND CONDITIONS:

1. Other than those changes specifically identified within this modification, all terms and conditions of contract W56HZV-12-C-0344 remain unchanged and in full force and effect.

2. In consideration of this modification, agreed to herein as complete equitable adjustments for the work described in CLIN 0011AA, the contractor hereby releases the Government from any and all liability under this contract for further equitable adjustments attributable to such facts or circumstances giving rise to the incorporation this modification.

*** END OF NARRATIVE A0013 ***

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS				
0011	TIGER 2 Contract NSN: 9999-99-999-9999				
0011AA	2014 EMOT LICENSE COMMODITY NAME: TIGER 2 Contract CLIN CONTRACT TYPE: Firm Fixed Price PRON: EH25E605EH PRON AMD: 08 ACRN: AB AMS CD: SM2B1100000 PSC: 9999 Contractor authorized to invoice for the license after delivery on 01 January 2014. (End of narrative B001) Work shall be performed in accordance with SOW section C.1.2.6.1 and Attachment 00014. (End of narrative C001) Packaging and Marking Inspection and Acceptance INSPECTION: Destination ACCEPTANCE: Destination Deliveries or Performance DOC SUPPL REL CD MILSTRIP ADDR SIG CD MARK FOR TP CD 001 W56HZV2164P101 W9109T M 2 DEL REL CD QUANTITY DEL DATE 001 1 31-DEC-2014 FOB POINT: Destination SHIP TO: (W9109T) XR W4GG HQ US ARMY TACOM ANNISTON ARMY DEPOT TIGER WRHS 7 FRANKFORD AVE ANNISTON,AL,36201-4199	1	LO	$ 1,000,000.000	$ 1,000,000.00

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

Definitions:

Acceptance: Executed by an authorized Government Representative on a DD Form 250 or alternate Contractor formatted document and means the act by which the Government assumes, for itself or as an agent of another, ownership of the identified supplies or recognizes completion of total performance specified in the contract.

Acceptance rate: The total number of TIGER Engines that pass test per ETP21500 in a given period divided by the total number of engine tests accumulated on those engines. The ratio shall be specified as a percentage.

Bi-monthly: Occurring every other month.

Block Change: Whenever the field experience doesnt require immediate support, engine improvements shall be introduced to the overhaul process in the following manner. The Contractor shall propose part candidates at Customer Satisfaction Board (CSB) 3 that shall target a common entry point for several different improvements. Initially a single point of entry (the Block Change) shall be assigned for one time each year.

Condition Based Maintenance (CBM): A set of maintenance processes and capabilities derived from real-time assessment of TIGER engine conditions obtained from embedded sensors, software and external tests and measurements to perform maintenance only upon evidence of need.

Condition Based Overhaul (CBO): A structured depot process of utilizing known engine operating and life history to tailor the National Maintenance Work requirement (NMWR) overhaul criteria to resolve engine failures and to achieve consistent levels of operational reliability at an optimal operational and support cost.

Condition Code A Material: The serviceable parts which are issuable to all customers without limitation or restriction.

CSB Gate 1: The Customer Satisfaction Board (CSB) is presented with the issue to be addressed and determines how to proceed, what the required resources, required funding, and priorities are.

CSB Gate 2: Review Root Cause and Corrective Action (RCCA) and selects best option for implementation.

CSB Gate 3: Implementation Plan is presented to CSB Board for approval.

CSB 4: Implementation of project solution notification presented for approval.

CSB 5: Follow-up effectiveness of project solution presented for approval.

Defects: Any condition or characteristic in supplies that is not in compliance with the requirements of the AlliedSignal/Honeywell Fabrication Specification 91547-E2180, current revision.

Engine: The AGT1500 Engine delivered by ANAD under the TIGER Program as described in this contract, and excludes any other versions of the AGT1500 Engine.

Excluded Engine: Any engines NOT the product of the entire TIGER process i.e. engines delivered under other contracts or engines returned from the field such as warranty repairs.

First Pass Yield: The rate defined by the number of acceptable first pass engines to the total number of first pass engines.

First Pass Engine: Any untested engine which is a product of the TIGER process sent to the test cell for acceptance testing.

Hardware, Material and Parts: The AGT1500 Engine parts and components furnished by the Contractor pursuant to this contract.

In Process Review (IPR): Integrated review meetings to communicate the status of the TIGER program.

Level 1 Milestone: Represents Contract Deliverables that impact the entire program (Customer Milestones). Requires customer approval for change.

Level 2 Milestone: Identifies the functional objectives for gathering status of work progress and identifying variance from contract deliverables. These elements are used to establish priorities for more detailed scheduling, a critical path analysis. These elements represent accomplishment of internal work toward the completion of contract milestones. These milestones are critical to the achievement of Level 1 milestones.

Mean Time Between Depot Returns (MTBDR): The average operating time of the fleet of TIGER engines that has to be returned to the depot

for repair/overhaul expressed in hours.

New Parts Rate (formerly known as Depot Overhaul Factor (DOF)): The forecasted percentage, based on historical averages, of each new part being replaced during a single engine overhaul.

Nonconformance: The failure to comply with, or failure to operate due to noncompliance with, applicable AGT1500 Engine drawings, or having defects in workmanship or material. Normal wear and tear and the need for regular overhaul and periodic maintenance do not constitute a Nonconformance.

Operating Tempo (OPTEMPO): The rate at which the M1 Abrams is involved in all military activities, including contingency operations, exercises and training deployments but is calculated as a multiple of the rate prevailing in peacetime. For TIGER the OPTEMPO is 300 hours/year (domestic) and 900 hours/year (deployed).

Overall Acceptance Rate: The ratio of the number of accepted engines to the total number of tests on those engines.

Products: The parts for field or depot requirements, including those returned for exchange.

Project Manager, Heavy Brigade Combat Team (PM HBCT): The overall program lead and technical lead for the Abrams AGT1500 TIGER program.

Program Management Reviews (PMR): The controlling review meeting used by the Government to track progress of the contract.

Prognostic Health Monitoring (PHM): The analytical assessment of engine performance, based upon engine sensor output, with the capability of predicting future engine health with anticipated variations in environmental factors. PHM results can be used to predict operational readiness and mission capability.

Reclaim Rate: Percentage of parts that the depot will reclaim and reuse. (ANAD)

Single Performance Standard: All engines being overhauled and repaired according to the same Work Instructions and the same engine Bill of Material (BOM).

Six S (6S): The methodology for creating and maintaining a clean, organized, and high performance workplace. It results in safer working conditions and greater productivity/efficiency. Six S is sorting, storage, shining, standardizing, sustaining, and safety.

Technical Data Package (TDP): Government ordnance drawings, Quality Assurance Requirements documents, industry standards, and Government owned commercial specifications with 91547 prefix.

Technical Test Operational Modes (OPMODE): Operating conditions and mission profile characteristics as defined by the Government.

Test Cell Accept: Any engine sent to the test cell with the test process started and the engine is subsequently removed from the test cell after having met the requirements of the AGT 1500 Acceptance Test Procedure (ATP) is counted as a test cell accept.

Test Cell Reject: Any engine sent to the test cell with the test process started and the engine is then removed from the test cell without having met the requirements of the AGT 1500 Acceptance Test Procedure (ATP) is counted as a test cell reject.

Threshold requirement: The minimum expected performance or outcome required in the contract.

TIGER Field Repair Site: A Contractor operated, repair type facility, with appropriate tooling, spare parts and utilities, suitable for troubleshooting, repairing and testing the AGT1500 engine and/or Abrams power pack.

Total InteGrated Engine Revitalization (TIGER) engine: An AGT1500 engine repaired and /or overhauled in accordance with the Contractor eMOT and kitting processes, observes the latest TIGER engine Bill of Material (which includes an hour meter), uses hardware removal and replacement factors for overhaul processing, * is monitored in service by on-site Field Service Engineers, and utilizes the services of an engine repair facility to resolve issues as applicable. TIGER Engines will be built in accordance with the latest TIGER engine Bill of Material (BOM) and hardware removal and replacement factors for overhaul processing (starting with the 1000 hour BOM), utilizing the Contractor kitting processes, full-up and running eMOTs at ANAD, including hour meter on the BOM.**

* = "has GFM inspected to the Contractors specifications" removed via Modification PZ0007.

** = "GFM inspected to the Contractor specifications" removed via Modification PZ0007.

TIGER Fleet: (engines to be included in official MTBDR calculations) TIGER Engines that are operating at sites where Honeywell Field Support Engineers are located and have the capability to perform repair and maintenance activities.

C.1. Total InteGrated Engine Revitalization (TIGER) Program

C.1.1 The objective of TIGER is to continually reduce operating and support costs and improve readiness consistent with Abrams Fleet Management goals. TIGER will maintain the process improvements, reliable supply of parts, cost reductions and durability/readiness increases.

C.1.2. The following paragraphs define the program breakdown and how they relate to the performance work statement. The contractor shall provide all parts needed to support the contract requirements regardless of lead time.

C.1.2.1 TIGER Production Engine Overhaul RESET (FFP). The Contractor shall provide all of the RESET parts on the approved TIGER Master Parts List (MPL), as specified in an approved 1400 hour MTBDR AGT 1500 Engine demand model. Non-Recurring Engineering (NRE) for ANAD Overhaul production and engineering services will also be included. The contractor shall provide all parts needed to support the contract requirements regardless of lead time.

C.1.2.2 TIGER Production Engine Overhaul SUSTAINMENT (FFP). The Contractor shall provide all of the sustainment parts for Condition Based Overhaul on the approved TIGER Master Parts List (MPL), as specified in an approved 1400 hour MTBDR AGT 1500 Engine demand model.

C.1.2.3 Field Spares Support (FFP). The Contractor shall provide all of the field spare support parts on the Government approved Honeywell TIGER Master Parts List (MPL), as specified in an approved TIGER engine Demand model. This includes all other required hardware to support the TIGER field repair sites as described in the SOW.

C.1.2.4 Field Service Engineers (FFP). The Contractor shall provide Field Service Engineers (FSE) for the AGT1500 engines fielded to U.S. Army tanks at locations defined in the SOW. The FSEs are to collect maintenance and operational data on AGT1500 engines, perform low risk repairs in accordance with TIGER process sheets or Technical Manual TM 9-2835-255-34, and provide technical assistance and training to crew and field level activities.

C.1.2.5 Contractor Manpower Reporting (CMR) (FFP). The Contractor shall provide Contractor Manpower Reporting as described in the SOW to report information related to the manpower required for performance of this contract on the provided secure Army website.

C.1.2.6 Electronic Manufacturing Operations and Tooling (eMOT) Licensing (FFP). License and Technical Assistance Agreement dated September 1st, 2005, including amendments through December 15th, 2011, is hereby incorporated and is applicable to the requirements of this contract through December 31, 2012(Attachment 0009). eMOT licensing has been funded by the Government under Modification 0088 to contract W56HZV-06-C-0173.

*****C.1.2.6.1 The contractor shall provide the license provided for as Attachment 0014 to this contract, with all its terms and conditions, in addition to the terms and conditions imposed by this contract. This license agreement shall remain valid through December 31, 2014.

C.1.2.7 Systems Technical Support (STS) (Cost Plus Fixed Fee)(CPFF). The Contractor shall provide Systems Technical Support as described in section C.10 of the SOW for the Abrams family of vehicles. The Contractor shall furnish the supplies and services necessary to accomplish the engineering and related technical support for the AGT1500 Turbine Engine in accordance with the requirements described in the approved SOW incorporated in the contract. No work shall be performed outside of the labor hour and material dollar limits set forth in the Request for Engineering Services (RES) and updated scope submitted and approved under the STS CLIN.

C.2 PERFORMANCE WORK STATEMENT

C.2.1. The Contractor shall exercise the requisite planning, direction and control over the TIGER program to successfully accomplish performance requirements for each of the following program elements:

a. TIGER Program Management and Integration.
b. Integrated Supply Chain Management (Demand, Supply Chain, and Material Management).
c. Overhaul and Condition Based Overhaul (CBO) Support at ANAD.
d. Field repair and maintenance of AGT 1500 Engine performance issues.
e. Data Collection and Fact Based Maintenance (FBM) Support.
f. Engineering Project Management and System Technical Support.

C.2.2. The Contractor shall provide the hardware, material parts and services to enable ANAD to deliver Reset or Condition Based Overhaul (CBO Sustainment) engines to a near zero time 1400 hour single standard engine with at least 1,400 hrs MTBDR durability, and to maintain the engines in the field. The Government will provide the incoming unserviceable assets. All delivered engines shall meet the following performance requirements:

a. AGT 1500 Fabrication Specification 91547-E2180, Revision J, dated 1 June 2008.
b. NMWR 9-2835-255 (Volumes 1 through 5 inclusive) as determined by the conduct of the overhauled engine test as defined in the Engine Test Procedure (ETP) 21500DECU.

C.2.2.1. In addition, the Contractor shall reference the following when developing and validating product/process improvements to the single performance standard:

a. Systems Specification for Tank, M1A1, Specification Number SA-X00003-D, dated 12 November 1996
b. Systems Specification for Tank, M1A2, Specification Number SA-SA00001D, SCN No. 1, dated 22 April 2004
c. Product Item Specification, Electronic Digital Engine Control, EA-J7 (AGT1500), Specification Number 91547-E2523, Revision B, dated 13 January, 2010.

C.2.3. The Contractor workforce co-located at US Army Anniston Army Depot (ANAD) performing under this Contract shall be under the supervision, direction and control of the Contractor, not under the supervision, direction or control of a Federal officer, Military or civilian. Contractor workforce shall not be placed in command, supervision, administration or control over Department of the Army military or civilian personnel or of other Government Contractors.

C.2.4. The Contractor is responsible for providing production problem resolution for all new parts and reclaim parts (provided by the Government) to the ANAD overhaul line. The Contractor shall provide eMOT work instructions that enable ANAD to ensure shop build records are complete including verification of serial numbers, waiver applicability, ATP test results and appropriate eMOT data field completion. These work instructions shall also identify all final inspection criteria (i.e. secured fittings, complete hardware, absence of FOD, adequate safety wire) and build record requirements.

C.3. PROGRAM MANAGEMENT AND INTEGRATION

C.3.1. Reviews and Meetings:

The Contractor shall attend and/or conduct the necessary meetings and reviews required to effectively manage the contract efforts in an Integrated Product Team (IPT) environment with the Government. Such efforts include Contractor Customer Satisfaction Board (CSB) meetings, semi-annual Program Management Reviews (PMRs) via teleconference, monthly Supply, Inventory, Operating Plan (SIOP) (One annual extended SIOP or Parts meeting at ANAD) meetings, semi-annual In-Process Reviews (IPRs), and quarterly engineering technical reviews. The Contractor shall host IPRs *** every 6 months. PMRs shall be scheduled every 6 months alternating with the IPR schedule conducted telephonically. The Contractor shall capture all action items assigned during the meeting. The action items shall be furnished to the Contracting Officers Representative (COR) within 15 working days after the IPR, in Contractors format in accordance with CDRL A001 or posted on the TIGER website. (***Changed via Modification P00006 to remove "at Phoenix, Arizona.")

C.3.1.1. If there is a technical disagreement between ANAD and the Contractor about a proposed action on the TIGER Program; the Contractor shall document the impasse and forward that information to PM HBCT for final resolution.

C.3.1.2. The Contractor shall conduct a Sales, Inventory Operations, Planning (SIOP) review each month (exception November or at USG request) with the Government via teleconference or a designated location. Monthly attendance for the SIOP shall consist of at least one member from TACOM, PM-HBCT, ANAD and the Contractor. The Government will identify Government representatives to attend the SIOP, with one representative being a mandatory participant. The Government may delegate its representation. If the SIOP meeting cannot be held as planned, the Contractor shall notify TACOM in writing and obtain permission to move or cancel the meeting.

C.3.1.2.1. The SIOP review shall provide the TIGER teams the status of the integrated supply chain and forecast requirements in support of the contract TIGER Production Schedule. The information to be reviewed shall consist at a minimum of the following:

a. Production Schedule:
(1) Requirements, gaps and recovery plans
(2) Actual vs. forecast of build rates
(3) Unplanned/Potential workload changes

b. Quality:
(1) Impact and corrective action of defects
(2) **** (**** = "Inspection of GFM" removed via Modification PZ0007.)

c. Material Management:
(1) Kitting activities and rates
(2) Warehouse count accuracy rates
(3) Line support issues and corrective actions
(4) Field Orders

d. ISC Sourcing:
(1) Supplier Issues
(2) Small Business Metrics

e. Demand:
(1) Contract Modification status
(2) Master Parts List changes
(3) ECP effectivity

(4) Shortages
(a) 90 day look ahead
(b) 30 day critical by part number
(c) Critical shortage per ANAD Daily Shortage meeting
(d) Sustainment Status Update

C.3.1.2.2. Following each SIOP meeting, official minutes (including the new Production Schedule and Rolling Action Item List (RAIL) shall be produced and provided to all SIOP members in accordance with CDRL A002 or posted on the TIGER website.

C.3.1.2.3. The Contractor shall conduct an expanded SIOP and Parts is Parts conference annually by teleconference or before Program renewal to determine go forward order policy for all parts. The information to be reviewed at the expanded SIOP shall consist of the following:

a. All items normally presented in monthly SIOP and

b. Production schedule:
(1) Reset production
(2) Sustainment production
(3) Field and TIGER shop requirements

c. Demand model review:
(1) Methodology
(2) Assumptions (e.g. safety stock levels, MPL version, workload)
(3) Inputs outputs
(4) ROM estimates

C.3.1.3. The outcome of the SIOP shall, at a minimum, consist of notification of New Part Rate (NPR) changes and recommendations for implementation plan for durability improvements and updates to the demand forecast.

C.3.2. Integrated Master Plan (IMP):

C.3.2.1. The Contractor shall maintain and update the IMP, as developed under Contract DAAE07-96-C-A002, and brief any changes at the IPR. Updates shall be downloaded documents on the TIGER website in accordance with CDRL A003.

C.3.2.2. The IMP shall contain the exit plan which defines what the Contractor shall do when the program ends, including the processes, in the event the Government does not award the option.

C.3.3. Integrated Master Schedule (IMS):

C.3.3.1. The Contractor shall maintain the Integrated Master Schedule (IMS) that defines the time phasing of Level 1 and 2 program milestones and their interdependencies. The IMS shall be used to assess program status and conduct schedule planning, critical path and risk assessments. The IMS shall be updated on a quarterly basis to accurately reflect the established development plan and status in accordance with CDRL A004 and posted on the TIGER website. Level 1 milestone changes shall be submitted to the Government for its approval.

C.4. CONFIGURATION CONTROL

C.4.1. The Contractor shall establish and maintain a Configuration Management (CM) program for configuration identification, control, status accounting, verification, and audit of the AGT1500 Engine and their Product Configuration Documentation (PCD) throughout the period of performance of the contract.

C.4.2. The Product Configuration Documentation (PCD) is defined as the documentation required for the product baseline in accordance with the requirements of this contract. The PCD shall include all technical data (in draft and final form) required by this contract, such as specifications, product engineering drawings and associated lists, special tools, interface and other AGT 1500 engine-related drawings, kits, containers, installation/removal instructions, special packaging instructions, quality assurance provisions, Contractor and Government-approved changes, required corrections, Engineering Release Records, and other technical documentation.

C.4.3. The Contractor shall provide CM and TDP support and related interface data through the end of the contract performance period. This support shall include submission of engineering change proposals, deviations, preparation and delivery of new and revised TDP data via Engineering Release Record (ERR) packages, as well as other technical data, in accordance with the SOW and the applicable CDRLs.

C.4.4. All Requests for Deviations (RFDs) shall be prepared and submitted in accordance with the Data Delivery Descriptions (DDDs) for RFDs in accordance with CDRL A011. No Request for Major/Minor Deviation shall be effective until approval is received from the Procuring Contracting Officer.

C.4.4.1. Effectivity Certification. The Contractor shall maintain the original effectivity point certification on file. This information shall be made available to the Government upon request and RFDs affecting the AGT 1500 engine shall be reflected in the Configuration Status Accounting records.

C.4.5. Data Storage. The Contractor shall store and protect all Government electronic product data in a CAD software system, engineering release system, and or product data management (PDM) system for the life of this contract.

C.5. CONFIGURATION MANAGEMENT

C.5.1. The Contractor shall utilize its Customer Satisfaction Board (CSB) Process (Contractor Procedure 1F12) to make configuration control changes. The Board consists of one member from each of the following organizations: PM Abrams (engineering, quality assurance and logistics), ILSC, TARDEC, ANAD and Honeywell personnel. The Government COTR will have final approval authority for the Contractors CSB, delegating responsibility at his discretion. The Governments recommendations shall be included in the minutes of the CSB meeting so this position is formally documented throughout the process in accordance with CDRL A006. Following each CSB meeting, official minutes shall be produced and provided to all CSB members including the Government representative on the TIGER program website (Daptiv e-Projects).

C.5.2. Projects approved during the CSB shall be documented and a formal request for Government approval will be made following CSB Gate 3 for all Class I Engineering Change Proposals (ECPs). All Class I ECPs that alter the engine or DECU Technical Data Package (TDP) must be cleared by the CSB Gate 3 exit review prior to submission to the Government. Approved implementation documentation shall be obtained for CSB Gate 3. After approval of the CSB Gate 3 exit, any changes shall be incorporated into the TDP through an approved ECP in accordance with CDRL A005. (Note: once approved through ECP, new configuration parts are added to the TIGER Master Parts List (MPL) BOM through an approved contract modification.)

C.5.3. CSB Gate 4 reviews shall be conducted by the Contractor and presented to the Government to communicate when a change is ready to be implemented at ANAD, and CSB Gate 5 shall be used to review the effectiveness of the implemented change.

C.5.4. Software changes approved by the CSB to the DECU by the Contractor shall be compatible with all previous U.S. tank hardware and U.S. vehicle operating software configurations.

C.5.5. All Engineering Change Proposals shall be prepared and submitted in accordance with the Data Delivery Descriptions (DDDs) for ECPs. MIL-STD-973, dated 17 April 1992, shall be used for reference. Any Deviation or ECP that affects Electric Magnetic Interface (EMI) or Nuclear Hardening capabilities shall be processed as a Class I ECP. (CDRL A005)

C.5.5.1. The Contractor shall not implement any ECP changes prior to Government ECP approval. The Contractor shall not incorporate any Class I ECP or Major/Minor RFD into the end item hardware without prior written approval of the PCO or designated representative.

C.5.6. Engineering Changes Government controlled items - The Contractor shall prepare and submit formal Engineering Change Proposals (ECPs) or Value Engineering Change Proposals (VECP) to effect changes to AGT 1500 components under Government control in accordance with DI-CMAN-80639C, dated 30 September 2000, (CDRL A005) and associated Data Delivery Description (DDD) for ECPs. A Notice of Revision (NOR) for each affected drawing shall be included in the ECP in accordance with DI-CMAN-80642C, dated 30 September 2000 (CDRL A010) and the DDD for NORs. The Contractor shall prepare and submit an Engineering Release Record (ERR) and submit an ERR package for each approved ECP as described in Section C.5.7 of this contract. Prior to preparation of formal ECPs, the Contractor shall request a group of ECP Numbers from the Government Configuration Data Management representative.

C.5.6.1. The Contractor shall submit sufficient supporting data to evaluate each proposed change. For Class II changes, this includes items a and c, below. For Class I changes, supporting data includes:

a. Rationale to support the necessity of making the change;
b. Any test results, planned testing, analyses, or other information to show acceptability;
c. Inclusion of affected parts and assemblies - models, drawings, sketches, calculations, manufacturers data sheets, and other data necessary to define the change you are proposing;
d. Identification of any logistics impact to each of the elements of ILS, including Packaging, TMs, and provisioning.
e. Engineering Estimated Cost Data to show increase or decrease of the unit and total cost; costs of tools or gages; cost of obsolescence or rework; manufacturing Contractor cost estimates of parts involved, packaging costs when affected; PCD creation and revision costs.
f. Identification, by serial number, or date, of the systems affected.
g. Transportability impact
h. Safety impact
i. MANPRINT impact
j. Spare & Repair Parts Data/Interchangeability Factors form when interchangeability is affected and or when there is a put and take of parts. Any replacement part is (or potentially is) a repair part and the questions of interchangeability must be determined for all replacement parts.
k. ECP Enclosure List to identify all documents contained in the ECP package. The Enclosure List shall also identify all end items affected, elements of the end item affected, and other ECPs that are pending against the documents listed. Include NSNs impacted by part

number changes.

C.5.6.2. ECP Numbers. The Contractor shall e-mail requests for ECP numbers to the TACOM Configuration Control Board (CCB) Coordinator, RDTA-EN/CDM. The Contractor shall utilize ECP numbers on an individual basis as a control identifier for ECPs and related Engineering Release Records (ERRs). ECPs returned for major revisions or rework shall be resubmitted using the original ECP number suffixed with an R1, R2, etc.

C.5.7. Engineering Release. Engineering release, via an Engineering Release Record (ERR), is an action that formally approves configuration documentation and makes configuration documentation available for its intended use. The Contractor shall prepare and submit an ERR and submit an ERR package for each Government-approved change to the Product Baseline in accordance with the ERR requirements of this contract (CDRL A007).

a. ERR Package. The ERR Package is defined as the Engineering Release Record submitted concurrently with the new and revised Product Configuration Document (PCD) for Product Baseline initial release and Product Baseline change release. The Contractor shall create and revise product data to reflect the current, Government-approved, Product Baseline configuration for the AGT1500 Engine for the entire contract performance period.

(1) The Contractor shall prepare and submit a digital ERR package to the PDMLink workflow in accordance with the contract scope and with DI-CMAN-80463C, dated 30 September 2000 (CDRL A007) for Government approval to establish or update the Product Baseline TDP. The ERR number used for change release shall be the same as the Government-approved ECP number.

(2) The Contractor shall prepare an Engineering Release Record (ERR) for each approved ECP, initial or direct release of a configuration item (CI) and Technical Data Package (TDP) in accordance with DI-CMAN-80463C, dated 30 September 2000, and CDRL A007. ERR metadata documentation shall include:
(a) ERR number
(b) Date
(c) Sheet number of total sheets
(d) Baseline established or changed
(e) Type of release (initial or change)
(f) ECP Number and ECP approval date
(g) Functional Assembly and Nomenclature
(h) System or Configuration item nomenclature (all end item affected by model number)
(i) Remarks or Miscellaneous Information
(j) Drawing Data Information:
1. CAGE code
2. Doc Type
3. Drawing size and Drawing number
4. Sheet of sheets
5. Revision letter
6. Revision date
7. Release (Initial or New Application) or Change (Change or Chg Application)
8. Distribution Code (See User Defined Metadata Attachment)
(l) Name and address of submitting office
(m) Government approval block

b. ERR Transmittal Problems - The Contractor shall immediately notify the government CDM representative by telephone or e-mail when conditions exist that prevents the Contractor from creating or submitting ERRs.

c. When the Contractors product data input is found to have excessive errors, the Contractor shall make the corrections and resubmit the ERR data.

C.5.8. Configuration Status Accounting Information. The Contractor shall maintain a Configuration Status Accounting system which documents changes affecting the Government controlled items and provides a detailed description of RFDs, ECPs and ERRs in process, completed, and cancelled. The system shall be populated with the status of changes and deviations, status of resulting action items, data affected by proposed changes and deviations, effectivity and incorporation status of approved changes and deviations, ERRs pending submittal, and status of submitted ERRs.

C.5.9. Government Product Data Management (PDM) System PDMLink. The Contractor shall create, revise and deliver product data upon ECP approval or drawing release on-line using the PDMLink in accordance with the requirements of this contract (CDRLs A008 Product Drawings/Models and Associated Lists, and, CDRL A007 Engineering Release Record). The Contractor shall obtain a login and password to the PDMLink for all Contractor personnel responsible for preparing ERRs and submitting to the government using the automated workflow.

C.5.9.1. PDMLink Training: The Contractor shall attend PDMLink training and comply with new direction and requirements of Windchill PDMLink. The Contractor shall also request training via a formal e-mail request to the primary or alternate CDM representative. The type and location of training will be at the Governments discretion. Training may be either formal classroom session(s) at the Contractors,

Governments, or off-site location, or informal desk top instructions at the individual Contractors workstation. Training guidance may also be provided by written guides and manuals or by telephone.

C.5.9.2. PDMLink Software Issues: The Contractor shall notify the Helpdesk via e-mail message to: ace.support@conus.army.mil when changes or corrections to product data cannot be accomplished by the Contractor due to software deficiencies or bugs. The Contractor shall courtesy copy the TACOM CDM representative on all software-related helpdesk requests. The Contractor shall notify the CDM representative by e-mail when product data is not available for updating or correction. The CDM representative will release data, take appropriate action, and provide further direction to the Contractor, as applicable.

C.5.9.3. Configuration Data Management for Government controlled items. The Contractor shall assign a unique identifier to PCD and utilize disciplined version control in managing digital data. The Contractor shall retain all Government-approved revisions (versions) of each document and model representation to provide a traceable history in order to access the correct revision of an item of data when needed. Numerical revisions (versions) are not allowed. The content of a document and model revision is fixed once the Government approves PCD under Government configuration control. Changes are allowed only by a superseding document revision (via Government approved ECP) and subsequent approval of the new revision by the Government (via ERR). The Contractor shall ensure that all representations (i.e., hard copy, raster, Adobe PDF, native CAD, neutral CAD, etc.) of a single version or revision of PCD, delivered to the Government for approval and subsequently maintained by the Contractor for the term of this contract, are identical.

a. Drawing Number Assignment - The Contractor shall assign Government-issued Army Ordnance Part Numbers (AOPNs) to all product drawings, models, and associated documents, including package content, installation, control, interface and kits produced and released under this contract. The AGT 1500 engine and components shall use the AOPN as both the drawing/model number and base Part or Identifying Number (PIN), along with CAGE 19207 as the basis for unique item identification. Any engine items authorized by the Government to remain as manufacturer part numbers shall reflect unique item identification in the PCD using, at minimum, the vendors complete PIN and CAGE code. Control drawings authorized by the Government, such as source control or vendor item control, shall be assigned an AOPN using CAGE 19207 and shall be prepared in accordance with the requirements of ASME Y14.24. (CDRL A008 Product Drawings)

b. Drawing Part Numbers for Privately Developed Items - If a privately developed item is approved for incorporation into the design, and the Government has authorized preparation of a control drawing, the Contractor shall assign an AOPN to the item and or drawing in accordance with C.5.9.3(a) and ASME Y14.24, dated 1 January 1999. CDRL A008 (Product Drawings)

c. Product Data Drawings, Models and Documents Custodianship - The Contractor is responsible for all original data in its possession. As custodian, the Contractor shall make any changes authorized by TACOM to the original data, and provide compliant data as part of the ERR package in accordance with the ERR requirements of this contract. The Contractor shall distribute additional copies of changed data to co-users and other recipients as described in the SOW or CDRL. The Contractor shall not transfer custodianship of any Government data to vendors or Sub-Contractors without written approval from the COR.

d. End of Contract (EOC)-Procedures for Transferring Product Data Documents, Drawings, Models, and Associated Lists. The Contractor shall transfer master data not already in the Governments possession to the CDM Representative by the EOC. The Contractor shall transfer these source 2D non-digital and digital, neutral 3D CAD solid models, and other software generated master files as attachments to a closeout ERR or Change Notice object in the Governments PDM System.

C.5.10. Product Drawings, Models and Associated Lists Government controlled: Technical Data Package (TDP).

C.5.10.1. Computer Aided Design Capability. The Contractor shall possess computer aided design (CAD) capabilities to produce drawings and models under this contract.

C.5.10.2. Product Data Lifecycle Management. The Contractor shall design, develop, prepare, manage, deliver and maintain, update and revise engineering drawings and models, associated lists, program-unique specifications, and other required technical data that represent the AGT 1500 Engine product configuration document (PCD) baseline for each Government approved end item, top assembly item, configured item, lowest assembled or part item.

C.5.10.2.1. Product Data Functional Requirement. AGT 1500 Engine product drawings and models shall provide accurate design, engineering, manufacturing, and quality assurance information required to enable (a) modeling and simulation, (b) development of installation, operation, maintenance and training materials, (c) support logistics provisioning and cataloging, and (d) facilitate procurement or manufacture of an interchangeable item that duplicates the physical and performance characteristics of the original product, without additional design engineering effort or recourse to the original design activity.

C.5.10.3. Technical Data Package (TDP) Product Data. Government controlled product data developed and maintained for AGT 1500 Engine part, subassembly, assembly, unit, group, kit, set, subsystem, or system configuration items shall be delivered IAW requirements cited in this contract and;

a. DI-SESS-81000C (CDRL A008) Product Drawings/Models and Associated Lists
b. MIL-DTL-31000C Technical Data Package Specification
c. Product Drawings and Associated List TDP Option Selection Worksheet
d. Tailoring Checklist for Product Drawings and Documents (ASME Y14.100)

e. Product Solid Models TDP Option Selection Worksheet

C.5.10.3.1. Digital Product Data Sets.

a. Product data description. Product data shall disclose (directly or by reference) the physical and functional requirements for each item by means of graphic and textual presentation that includes geometry, topology, relationship, tolerances, notes, attributes, features, critical dimensions, critical safety item information, interface requirements, associativity, parts lists, unique part identification, and revision history. The Contractor geometry and 3-D CAD data creation standard(s) shall stipulate application of these requirements.

b. Design and Modeling. AGT 1500 Engine technical data package design data shall constitute 2-dimensional engineering drawings, and 3-dimensional solid models in neutral format (will be noted on engineering drawings), and associated documents. The DoD adopted industry standards Y14.1, Y14.5, Y14.24, Y14.34, Y14.35, Y14.38, and Y14.100 are required as a composite set for Contractor's development and delivery of AGT 1500 Engine technical data packages to the Government.

C.5.11. Product Definition Data for Government controlled tech data in accordance with CDRL A008, Product Drawings/Models and Associated Lists.

a. Three-dimensional (3-D) Solid Model Formats. The Contractor shall design, develop, and deliver AGT1500 engine part and assembly solid model product definition data in neutral file format when authorized by the Contracting Officers Technical Representative (COTR) through an approved scope change or request for technical service.
(1) Native Format. The native 3-D CAD solid model is the product data master and primary content file in the construction of AGT1500 engine digital product data sets. Solid models shall be fully defined.
(2) Neutral Format. The Contractor shall translate each AGT 1500 engine design master (native) 3-D CAD part and assembly solid mode into an ISO 10303 STEP AP203 Ed. 2, STEP 214 or IGES format as appropriate.

b. Two-dimensional (2-D) computer generated drawings. The Contractor shall develop and deliver 2-D computer generated drawings for each part, assembly, installation, kit, and special tool configuration.
(1) New 2-D Drawings. All new (initial or direct release) 2-D engineering drawings shall be drawn using a CAD system. Transmission of two-dimensional product definition drawings and documents shall be delivered in a full size digital raster Acrobat Adobes PDF image format at 200 dpi minimum resolution. Drawing formats, sizes, and content shall conform to the requirements of standard ASME Y14.1. Product drawings and associated list shall be developed using ASME Y14.100, Y14.24, Y14.34, Y14.35, Y14.5, and Y14.1 as a composite set.
(2) Combination Part Items. AGT 1500 engine fabrication, assembly, installation, interface, and kit drawings incorporating commercial and noncommercial configuration items shall be developed and delivered in a 2-D electronic drawing in Acrobat Adobes PDF image format.
(3) Drawings Conversion. The Contractor shall convert existing legacy 2-D drawings (previously released design engineering data to Government) into 3-D CAD solid model formats, as stated herein, and deliver IAW ERR submittal procedures.
(4) Drafting Standard Exceptions. Revisions to legacy 2-D drawings, for which 3-D CAD development or update is not requested by Government in SOW, shall be made IAW the drafting standard under which the drawing was originally created under Government contract. Drawings shall be revised IAW ECP/ERR procedures and delivered in full size digital raster Acrobat Adobes PDF image format at 200 dpi minimum resolution.
(5) Stable Base Formats. Non-digital reproduction Class I, II, III, IAW MIL-PRF-5480G, drawings shall be digitally scanned and delivered in raster Adobe Acrobat's PDF image documents at 200 dpi minimum resolution. Reduced sizes are prohibited.

C.5.12. DoD Technical Distribution Statement and Export Control For Government controlled data. All new (initial or direct release) and revised product definition documents for AGT 1500 Engine configuration items shall have the appropriate DoD technical distribution statement and export control warning required by DoD Directives 5230.24 dated 18 March 1987 and 5230.25 dated 6 November 1984. In order to protect and limit transmission of proprietary information not owned by the Government (e.g. commercial technical data developed at private expense) that is protected by the Contractors Government Limited Rights in data statement IAW DFARS, received Government validation of assertion, and is marked accordingly, the Contractor shall apply DoD Technical Distribution Statement E IAW DoDD 5230.24. Technical data with Government Purpose Rights or Unlimited Rights shall have DoD Technical Distribution Statement D IAW DoDD 5230.24.

C.5.13. Source Control. For Government controlled data, the Contractor shall prepare Government Source Control and Vendor Item Control Drawings IAW Y14.24 only upon written authorization by the Government. When possible, Source Control and Vendor Item Control Drawings shall have listed two (2) or more sources of supply. Requests for Government authorization shall be accomplished by the Contractors written justification to the COTR IAW the ECP process delineating the need for source control and vendor item control drawings in the use of commercial or vendor developed configuration items for Government procured systems.

C.5.14. Geometry and Data Creation Standard. When authorized by the COTR through an approved scope change or request for technical services, the Contractor shall provide a summary of the geometry and data creation standard in use to develop, define, and manage AGT 1500 Engine 2-D drawings, 2-D and 3-D CAD models, and associated documents. The Contractors data standard shall contain identification of data format types, application of geometric tolerances, materials, surface finishes, annotations, notes, metadata attributes, relationships and associations, default datum, file and part/document naming conventions, views, planes, layers, parameters, units, reference objects, line weights, symbols, quality assurance information, rights in data, security markings, export control notices, engineering notes, material and process specifications referencing, and part to file structuring. This document shall be delivered IAW CDRL A008, Product Drawings/Models and Associated List (TDP).

C.5.15. Product Data Document Approval in Contractor System.

C.5.15.1. Design Drawing Verification and Approval. The Government Design Engineer assigned to vehicle system is required to authenticate and sign-off newly generated product drawings due to ECP approval and or initial or direct release. Entry shall be made in the Design Engineer's Approval Block, ASME Y14.1 (Block G) prior to ERR release. Request Government Design Engineer names from PCO.

C.5.16. Part Marking Unique Identification (UID) in Technical Data. The Contractor shall determine location and type of UID marking IAW MIL-STD-130N, when UID marking is required, Identification Marking of US Military Property, dated 17 December 2007, and shall ensure that this information is directly added to AGT1500 Engine 2-D drawings.

C.6. INTEGRATED SUPPLY CHAIN AND MATERIAL MANAGEMENT

C.6.1. The Contractor shall provide parts to the ANAD assembly floor on time to meet the ANAD TIGER production schedule. In addition, the Contractor shall provide components to the worldwide tactical field demands and provide all parts required to enable the TIGER field sites to complete field level repairable tasks. Additional critical purchased parts will be identified by both the Government and Contractor based on factors such as lead-time, quality, delivery and other agreed upon criteria.

C.6.2. The Integrated Supply Chain & Material Management function comprises the following activities:

C.6.2.1. Demand management to assure that the optimal order quantities are placed within required lead times to meet forecasted material requirements.

C.6.2.2. Procurement and supply chain management to assure that quality parts are delivered on time to the ANAD warehouse.

C.6.2.3. Inventory control to assure total parts tracking and visibility from time of order placement through delivery to ANAD.

C.6.2.4. Parts Management to assure that the correct part kits, supermarket stock and subassemblies are available at the required time at each assembly station.

C.6.2.5. The Contractor shall ensure that ANAD has eMOT work instructions that represent the approved TIGER configuration per technical data requirements and the National Maintenance Work Requirement (NMWR). Controls will include flow-down of approved MPL part number changes to kit sheets and subsequent audit of kit sheets against the approved TIGER MPL. A system will be utilized to identify and track delivered TIGER engine part kit quality issues and the associated corrective actions.

C.6.3. Demand Management and Material Forecasting.

C.6.3.1. The Contractor shall forecast worldwide demand for AGT1500 part requirements based on the following data from the Government:
a. Engine/component production schedule
b. Field Usage data
c. Approved Demand Model Assumptions

C.6.3.2. The Contractor shall maintain a current list of piece parts and components on the AGT1500 engine including supplier part numbers, National Stock Numbers, NPR and Ordnance numbers, and projected lead-times. The Government shall have unlimited rights to this information, except where the Contractor has marked the data with a limited data rights legend or Contractor Confidential or Proprietary legends. The list shall be kept current and the latest version shall be available electronically to the Government via a flat file, upon request, to the TIGER website in accordance with CDRL A012.

C.6.3.3. The Contractor shall analyze part usage trends and durability improvement incorporation schedules, and shall adjust demand requirements to usage rates and incorporate the data into the Kit process sheets. Changes to usage rates with supporting justification will be reviewed with ANAD Turbine Value Stream (TVS) Management, TACOM ILSC, PM HBCT, and Honeywell Engineering. The Contractor shall make adjustments to the usage rates within the Contractor provided MPL and follow the mutually agreed modification process to update the contract.

C.6.3.4. The Contractor shall conduct a provisioning conference or Parts is Parts meeting with ANAD, TACOM ILSC and PM HBCT in conjunction with each iteration of program year planning. The meeting shall be held at ANAD unless otherwise directed by the Government. The intent of this conference shall be to reconcile the TIGER demand with the GFM due-in, Contractor due-in and quantities shown in Contractors Inventory Management System (IVMS) as well as update the TIGER engine Master Parts List (MPL) configuration with new part consumption trends, repair effectiveness or changes. The Contractor shall advise the USG if there is: (1) any excess inventory that can be applied against the next program years requirements, (2) any inventory shortages (gap), or (3) inventory not required per the latest USG approved TIGER MPL (e.g. provisioning assembly vs. detail, obsolete per ECP, NPR revisions). The USG and the Contractor shall negotiate actions to address any excess or shortages in support of TIGER requirements. Any obsolete inventory identified shall be coordinated with the USG for approved disposition (e.g. scrap, rework, redeploy from TIGER inventory, other).

C.6.4. Contractor Supplied Material and Supply Chain Management

C.6.4.1. The Contractor is responsible for Supply Chain Management of all contractor supplied material. The Contractor shall provide all of the new component material required to support the repair and overhaul of the ANAD AGT1500 engine overhaul line after consumption of GFM. The Contractor shall be responsible for the qualification of suppliers, and the acceptance/inspection of all Contractor supplied***** parts, as well as the on-time delivery of the Contractor supplied parts. Parts delivered to ANAD and accepted by the Government shall be failure free through the Acceptance Test of the engine or delivery to the field in accordance with Contractor standard warranty provisions in H-6.*** *** Any Contractor furnished part found to be defective after delivery to ANAD shall be reworked or replaced by the Contractor at no additional cost unless determined to be defective due to ANAD workmanship error. (***** = "Contractor supplied" added via Modification PZ0007.)(*** *** = "in accordance with Contractor standard warranty provisions in H-6" added via Modification PZ0007.)

C.6.4.2. Contractor supplied parts rejected at ANAD assembly shall be returned to the TIGER Kitting facility for replacement. All nonconforming contractor procured TIGER parts shall be dispositioned utilizing the existing Contractor Material Review Board (MRB) process.

C.6.4.3. Test Support Hardware and Safety Stock: The Contractor shall provide all hardware necessary to complete TIGER AGT1500 engine acceptance testing, control test hardware, and safety stock based on individual part usage rate and lead time.

C.6.5. Reclaimed Parts

C.6.5.1. The Contractor shall develop a mutually agreed-upon process with ANAD and schedule for the delivery of the ANAD reclaimed condition Code A parts to the TIGER Kitting facility to ensure on-time delivery of the kits to the ANAD AGT1500 Engine Overhaul line. The Government will be solely responsible for performing the reclamation process, including moving, identifying and providing the status of the parts during this process, packaging for warehouse storage, and delivering the inspected Condition Code A reclaimed hardware to the Contractor.

C.6.6. Inventory Management

C.6.6.1. The Contractor shall provide inventory management services to include receiving, stocking, issuing, and maintaining inventory accuracy of all parts in the Kitting facility and warehouse. The Contractor shall utilize a Government approved Government Property Control system at ANAD for the TIGER Program.

C.6.6.2. The Contractor shall provide an automated inventory management system for recording and reporting on the Kitting facility. The Contractor shall report, in Contractor format, the daily stock on hand available in the TIGER warehouse to support the program requirements in accordance with CDRL A017. The Government will be responsible for physically tracking the status of reclaim parts in the back shop areas, collecting data and moving the reclaim parts to the various areas as specified on the reclamation process routing.

C.6.6.3. The Contractor and its subcontractors are authorized to commingle material produced, purchased, or otherwise furnished by the Contractor under this contract and other materials provided by the Government as GFM to this contract. For the purpose of this provision, the same part manufactured to different revision levels may be commingled unless the parts are specifically designated as obsolete by TDP revision.

C.6.6.4. The Contractor shall develop a plan for conducting an annual physical inventory of the TIGER Anniston Army Depot (ANAD) warehouse and the TIGER offsite warehouse. The objective of this inventory audit is to validate actual quantities of TIGER parts on hand against those quantities reported in the contractor inventory management system. The Contractor's plan shall be coordinated with ANAD and TACOM, and include a schedule to ensure the completion date before the demand planning of the next program period.

C.6.6.5 The Contractor shall develop a plan to reconcile potential discrepancies in parts received into the TIGER Inventory Management System (IMS) between Attachment 0003 and Attachment 0004 of this contract. The objective of this reconciliation is to validate the LOT quantity of CLINs 0001 & 0004 with individual part receipts. The plan will be submitted no later than 31 December 2013 in accordance with CDRL A020.

C.6.7. Parts Kitting and Warehousing

C.6.7.1. The Government shall provide the Contractor space for the TIGER Kitting facility and TIGER Warehouse at ANAD. The Government provided storage areas must be securable by the Contractor to prevent uncontrolled access to the TIGER repair parts inventory.

C.6.7.1.1. The Contractor shall provide fork lift transport for manifested reclaim parts from Bldg 133 to Bldg 136 TIGER warehouse. The Contractor is not required to provide long term packaging and preservation for transit or storage of reclaim parts moving to Bldg 136.

C.6.7.2. The Contractor shall flow all new and reclaimed (Condition Code A) material through the Inventory Management System (IMS) utilized in the TIGER warehouse. The material shall be moved to the TIGER warehouse/kitting facility at the Contractor's direction. The Contractor shall provide a flat file of incoming material on a monthly basis from the IMS which delineates between TACOM, ANAD or the Contractor as the source of supply. The Contractor shall provide a monthly material delivery report detailing the quantities of parts by NSN delivered to the ANAD production floor in accordance with CDRL A013. The report shall include date of delivery, specific kit number,

and identify all parts issued to a supermarket (bulk parts storage area. The data maintained in the Contractor's inventory management system is limited to part number, NSN, ordnance number, nomenclature, quantity, new or reclaim status, receipt reference, issue reference, and date of transaction.

C.6.7.2.1. The Contractor shall establish controls for ensuring delivered kits meet the current TIGER engine configuration requirements as defined in the governing technical data. Controls shall include flow-down of approved Master Parts List (MPL) part number changes and effectivity dates to kit sheets and subsequent audit of kit sheets against the approved TIGER MPL (Attachment 4). The Contractor shall support existing Government quality tracking system (EMIDAS) to identify and track delivered TIGER engine part kit quality issues, and the associated corrective actions.

C.6.8. TIGER Field Repair Sites Inventory

C.6.8.1. The Contractor shall provide the new hardware required to support the TIGER Field Repair Sites. The Contractor shall control and replenish the repair parts inventory through an established process. The inventory may be co-located at the Field Repair Site or remotely located. The Government provided storage areas must be securable by the Contractor to prevent uncontrolled access to the TIGER field repair parts inventory. The Contractor shall also be responsible for shipping new or reclaimed hardware to the TIGER Field Repair Site.

C.6.9. Field Support Inventory

C.6.9.1. The Contractor shall provide hardware in support of tactical field requisitions in accordance with the field assumptions in the Demand Model. The Contractor shall monitor and maintain inventory field safety stock levels of hardware to support the Government requirements as viewed through the Government supply Internet portal. Field inventory levels shall be managed during the monthly SIOP to maintain support of the unique site requirements. The field repair parts shall be packaged in a reasonable unit pack quantity by the Contractor for shipment to the field in accordance with standard commercial packaging. Line Replaceable Units (LRUs) shall also be packaged by the Contractor in Government furnished containers. The Contractor shall deliver the packaged detail hardware for field support to the DLA warehouse located at ANAD for final shipment.

C.7. OVERHAUL SUPPORT AT ANAD

C.7.1. The Contractor shall recommend improvements to the AGT1500 engine, eMOT procedures, test cell equipment, the Acceptance Test Procedure, and other procedures, tools and equipment used to build and test the AGT1500 engine that shall improve the engine acceptance rate, reduce test cell failures (engine and component), and lower the overall O&S cost, subject to Government approval.

C.7.1.1. The Contractor shall provide on-site technical support at ANAD to include technical advice, training, documentation (Build Sheets, eMOTs), and troubleshooting/fault analysis of engine assembly and test.

C.7.1.1.1. The Contractor shall use best commercial practices to review engine technical issues, test cell rejects, component failures, and trend data from ANAD assembly and test processes, investigate adverse trends, and make recommendations to the government on assembly/test procedures, instrumentation, test benches, eMOTs, or other process improvements to ensure adverse trends are corrected to mitigate negative impact on engine acceptance.

C.7.1.1.2. The Contractor shall report through scheduled Overhaul Team and Condition Based Overhaul Dashboard Meetings on the results of production trend analyses, as well as on status and results of technical investigations underway to ensure effective communication is in place and the overhaul team has all the information to promote continuous improvement of the overhaul process and delivered product.

C.7.2. The Contractor shall provide technical training on the use of the electronic work instructions at ANAD, herein referred to as Electronic Manufacturing Operations and Tooling (eMOT), provided for under separate license. ANAD will provide the PC infrastructure for the on-site eMOT system. The Contractor shall provide and maintain an eMOT training module.

C.7.2.1. The Contractor shall provide ongoing updates of the eMOTs. The Contractor shall provide training to ANAD for the proper operation of the system. The Contractor shall have final approval authority for changes to the eMOT system. The Contractor shall review Government requests for changes to the eMOT work instructions and shall make the required changes in the eMOT system. The Contractor shall provide software licenses and associated implementation Intellectual Property (IP) to ANAD along with software maintenance for contract duration.

C.7.2.2. The Contractor shall be responsible for eMOT changes that do not impact inventory, scheduling, facilities and/or ANAD labor. The Contractor on-site technical lead shall coordinate issues with ANAD personnel and then implement changes.

C.7.2.3. The Contractor shall provide requested technical input to ANAD for implementation of the ANAD LMP system. The Contractor shall maintain the current eMOT and CBO Database Systems and shall make all required data available to ANAD for LMP at the requested intervals.

C.7.3. The Contractor shall provide technical assistance to ANAD in performing quality initiatives and continuous improvements to the AGT1500 overhaul and repair process to ensure TIGER performance and operational objectives are met. To accomplish the performance

objectives the Contractor shall provide the following minimum support:

C.7.3.1. The Contractor shall provide subject matter experts as requested by ANAD to conduct a process review of work areas, test areas, fabrication areas, assembly and disassembly areas and final out to identify potential continuous improvement projects. The Contractor shall assist ANAD in project implementation in order to improve the quality and reduce variability in the component, module, and engine assembly and test processes.

C.7.3.2. The Contractor shall provide technical, material and quality input to the Government during the execution of an integral root cause corrective action (RCCA) process at ANAD as part of their overhaul process.

C.7.3.3. The Contractor shall advise ANAD on best commercial practices for their parts reclamation processes.

C.7.3.4. The Contractor and ANAD QA will jointly conduct periodic quality audits of key overhaul processes and tooling to ensure compliance with all AGT1500 technical data, eMOTs, NMWR and ANAD established requirements, standards and procedures.

C.7.4. The Contractor shall recommend improvements to the Condition Based Overhaul (CBO) process development throughout the performance of this contract. Any improvements shall be at the approval of the Government. The CBO process establishes the methodology employed at ANAD to overhaul TIGER sustainment engines in order to maintain TIGER durability goals at a best value cost to the government. The plan shall include:

C.7.4.1. Collaborate with ANAD personnel in the execution of a comprehensive engine induction/disassembly process including a pre-shop analysis (PSA) procedure to be included as part of CBO.

C.7.4.2. Review trends in hardware condition as a function of time for engines with operational hour meters and part usage for engines with operational EMUs to confirm the documented and projected condition of the hardware is consistent with a fleet MTBDR of 1,400 hrs. This shall include semi-annual on-site reviews of hardware by engineering to review trends, potential durability impacts, and to evaluate potential future design improvements to be funded separately (reference Section C.10).

C.7.4.3. Conduct root cause investigations on new or unusual findings uncovered during CBO incoming inspection and analysis, and recommend process and/or product improvements based on the root cause of the findings. The CSB process shall be used to communicate root cause (CSB2) with recommendations on corrective action.

C.7.4.4. Conduct a semi-annual review of the CBO Time Dependant Overhaul Criteria (TDOC) based on the maturity of the CBO process as demonstrated through the pilot program and the full incorporation of CBO, and publish updates to the TDOC (increasing and/or decreasing inspection requirements and intervals on parts) based on findings during disassembly analysis, to ensure the hardware inspection and replacement requirements are consistent with the fleet MTBDR of 1,400 hrs. The TDOC updates shall be submitted on DA Form 2028 for incorporation into the NMWR.

C.7.4.5. Create and modify the CBO work scope processes and the analysis of said work scopes with ANAD in the continuous improvement process of CBO. The analysis shall produce recommendations for future work scope adjustments, with all recommendations and findings documented.

C.7.5. The Contractor shall develop and recommend a process to evaluate components which have exceeded NMWR service/repair criteria for cost effective salvage potential. As part of this process the Contractor shall perform the following:

C.7.5.1. Review hardware that is rejected for use during OIP/reclaim processes for potential new repair procedures that shall lower the cost of ownership through more cost effective repairs.

C.7.5.2. Based on the quantity of non-serviceable hardware and repair options, the Contractor shall present to the government during CBO Process Review Meetings at ANAD and twice annually at TIGER IPR reviews cost-effective industry and/or Contractor-developed repair options for development, qualification and incorporation into the ANAD overhaul process.

C.7.5.3. Identify, define, develop, and qualify new repair capabilities and overhaul repair instructions (ORI). The ORI shall be developed and processed in accordance with the Contractors format and submitted for Government approval via DA Form 2028.

C.7.5.3.1. Potential new repair projects shall include introducing non-proprietary commercial repair processes and procedures for gas turbine propulsion engines which are relevant to the repair and overhaul of the AGT1500 engine at ANAD. Intellectual Property (IP) or Confidential Repairs the Contractor developed shall remain the property of the Contractor unless provided for use at ANAD under separate license agreement. The Contractor may authorize ANAD to use a specific proprietary repair as long as an active contract supporting AGT1500 at ANAD and a license agreement for use of Contractors eMOTs is in force and the proprietary documents are strictly controlled to prevent unauthorized use.

C.7.6. The Contractor shall provide recommended changes to the National Maintenance Work Requirements (NMWR) that are revealed as a result of the execution of this contract via a DA FORM 2028-2, in accordance with CDRL A014.

C.7.7. The Government will provide non-temporary workspace for Contractors on-site Overhaul team at ANAD. The office space will include the necessary infrastructure for office activities: phone, fax, internet connection, access to sanitary facilities, heating, ventilation, and air conditioning.

C.8. CONDITION BASED OVERHAUL (CBO) DATA SUPPORT

C.8.1. The Contractor shall provide all condition based overhaul (CBO), data support system infrastructure, and database architecture (e.g. FBM, THM, eMOT, PETS-- hereafter referred to as CBO databases)to collect, process, store and report TIGER engine data for condition based overhaul to maximize the usable life of parts in order to reduce cost without impacting TIGER durability gains.

C.8.1.1. The TIGER CBO database(s) shall provide data on prior field maintenance activity, reason for engine return, and maintenance findings. The TIGER CBO database(s) shall accommodate the re-use of TIGER UID engine data-plates and engine serial numbers on sustainment engines to uniquely identify the pedigree of the engine.

C.8.1.2. The TIGER CBO database(s) shall provide the CBO analyst a qualitative assessment of field maintenance actions (e.g. serialized parts replaced in field) to help establish a background of understanding on a returned TIGER engine.

C.8.1.3. The TIGER CBO database(s) shall contain individual engine data concerning the type of life the engine experienced in field use for component health assessments including last engine faults and fault history. Data shall include Engine Memory Unit (EMU) files, which keep track of: starts, shutdowns, min/max speed cycles, and temperatures throughout the life of the engine.

C.8.1.4. The TIGER CBO database(s) shall provide the CBO analyst a quantitative assessment of the remaining life for the compressor and turbine disks for determining the maintenance action to take on a returned TIGER engine.

C.8.1.5. The TIGER CBO database(s) shall contain Repair & Overhaul (R&O) data including the following: part serial numbers, waivers, build characteristics, inspection/test results and maintains assembly and module hierarchies pertaining to each engine/module serial number.

C.8.1.6. The TIGER CBO database(s) shall provide the CBO analyst the master record of the engine build configuration and runtime for all modules/parts.

C.8.1.7. The TIGER CBO database(s) shall collect all Acceptance Test Procedure (ATP) data when qualifying an engine for the field.

C.8.1.8. The TIGER CBO database(s) shall integrate the necessary data inputs into a central viewing area for the CBO analyst ease of viewing relevant data on any given engine for developing a tailored work scope for the sustainment repair and overhaul action.

C.8.2. Database Maintenance and Support

C.8.2.1. The Contractor shall maintain the Fact-Based Maintenance (FBM) database, the TIGER Health Management (THM) database, the Electronic Manufacturing Operations and Tooling (eMOT) database and the Production Engine Trending System (PETS) database to support execution of contract requirements.

C.8.2.2. Database updates shall be provided to add functionality and incorporate requested data entry and system use improvements based on user inputs from Field sites with EMU-equipped TIGER engines on a semi-annual basis. Maintenance shall include: correcting identified software issues, minor updates, software modifications to increase database efficiency, assist database users in execution of their tasks, and add any additional minor functionality changes per the Governments request. The Contractor shall ensure the Government has access to data within the databases.

C.8.3. Database Obsolescence

C.8.3.1. The Contractor shall monitor for and address obsolescence issues that may come about as a result of changes to software code/platforms on which the databases were developed.

C.8.3.2. In the case of a pending software code/platform obsolescence issue, the Contractor shall update the database to a current software platform to maintain all database functionality.

C.8.4. Component Part Life Algorithm Monitoring and Improvement

C.8.4.1. The Contractor shall use the results from CBO inspections and THM to monitor and assess the accuracy of the life tracking algorithms on critical parts relative to the field usage. The Contractor shall utilize the information to create new and/or updated algorithms on life tracked parts for use in the THM database to better assist in predicting component life to the field usage rates.

C.8.5. Data Analysis

C.8.5.1. The Contractor shall utilize best commercial processes for analysis of data. The processes that shall be conducted include:

identifying components that drive field maintainability and durability, analyzing field data to determine possible correlations that create engine failures, and providing CBO decision support to TVS.

C.8.5.2. The Contractor shall manage and improve on a fleet logistics model capable of forecasting failure rates and engine demands based on US Government provided conditions and CBO data analysis.

****C.9. FIELD SERVICE ACTIVITIES

C.9.1. TIGER Repair Support Process

C.9.1.1. The TIGER Team shall operate TIGER Field Repair Sites at agreed upon locations identified under C.9.2.3 of this SOW. TIGER field support shall be expanded to other locations having operational Abrams vehicles, within regional proximity to the established TIGER Field Repair Site in accordance with Attachment 0005. These sites shall include the US Marine Corps, Army National Guard, Return to Stock (RTS), US Marine Corps Reserve (USMCR), Army National Guard sites that are specifically under the control of the Abrams FOV Material Fielding Team (MFT) and locations with on-loan Abrams vehicles. CONUS sites shall be divided into 6 geographical regions containing at least one TIGER Field Repair Site in each region. TIGER Field Repair Sites shall perform AGT1500 engine and DECU diagnostics and troubleshooting, and engine depot level repairs to all fielded engines (TIGER, SLE) regardless of warranty status or cause of the failure. Repairs shall be limited to low risk TIGER authorized tasks and in accordance with applicable TIGER Field Task Training Manual REV F or higher. Engines at active US Army and US Marine Corp sites, in addition to locations with on-loan Abrams vehicles, USMCR and Army National Guard sites that are specifically under the support of the Abrams FOV Material Fielding Team (MFT) shall be repaired with spare parts from the TIGER Field Repair Site inventories. Any repairs performed at the TIGER Field Repair Site that are authorized field level maintenance tasks IAW Maintenance Advisory Message 03-005 and maintenance tasks authorized in the applicable Marine Corps TM 08953A-20/2 or US Army Technical Manual series TM9-2350-388/264 -20 or -23 level maintenance manual shall require replacement parts provided by the units Authorized Stockage Level (ASL)/Prescribed Load List (PLL) inventories or a USG approved non-TIGER inventory location. Engines at Army National Guard sites that are no longer supported by the Abrams FOV Material Fielding Team (MFT) shall be repaired with spare parts from the Kansas Army National Guard (KSARNG) A-Team inventory and shall not be authorized to receive or utilize any spare parts from the TIGER Field Repair Site inventories.

C.9.1.2. When an engine experiences a failure, field level maintenance shall be performed by Government and Contractor personnel to diagnose the engine in accordance with US Army Technical Manual series TM9-2350-388/264 or USMC Technical Manual TM 08953A-20/2 (annotate on DA Form 5988E). Government and Contractor personnel shall then perform authorized field level maintenance tasks IAW US Army Maintenance Advisory Message 03-005 and maintenance tasks authorized in the applicable USMC TM 08953A-20/2 or with US Army Technical Manual series TM9-2350-388/264-20 or -23 level maintenance manual in order to repair the engine.

C.9.1.3. Any field level maintenance action performed by the Government on the AGT1500 engines shall be reported by the Government to the contractor Field Service Engineer (FSE) at the earliest opportunity for data collection purposes. If the problem is beyond the capability of field level authorized maintenance tasks, the units maintenance section will contact the responsible contractor FSE of the incident and will provide a completed DA Form 5990E (job order) upon contractor FSE arrival.

C.9.1.4. Following engine evaluation, the contractor FSE shall determine whether the engine can be repaired in place or evacuated to the local TIGER repair activity. If the engine cannot be repaired, the TIGER contractor FSE shall recommend in writing to TACOM LCMC ILSC and PM-ABCT returning the engine to a depot level repair center. The contractor FSE shall also determine preliminary cause of failure.

C.9.1.5. If an engine requires evacuation to depot; the unserviceable engine shall be shipped to the depot and inducted into the Condition Based Overhaul process. Engines that can be repaired within the scope of the TIGER repair activity, regardless of cause, shall be repaired using spare parts from the TIGER repair activity inventory. This inventory of parts is intended for task-specific repairs only and includes internal engine parts and consumable supplies that the unit is no longer authorized to procure.

C.9.2. TIGER Field Repair Site

C.9.2.1. The Government shall provide the contractor with facilities at each TIGER field repair site, to include a shop with a minimum of two maintenance bays, a 6-ton minimum overhead lift per supported HBCT or battalion, secure parts and tool storage area, shop air, solvent tank and parts washer, running water, oil and water separator drain sump, work benches, cabinets, lighting and electricity. The Government shall provide a Ground Hop Support Set (GHSS), power pack maintenance stand, slave power pack, and engine module stands, including the servicing and maintenance labor ensuring serviceability. The Government shall also provide access to a shared forklift, and Petroleum, Oils and Lubricants (POL) to support the TIGER repair sites. The contractor shall coordinate with TACOM LCMC ILSC and PM HBCT to requisition surplus AGT1500 engine module stands, special tooling, fixtures, and support equipment from the Army-wide DS-Plus closeout program, if available.

C.9.2.2 The contractor shall collaborate with the Field Repair Site to identify and requisition adequate Government-owned office space for use by the contractor FSE. The office space will include the necessary infrastructure for office activities including phone, fax, high speed internet connection, sanitary facilities, heating, ventilation, and air conditioning.

C.9.2.3. The contractor and ANAD shall develop TIGER Field Repair Sites to provide services and supplies for the successful accomplishment of TIGER objectives for fielded AGT1500 engines issued from ANAD. Each TIGER Team shall consist of one contractor Field

Service Engineer (FSE) and one ANAD FSE, wherever more than one FSE is required. If only one FSE is required, the contractor shall provide the FSE. The contractor FSEs shall be provided and forward located at the TIGER Field Repair Sites equipped with Abrams vehicles for technical support services, data collection, user training, troubleshooting, trend analysis and approved engine repairs. The contractor shall provide FSEs at up to 9 CONUS and up to 3 OCONUS locations. The TIGER Field Repair Sites may be located at:

a. Fort Bliss, TX
b. Fort Hood, TX
c. Fort Riley, KS
d. Fort Carson, CO
e. Fort Stewart, GA
f. Fort Benning, GA
g. Camp LeJuene, NC (USMC)
h. Twentynine Palms, CA (USMC)
i. National Training Center, Fort Irwin, CA
j. Camp Casey, Korea
k. Germany
l. Kuwait

At the direction of the Government, a contractor FSE shall be dispatched to the Joint Systems Manufacturing Center at Lima, OH, to diagnose and repair discrepant engines. The contractor FSE shall arrive on-site within 24-48 hours of contractor notification.

C.9.2.4. The contractor shall provide DS Plus Phase I tooling to support the TIGER Field Repair Sites. The contractor shall provide repair and replacement services in support of the tool inventory to insure completeness and serviceability. The tooling inventory shall be co-located at the Field repair site in a secure storage area. The contractor shall be responsible for shipment of tooling requiring repairs or replacement to and from the TIGER Field Repair Site. The Government shall provide all DS Plus Phase 2 tooling (5180-01- 418-5790) for each TIGER Field Repair Site and provide repair and replacement services of the Phase 2 tooling.

C.9.3. Field Service Engineer (FSE) Responsibilities

C.9.3.1. The contractor FSEs shall track all AGT1500 engines in their area of responsibility. Engine maintenance activity, usage history, health monitoring, and fleet status shall be documented and reported through the Fact Based Maintenance centralized TIGER database. Monthly field service, performance, durability status reports, and discrepancy reports shall be generated and submitted via electronic media to the TIGER Field Team with copies submitted to the Government in accordance with CDRL A015. The contractor shall also provide engine and DECU technical assistance, and formal and informal training to crew and organizational level activities. The contractor FSEs shall continually evaluate all technical aspects of the engine to preclude No Evidence of Failure (NEOF) depot returns, and identify opportunities for improvement, trends, and cost savings.

C.9.3.2. Contractor FSEs performing under this Contract shall be under the supervision, direction and control of the contractor. Contractor FSEs shall not be under the supervision, direction or control of a federal officer, military or civilian. Contractor FSEs shall not be placed in command, supervision, administration, or control over Department of the Army or USMC military or civilian personnel or of other Government contractors.

C.9.3.3. The contractor shall perform tasks including engine-related field retrofits (e.g., EMU kits, PTS actuators), TIGER engine data collection for fleet status reporting or providing technical assistance (e.g. troubleshooting, diagnostics and training) to engines at regional locations as described in Attachment 0005 (e.g. National Guard or USMCR locations or alternate military training or tactical operations sites).

C.9.3.4. The contractor FSE shall periodically visit other sites within their geographical region to collect maintenance and operational data, provide training, and offer technical services when areas for improvement are identified. No site visit that may impact the contractor FSEs primary field support site shall be performed without approval from the Contracting Officer.

C.9.3.5. The Government shall furnish a working space, including a desk, chair, telephone, and high speed internet connection, for use by the contractor FSE. Administrative support (typing, filing, general clerical, reproduction) for the contractor FSE shall not be provided by the Government. The contractor FSE shall ensure that their designated area is neatly maintained at all times.

C.9.4. FSE Coverage Plan

C.9.4.1. The contractor shall provide backup coverage for their FSEs who are expected to be away from the assigned Field Repair Site for one week or more. Another qualified contractor resource shall travel to the site to provide continual coverage, unless the site commander waives the coverage during periods of low site activity.

C.9.5. Joint Systems Manufacturing Center (JSMC) Lima FSE Responsibilities:

C.9.5.1. While on site, the contractor FSE shall utilize the TIGER Production Repair shop at JSMC to perform limited depot level repairs in accordance with the seventeen (17) TIGER engine tasks, as outlined in Attachment 0006, to preclude evacuation to ANAD. The

contractor FSE shall also troubleshoot, diagnose, and repair faults on AGT1500 engines and DECUs for use in the Abrams tanks and derivative vehicles. Once a vehicle or power-pack problem has been fault isolated to the AGT1500 engine system or DECU by JSMC personnel, the contractor FSE shall be available within 24 to 48 hours of Government request to inspect and initiate procedures to identify and correct the reported system problem before the power-pack is removed. If the problem cannot be isolated with the power-pack installed, or the problem has been identified but cannot be repaired while in the installed condition, JSMC shall remove the power-pack and initiate temporary power-pack connections (ground hop) that facilitate operation of the uninstalled power-pack. The contractor FSE shall then re-inspect and initiate procedures to correct the reported problem. The JSMC personnel, with the contractor FSE present, will verify that the deficiency has been repaired via the ground hop prior to re-installation of the power-pack by JSMC personnel.

C.9.5.2. If an engine fault cannot be isolated or repaired with the engine in the power-pack configuration, that engine shall be removed from the transmission and ancillary power-pack components by JSMC personnel and inducted into the TIGER Production repair shop. The contractor FSE shall evaluate the engine by disassembly inspection to determine if repairs can be performed at the TIGER Production repair shop. If low risk repairs are performed within the repair shop capabilities in accordance with TIGER Field Task Training Manual Rev F or higher, the engine shall be returned to fully serviceable condition and returned to the JSMC production line for immediate use. If internal investigation of the discrepant engine by the contractor FSE reveals the engine cannot be repaired in the TIGER Production repair shop, the contractor FSE shall make a recommendation to the TIGER Team to evacuate the engine back to ANAD for failure analysis and repair. The contractor FSE shall notify JSMC of the engine status and JSMC will re-containerize the engine and expedite shipment to ANAD.

C.9.5.3. The contractor FSE shall provide TIGER technical field service support for the AGT1500 engines and DECUs in the Abrams tanks and derivative vehicle production lines at JSMC including the following:

C.9.5.3.1. The contractor FSE shall be an active participant in monthly production, M1A2 Program Support Team, and technical representative meetings applicable to the Abrams tanks and derivative vehicle production efforts at JSMC in order to provide technical advice and recommendations to PM Heavy Brigade Combat Team, ANAD, and DCMA Lima.

C.9.5.3.2. The contractor FSE shall perform testing and collect and evaluate engine data and provide data to the Overhaul team in order to recommend short term and long term corrective actions. Corrective action recommendations shall be forwarded quarterly to the TIGER Teams via electronic correspondence with a courtesy copy (cc) sent to the Assistant Product Manager (APM), Abrams GFM, and to the Program Integrator at DCMA Lima in contractor format.

C.9.5.3.3. The contractor FSE shall provide monthly field service. Performance and discrepancy reports shall be generated and submitted via electronic media to the TIGER Field Support Team, with copies submitted to the APM, Abrams GFM, and to the Program Integrator at Lima. These reports shall not require any additional approvals prior to release by the quality representative and shall be submitted in contractor format in accordance with CDRL A015.

C.9.5.3.4. The contractor FSE supporting JSMC Lima shall provide on-call support to the Kansas Army National Guard (KSARNG) A-TEAM AGT1500 engines at JSMC, as long as the activity does not impact primary work scope, cost, or schedule and a contractor FSE is available.\~ The contractor FSE shall perform limited depot level repairs in accordance with the seventeen TIGER engine tasks using A-TEAM provided parts, hardware, and LRUs to the AGT1500 to preclude evacuation to depot. The contractor FSE shall inspect and initiate procedures to identify and correct the reported system problem before the power-pack is removed, then induct the discrepant engine into the TIGER Field Repair shop to evaluate the engine by disassembly inspection and repair in accordance with the TIGER Field Task Training Manual Rev F (4-29-2011). No intermingle or loan/borrow of any parts, hardware, or LRUs is authorized for A-TEAM AGT1500 engines at JSMC.\~ The contractor FSE shall not provide support of technical issues with the transmission and ancillary components that make up the powerpack for the A-TEAM. The contractor FSE shall also troubleshoot, diagnose and repair faults on AGT1500 engines and DECUs for use in the Abrams tanks and derivative vehicles.\~ No support to the A-TEAM AGT1500 engines may impact the contractor FSE s primary support role at JSMC Lima. When there is a request by ATEAM for support, the contractor FSE will report findings to the ATEAM representatives and if support is for a TIGER engine, then the contractor FSE will also fill out a Field Service Report into the FBM database.

C.9.6. Contractor FSE Responsibilities for Germany

C.9.6.1. The contractor shall provide a contractor FSE to USAREUR, Germany on an as-needed basis to assist with any future engine problems that may arise during periods of vehicle activity.

C.9.6.2. The contractor FSE shall function on a temporary basis in accordance with applicable German visitation laws. The duration of each TDY assignment shall be limited to a maximum of 90 days.

C.9.7. Contractor Field Service Engineer Responsibilities for Kuwait

C.9.7.1. The contractor shall provide a contractor FSE to Camp Arifjan / Camp Buerhing, Kuwait on an as-needed basis to assist with any future engine problems that may arise during periods of vehicle activity,

C.9.7.2. The contractor FSE shall function on a temporary basis in accordance with applicable CENTCOM regulations pertaining to civilian contractor TDY deployments. The duration of each TDY assignment shall be limited to a maximum of 30 days.

C.9.8. Customer & Product Support (C&PS) Engineering

C.9.8.1. Customer Support Program Management: The contractor shall provide a Customer Support Program Manager (CSPM) and Customer Support Engineers (CSE) to coordinate customer and field support with the other TIGER teams and liaison between TIGER field sites and TIGER program management. The contractor shall also liaison between ANAD and the field sites. The contractor shall compile the monthly activity and metric reports ensuring the timely publication and distribution of CDRL A015. Deliverables for CDRL A015 will be reviewed and approved by the CSPM. The CSPM shall also prepare and present AGT1500 familiarization and theory of operation training to ANAD and other TIGER team personnel.

C.9.8.1.1. The CSPM shall also serve as chairman for the Customer Satisfaction Board. The chairman shall ensure that CSB briefings are conducted in the contractors approved format and that a quorum is available for the meeting. Any resultant notification of activity that directly affects field operations shall be coordinated by the CSPM. Maintenance Action Messages or Maintenance Information Messages will be drafted by the C&PS organization and forwarded by the CSPM to TACOM LCMC ILSC for final approval and distribution.

C.9.8.2. The contractor shall be responsible for planning, implementing and controlling the TIGER field support program.

C.9.8.3. The contractor shall support their FSEs in resolving troubleshooting, repair and other technical engine and DECU issues. The contractor shall compile the activities and metrics of their FSEs and prepare reports in accordance with CDRL A015 to be presented to the customer on a monthly basis. The contractor shall be responsible for all functions associated with management and control of field services associated with the TIGER program.

C.9.8.3.1. The contractor shall review and approve all Field Service Reports (FSRs) and Shop Findings Reports (SFR) and enter them into the Condition Based Overhaul (CBO) database by their FSEs. The contractor shall ensure all content is correctly entered and that the report is technically correct. The contractor shall also participate telephonically with the Government once every 2 weeks in scoring the FSRs for chargeability against Mean Time Between Depot Repair (MTBDR), mean time between failures, and mean time between removals.

C.9.8.3.2. The contractor shall be responsible for ensuring all contractor FSE s fully understand the requirements of the TIGER SOW. It shall also ensure the contractor FSEs are informed of any CSB decisions regarding engine or DECU configuration changes and any field retrofit campaigns.

C.9.8.3.3. The contractor shall periodically visit TIGER field repair sites to review technical issues with their on site FSE. The CSE shall also use this opportunity to consult with the local site command to ensure their FSE is performing to expectations.

C.9.8.3.4. The contractor shall prepare USG Form DA2028s for any required changes and shall forward the DA2028 to TACOM for final approval. Once the DA2028 is approved by TACOM, the contractor shall distribute the approved DA2028 to appropriate TIGER team members.

C.9.8.3.5. The contractor shall coordinate engine component repairs within the TIGER community. These repairs shall include development of new component repairs required by the TIGER overhaul team or modifications of existing component repairs. C&PS shall coordinate the development of these repairs within the contractors engineering organizations before submitting them to TACOM for final approval. Once approved, the contractor shall distribute the repair via Form DA2028 to the TIGER community and for incorporation into the AGT1500 NMWR.

C.9.8.3.6. The contractor shall also provide technical support to the TIGER Overhaul Team and Turbine Value Stream. The assigned CSE shall be the technical reference for all Overhaul Team and Turbine Value Stream Engineering support functions, such as Process Engineering, Production Support Engineering, Repair and Overhaul Engineering and Field Support Engineering, Quality Assurance, and Material Management teams.

C.9.8.3.6.1. The contractor shall provide remote technical help to the production line for all Contractor platform products in association with Abrams vehicle configuration. The products include the AGT1500 engine, DECU, Nuclear Biological and Chemical (NBC) system, alternator, and voltage regulator systems and system interfaces. The Contractor shall be responsible for analysis, communication, and organizing corrective action with the platform product Original Equipment Manufacturer (OEM).

C.9.8.3.6.2. The contractor shall research, facilitate, and provide technical input to the Condition Based Overhaul development and implementation. C&PS shall lead the Contractor Phoenix Team actions regarding the CBO database development, maintenance, and analytics for the enhancement and growth of the TVS reclamation programs.

C.9.8.3.6.3. The contractor shall be responsible for designating the TIGER Team point of contact to TACOM for reporting and metric evaluation of the CBO program.

C.9.8.3.6.4. The contractor shall work with the Turbine Value Stream (TVS) on additional TVS and ANAD areas of concern regarding all contractor products, and the interface there of.

C.9.8.3.6.5. The contractor shall provide the Contractor Demand Team and Integrated Supply Chain (ISC) teams with technical data for hardware provisioning, hardware usage rates (U/R), new part rate (NPR), and overhaul reclamation awareness to ensure correct provision requirements are met in order to support TVS program production.

C.9.8.3.6.6. The contractor shall provide technical input to the CSPM with the overall functionality of the Customer Satisfaction Board (CSB) program. The contractor shall organize, conduct and present CSB Gate 4, for implementation confirmation, and Gate 5 for effectivity in association with contractor CSB Guidelines.

C.9.9. The contractor shall perform engineering failure analysis of engine component field failures , including LRUs and internal engine components, **** *** as necessary to initiate root cause corrective action investigations of systemic field failures, and to identify opportunities for component durability improvements associated with Operations & Support cost reduction.

**** *** = "LRUs and internal engine components" inserted in place of "DECUs", via Modification PZ0007.

C.9.9.1. The contractor shall use input from the field service engineers, USG quality and field personnel, and data from the FBM and THM database to Pareto failure symptoms and causes and identify components that require detail investigation.

C.9.9.2. The contractor shall utilize best commercial processes for analysis of data. The processes that shall be conducted include identifying components that drive field maintainability and durability, analyzing data to interpret diagnostics and prognostic outputs, and providing data to appropriate teams to identify potential improvements to overhaul and field support processes.

C.9.9.3. The contractor shall identify failed components for shipment to the Contractors facility for investigation.

C.9.9.4. The CSB process shall be used to communicate root cause (CSB2) with recommendations on corrective action.

C.9.10. The contractor shall monitor and update the Government on the durability and reliability status of the AGT1500 fleet. The contractor shall provide quarterly status in accordance with CDRL A003.

C.9.10.1. The fleet projection shall be analyzed to ensure the fleet status is consistent with the fleet durability goal of 1,400 hr MTBDR, and initiate investigations and/or recommend improvements to mitigate any potential long term durability risks identified by this fleet projection.

C.10. ENGINEERING PROJECT MANAGEMENT AND SYSTEM TECHNICAL SUPPORT

C.10.1 The Contractor shall provide technical project management, systems engineering, logistics, quality, program cost/schedule planning, and configuration management services for the Abrams family of vehicles in support of life cycle cost improvements, investigative and development engine testing and 1,400 hr TBDR durability. For life cycle cost improvement projects, the project management work through Customer Satisfaction Board (CSB) Gate 1 shall be funded by the FFP portion of the contract and the Center of Excellence (COE) work described below shall be funded by the CPFF CLIN 0002AB. The development, qualification and endurance testing of individual projects authorized on a case basis by the Contracting Officer will be funded under STS CPFF CLIN 0002.

C.10.2. Task and Control:

C.10.2.1. The contractor shall assist the COTR in the preparation of SOW changes and submit them to Contracting Officer through the COTR for approval in accordance with CDRL A009. SOW changes under the STS CPFF CLIN can be canceled at any time by the Contracting Officer. The Contracting Officer will notify the Contractor in writing the reason(s) for canceled SOW.

C.10.3. The Contractor shall furnish the supplies and services necessary to accomplish the engineering and related technical support for the AGT1500 Turbine Engine and DECU, and/or power-pack or vehicle components in accordance with the requirements described in this SOW. No work shall be performed outside of the dollar limits set forth in Section B of this contract submitted and approved under the STS CLIN. As necessary in the performance of the foregoing, and as more specifically defined, the Contractor shall:

C.10.3.1. Prepare cost and schedule estimates and cost effectiveness analyses, to develop engine, DECU, and/or power-pack or vehicle component improvement projects that improve engine performance and/or lower the cost of ownership to the government via lower acquisition cost of components or increase in number of rides (repair cycles) at overhaul (lower NPR);

C.10.3.2. Implement design, proof of concept testing, development, and/or qualification of approved component improvement projects, and recommend engineering change proposals for current and future production versions of the contract items and modifications thereto;

C.10.3.3. Conduct endurance and qualification component, rig and/or engine tests;

C.10.3.4. Prepare calculations, layouts, drawings, sketches, schematics, charts and other visual depictions, and purchase descriptions for the overall TIGER and Abrams objectives.

C.10.3.5 Support ongoing engine, DECU, and/or power-pack or vehicle testing at YPG, APG, TARDEC, and other test sites identified in the STS requirements. Support includes: remote or on-site technical analysis of engine, DECU, troubleshooting, testing, or disassembling USG engine assets for the purpose of uncovering root cause of engine or integration issues identified at the test site; refurbishing or upgrading USG engine assets to include recently approved engineering changes.

C.10.3.6. The Government shall provide the latest TIGER configuration engines for ongoing engineering development and endurance test objectives as defined in this SOW. The Contractor shall provide development hardware and special AGT1500 test equipment to investigate, develop, or qualify activities as defined in the SOW. The Contractor shall notify the Government of the engine quantity requirements, shipment locations, and the need dates at least six months in advance of need date.

C.10.3.7. Contract Work Breakdown Structure (CWBS): This SOW will serve as the CWBS framework for contract planning, budgeting and reporting status of Cost and Schedule to the Government for this CLIN in accordance with CDRL A016.

C.10.3.8 The contractor shall notify the Contracting Officer and COTR upon reaching 75% of the total cost provided on any of the CLINs/ SubCLINs.

C.10.4 The Government shall conduct TIGER vehicle durability tests at YPG and/or APG on three TIGER engines (two APIVT vehicles and one performance vehicle). The Contractor, if directed by the Contracting Officer through a new STS SOW update under CLIN 0002, shall provide support of this activity to include generation of the test plan, on-site engine and/or vehicle integration issues, TIGER repairs performed on site at YPG and/or APG, performance testing of engines at the Phoenix and/or TARDEC test site to the Simulated Yuma Durability Engine Test (SYDET) duty cycle, and investigative teardowns and inspections at the Phoenix facility.

C.10.5 Additional M1 Family of Vehicles Related Support

C.10.5.1. The Contractor, if directed, shall provide technical services to GDLS, Allison, the ANAD facility, Joint Systems Manufacturing Center (JSMC) Lima Tank Plant, DRS, the field community, and other agencies/OEMs when requested to address unique AGT 1500 engine, DECU, and integration concerns not directly related to the TIGER Program to include: power-train improvements initiated outside of the TIGER program; Allison Transmission for Transmission Test Cell Testing; vehicle health monitoring system development; and engine and DECU activities related to ongoing or future vehicle, engine or transmission component improvement projects .

C.10.5.2. The Contractor, if directed, shall provide development of Technology Insertion projects for the AGT1500 engine which will yield longer term improvements in terms of life, cost of ownership, such as fuel efficiency improvements, and performance. The Contractor shall provide detailed technical and financial analysis of new technology insertions to ensure that the desired long term effects are justified.

C.10.5.3 The Contractor, if directed, shall provide life cycle cost component improvements (e.g. design of special test equipment, develop diagnostic hardware and software, procure hardware and conduct development and endurance engine testing on GFM TIGER engines)to complete a design and qualification of hardware or software .

C.10.5.4 The Contractor, if directed, shall provide Abrams CBM with the development of health management sensors and algorithms to improve the capability of the AGT1500 engine and DECU to proactively predict pending faults or failures that would drive engines back to depot, and provide additional diagnostic capability of the engine and DECU based on faults or failures detected/observed in the field.

C.10.6. CLIN 0002AA is incorporated to add the following SOW: The Contractor shall provide Center of Excellence (COE) support to the TIGER Project Engineering team in achieving the objectives of the chosen Life Cycle Cost (LCC) and durability improvement projects including performance, turbines, compressors, controls, test and mechanical systems engineering. The COEs shall provide engineering and technical analysis to the TIGER Project Engineering team in the following major tasks:

(1) Durability/ LCC improvement project candidate identification and selection
(2) Durability/LCC improvement project initiation and planning
(3) Durability/LCC improvement project execution to Customer Satisfaction Board (CSB) Gate 1

C.10.6.1. The projects will be executed to Customer Satisfaction Board (CSB) Gate 1.

C.10.6.2. The Contractors Center of Excellence Engineering and TIGER Project Engineering teams shall conduct the following tasks for LCC reduction projects:
Project candidate identification and selection
Project initiation and planning
Preparation for CSB1 activities:
Goal of CSB1 is to identify and clearly define problem
Follow-on actions generated from CSB 1 for gate closure
Identifying necessary future actions for continued project execution
Determining impact of selected project on any on-going Root Cause and Corrective Action (RCCA) investigations, supporting the Service Related Difficulty (SRD) process.

C.10.6.3. The Contractor shall obtain approval from Contracting Officers Technical Representative (COTR) prior to starting work on any LCC or durability improvement project. If approved, the Contractor shall proceed towards CSB Gate 1.

C.10.6.4. The Contractor shall present individual Gate 1 CSBs to Government.

C.10.6.4.1. Once the CSB Gate 1 presentation has been delivered to the Government, the recommendation shall be made with concurrence of the COTR as to whether to submit a separate scope action to continue funding the project.

***C.10.6.5. The period of performance for CLIN 0002AA is from contract award through 31 December 2014.

C.10.7. CLIN 0002AD is incorporated to add the following SOW: The Contractor shall prepare a preliminary design for an improved durability recuperator for the AGT1500. A tubular recuperator was originally demonstrated on the LV50 High Power Density Engine (HPDE) Program contract number: DAAE07-02-3-0002.

C.10.7.1. Mechanical Design. The Contractor shall create the required analytical models and perform any analytical analysis required, and complete preliminary design definition, including Preliminary Design Review (PDR). Activities include the tasks listed below.

C.10.7.1.1. Preliminary Design - The Contractor shall utilize the latest engine and component performance information from recently conducted instrumented engine (Level 2) testing to maximize the performance (i.e. effectiveness, pressure drop) requirements while meeting the durability requirements for a tubular recuperator configuration. The Contractor shall perform appropriate analysis to determine the analytical life of the tubular recuperator system to the Simulated YPG Duty-cycle Engine Test (SYDET) or other test cycle as directed by the Government. The threshold service life for the design is 3,000 hrs to the SYDET, and the objective service life is 4,500 hrs to the SYDET.

C.10.7.1.2. The Contractor shall conduct a Concept Review 1 month after contract award, Design Review 8 months after award and a Preliminary Design Review (PDR) within 10 months after award.

C.10.7.1.3. The Contractor shall implement a management program to achieve the following major development milestones. Note: Program technical performance measures (i.e. effectiveness, pressure drop, durability, weight) shall be reviewed at the preliminary design review (PDR) to provide appropriate communication of actual performance of the project relative to expected performance, and opportunity to validate project cost-benefit and ROI throughout the project.

C.10.7.1.4. The period of performance for CLIN 0002AD is from contract award through 30 August 2013.

C.10.8. CLIN 0002AB is established to define the following scope: The Contractor shall develop and coordinate a transition plan to move the entire TIGER Government Furnished Material (GFM) inventory from the remote facility to the on-site warehouse space at Anniston Army Depot (ANAD). The Contractor shall coordinate all tasks to safely and securely transition TIGER material from the B.R. Williams warehouse space to the renovated warehouse space in the center section of Building 136, ANAD.

C.10.8.1. The Contractor shall manage the transition of all TIGER hardware stored in the off-site temporary warehouse facility into the ANAD Building 136 Center and East sections. The Contractor shall provide all equipment and resources to count, verify, track, transport, receive, stock and record inventory in the consolidated warehouse locations. The Contractor shall perform cycle counts during the transition comparing the Glovia record on hand balance. All material to protect the hardware from inclement weather conditions during the move and, once relocated; to the outside canopy storage space will be provided by the Contractor.

C.10.8.2. The Contractor shall transition all TIGER hardware stored in the off-site temporary warehouse into Building 136 4 months after Army Corps of Engineers completes Building 136-Center improvements. Upon completion of the transition, the Contractor shall deliver a final report in accordance with CDRL A002 summarizing the transition 1 month after all TIGER hardware has been transitioned into Building 136-Center and East sections.

C.10.8.3. The period of performance for CLIN 0002AB is from contract award through 31 December 2012.

C.10.9. CLIN 0002AC is established to define the following scope: The COTR shall provide authorization for inquiries via a Request for Engineering Services (RES) requiring more than 8 direct labor hours but not more than 250 direct labor hours for completion of a project.

C.10.9.1. The Contractor shall conduct necessary research into all data sources, provide a response to the COTR and respective Functional Technical Representative (FTR) based on a project Statement of Work (SOW) which includes: Description of the problem or question being investigated; Scope of work to be performed with boundaries set forth in paragraphs C.1 through C.10, interfaces, participants and authorities; Dollars and/or man hours authorized for labor, materials, supplies, subcontracts and travel; Expected method of closure, deliverables and reporting requirement; and Period of performance and schedule.

C.10.9.2. Each RES shall have a unique designation.

***C.10.9.3. The period of performance for CLIN 0002AC is from contract award through 31 December 2014.

*,***C.10.10. CLIN 0002AG is established to incorporate the following scope: The Contractor shall coordinate with a second source to develop and qualify a newly designed improved oil filter impending bypass switch to eliminate low time failures and switch corrosion. The Contractor shall procure ten (10) parts from the vendor for qualification and engine testing at the Phoenix test cells.

C.10.10.1 The Contractor shall complete qualification testing in accordance with Qualification Test Plan QTP-8H0158D and the latest revision of specification 91547-E2115. Testing shall not commence until Government concurrence with the QTP is received.

C.10.10.2 The Contractor shall submit all documentation, test reports, source controlled drawings, and Engineering Change Proposal (ECP) required for incorporation of the improved switch in accordance with CDRL A005.

C.10.10.3 The Contractor shall recommend an implementation plan of the qualified designs during the CSB process (CSB Gate 3) for Government approval in accordance with CDRL A002.

C.10.10.4 The Contractor shall deliver a final report, in contractor format, in accordance with CDRL A019 to the Government COTR for approval summarizing work accomplished 1 month after ECP submittal.

***C.10.10.5 The period of performance for CLIN 0002AG is from contract award through 31 May 2014.

*C.10.11 CLIN 0002AF is incorporated to add the following SOW: The Contractor shall provide technical engineering project management of the DECU to integrate and troubleshoot in all fielded variants of the M1 Abrams tank. This shall include technical services in understanding and resolving vehicle integration issues as well as reviewing and advising on field procedures related to the product.

C.10.11.1 The contractor shall provide engineering expertise in the M1A1 IPT quarterly software team meetings/telecons.

C.10.11.2 The contractor shall provide engineering analysis and expertise to TACOM, GDLS and DRS regarding the integration of the AGT1500 simulator into the M1A1 SILs at GDLS and DRS.

C.10.11.3 The contractor shall conduct technical reviews on DECU compatibility with Abrams systems and Line Replaceable Units (LRU) with the M1A2SEPv2 integration of the DECU. The reviews include the Embedded Diagnostic (ED) system, Engine Memory Unit (EMU), Direct Support Electronic System Test Set (DSESTS) and other systems that involve DECU operation or interface. The contractor shall provide technical services to TACOM, GDLS and DRS for integration of the AGT1500 simulator into the M1A2SEP SIL at GDLS.

C.10.11.4 Three trips are included in this SOW: Two (2) one day driving trips to Yuma Proving Grounds (YPG) for one (1) person and one (1) single day trip to TACOM or ANAD (depending on where assistance is requested by Government) for one (1) person.

C.10.11.5 The Contractor shall provide a final summary report, in contractor format, for the period of 1 Feb 31 Dec 13 of the requested technical analysis activity to the COTR for approval 1 month prior to the end of the period of performance in accordance with CDRL A002.

***C.10.11.6 The period of performance for CLIN 0002AF is from contract award through 31 December 2014.

**C.10.12 Contract Line Item Number (CLIN) 0002AH is established to develop an AGT 1500 Fast Accurate Simulation of Turbine (FAST) engine transient model and update the Component Map Engine Model (CMEM) with the new FAST transient model and the latest FAST Steady State model. The Contractor asserts technical data rights in regards to FAST and CMEM software IAW Attachment 0013.

C.10.12.1 The Contractor shall use data obtained from Level 2 instrument testing completed under EWD-CL038-002B dated 11 June 2012, Contract W56HZV-06-C-0173, to create the new FAST transient model. The Contractor shall use the AGT 1500 FAST model for transient control schedule development and compressor stability assessments that include transient destabilizing influences. The Contractor shall also use the AGT 1500 FAST model to predict transient behavior around the operating envelope. The CMEM model shall be able to run real time and shall be used to bench test DECU logic. It shall also be incorporated into vehicle system models for performing vehicle-level design trade studies.

C.10.12.2 The Contractor shall convert the latest FAST steady state model (Cycle Producibility Report CPR-419) to CMEM model.

C.10.12.3 The Contractor shall develop recuperator heat transfer and heat sink modeling using the transient data collected during the Level 2 instrumented testing funded under Contract W56HZV-06-C-0173.

C.10.12.4 The Contractor shall update the CMEM model with the new transient model and provide technical support for the integration of the CMEM model with the Tank Automotive Research and Engineering Center (TARDEC) vehicle-level model.

C.10.12.5 The Contractor shall document a milestone schedule within 30 days after contract award in accordance with CDRL A004.

C.10.12.6 The Contractor shall deliver Version 3 of the Integrated Model to the Tank Automotive Research, Development and Engineering Center (TARDEC) 12 months after contract award in accordance with CDRL A022. The Contractor shall validate the Integrated Model at steady state conditions against the CPR-419 FAST steady state model. The Contractor shall deliver a Users Manual for the updated Controls Integrated Model IAW CDRL A022. The Integrated Model shall be validated against engine test data for engine starting phase as well as for on-speed transients.

C.10.12.7 The period of performance for CLIN 0002AH is from contract award through 31 December 2014.

**C.10.13 CLIN 0002AJ is established for the TIGER Engine Correlation Testing. The Contractor shall correlate data among test cells located at the Contractors engine test facility (Phoenix, AZ), Anniston Army Depot (ANAD - Anniston, AL), Kansas Army National Guard (KSARNG - Fort Riley, KS), and the Tank Automotive Research, Development and Engineering Center (TARDEC - Warren, MI), using one AGT 1500 TIGER engine, supplied by the Government. The Contractor shall use the GFM TIGER engine as the comparison baseline engine used for the test cell correlation. The Contractor shall test the correlation engine at each of these locations IAW a test plan developed by the Contractor in Section C.10.13.1.1. Furthermore, the Contractor shall use a single inlet bell mouth, provided by the Government, to maintain conformity and minimize the risk of outside factors affecting the data. The Contractor shall ensure that the four test sites provide reliable and repeatable engine data within accuracy tolerances defined in the Test Plan (CDRL A018).

C.10.13.1 The Contractor shall complete the test preparation in accordance with the following tasks:

C.10.13.1.1 Test Plan The Contractor shall create a detailed correlation Test Plan in accordance with CDRL A018 including the installation and test instructions. The Contractor shall deliver this correlation Test Plan IAW CDRL A018 within 30 days after award. The Government will have 30 days to approve or disapprove of this Test Plan. If the Test Plan submitted by the contractor is disapproved, the Contractor shall submit a revised Test Plan within 30 days after the Governments disapproval. The Test Plan shall include the sequence of the correlation testing between the four sites along with a coordinated schedule. The Test Plan shall clearly document test set-up, and require the use of a single inlet bell mouth throughout the testing process. The Test Plan shall state that no engine maintenance is to be performed between test aside from maintenance required for pre-and post-test and to prepare the engine for shipment.

C.10.13.1.2 Test Readiness Review (TRR) The Contractor shall conduct a test readiness review with Government participation prior to initiation of correlation testing.

C.10.13.2 Test Conducted at Contractor Test Facility (Phoenix, AZ) The Contractor shall perform a baseline test of the GFM correlation engine at the Honeywell test facility in Phoenix, Arizona, IAW the following tasks:

C.10.13.2.1 Test Requirements The engine shall be tested IAW the test plan in each of Honeywells two test cells. These performance calibrations shall serve as the basis to correlate engine performance. The Government will consider the correlation test complete when the engine is run through the full correlation test. Upon completion of the successful test cell correlation engine test, the Contractor shall document these findings in a report IAW CDRL A019 and provide a correlation certificate to Phoenix.

C.10.13.2.2 Engine Preparation and Shipment The engine shall be removed from the test cell and prepared for shipment per NMWR 9-2835-255-1. The Contractor shall then ship the engine to TARDEC for further correlation testing. Government Transportation Authorization Code (TAC) code will cover shipping costs.

C.10.13.3 The Contractor shall provide technical support and recommendations for the correlation testing at TARDECs two test cells located at TARDEC (Warren, MI). The Contractor shall perform the requirements of the Test Plan including the pre-test setup, test analysis, review of the test data, and troubleshooting. Upon completion of the successful test cell correlation engine test, the Contractor shall document these findings in a report IAW CDRL A019 and provide a correlation certificate to TARDEC. The Contractor shall arrange for shipment of the baseline engine to KSARNG for further correlation testing with Government TAC code to cover shipping costs.

C.10.13.4 The Contractor shall provide technical support and recommendations for correlation testing at Kansas Army National Guard (KSARNG)s two test cells located in KSARNG (Fort Riley, KS). The Contractor shall perform the requirements of the test plan including the pre-test setup, test analysis, review of the test data, and troubleshooting. Upon completion of the successful test cell correlation engine test, the Contractor shall document these findings in a report IAW CDRL A019 and provide a correlation certificate to KSARNG. The Contractor shall arrange shipment of the baseline engine to ANAD for further correlation testing with Government TAC code to cover shipping costs.

C.10.13.5 The Contractor shall provide technical support and recommendations for the correlation testing at ANADs six test cells located in ANAD (Anniston, AL). The Contractor shall perform the requirements of the Test Plan including the pre-test setup, test analysis, review of the test data, and troubleshooting. Upon completion of the successful test cell correlation engine test, the Contractor shall document these findings in a report IAW CDRL A019 and provide a correlation certificate to ANAD. The Contractor shall arrange for the shipment to Phoenix for final correlation testing with Government TAC code to cover shipping costs.

C.10.13.6 The Contractor shall conduct final performance validation of the correlation engine at the Honeywell test cells in Phoenix, Arizona. The Contractor shall test the engine in accordance with the test plan in a single test cell designated by the Contractor. This performance calibration shall serve to validate the engine performance. Testing is complete when the engine is run through the full test as defined by the Test Plan.

C.10.13.6.1 Final Correlation Engine Preparation and Shipment At the completion of the correlation testing, the Contractor shall preserve the engine for long-term storage and prepare it for shipment per NMWR 9-2835-255-1. The Contractor shall then ship the engine to ANAD for long-term storage. Government TAC code will cover shipping costs.

C.10.13.7 The Contractor shall review the test data from each of the four test facilities upon completion of the testing and brief the

Government on the results at each tested location in accordance with CDRL A021

C.10.13.8 The Contractor shall perform pre-test setup, test analysis and troubleshooting at TARDEC (Warren, MI), KSARNG (Fort Riley, KS), and ANAD (Anniston, AL).

C.10.13.9 The Contractor shall document the Integrated Master Schedule and coordinate with the Government Contracting Office Technical Representative (COTR) before incorporating into the Integrated Master Schedule in accordance with CDRL A004 within 30 days after contract award.

C.10.13.10 At the conclusion of the testing, an analysis of the engine test data shall be performed by the Contractor. Upon completion of the successful test cell correlation engine test, the Contractor shall document findings in a correlation certificate to each site. In addition, the Contractor shall prepare and deliver to the Government a final report, including documented findings and recommendations for each test facility, in accordance with CDRL A019. The correlation findings report shall contain analyses of data anomalies and correlation results between test facilities, including fuel and air flow, engine operating temperatures, and compressor efficiencies and pressures and shall be included as an Annex to the final report. The Contractor shall also prepare and issue a preliminary report for each site in accordance with CDRL A019. Additionally, the Contractor shall prepare and deliver a work summary report to the COTR for approval in accordance with CDRL A019 summarizing work that was accomplished on this Section C10.13 after the correlation findings report is delivered.

C.10.13.11 The period of performance for section CLIN 0002AJ is from contract award through 31 December 2014.

**C.10.14 CLIN 0002AK is established for the torque meter development. The Contractor shall develop a torque meter system physically integrated into the AGT 1500 for the purposes of measuring engine drive torque for the AGT 1500 engine. This effort shall be focused on developing a torque meter system in conjunction with an outside vendor and, shall conclude with an engine design demonstration test with this torque meter system installed. The Contractor shall present results of this effort to the Government in a Preliminary Design Review (PDR).

C.10.14.1 a project kickoff meeting shall be held at the Contractors facility to familiarize the vendor team with project tasks, roles, and responsibilities. The Contractor shall provide meeting minutes for the kickoff meeting in accordance with CDRL A021

C.10.14.2 Prior to initiating development of the torque meter system design, the Contractor shall hold a requirements review with the Government detailing the torque meter system design and recommendations in order to gain Government concurrence. This requirements review is to finalize the design requirements for Government concurrence prior to development.

C.10.14.3 The Contractor shall update the Customer Satisfaction Board (CSB) 103758 Gate 2 in accordance with CDRL A006 and shall incorporate any necessary changes discussed during the requirements review.

C.10.14.4 The Contractor shall submit a draft of the engine torque meter Test Plan to the Government at least 30 days prior to the start of any testing in accordance with CDRL A018.

C.10.14.5 The Contractor shall develop interface control documentation to ensure that system fit, form, and function are compatible with current engine design and vehicle sub-systems.

C.10.14.6 A quantity of three Government Furnished Material (GFM) sun gears, Ordnance P/N 12284387, Honeywell P/N 3-020-175-52, shall be shipped from TIGER inventory at ANAD if safety stock is available to Honeywell Phoenix. The Contractor shall modify these sun gears IAW the results of the requirements review, and shall ship these items to the torque meter vendor for component modification and follow-on torque meter system development.

C.10.14.7 The Government will ship a quantity of two GFM reduction gearbox rear cover plates Ordnance P/N 12286019, Honeywell P/N 3-020-176-12, and a quantity of two housing & carrier assemblies Ordnance P/N 12284485, Honeywell P/N 3-020-410-29, from TIGER inventory at ANAD, if safety stock is available, to Honeywell Phoenix. The Contractor shall rework the two housing & carrier assemblies and the two GFM reduction gearbox rear cover plates to machine a passage for the torque meter wires to pass through.

C.10.14.8 The Contractor shall develop three torque meter systems for the purpose of performing development component bench testing and an engine test.

C.10.14.8.1 Honeywell shall submit a development component Test Report detailing findings and recommendations in accordance with CDRL A019.

C.10.14.8.2 Upon completion of component development bench testing, the Contractor shall install the torque meter system shall into a test engine for the purpose of performing a design demonstration test IAW C.10.14.10.5.

C.10.14.9 The Contractor shall complete torque meter development activities in conjunction with the Contractors vendor located in San Diego, CA.

C.10.14.10 Milestones / Program Controls

C.10.14.10.1 The Contractor shall prepare a milestone schedule for approval of the COTR within 30 days after contract award with the COTR before incorporating the milestones into the Integrated Master Schedule in accordance with CDRL A004.

C.10.14.10.2 The Contractor shall prepare a requirements specification document for the torque meter design identifying environmental, physical and dimensional, and test requirements IAW A019.

C.10.14.10.3 The Contractor shall prepare and deliver a design demonstration test plan to the COTR for approval in accordance with CDRL A018 at least 30 days prior to the start of testing.

C.10.14.10.4 The Contractor shall hold a design demonstration Test Readiness Review (TRR) with the Government 30 days after the Test Plan has been delivered.

C.10.14.10.5 The Contractor shall complete a torque meter system design demonstration engine test at the Honeywell Phoenix test cell in accordance with the test plan.

C.10.14.10.6 The Contract shall provide an Engine Test Report to the COTR documenting findings from the design demonstration test and design recommendations in accordance with CDRL A019.

C.10.14.10.7 The Contractor shall submit a draft of the preliminary validation test plan to the Government in accordance with CDRL A018.

C.10.14.10.8 The Contractor shall hold a Preliminary Design Review (PDR) with the Government to present the design demonstration test findings, lessons learned, and torque meter system design modifications required to enable validation of the final torque meter system in accordance with CDRL A021

C.10.14.10.9 The Contractor shall deliver a final report to the Government COTR for approval which summarizes work accomplished 1 month after PDR has been completed in accordance with CDRL A019.

C.10.14.11 The period of performance for CLIN 0002AK is from contract award through 31 December 2014.

**C.10.15 CLIN 0002AL is for performance of the return engine and component testing. The Contractor shall perform functional testing on AGT 1500 engines either returned from the field or identified as engines or engine components of interest by the Government. Prior to functional testing, the COTR must approve the investigation of the specified engine or component. If the engine has been targeted due to service related difficulties (SRD), Honeywell shall perform functional testing to determining root cause to mitigate or eliminate repeat events.

C.10.15.1 The Contractor shall perform the following activities for engines or components of interest:

C.10.15.1.1 Prepare build and test instructions for the engine or component.

C.10.15.1.2 Perform As-received Inspections.

C.10.15.1.3 Fabricate and install special hardware, test equipment and instrumentation.

C.10.15.1.4 Prepare engine or component for functional test.

C.10.15.1.5 Perform functional tests.

C.10.15.1.6 Analyze test data.

C.10.15.1.7 Disassemble and inspect the engine or component and evaluate results.

C.10.15.1.8 Reassemble the engine or component depending on test results above.

C.10.15.1.9 The Contractor shall dispose of the engine or component per instructions provided by the Government via issuance of a modification or PCO letter.

C.10.15.2 Honeywell shall provide the COTR with a written recommendation of the work needed to fix the engine or component expected results and potential benefit to the Government for each engine or engine component to be tested under this C.10.15 section of the SOW. After completion of the tasks identified in C.10.15.1, the report of findings shall be delivered to the Government in accordance with CDRL A019.

C.10.15.3 The Contractor shall deliver a Final Report in accordance with CDRL A019 to the COTR summarizing work accomplished 30 days after final engine investigation has been completed.

C.10.15.4 The period of performance for section CLIN 0002AL is from contract award through 31 December 2014.

**C.10.16 CLIN 0002AM is added for the production and delivery of three High Definition training videos for Government use for AGT 1500 maintenance. Each video shall be approximately 20 minutes in duration. The Contractor shall deliver the three High Definition (HD) training videos IAW CDRL A022.

C.10.16.1 One video shall cover general foreign object damage (FOD) prevention. It shall cover procedures to prevent foreign object damage (FOD) using Honeywell and field best practices while maintaining the vehicle and engine.

C.10.16.2 The second video shall cover the correct procedure for running the power pack outside the vehicle (ground-hopping). The covered procedures shall follow those in TM 9-2350-388-23-1-3, Work Package 0263 dated 16 March 2012. In addition, the video shall show the correct procedure and rationale for the required 2-minute cool down before engine shut down.

C.10.16.3 The third video shall cover Inlet Guide Vane (IGV)actuator maintenance, adjustment, and replacement procedures in accordance with TM 9-2350-388-23-1-2, Work Package 0169 dated 16 March 2012 and TM 9-2350-388-23-1-3, Work Package 0295 dated 6 February 2009. It shall also cover Power Turbine Stator (PTS) actuator maintenance, adjustment, and replacement procedures in accordance with TM 9-2350-388-23-1-2, Work Package 0170 dated 16 March 2012 and TM 9-2350-388-23-1-3,, Work Package 0296 dated 6 February 2009.

C.10.16.4 Prior to filming, the Contractor shall develop scripts and submit copies of each script to the Government for final approval IAW CDRL A019. The scripts shall be submitted at least 60 days in advance of the scheduled commencement of filming.

C.10.16.5 Honeywell shall produce and record each video at Yuma, AZ (YPG).

C.10.16.6 The Contractor shall document a milestone schedule and coordinate with the COTR within 30 days after contract award.

C.10.16.7 The Contractor shall provide quarterly updates to the Government regarding costs, technical, and schedule status IAW CDRL A004.

C.10.16.8 The Contractor shall deliver HD DVD copies and a final report to the COTR for approval in accordance with CDRL A019 summarizing work accomplished one month after final video delivery.

C.10.16.9 The period of performance for CLIN 0002AM is from contract award through 31 December 2014.

**C.10.17 CLIN 0002AN is added for the update of the EA-J6 Digital Electronic Control Unit (DECU) J6_08_0X software. The Contractor shall generate, test, and qualify AGT1500 DECU software version J6_08_0X incorporating changes as specified below. The X at the end of each build is the minor revision and shall be between 0 and 9.

C.10.17.1 The Contractor shall incorporate the following changes, validation, and qualification on the EA-J6 software to maintain commonality with the J7 DECU:

C.10.17.1.1 Pulse Jet Air System (PJAS) Idle The Contractor shall modify the J6 software to include an automated PJAS idle checkout mode for the M1A2 vehicle platforms. The vehicle shall be able to activate the PJAS idle mode by sending the PJAS IDLE SET command through the 1553 interface. The vehicle shall be capable of aborting PJAS idle mode by sending the PJAS IDLE CLEAR command through the 1553 interface. When the PJAS mode is active, the DECU shall send the PJAS IDLE message to the vehicle through the 1553 interface.

C.10.17.1.2 Fact Based Maintenance Function (FBMF) Software The Contractor shall modify the J6 DECU software to support read information from the sidecar. The software shall read: NH Trim, PTS Trim, Engine Hours, and Engine Serial Number.

C.10.17.1.3 Add available fault messages The Contractor shall modify the J6 software to include DECU FAILURE and WF SOL fault messages.
C.10.17.1.4 T7 In Range Fault Detection The Contractor shall add logic to detect in Range T7 fault and set trigger for sidecar to record the event(s) in the Engine Memory Unit (EMU).

C.10.17.1.5 The Contractor shall update EK-39D, to add the symbol table for the J6_08_0X software.

C.10.17.2 The Contractor shall perform EA J6 validation software build testing on the system bench, engine test cell, and M1A2 Abrams tank.

C.10.17.3 The Contractor shall hold a Test Readiness Review (TRR) to obtain Government approval prior to the start of qualification testing.

C.10.17.4 The Contractor shall complete EA-J6 qualification testing in the same manner as the last software build J6_06_01. If limitations exist due to legacy test equipment, the Contractor shall provide alternatives for review and approval by the COR.

C.10.17.5 The Contractor shall complete three trips in support of this software upgrade. The first trip shall include two people from

Puerto Rico to Tucson for a period of two weeks. The second trip shall include one person from Tucson to Puerto Rico for a period of two weeks. The third trip shall include one person from Tucson to Puerto Rico for a period of one week.

C.10.17.6 The Contractor shall update a milestone schedule and coordinate with the Government Contracting Officers Representative (COR) before incorporating into the Integrated Master Schedule, in accordance with CDRL A004. This shall be completed within 30 days after contract award.
C.10.17.7 The Contractor shall prepare and deliver an ECP for the modified EA-J6 software package IAW CDRL A005 after successful completion of qualification testing.

C.10.17.8 The Contractor shall deliver a final report summarizing the work accomplished to the COTR for approval 30 days after ECP submittal in accordance with CDRL A019.

C.10.17.9 The period of performance for CLIN 0002AN is from contract award through 31 December 2014.

*[SOW Sections C.10.10 and C.10.11, and subsections added via modification P00004]
**[SOW Sections C.10.12, C.10.13, C.10.14, C.10.15, and C.10.16, C.10.17, and subsections added via modification P00009]
***[SOW Sections C.10.6.5, C.10.9.3, C.10.10, C.10.10.5, and C.10.11.6 modified via modification P00011]
****[SOW Sections C.9 and all of its subsections modified via modification P00012]
*****[SOW Section C.1.2.6.1 added via Modification P00010]

*** END OF NARRATIVE C0001 ***

SECTION G - CONTRACT ADMINISTRATION DATA

LINE ITEM	PRON/ AMS CD/ MIPR/ GFEBS ATA	OBLG STAT	JO NO/ ACCT ASSIGN	ACRN	PRIOR AMOUNT	INCREASE/ DECREASE	CUMULATIVE AMOUNT
0011AA	EH25E605EH SM2B1100000	1		AB	$ 0.00	$ 1,000,000.00	$ 1,000,000.00
					NET CHANGE	$ 1,000,000.00	

ACRN	ACCOUNTING CLASSIFICATION					INCREASE/ DECREASE
AB	97 X4930AC9D 6D	26KB	S20113	W56HZV		$ 1,000,000.00
					NET CHANGE	$ 1,000,000.00

	PRIOR AMOUNT OF AWARD	INCREASE/DECREASE AMOUNT	CUMULATIVE OBLIG AMT
NET CHANGE FOR AWARD:	$ 118,357,831.77	$ 1,000,000.00	$ 119,357,831.77

LINE ITEM	ACRN	EDI/SFIS ACCOUNTING CLASSIFICATION				
0011AA	AB	97 0X0X4930AC9D	S20113	6D0000SM2B110000026KB	S20113	W56HZV

SECTION J - LIST OF ATTACHMENTS

List of Addenda	Title	Date	Number of Pages	Transmitted By
Attachment 0014	2014 E-MOT LICENSE AND TECHNICAL ASSISTANCE AGREEMENT	02-DEC-2013	007	EMAIL
Attachment 0015	SUBCONTRACTING PLAN	11-DEC-2013	003	EMAIL