AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code	Page	Of
Firm-Fixed-Price	1	39

2. Amendment/Modification No.	3. Effective Date	4. Requisition/Purchase Req No.	5. Project No. (If applicable)
0005	2012MAR13	SEE SCHEDULE	

6. Issued By Code W56HZV

U.S. ARMY CONTRACTING COMMAND
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7. Administered By (If other than Item 6) Code

SCD PAS ADP PT

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

Code Facility Code

[X] **9A. Amendment Of Solicitation No.**
W56HZV-11-R-0329

9B. Dated (See Item 11)
2012JAN26

[ ] **10A. Modification Of Contract/Order No.**

10B. Dated (See Item 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

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

[ ] **is extended,** [X] **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 2 signed **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)

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:**

[ ] **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)	
15B. Contractor/Offeror _____ (Signature of person authorized to sign)	**15C. Date Signed**	**16B. United States Of America** By /SIGNED/ (Signature of Contracting Officer)	**16C. Date Signed**

SECTION A - SUPPLEMENTAL INFORMATION

1. Amendment 0005 to Solicitation W56HZV-11-R-0329 is to provide for the following changes:

a. Section C - Updates and new language as follows:

i) C.17.5.1.4.2 - Number of training sessions changed from three to four

ii) C.18.2.2.2 - Updates as follows:

- Language added:

a. The armored rolling chassis shall be configured with GPKs as follows: MCTAGs on rolling chassis in B1-kit configuration, OPGK 2.0 and Turret Ring and Hatch on rolling chassis in B2-kit configuration (this MCTAGS, OGPK 2.0 and Turret Ring/Hatch are accounted for within the quantities to be provided to the contractor in Attachment 36.) This MCTAGS and OGPK 2.0 (along with Turret Ring and Hatch for corresponding OGPK 2.0) will be returned to the contractor to be installed onto the vehicles prior to vehicle acceptance IAW Attachment 37.

- Language deleted:

a. Each armored chassis shall include appropriate surrogate weight in order to represent a GPK.

b. Section J (Attachments) are revised as follows:

i) Attachment 1 Purchase Description - Replaced Version dated 13 February 2012 with Version dated 08 March 2012.

- See Revision History for all changes to Purchase Description Main Body and its related Annexes, noting that only the Main Body & Annex H have been updated.

ii) Attachment 6 - Replaced Version dated 27 February 2012 with Version dated 08 March 2012 and is updated as follows:

- Language in the "JLTV-XX Estimate Summary" section of the "Instructions" tab has been updated.

- Tabs for the Estimated Summaries for the JLTV-GP, JLTV-HGC, JLTV-CCWC, JLTV-UTL, JLTV-XXX, JLTV-Kits, JLTV-Expansion Kits, JLTV-Trailer & JLTV-FoV Level

a. Input tables updated to allow for both multi-year production and option year production scenarios. Each scenario now allows for input for each individual year for LRIP and Full Rate Production.

- The following language has been added to the "Government Assumptions" tab:

b. The initial PD phase contract is currently planned to be a single award, fixed price contract consisting of a three year LRIP period with an option for five years of FRP deliveries. FRP deliveries will be secured through either a five year multiyear contract or a five single years options.

iii) Attachment 36 - Replaced Version dated 08 February 2012 with Version dated 09 March 2012 and is updated as follows:

- Please see "Change Log" tab for all changes associated with Attachment 36.

iv) Attachment 37 (FOUO) - Replaced Version dated 22 February 2012 with Version dated 09 March 2012 and is updated as follows:

- Please see "Change Log" tab for all changes associated with Attachment 37.

v) Attachment 38 - Replaced Version dated 10 November 2011 with Version dated 29 February 2012 and is updated as follows:

- Please see "Change Log" for all changes associated with Attachment 38.

*** END OF NARRATIVE A0006 ***

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C.1 GENERAL

C.1.1 Introduction

This Statement of Work (SOW) encompasses the Engineering, Manufacturing, and Development (EMD) phase of the Joint Light Tactical Vehicle (JLTV) acquisition program. All references to meetings, conferences, and reviews, as well as documentation, shall pertain only to the EMD phase unless specifically stated otherwise.

C.1.2 Scope

The JLTV requirements are fully described in the JLTV Purchase Description (Attachment 1). In this SOW, the term "JLTV" will refer to the entire JLTV defined below, and the term "configurations" will be used to refer to the four Mission Package Configurations defined below.

The JLTV is comprised of two variants, a two-seat and a four-seat variant, and a companion trailer (JLTV-T). The two-seat variant has one base vehicle platform: The Utility (UTL). The four-seat variant has two Base Vehicle Platforms: The Close Combat Weapons Carrier (CCWC), and The General Purpose (GP). Each base vehicle platform will be configured as a Mission Package Configuration through the installation of Mission Packages, as defined in Annex K of the JLTV Purchase Description (Attachment 1).

JLTV Mission Package Configurations:

- Utility (JLTV-UTL)
- Close Combat Weapons Carrier (JLTV-CCWC)
- General Purpose (JLTV-GP)
- Heavy Guns Carrier (JLTV-HGC)

The JLTV shall be developed, designed, modeled, simulated, fabricated, tested, and delivered to maximize performance within the affordability described in C.1.3. All Contract Data Requirements List (CDRLs) shall cover each deliverable configuration by specifically addressing any unique differences in the configurations. One CDRL submission may address all configurations.

C.1.3 Affordability

The Contractor shall consider affordability within the JLTV and achieve a Production and Deployment phase Average Unit Manufacturing Cost (AUMC) no greater than $250K (FY11 dollars), while maximizing performance in the JLTV Purchase Description (Attachment 1). The complete definition of AUMC is provided below. The cost target for the B-kit Armor is $65k (FY11 dollars). The Contractor shall track and control costs and shall perform cost-performance analyses. The ground rules and assumptions for vehicle production, schedules, and quantities are provided in Attachment 6 (Manufacturing Cost Estimate Template). The Contractor shall not create or define any additional "kits" to meet requirements beyond those kits already defined in the JLTV Purchase Description (Attachment 1); any such "kits" will be considered as non-compliances by the Government.

C.1.3.1 Definition of AUMC :

AUMC is defined as average cost to the USG to buy JLTV base vehicles (averaged across all configurations). The unit manufacturing cost should reflect a projected vehicle contract price for each JLTV configuration to include all direct and indirect cost. The unit manufacturing costs should include all overheads applicable to vehicle contract prices including General and Administrative (G&A), Cost of Money, and Profit. Non-recurring costs must be accounted for and may be amortized over the vehicle quantity buy. The recurring costs include the costs of material, labor, and other expenses incurred in the fabrication, checkout, and processing of parts, subassemblies, and major assemblies/ subsystems needed for the final system. The manufacturing cost also includes recurring costs of subcontractors and purchased parts/equipment. The manufacturing cost further includes recurring costs of the efforts to integrate and assemble the various subassemblies into a working system, recurring costs to install special and general equipment, and recurring costs to paint and package the system for shipment to its acceptance destination. It also includes moves in order to assemble into a final system. This is the price of the vehicle rolling off the line in its basic configuration before B-Kit armor or kits (as defined in the JLTV Purchase Description (Attachment 1) are added.

C.1.4 Commonality

The Contractor shall consider commonality within the JLTV as well as interchangeability with other DOD tactical vehicles, commercial sector processes and hardware, and allied forces (NATO). Commonality shall include interchangeability of components, Line Replaceable Units (LRUs), Line Replaceable Modules (LRMs), and consumables. Commonality shall also consider the interrelationships between systems, major sub-systems, sub-systems, assemblies, and sub-assemblies as they relate to operator and maintenance tasks, training requirements, use of support equipment. Commonality is based on a comparison of interchangeable LRUs and components which are defined as having the same fit, form and function as another LRU or component. The methodology for assessing tool commonality should be the annotation of all tools required to maintain and repair each sub-configuration at field maintenance level. Training commonality assesses the impact on training by considering the differences in operation and maintenance tasks as it relates to the JLTV variants, base vehicle platforms and mission configuration packages. Maintenance commonality contributes to consistency with the two level maintenance concepts and the definition for a field replaceable component, comparing and contrasting of the different Maintenance Tasks being performed at a specific Level of Maintenance. The Contractor shall specifically identify commonality-driven design decisions at the Design Understanding Review (DUR).

C.2 PROGRAM STRUCTURE & MANAGEMENT

The Contractor shall define and ensure Key Roles (e.g. PM and IPT leads) are staffed with personnel of commensurate education, training, work experience, and technical training necessary to effectively and efficiently perform required tasks. The Contractor shall present their organizational Key Roles at the Start of Work Meeting (SOWM) and shall discuss the plan for communicating and transitioning personnel changes. When the Contractor intends to change the personnel working in Key Roles, the Contractor shall to the maximum extent possible, provide 14 days notice to the Contracting Officer Representative (COR) prior to the personnel transition. To the maximum extent possible and practical, the Contractor shall conduct a transition meeting with the Government within seven days of the anticipated transition date to discuss all key issues related to such a transition. The Contractor shall provide Minutes, reference CDRL Data Item A002, NLT two days after the transition meeting, reporting on any Government concerns or issues discussed in the transition meeting, and providing analysis of actions that the Contractor will take to ensure a seamless transition.

C.2.1 Integrated Product Teams (IPTs)

For purposes of this Contract, any joint deliberative or task-focused body, regardless of its formal or informal title, (e.g., "Working Group," "Integrated Design Team", etc.) shall be considered an Integrated Product (or Process) Team, or "IPT". IPTs shall be established to serve as the primary contract management tool and key method of communication for this contract.

The first IPT meetings shall be held concurrently with the Start of Work Meeting (SOWM). Subsequent IPT meetings shall be held monthly or as mutually agreed between the Government and Contractor.

The Contractor shall be responsible for developing all IPT agendas and meeting minutes. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

The Contractor shall allow physical and dial-in access to the Government for all Contractor IPT meetings and any Contractor design reviews following the SOWM event, in order to allow mutual understanding and maintain the program direction.

C.2.1.1 IPT Structure

The IPT structure may include the following teams: Program Management, Business Management, Acquisition, Systems Engineering, Supportability & Logistics, and Product Assurance Test & Evaluation.

Systems Engineering IPT should incorporate the following disciplines: Environmental, Safety, and Occupational Health (ESOH); Human Systems Integration (HSI)/Manpower and Personnel Integration (MANPRINT); Manufacturing & Quality; Reliability, Availability, Maintainability (RAM); Risk; Modeling & Simulation (M&S); Force Protection; Mobility; Weapons; Transportability; Trailer; Auxiliary Automotive; Vetronics (with Electronic Architecture); C4ISR Integration; Software; Power Management; and Information Assurance.

IPT Leaders shall be identified no later than the SOWM. The Contractor may propose changes to the number, composition, functionality, and responsibilities of IPTs at the SOWM. Proposed changes will be jointly determined thereafter. Throughout the life of this contract, both Contractor and Government IPT members have the responsibility to propose new or modified IPTs when needed to focus efforts or improve effectiveness.

C.2.2 Integrated Master Plan (IMP)

The Contractor shall manage the JLTV EMD program in accordance with the IMP (Attachment 2 IMP) and Integrated Master Schedule (IMS) (reference CDRL Data Item A012). The IMP outlines significant accomplishments and Exit Criteria for the program's major reviews that shall be satisfied to accomplish the work under this contract. The Contractor shall report on program progress at each Program Management Review, at selected meetings/audits/assessments/reviews in accordance with the IMP. The Contractor shall utilize the IMP and contract deliverable dates to develop their IMS baseline.

C.2.3 Internet-Based Collaboration

The JLTV Integrated Data Environment (IDE) consists of internet-based collaboration tools (defined below) that shall be used to facilitate information sharing and collaboration within a secure Government server environment that provides controlled, distributed access to JLTV program information, both released and in-work. Types of information that shall be processed and maintained within the IDE will include JLTV program documents, reports, program management data, meeting-related information, modeling and simulation/analysis data, pertinent manufacturing information, and test data, consistent with the JLTV Security Classification Guide (the Government will provide the JLTV Security Classification Guide at the Start of Work Meeting). Any posting to the IDE is considered a data deliverable in the context of DFARS Data Rights clauses including 252.227-7013 and 252.227-7014 . The IDE shall only be used for sharing unclassified/FOUO information. All classified information shall be sent via registered mail to the JLTV classified mailing address.

JLTV classified mailing address:
SFAE-CSS-TV-JL
6501 E. 11 Mile Rd, MS 640
Warren, MI 48397

The Contractor shall notify appropriate Government personnel via e-mail when new or updated documents are posted to a collaboration environment. The notification email shall include a hyperlink to the location of the posted content. Correspondence to the Contracting Officer shall not be submitted via an internet-based collaboration tool without prior authorization.

IDE collaboration tools: The Contractor shall use the JLTV SharePoint server to facilitate unclassified, secure internet-based information sharing between JLTV program participants. SharePoint will also serve as the primary means of submitting unclassified/FOUO CDRL items, unless otherwise stated within a specific CDRL item. The Contractor shall conduct Contractor-Government internet conferencing (web meetings) using Government approved systems such as the Defense Connect Online (DCO) conferencing tool. The Contractor shall use VDLS [VISION (Versatile Information Systems Integrated On-Line Nationwide) Digital Library System] to access unclassified data from Government testing, and Secret VDLS for classified test data. Details on specific IDE tools, requirements for access, and approach for use will be discussed at the SOWM.

The Government will sponsor Army Knowledge Online (AKO), SharePoint, DCO, VDLS, SVDLS, and other required accounts. Details will be provided at the SOWM. The Government can only sponsor accounts for U.S. Citizens. The Contractor shall provide names, contact information, level of access (upload or download), and training required for personnel requiring access to these tools NLT SOWM meeting, for all systems except VDLS. The list of Contractor personnel requiring VDLS access shall be provided to the Government 60 days prior to the Test Readiness Review (TRR).

In order to access these systems, the Contractor shall have or obtain External Certification Authority (ECA) Certificates and/or DoD Common Access Cards (CAC) for appropriate personnel. The Contractor shall designate an Information Assurance (IA) Officer to work with PM JLTV and the Government IA Manager in order to obtain and implement usage of the ECA and/or CAC program in compliance with DoD Directive 8190.3 Smart Card Technology, and DoD Instruction 8520.2, Public Key Infrastructure (PKI) and Public Key (PK) Enabling.

C.3 MEETINGS/AUDITS/ASSESSMENTS/REVIEWS

C.3.1 Participation/Administration
The Contractor shall participate in the meetings, audits, assessments, and reviews required in this scope of work. Where possible, face to face meetings shall be scheduled in tandem, or groups, to minimize personnel resources and travel expenses. Unless otherwise specified in the paragraphs below, all meetings, audits, assessments, and reviews shall be hosted by the Contractor. The Contractor's hosting duties and responsibilities shall include all functions (e.g. providing facility, sending invitations, media resources, security, minutes, hard copy materials) related to the preparation and execution of the meetings, audits, assessments, and reviews. Major review content shall, at a minimum, address the items in the IMP.

C.3.1.1 Agenda and Read-Ahead Packages
The Contractor shall submit an agenda and read-ahead package in Contractor format for all meetings, audits, assessments, and reviews in this section. Each agenda shall include presentation of all items identified in the IMP for that specific event. The IMP will be used as Exit Criteria for each event. (CDRL Data Item A001)

Cost & IMS information may be included as an agenda item at meetings, conferences, and reviews to include discussion of contract progress and issues (performance goals, exit criteria, schedule progress, risks and mitigation, and cost impact).

C.3.1.2 Minutes
The Contractor shall record and provide minutes for all meetings, audits, assessments, and reviews in Section C.3 and otherwise called out in this contract. The Contractor's recorder shall be identified at the beginning of each event. (CDRL Data Item A002)

C.3.1.3 Invitations
Government participants will be identified by the Government Program Office. The Contractor shall send invitations for all meetings called out in Section C.3 not less than 14 days prior to the event.

C.3.2 Start of Work Meeting (SOWM)
The Contractor shall participate in a Start Of Work Meeting at or near the Government Product Manager site within 7 to 30 days after Contract Award, as scheduled by the Government. This meeting will introduce and align the Government and Contractor teams. The SOWM will consist of a Scope of Work review, a System Requirements Review (SRR), and an IMS Review. The agenda topics for the SOWM are identified in the SOWM Agenda (Attachment 4). The SRR will be a line by line review of the Purchase Description (Attachment 1). Refer to Section C.4.5.1 for IMS Review requirements. For planning purposes, this meeting is anticipated to be a six consecutive day event.

C.3.3 Design Understanding Review (DUR)
The Contractor shall host and conduct a Design Understanding Review at or near the Contractor site NLT 120 days after Contract Award as proposed by the Contractor at the SOWM. The Contractor shall present their detailed JLTV design. The Review shall be at a level of detail similar to a Critical Design Review (CDR), include M&S results, and describe compliance to the JLTV Purchase Description (Attachment 1). The Contractor shall display and manipulate 3D CAD models for meeting participants. For planning purposes, this meeting is anticipated to be a five day event.

C.3.4 Program Management Level IPT Meetings
The Contractor shall conduct at a minimum monthly Program Management (PM) Level IPT Meetings. The PM Level IPT Meetings shall commence the month following the SOWM. The meetings shall include Contractor program management personnel and working level IPT personnel to

address cost, schedule, performance, risk status, and the Contractor shall be prepared for detailed discussion with the Government. Technical issues shall be presented in terms of performance goals, exit criteria, schedule progress, risks and mitigation, and cost impact.

C.3.5 Program Management Reviews (PMR)
The Contractor shall conduct quarterly PMRs, beginning with the first quarter after contract award. The PMRs shall include Contractor senior-level program management personnel. The Contractor shall present cost, schedule, performance, and risk status at each PMR and be prepared for detailed discussion with the Government. Issues shall be presented in terms of performance goals, exit criteria, schedule progress, risks and mitigation, and cost impact. For planning purposes, these meetings are anticipated to be a one day event.

C.3.5.1 Final PMR
The final PMR shall be conducted no sooner than 26 months after contract award. In addition to the items in the IMP the following shall be Exit Criteria for the final PMR:

(a) All final CDRL submittals accepted
(b) A final physical inventory of Government Property shall be performed and the resulting report (which shall include the Facility Vehicle and GFE/GFI on Attachment 36) submitted to the COR.
(c) Condition of each test asset described and presented
(d) Contractor and contractor equipment vacated from test sites
(e) All major reviews closed out

C.3.6 Government Conducted Technology Readiness Assessment (TRA) Reviews
The Contractor shall participate in Government-led TRA Reviews as a portion of the TRR and PRR. The Contractor shall evaluate and present system technology maturity based on the Work Breakdown Structure (WBS) (Attachment 8), the score of the level of technological maturity, and demonstrate achievement of Technology Readiness Level (TRL) 7 as defined in the Defense Acquisition Guide (DAG) Section 10.5.2, Technology Maturity and Technology Readiness Assessments. If TRL 7 has not been achieved for any component at TRR, the Contractor shall present a technology maturation plan at the event, detailing how TRL 7 will be achieved by PRR.

C.3.7 Test Readiness Reviews (TRR)

C.3.7.1 Contractor Conducted Pre-Test Readiness Reviews (pre-TRRs)
The Contractor shall conduct a Pre-TRR to present to the Government the readiness of the vehicles to enter into Government system level testing. The Pre-TRR shall be held at or near the Contractor build site, at least seven days prior to the Government TRR. The Pre-TRR shall address the content detailed in the IMP (Attachment 2) and the Pre-TRR Checklist (Attachment 13). For planning purposes, this meeting is anticipated to be a two day event.

C.3.7.2 Government Conducted Test Readiness Reviews (TRR)
The Contractor shall support the Government TRR, conducted at or in the vicinity of Aberdeen Proving Ground (APG). The Government TRR is anticipated to be held no more than seven days prior to vehicle delivery and will assess both the Contractor's and the Government's test readiness. The Contractor shall be prepared to support the TRR with all of the information prepared for the Pre-TRR. For planning purposes, this meeting is anticipated to be a one day event.

C.3.8 Manufacturing Readiness Assessment (MRA)
The Contractor shall conduct an MRA at or near the Contractor site NLT 60 days after TRR. The purpose of this meeting will be to evaluate manufacturing readiness in preparation for Milestone C IAW the definitions, criteria, and processes defined in the DoD MRL Desk book (30 July 2010). For planning purposes, the MRA is anticipated to be a two day event. MRA content, at a minimum, shall address the items in the IMP.

C.3.9 Functional Configuration Audit (FCA)
The Contractor shall conduct a Functional Configuration Audit at or near the Contractor site. The FCA shall follow the guidance of DAG Section 4.3.3.4.6. This assessment shall be the formal examination of the "as-tested" characteristics of the JLTV and will verify that actual performance complies with the design and interface requirements in the functional baseline. The FCA shall validate that each subsystem performs the functions assigned to it in the Allocated Baseline. The FCA shall review the JLTV test and analysis data, including component, subsystem, and software unit test results, to validate that the intended function or performance stated in the JLTV Purchase Description (Attachment 1) and Contractor Allocated Baseline is met.

The FCA content, at a minimum, shall address the items in the IMP. The FCA shall be conducted after Correction Action Period (CAP) 2 as defined in Section C.17.3.3 and prior to the Production Readiness Review (PRR). For planning purposes, this meeting is anticipated to be a three day event.

C.3.10 System Verification Review (SVR) / Production Readiness Review (PRR)
The Contractor shall conduct a System Verification Review concurrently with a Production Readiness Review (PRR), at or near the Contractor site, NLT 120 days after Correction Action Period (CAP) two as defined in section 17.3.3. The SVR, a multi-disciplined product and process assessment, shall follow the guidance of DAG Section 4.3.3.4.5. The Contractor shall demonstrate, at SVR, that their JLTV design is ready to proceed into Low-Rate Initial Production (LRIP) and Full-Rate Production (FRP) within AUMC target, schedule,

risk, and other system constraints.

The Contractor shall demonstrate at the PRR how they (and their major Subcontractors) will accomplish adequate production planning to reduce and eliminate unacceptable risks that would breach thresholds of schedule, performance, or cost. The PRR shall examine the readiness of the manufacturing processes, the quality management system, and the production planning (e.g., facilities, tooling and test equipment capacity, personnel development and certification, process documentation, inventory management, supplier management). The SVR/PRR content, at a minimum, shall address the items in the IMP. For planning purposes, this meeting is anticipated to be a five day event.

C.3.11 Milestone C Preparation Meetings & Support
The Contractor shall support JLTV Milestone (MS) C documentation and preparation efforts. This support shall include reviewing and/or clarifying their methodologies utilized to produce technical and/or cost data (e.g., CDRLs). This support may require the attendance of Contractor subject matter experts (up to five SMEs) at meetings resultant of data calls or requests for information from various levels of echelon within the Office of the Secretary of Defense (OSD) or the Department of the Army (DA)/Department of the Navy (DoN). This support will be required three times during the contract Period of Performance. Support requests requiring Contractor attendance will likely occur at PM JLTV offices or in the Metropolitan District of Columbia (DC) area (to include the Quantico, VA area) and each meeting will be no longer than one business day in duration.

C.3.12 Business Management Reviews

C.3.12.1 Contractor Manufacturing Cost Estimate Reviews
The Contractor shall host manufacturing cost estimate meetings with Government Business Management and Cost Team representatives to review the Contractor's manufacturing cost estimates, methodologies and source data, two weeks prior to the Manufacturing Cost Estimate Report submittal (Reference CDRL Data Item A003). For planning purposes, this meeting is anticipated to be a one day event.

C.3.12.2 Cost and Software Data Reporting (CSDR) Readiness Review
Prior to the Office of Secretary of Defense (OSD)/Defense Cost and Resource Center (DCARC) Post Contract Award Meeting (Reference C.3.12.3) and NLT seven weeks after contract award, the Contractor shall conduct a CSDR Readiness Review. This meeting may be held concurrently with, or influenced by, the scheduling of the SOWM.

The Contractor shall present their plan for implementation of CSDR requirements. The plan shall demonstrate the intended rationale, methodology, & source data for the segregation of costs by WBS element per CSDR Contract Plan (Attachment 5, Approved Contract CSDR Plan A-11-B-C1and Attachment 51, CCDR Instructions), by functional category, and by recurring v. non-recurring. For planning purposes, this meeting is anticipated to be a one day event.

C.3.12.3 OSD/DCARC - Post Contract Award Meeting
The Contractor shall attend and brief at the OSD/DCARC Post Contract Award Meeting to be held in Metropolitan District of Columbia (DC) area. At this meeting the Contractor shall present the methodologies used for mapping internal cost accounts to the agreed upon WBS, specifically showing how individual WBS elements will be populated with both recurring and non-recurring information. For elements where a 1921-1 report is required, the Contractor shall present the methodologies used for mapping internal cost accounts to functional breakout areas. For planning purposes, this meeting is anticipated to be a one day event.

C.4 BUSINESS MANAGEMENT
At the SOWM, the Contractor shall present their accounting calendar encompassing the duration of the contract. In addition the Contractor shall present scheduled dates of all recurring Business Management CDRL submissions to SharePoint and the DCARC repository. The Contractor shall notify the Government when there are any changes to this accounting calendar.

C.4.1 Contractor Manufacturing Cost Estimates
The Contractor shall provide a Manufacturing Cost Estimate Report that demonstrates auditable estimates for expected Production & Deployment (P&D) phase contract prices based on the JLTV concept and the Contractor's delivered designs in accordance with the Contractor Manufacturing Cost Estimate (Attachment 6). Attachment 6 provides the formatted delivery template and ground rules and assumptions for vehicle, trailer, and kits production schedules and quantities. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A003).

C.4.2 Contractor Cost Data Reporting (CCDR)
The Contractor shall prepare and submit CCDR IAW the Approved Contract CSDR Contract Plan A-11-B-C1 (Attachment 5), CDRL Data Items A004 and A005, and CCDR Instructions (Attachment 51).

Prime Contractors are responsible for flowing down these CCDR requirements to all subcontractors meeting the reporting thresholds. This responsibility includes requiring subcontractors to electronically report directly to the DCARC. The Contractor is responsible for collecting subcontractor data (for subcontractors not meeting CCDR reporting thresholds) in adequate detail to comply with the resource data table requirements of the CCDR DD Form 1921 and 1921-1.

C.4.3 Bill of Materials (BOM)
The Contractor shall deliver a Bill of Material (BOM) for each JLTV configuration, trailer, and kit. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A010)

C.4.4 Contract Work Breakdown Structure (CWBS) Dictionary
The CWBS dictionary index is defined by the Approved Contract CSDR Contract Plan A-11-B-C1 (Attachment 5). All CSDR CWBS oriented reporting will be, at a minimum, in compliance with MIL-HDBK-881 definitions and the lowest CWBS level(s) identified by the Approved Contract CSDR Contract Plan A-11-B-C1 (Attachment 5). At the discretion of the Government, specific CWBS elements may require lower levels of reporting. The Contractor shall maintain and update the Dictionary during contract execution. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A011)

C.4.5 Contractor Integrated Performance Management
The Contractor shall establish, maintain, and use an integrated performance management system in the performance of this contract. The integrated performance management system shall link the Contractor's management processes and systems to include the Integrated Master Schedule (IMS), WBS (Attachment 8), change management, material management, procurement, cost estimating, and accounting. The Contractor shall integrate these systems and processes to provide early indication of cost or schedule problems, and their relation to technical achievement. The Contractor shall maintain a schedule and analysis system that includes a critical path feature. Use of a Commercial off the Shelf (COTS) application is preferred.

C.4.5.1 Integrated Master Schedule (IMS) Reporting and Review Process
The Contractor shall use the Defense Contracting Management Agency's (DCMA) Fourteen Point Schedule Assessment as guidance to develop and maintain an Integrated Master Schedule (IMS). The IMS shall include all efforts performed by Major subcontractors (Major subcontractor is defined as a subcontractor that is awarded a subcontract(s) and the value of all work awarded equals or exceeds 10 percent of the value of this contract). The IMS shall contain logically networked, detailed program activities encompassing; the contract milestones, events, decision points, critical subcontract task/hand-offs, external dependencies, Government Furnished Equipment, Government Furnished Information, exit criteria, discrete tasks and activities (including planning packages where applicable) from contract award through delivery and acceptance of all test assets.

The IMS shall be vertically and horizontally traceable. The IMS shall include reference to the IMP (Attachment 2), WBS (Attachment 8), and IPTs. Additionally, it shall include fields and data that enable the Government to assess the information by product, process or organizational lines, or any combination.

The IMS shall be capable of displaying summary, intermediate, and detailed schedules. Additionally, it shall generate schedule analyses of progress to date. The Contractor shall provide an IMS capable of producing a critical path analysis to the IMP program events Pre-TRR and TRR, and the program milestones defined in Sections F.2.1, F.2.2, F.2.3, F.2.4.1-F.2.4.3.. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A012).

The Contractor shall engage jointly with the Government program office in Integrated Master Schedule Reviews to discuss the risks inherent in the contract performance.

The IMS review will verify the Contractor's use of a reliable performance baseline that includes the pertinent contract scope of work, consistent with contract schedule requirements. The IMS review will be conducted IAW Section C.3.2. The Contractor shall provide a read-ahead package NLT two business days prior to the review containing documents and data pertinent to the upcoming review. At a minimum, the read-ahead package shall include:

(a) A draft agenda (reference CDRL Data Item A001, Agendas and Read-Ahead Packages) including interview schedule, locations, and participants (w/title)
(b) Program and Functional organizations, including names and titles of responsible individuals
(c) Time phased staffing plan
(d) Critical Path Analysis
(e) Risk Register
(f) Additional read-ahead requirements may be requested prior to the start of the review

C.5 SYSTEMS ENGINEERING (SE)

C.5.1 System Level Design Document (SLDD)
The Contractor shall deliver a System Level Design Document (SLDD) that encompasses the JLTV top-level designs and subsystem designs. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A014)

C.5.2 Technology Readiness Level (TRL) Assessments
The Contractor shall track and assess the TRL of the technologies included in the delivered configurations per the WBS elements (reference Attachment 8 WBS). This assessment shall include at a minimum a description of the technology, the function it performs and how it relates to other parts of the system. This assessment shall also include a description of the environment in which the technology has been demonstrated and an analysis of the similarities between the demonstrated environment and the intended operational environment. This assessment shall include the TRL assigned to each technology. Reference DoD Deskbook 5000.2-R for Technology Readiness Level definitions. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.3 Key Subsystems and Design Margins
The Government has identified key subsystems based on the impact of a failure to the EMD program schedule, as identified in the Key Subsystems (Attachment 9). The Key Subsystems are broken into three categories; Level 1, Level 2, and Level 3 depending on impact on program schedule and timing. The Contractor shall review Key Subsystem Design Failure Mode Effects and Analysis (DFMEAs), Design Verification Plan & Report (DVP&Rs), and Process Failure Mode Effects and Analysis (PFMEAs) as a part of the Manufacturing & Quality IPT.

The Contractor shall define design margins for use in the design of Key Subsystems (per Attachment 9). This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.4 System Requirements

C.5.4.1 Requirements Review Sessions
The Contractor shall conduct specific line-by-line Requirements review sessions in conjunction with events indicated in the IMP. In these sessions, the Contractor shall be prepared to discuss and provide additional information explaining how the JLTV meets the requirement for each line of the JLTV Purchase Description (Attachment 1). The SRR shall set the baseline for these discussions, and subsequent meetings shall focus on changes and updates based on the Contractor's design.

C.5.4.2 Requirements Verification Matrix
The Contractor shall provide a Requirements Verification Matrix that tracks achievement of all JLTV Purchase Description (Attachment 1) requirements, including all Objectives. The Contractor shall detail their assessment methods and make evidence available to the Government when the matrix is updated to show verification of a requirement. The matrix shall be completed in accordance with the template provided as Attachment 10. This Contractor verification is informational only and does not in any way supersede the verification requirements detailed in the JLTV Purchase Description (Attachment 1). The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A015)

C.5.4.3 Requirements Non-Compliance Reports
The Contractor shall provide a Purchase Description Non-Compliance Report to the Government in the event of any requirements non-compliance. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A016)

C.5.5 Weight Control and Reporting
The Contractor shall develop and implement a weight control program for the design, development, and fabrication of the JLTV. The Contractor may develop their processes using the Society of Allied Weight Engineers, Inc.'s Recommended Practices 5- Mass Properties Control System for Wheeled and Tracked Vehicles (26 May 2007) as a guide (www.sawe.org/technical/rp/rp5). The Contractor shall use a margin policy that reflects the level of confidence in the weight estimates and is applied individually to each entry in the weight reports. The Contractor shall verify scale calibration prior to weighing any components. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.5.1 Weight Estimating and Reporting
The Contractor shall prepare and update weight estimates throughout design, fabrication, and test. The Contractor shall validate weight estimates by using tracking and monitoring activities during design and production of the first deliverable vehicle for each configuration. Weight estimates shall be under configuration control consistent with design configuration management requirements (ref Section 11). The Contractor shall update and maintain the weight estimates throughout the duration of this contract.

The Contractor shall organize and format weight estimates in accordance with the BOM and WBS. Weight estimates may include additional vehicle configurations or unique subsystem configurations as deemed necessary by the Contractor. Weight estimates shall provide the center of gravity location for all configurations as defined in the PD and compare it against the limits developed by the Contractor for compliance to performance requirements.

Weight estimates shall include the following: Curb Weight, Curb+B1-Kit, Curb+B2-Kit, Curb+B2+EFP Kit, Gross Vehicle Weight (GVW), and Gross Vehicle Weight Rating (GVWR). Estimates shall be consistent with the Load Plan (ref. CDRL Data Item A070) and ensure that weights are carried in the respective locations on and in the vehicles.

All vehicle weights shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government

provided IMP.

C.5.5.1.1 Baseline Weight Estimate (BWE)
The Contractor shall maintain a BWE detailing the weight of the vehicle during detail design. The Contractor shall add a new baseline estimate to the BWE at the conclusion of the SRR, DUR, and any major design changes after DUR. The BWE shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.5.1.2 Preliminary Product Weight Estimate (p-PWE)
The Contractor shall maintain a preliminary Product Weight Estimate (p-PWE), based on the BWE, to record and report differences or changes between the BWE and the actual weights, as materials are procured, weighed, and the first of each JLTV configuration is fabricated. A rationale shall be prepared in the event any component weight is more than +/- 2% from the estimate for the component. The p-PWE shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.5.1.3 Product Weight Estimate (PWE)
When all margins have been eliminated from the p-PWE for each base vehicle platform, it shall become the Product Weight Estimate (PWE), and correlate with the expected Curb Weight for that base vehicle platform. The PWE shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.5.2 Scale Weighing Completed Vehicles
The Contractor shall ensure scale(s) used for the following measurements have been certified within a year of use.

C.5.5.2.1 Product Weight Baseline (PWB)
After scale weighing the first vehicle fabricated for each JLTV base vehicle platform at Curb Weight, the Contractor shall provide a PWB that sets the baseline of each base vehicle platform weight and explains any discrepancies between the PWE and the actual scale weights. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A018)

C.5.5.2.2 Weighing of All Deliverable Vehicles
Prior to delivery, the Contractor shall weigh each complete deliverable JLTV in its defined Curb Weight. Each delivered JLTV vehicle is expected to meet the weight requirements in the JLTV Purchase Description (Attachment 1) and is expected to be no greater than +/- 2% from the Curb Weight defined in the PWB (ref. CDRL Data Item A018). Any corrective adjustments to the documented weights or vehicle operational limits shall be made in accordance with the Configuration Management procedures per Section C.11. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.6 Corrosion Prevention and Control

C.5.6.1 Corrosion Prevention and Control Plan (CPCP) and Finish Specification Report
The Contractor shall implement Corrosion Prevention and Control. The Contractor shall provide a CPCP with a Finish Specification Report. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A019)

C.5.6.2 Joint Interfaces, Materials, and Coatings
The Contractor shall provide developmental joint design drawings depicting part interfaces, materials of construction, fasteners, coatings, and torque values to support the JLTV corrosion plan. The Contractor shall include a list of wear items that are exempt from the vehicle corrosion service life. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A090)

C.5.6.3 Corrosion Prevention Working Group
The Contractor shall participate in the JLTV Corrosion Prevention Working Group which is comprised of subject matter experts from the Contractor and Government communities whose primary focus is to ensure all corrosion issues are identified and addressed. The Contractor shall participate in monthly telecom Working Group meetings. The Contractor shall host quarterly face to face Working Group meetings at the Contractor location prior to vehicle delivery and attend quarterly Working Group meetings at Aberdeen Proving Grounds (APG) after vehicle delivery. During Corrosion Prevention Working Group meetings the Contractor shall present the status of the CPCP (reference CDRL A019).

C.5.7 Systems Interoperability
The Contractor shall be responsible for systems interoperability. Systems interoperability shall, at a minimum, include interoperability of all hardware, software, and logistics systems included in the JLTV (e.g. CFE, GFE, and GFI). This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.8 User Review Event Requirements
The Contractor shall conduct a User Review Event within 180 days after Contract Award. The Contractor shall propose the schedule for the User Review Event at the SOWM. The User Review Event may be executed using a vehicle or using virtual design review tools (e.g. the TARDEC Cave Automatic Virtual Environment (CAVE)) and the Contractor SIL(s), and shall be supplemented by the use of pictures, presentations, animations, interactive demonstrations, vehicle mockups, and/or vehicles, as appropriate. All representations shall

accurately depict the current design and GFE shall be used whenever possible. Soldiers and Marines will be made available to the Contractor for up to two weeks total for the User Review Event. The Contractor shall provide at least 45 days notification prior to the proposed User Review Event, and final timing of the Event shall be subject to Government Approval. The Contractor shall allow the Government access to the Contractor data collection and provide the ability for the Government to collect its own data at these events.

C.5.8.1 User Review Plan
The Contractor shall create a detailed User Review Plan including dates of the evaluations and a detailed plan for executing the User Review Event. The Plan shall detail if or how each Review will include the evaluations in the Recommended User Review Evaluations (Attachment 11). This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.8.2 User Review Reports
The Contractor shall provide User Review Reports documenting the Event. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A022)

C.5.9 Signature Management Goals
The Contractor shall use the guidelines in the following paragraphs along with engineering judgment and best practices to establish vehicle level Signature Management Goals for visual, acoustic, and thermal detect ability (other than those specifically required in the PD), and then incorporate these goals during Contractor design. The Contractor shall present their Signature Management Goals at the DUR. All developed assumptions, conducted analysis, and test data shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.9.1 Visual Signature Goal Development
Each established visual signature goal should be met under all assumed vehicle operating and environmental conditions. Vehicle profiles, caused by the addition of mounted crew weapon systems, antennas and other equipment, should be minimized and/or treated by shaping, size variation or other engineering methods to limit the creation of unnecessary signature cues. Vehicle surfaces that are likely to produce solar glints should be treated, tilted towards the ground or minimized.

C.5.9.2 Acoustic Signature Goal Development
Each established acoustic signature goal should be met under all assumed vehicle operating and environmental conditions, including stationary at idle and operating transversely at low speeds. Major noise sources should be addressed in order to meet any useful acoustic signature metric (See MIL-STD 1474, Level 1). Examples of major noise sources include engine exhaust, vehicle cooling, engine intake, and other mechanical noise. The Contractor shall also consider cost, weight, and efficiency impacts of any developing Noise, Vibration, and Harshness (NVH) methods.

C.5.9.3 Thermal Signature Goal Development
Each established thermal signature goal should be met under all assumed vehicle operating and environmental conditions, including idle, tactical idle and fully exercised vehicle running at full load. Best engineering practices include obstructing the view of hot components in the vehicle, use of insulation and radiation barriers, and consideration of heat rejection as part of the component selection process.

C.5.10 Engine Emissions Analysis Report

C.5.10.1 EPA Emissions Requirements
The Contractor JLTV design is not subject to EPA Motor Vehicle Heavy Duty Diesel Exhaust emission standards or the EPA Non-road exhaust emission standards since the vehicle will contain permanent armor protection. This determination is IAW 40 CFR, Sections 85.1703, 89.908 and 1068.225.

C.5.10.2 Engine Emissions Analysis Report
The Contractor shall provide a diesel engine emissions analysis report under transient and steady state test cycles using DF2 diesel fuel. This analysis and report shall be done using the engine(s) selected by the Contractor. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A023)

C.5.11 Growth Margin Analysis
Throughout the period of performance of this contract, the Contractor shall track the amount of growth margin in each of the following categories as a percentage of the total design: payload, armor, weight, computing, networks, data buses, electrical power, memory and towing capacity. As applicable, these growth margins shall be within the constraints of the transportability requirements as defined in the JLTV Purchase Description (Attachment 1). The Contractor shall provide a report documenting these available growth margins and the specific growth analyses in the following paragraphs. The growth margin tracked above, as well as the information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A103).

C.5.11.1 Power Generation Growth Analysis
As part of the Growth Margin Analysis, the Contractor shall conduct an analysis to determine how each configuration could be upgraded to

supply power to future on-board systems including how additional power distribution would be connected to the existing architecture. The analysis shall include planning for future increased electrical power generation. The Contractor shall identify technology candidates, design modifications, retrofit compatibility, and supporting theoretical calculations.

C.5.11.2 Future C4I Systems Growth Analysis
As part of the Growth Margin Analysis, the Contractor shall conduct an analysis to determine how future C4I systems are to be integrated into the JLTV 4-seat variant, using the potential future requirements in Future C4I Systems Growth (Attachment 52). The analysis shall include plans for space, weight, power, system and network interconnects, mounting provisions, computing resources (e.g. applications, bandwidth, memory, processing), and thermal loads for all of the systems listed in "Table 5 - Future C4I Systems Growth" of Annex K of the JLTV Purchase Description (Attachment 1).

C.5.12 Vehicle Specification Sheet
The Contractor shall deliver two vehicle specification sheets for each JLTV configuration, IAW Vehicle Specification Sheet (Attachment 12). One sheet shall be in metric units and one sheet shall be in U.S English units. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A024)

C.5.13 Design for Maintainability Assessment
The Contractor shall demonstrate how the JLTV is designed for ease of maintenance and repair. At a minimum this activity shall address the Key Subsystems (per Attachment 9). The demonstration of the design process shall incorporate the use of CAD to simulate repair and maintenance processes using digital mockup assembly (DMA) methods (including clearances for tooling, personnel, and part removal) to determine the design has ample maintenance clearances, tolerances, and spatial constraints based on Developmental Design Models Technical Data (CAD Models) (Attachment 29). The Contractor shall perform an assessment of Design for Maintainability that includes results of these DMA reviews. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.5.14 Transportability Report
The Contractor shall complete and submit a Transportability Report. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A025)

C.5.15 Routing Diagrams - Cabling, Wiring Harnesses, and Plumbing
The Contractor shall provide detailed logical wiring diagrams, schematics, and physical routing diagrams (harnesses, cables, and plumbing) of all electrical, fluid, and air lines in the JLTV. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A027)

C.5.16 Special Characteristics
Special Characteristics (SC) are defined as product or process properties (e.g. dimensions, performance tests, part characteristics, or process parameters) that can impact safe product function (as defined by the ESOH Program, Section C.13.1) or induce non-conformance with Government regulations.

The Contractor shall identify all Special Characteristics (SC) in the JLTV design. The Contractor shall select their own marking schema for Special Characteristics as described in ISO/TS 16949:2009: Section 7.3.2.3 (e.g. the inverted delta symbol). The Contractor shall use this schema to identify and mark any characteristic or parameter that, when not executed according to the appropriate tolerances or specifications, can impact safe product function or induce non-conformance with Government regulations. The Contractor shall use best practices in order to include Special Characteristics in their Developmental Design Models Technical Data (CAD Models) (e.g. use of layers to manage components, fasteners, and other classes of material). Refer to section C.12.3.2 for Developmental Design Technical CAD Data Requirements.

This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.6 MODELING AND SIMULATION (M&S)

C.6.1 Contractor M&S
At the DUR, the Contractor shall provide an in-depth presentation of the Modeling and Simulation (M&S) that was used to optimize the JLTV design. The M&S presentation shall include key performance characteristics for Mobility (NRMM, Propulsion, Suspension, and Ride Dynamics), Thermal (Engine, HVAC, Electronics), Structure, Signature Management, Survivability (Vulnerability and Criticality), Transportability, Crash Worthiness, Fire Extinguishing, Reliability, Availability and Maintainability (RAM). Additional topics may be added by the Contractor.

The Contractor shall allow Government SME(s) access to observe and discuss the M&S process for the duration of the contract, in order to ensure an understanding of the tools, processes, constraints, and assumptions used during Contractor and any subcontracted M&S to include: specific details such as Finite Element Analysis (FEA) and Computer Aided Design (CAD) modeling processes, default tolerance

settings, Finite Element (FE) Model quality, material and structural properties, loading conditions, and nodes density assignment throughout the material depending on the anticipated stress level of a particular area. Expected cadence of these discussions shall be mutually determined at the SOWM. This requirement also applies to the creation and submission of the CAD & CAE models in Section C.12.3.

All M&S outputs, interim results, and data used to create the models shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.6.2 M&S Data Sheets Package
The Contractor shall submit a M&S Data Sheets Package containing the information and data sheets required in C.6.2.1-C.6.2.4. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A028)

C.6.2.1 Vehicle Propulsion Data Sheets
The Contractor shall submit fully completed Vehicle Propulsion Data Sheets (Attachment 14) for each JLTV configuration.

C.6.2.2 Vehicle Mobility and Dynamics Data Sheets
The Contractor shall submit fully completed Vehicle Mobility Data Sheets (Attachment 15) and Vehicle Dynamics Data Sheets (Attachment 16) for each JLTV configuration. When completing these Data Sheets, the Contractor shall assume the Run Flat Kit (if kitted) is not installed.

C.6.2.3 Thermal Management Data Sheets
The Contractor shall provide the data required in the Thermal Management Data Sheets (Attachment 17) for each JLTV configuration.

C.6.2.4 Safety & Crashworthiness Data Sheets
The Contractor shall provide the data required in the Safety & Crashworthiness Data Sheets (Attachment 50) for each JLTV configuration.

C.6.3 Vulnerability Analysis Data Package
The Contractor shall provide a Vulnerability Analysis Data Package that includes: the data described in Vulnerability Data Sheet (Attachment 20), a completed Cab Design Data Sheet, (Attachment 21), and detailed performance descriptions of the JLTV structure and the unique armor recipes for each vehicle surface (e.g. sides, top, front, rear, underbody, EFP). For each armor recipe, the Contractor shall specify the material and thickness of each armor layer (including air spaces), from outside to inside, plus the areal density of the overall recipe.

The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A032)

C.6.4 Underbody Blast Analysis
The Contractor shall perform underbody blast analyses against all threshold and objective underbody threats defined in Annex E of the JLTV Purchase Description (Attachment 1), for each JLTV configuration at all armor protection levels. All vehicle simulations shall include the finalized vehicle designs, including all subsystems, payloads, components (including GFE), and occupants.

C.6.4.1 Underbody Blast Analysis Package
The Contractor shall provide an Underbody Blast Analysis Package which includes the results of the above analysis and fully completed Blast Protection Data Sheets (Attachment 22). The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A033)

C.7 VEHICLE ELECTRONICS (VETRONICS) AND COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, INTELLIGENCE, SURVEILLANCE, RECONNAISSANCE, AND ELECTRONIC WARFARE(C4ISR/EW) SUBSYSTEMS

C.7.1 Environmental Survivability and Reliability

C.7.1.1 Electromagnetic Environmental Effects (E3)
The Contractor shall perform analyses, studies, inspections, and tests to verify that the JLTV is designed to comply with the applicable E3 standards identified in the JLTV Purchase Description (Attachment 1). The analyses, studies, inspections, and tests shall also be sufficient to characterize the E3 performance of the integrated system including spectrum-dependent subsystems.

C.7.1.1.1 Electromagnetic Environmental Effects (E3) Performance Report
The Contractor shall provide an E3 Performance Report that details the E3 performance described above. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A036)

C.7.1.2 Co-site Interference and Antenna Optimization Report
The Contractor shall analyze potential interference patterns (co-site interferences) and optimize placement of all vehicle antennas

(including Electronic Warfare) for each vehicle configuration. The Contractor shall work directly with the Government for final placement of all antennas. Specifically for the JLTV-CCWC configuration, the analysis shall include how each antenna is protected from the effects of missile exhaust. The Contractor shall provide the results of this analysis, including expected performance, antenna placement diagrams, Radio Frequency (RF) characteristics. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A035)

C.7.1.3 MIL Grade Connector Waivers
The Contractor shall submit waiver requests for non-MIL grade connectors (reference PDFOV-7660) using the format defined in MIL Grade Connector Waiver Form (Attachment 23), and shall include technical justification and qualification standards for the use of the alternate connector. All non-MIL grade connector waivers shall be submitted to the COR by SOWM. Waivers are intended to be dispositioned (approved/rejected) by the Government by DUR. If necessary, additional waivers will be considered up to nine months after Contract Award. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.7.2 Vehicle Network Configuration Package
The Contractor shall provide a Vehicle Network Configuration package including the Internet Protocol (IP) Addressing schema, IPv6 report, Controller Area Network (CAN) database, and configuration files of the vehicle networks. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW with the Government provided IMP. (CDRL Data Item A037)

C.7.3 Security and Information Assurance (IA)

C.7.3.1 IA Strategy
The Contractor shall execute an IA Strategy which includes tracking the status of IA Product certifications, system security requirements derived from the JLTV Purchase Description (Attachment 1), design system security architecture, detailed system security design; security test strategy, and risks based on the proposed architecture. The Contractor shall track if the IA or IA enabled products used within the architecture are on the DoD Unified Capabilities (UC) Approved Products List. For any products not on the List, the Contractor shall describe the path to obtain certification. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW with the Government provided IMP.

C.7.3.2 IA Accreditation Artifact Package
The Contractor shall provide an IA Accreditation Artifact Package. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A038)

C.7.3.3 IA and Software Scans
The Contractor shall provide the Government access to the software source code repositories for all JLTV software (excluding Commercial Off The Shelf (COTS)), the Systems Integration Laboratory (SIL) (Reference C.7.5), and integrated vehicle platforms for Information Assurance and Software Scans described in this section. Access shall be provided for a period of up to five days for each scan event. The IA Scans will allow the Government to conduct scans on the Contractor C4ISR/EW and Vetronics architectures and determine if there are any vulnerabilities or nonconformance in the system. The Software Assurance scans will allow the Government to conduct Software Assurance scans on the Contractor's C4ISR/EW and Vetronics software to determine if there are any vulnerabilities in the system. The Contractor shall ensure each source code repository can accept the Government's Hewlett Packard (HP) Fortify 360 Suite Static Code Analyzer scanning software tool.

C.7.3.3.1 Baseline IA and Software Scan
The Contractor shall provide the Government access to the SIL for the Baseline IA and Software Scan. The Baseline Scan shall be held NLT 180 days after Contract Award.

C.7.3.3.2 Intermediate IA and Software Scan
The Contractor shall provide the Government access to the SIL for the Intermediate IA and Software Scan. The Contractor shall jointly determine with the Government on what platform the test is to be conducted. The Intermediate Scan shall be held NLT 30 days prior to delivery.

C.7.4 Electrical Architecture Metrics
The Contractor shall track a set of metrics for the JLTV electrical architecture for the following aspects of the vehicle command and control systems (not including GFE hardware):

(a) Computing resources. These metrics shall include peak processor throughput & utilization (per processor) and volatile & nonvolatile memory usage (per board level or processor application) for the Driver's Smart Display Unit (DSDU), Commander's Smart Display Unit (CSDU) and Auxiliary Smart Display Unit (ASDU).

(b) Functionality operation. This metric shall include start-up time for DSDU; time shall commence from vehicle ignition-on to when full functionality of the display is available. This metric shall also apply to the CSDU, and ASDU; time shall commence from power on to when full functionality of the CSDU, and ASDU is available through the display. This metric shall be tracked at temperature extremes specified in the Purchase Description (Attachment 1) hot, cold, and room temperature (68F).

These metrics shall initially be tracked as estimates and shall be updated with actual values as the development progresses. These metrics will be reviewed by the Government initially at DUR and monthly through the end of contract. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.7.4.1 Data Bus Metrics
The Contractor shall track data bus resource metrics for the entire JTLV electrical architecture. These metrics shall measure throughput & utilization for all Vehicle Sensor Data Buses and the C4ISR/EW Data Bus. The metrics shall initially be tracked as estimates and updated with actual values as the development progresses. These metrics shall be reviewed initially at DUR and monthly through the end of contract. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.7.4.2 Power Budget Accounting
The Contractor shall track hotel, on-board, and export power loads (nominal and peak) for each JLTV configuration using a power budget breakdown. The loads shall initially be tracked as estimates and updated with actual values as vehicles are built and tested by measuring actual currents and voltages. Included in the breakdown, the Contractor shall list the total load draw of each configuration when integrated per Annex K of the JLTV Purchase Description (Attachment 1). This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.7.5 Systems Integration Lab (SIL)
The Contractor shall develop and use a SIL or SILs to integrate and test the JLTV system electronics, Line Replaceable Units (LRUs), and Configuration Items (CIs) prior to full vehicle integration. The SIL(s) shall contain all JLTV production-intent electrical and electronic components (modules, displays, controls, clusters, cabling and harnesses) and GFE electronic hardware and software to enable the replication of fully integrated vehicles. The SIL(s) shall be able to demonstrate actual hardware for both four-seat and two-seat variants.

The SIL(s) shall be functional and the Contractor shall provide a SIL demonstration prior to the Baseline IA and Software Scan. The Contractor shall also provide demonstrations prior to the Intermediate IA and Software Scan. After delivery of the vehicles, the SIL(s) shall remain fully functional. Proposed corrective actions shall be validated in the SIL(s) prior to implementation on the vehicles. The SIL(s) shall be kept current using the Change Management process defined in section C.11 for configuration changes developed by the Contractor in order to reflect the current state of the vehicles until the end of the contract.

C.7.5.1 SIL Demonstration Procedures
The Contractor shall develop and discuss recommended operating procedures for the execution of the events identified in SIL Demonstration Operating Scenarios (Attachment 24). This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.7.6 Health Management System (HMS)

C.7.6.1 HMS Report
The Contractor shall provide a HMS Report to include their Diagnostic Fault Data Table, Sensor Strategy, the Fault Notification Strategy, and the Data Strategy. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A040)

C.7.7 Other Analyses
The Contractor shall perform the analyses below (Section C.7.7.1-C.7.7.5), unless an analysis is not applicable to the Contractors JLTV design. The information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.7.7.1 Electrical Bus Fault Handling Analysis
The Contractor shall conduct analysis to demonstrate the following:

(a) How the electrical distribution system prevents or protects against voltage reversals (including the limits of the reverse voltage tested or verified).
(b) How the electrical distribution system is protected when short circuits occur.
(c) How the system reacts and is protected against arcing. If any arc detection techniques are used, the analysis shall discuss these techniques.
(d) Electrical items which should be checked for proper operation prior to initial Fording Tests.

C.7.7.2 Cascading Electrical Failure Analysis
The Contractor shall demonstrate through analysis the fault detection strategies employed on the vehicle that relate to the power management, generation, and distribution system will not cause a cascade of failures or have any adverse affects on other equipment on the bus. If a fault is severe enough to cause other effects, the Contractor shall identify and discuss these effects.

C.7.7.3 Battery Charging Strategy Analysis

The Contractor shall perform analysis and create curves or charts that demonstrate the correct charging rate for the battery at any State of Charge (SOC) and bus voltage level.

C.7.7.4 Energy Storage Device Degradation Analysis
The Contractor shall perform analysis that demonstrates that the energy storage device does not degrade below the level to perform its stated vehicular functions in the JLTV Purchase Description (Attachment 1) in less than three years.

C.7.7.5 Data Bus Communication Failure Default Mode Analysis
The Contractor shall perform analysis that demonstrates that when data bus communication required to control or configure components fails, the controlled or configured component will operate in a default state that provides for failsafe operation (reference PDFOV-1883 in JLTV Purchase Description Attachment 1).

C.7.8 VICTORY Participation
The Contractor shall evaluate design compliance to the VICTORY Standards Specification 1.0 (29 July 2011, https://sp.kc.us.army.mil/sites/VICTORY/default.aspx) and present a comparison of fully including VICTORY as a part of their design versus not including VICTORY, including expected cost differences, expected design advantages or burdens, compliance to the VICTORY Standards, and rationale for areas that are not compliant to the VICTORY standard. This presentation shall be given to the Government in San Antonio TX, including VICTORY personnel, NLT 180 days after Contract Award.

C.8 SOFTWARE
The Contractor shall have and maintain at least a Capability Maturity Model Integration (CMMI) Level III Software Engineering Institute (SEI) certification for all business units and subcontractors performing software development work. The Contractor shall deliver all software, including Non-Developmental Item (NDI), and Commercial Off The Shelf (COTS), software in each delivered vehicle with appropriate licenses and without restrictions for usage in its intended vehicle application.

C.8.1 Software Architecture Design Description (SADD)
The Contractor shall present a SADD at the DUR, describing the collection of software components utilized to meet JLTV requirements. The SADD shall describe the collection of software components utilized to meet JLTV requirements including descriptions of the interfaces and dependencies between components in the architecture. The SADD shall also include an explanation of each software component with its function, origin (e.g. COTS, CFE development item, GFE), size & computer resource constraints, interfaces, contract/derived requirement(s) satisfied by the component and indication of government rights in each software component. The Contractors response to this requirement shall include, but is not limited to, the following functional areas shall be examined: On-board C4ISR computing systems (including controls & displays), vehicle electronics (including embedded software), and power management. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.8.2 Source Code and Executables
The Contractor shall deliver a copy of all software images, executables, parameter files, configuration files, and source code utilized on the JLTV and developed by the Contractor or any subcontractors, including C4ISR and Vetronics software and firmware. The software images, executables, parameter files, configuration files, and source code shall be delivered separately from the vehicles. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A042)

C.8.3 Software License Package
The Contractor shall develop a Software License Package to identify and deliver all commercial software licenses for all software utilized on the delivered vehicles. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A043)

C.8.4 Software Version Description (SVD)
The Contractor shall develop a SVD document to describe each software version release. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A044)

C.8.5 Software Metrics
The Contractor shall track progress against the following software metrics. Tracking shall begin with estimates at SOWM and shall be updated monthly with actual values as available through the end of contract. The software metric information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. The software metrics shall address the following areas for the complete JLTV:

C.8.5.1 Source Lines of Code Metric
This metric shall track the number of Source Lines of Code (SLOC) by Software Configuration Item. Actual SLOC shall be tracked against the initial estimates, to provide indicator of progress versus plan.

C.8.5.1 Software Integration and Test Metric

This metric shall track the number of successfully completed integration and test procedures for each Software Configuration Item. Actual procedures shall be tracked against the initial estimates, to provide indicator of progress versus plan.

C.8.5.2 Problem Reporting Metric
The Contractor shall use a closed loop problem tracking system to capture, track, and correct software problems. The Contractor shall keep a set of metrics to track the number, type, and severity of open software problem reports against the total number of closed reports. The metrics shall be cumulative to show trends of problem report openings and closures over time.

C.8.6 Vehicle Software Updates
Upon the start of the Government testing phase, the Contractor shall conduct regression testing following any software modifications to ensure that no inadvertent functional degradation has occurred anywhere in the vehicle as a result of the software modification.

C.8.6.1 Vehicle Calibration Updates
The Contractor shall notify the Government of any planned calibration updates. Software acceptable for these updates are those systems which require extensive calibration testing on fully functioning, complete vehicles that cannot be accurately modeled, simulated, or developed using an alternative method, including:

(a) Electronic Stability Control (Including Traction Control and Anti-Lock Brakes)
(b) Active Suspension Systems (Active Damping, Height Adjustment, and Leveling)
(c) Active Drive train Systems (Active Transfer Case and/or Differentials)
(d) Active Safety Systems (Crash Avoidance, and Crash Preparation)

Vehicle calibration updates shall be presented to the Corrective Action Review Team (CART) and shall be performed at Corrective Action Period (CAP) 1, unless otherwise authorized by the CART (reference C.19.6.3). The Contractor shall schedule these updates with the Government, install any software updates in all test assets at all test sites, and maintain configuration management.

C.9 RELIABILITY, AVAILABILITY, AND MAINTAINABILITY (RAM) PROGRAM

C.9.1 RAM Program
The Contractor shall develop, implement, and maintain a comprehensive RAM Management Program. The management program shall establish a process to achieve RAM requirements in the JLTV Purchase Description (Attachment 1). The program shall include all aspects of reliability, availability, and maintainability. The Contractor shall develop engineering processes to ensure a reliable design reflected in a corresponding reliability model. American National Standards Institute document GEIA-STD-0009-2008, including the Checklist for Evaluating Reliability Program Plans, shall be used as guidance for reliability program development. The Contractor shall make available all RAM data for all subcontractor supplied component or subsystem. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.9.2 Reliability Model
The Contractor shall develop and utilize a reliability model for each configuration and trailer within the JLTV. The reliability model shall be complete with reliability predictions, developed with appropriate design tools and processes such as: Fault Tree Analysis (FTA), Failure Modes and Effects Analysis (FMEA), Design Verification Plan & Report (DVP&Rs), Reliability Centered Maintenance (RCM) concepts, Accelerated Life Cycle Testing (ALT), and continual improvement.

Throughout the period of contract performance, the Contractor shall update the reliability model whenever new failure modes are identified or when reliability predictions are impacted by design or manufacturing changes. The Contractor shall consider their reliability growth tracking status when prioritizing correction actions.

The Contractor shall utilize the reliability model to:
(a) Generate and update the reliability predictions from the system level down to lower indenture levels
(b) Aggregate system-level reliability based on reliability predictions from lower indenture levels up to the system level
(c) Manage the reliability predictions, design predictions, current demonstrated reliability, and proposed design change results from engineering analysis as well as component and system test results
(d) Identify single points of failure
(e) Enable the application of proactive tools such as Reliability-Centered Maintenance (RCM) and Condition Based Maintenance Plus (CBM+) (as directed in DODI 4151.22), to optimize system design and respective reliability, availability, and maintainability performance.

This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.9.2.1 RAM Predictions
The Contractor shall develop and provide Reliability and Maintainability (R&M) predictions that correlate with the Contractor Reliability Model. R&M predictions shall include reliability design predictions for Mean Miles Between Hardware Mission Failure (MMBHMF)

and Mean Miles Between Essential Function Failure (MMBEFF) and maintainability design predictions for Maintenance ratio (MR), Mean time to repair (MTTR) and Max Time to Repair (MaxTTR). R&M predictions shall include predictions at the LRU level for the JLTV design at the A-structure armor protection level as well as with the B-kit (levels 1 and 2) installed. R&M predictions shall include failure rates for each LRU and shall further identify whether the individual failure rates are estimated (E), calculated (C), or measured (M). R&M predictions shall be rolled up to the system level. The Contractor shall analyze and update the R&M predictions whenever a design change or manufacturing change occurs. The Contractor shall include R&M predictions in the reliability model. The Contractor shall document any assumptions, boundary conditions and any test or modeling inputs used in developing R&M predictions.

If possible, the Contractor shall generate the R&M predictions by utilizing actual component and subsystem test-generated data with test inputs at least equivalently demanding as the JLTV Operational Terrain (JLTV Purchase Description (Attachment 1)), Annex H). The Contractor may also use previously generated data for COTS items to generate R&M predictions, provided that the testing represented the Operational Terrain environment. The Contractor shall not base their R&M predictions solely on models, on Non-Electronic Parts Reliability Data (NPRD), or on MIL-HDBK-217 data. If inputs used to generate R&M predictions are not representative of the Operational Terrain, then the Contractor shall use an adjustment factor to account for differences between Operational Terrain and actual inputs used. The Contractor shall provide rationale in this CDRL for any adjustment factors.

The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A045)

C.9.3 Reliability Growth

C.9.3.1 Contractor Reliability Growth Plan
The Contractor shall develop and deliver a reliability growth plan IAW the AMSAA Planning Model Based on Projection Methodology (PM2) Reliability Growth Planning Curve Spreadsheet that describes planned reliability growth throughout system design and Government testing (to include Contractor performed and Government performed, reference section C.17.3). The reliability growth plan shall describe how the Contractor will achieve the JLTV reliability requirements in the JLTV Purchase Description (Attachment 1) and show continued growth beyond the reliability threshold throughout LRIP and into FRP. The reliability growth plan shall include a growth curve which shows achievement of at least 1,680 MMBHMF prior to start of the LUT. Refer to the CAP Execution Plan (Attachment 42) for more guidance. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW with the Government provided IMP. (CDRL Data Item A046)

C.9.3.2 Reliability Growth Tracking
The Contractor shall track reliability growth using the AMSAA Maturity Projection Model (AMPM) software tool. The Contractor shall develop and deliver reliability growth tracking curves once system level Reliability Growth testing begins IAW the AMSAA Planning Model Based on Projection Methodology (PM2) Technical Report No. TR-2006-9 (Attachment 26). The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A047)

C.10 RISK MANAGEMENT
Risk management shall be an integral part of all technical reviews, risk review board meetings, periodic program management reviews, meetings, and IPTs. The Contractor shall invite Government representative(s) to participate in monthly Contractor Risk meetings.

C.10.1 Risk Tracking Reports
The Contractor shall develop and deliver Risk Tracking Reports. The Contractor shall systematically identify and analyze all risks, and shall develop mitigation plans for all red and yellow risks as defined in the JLTV Risk Scoring Criteria (Attachment 27). The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A048)

C.11 CONFIGURATION MANAGEMENT (CM)
The Contractor shall maintain a CM process to control all hardware and software configurations including documentation, media, and parts representing or comprising the JLTV. The Contractor shall use ANSI/EIA-649A, IEEE 828, and MIL-HDBK-61A as guidance. The Contractor shall maintain configuration management responsibility throughout the period of performance of this contract. The Contractor's part numbering system shall maintain links to any Original Equipment Manufacturer (OEM) part numbers. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.11.1 Baseline Description Documents
The Contractor shall deliver the Allocated and Initial Product Baselines in separate Baseline Description Documents. Reference the DAG Section 4.2.3.1.6.2. - Establishment of Configuration Baselines as a guide for defining the Allocated and Product Baselines. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A049)

C.11.2 Change Reporting
The Contractor shall use the following classifications for all changes made to the baselines:

Class I: A change to Contractor approved configuration documentation, and:

(a) affects any physical or functional requirement in Contractor approved ALLOCATED configuration documentation, OR

(b) affects Contractor approved PRODUCT configuration documentation AND one or more of the following:

i) Government furnished equipment (GFE),
ii) safety,
iii) compatibility, interoperability, or logistic support,
iv) Contract schedule delay,
v) will require retrofit of delivered units,
vi) interchangeability, substitutability, or replaceability of any item down to non-repairable subassemblies,
vii) sources on a source control drawing,
viii) skills, manning, training, biomedical factors or human engineering design,
ix) Configuration item cost increase.

Class II: All other changes are Class II changes.

C.11.2.1 Change Log
The Contractor shall maintain a change log to track changes and status of each change implementation. The change log shall include: description of changes, parts affected, reason for change, classification of change, status of change (New, In Design, In Validation, Approved, Implemented, Verified), date opened, date closed, deficiencies corrected, associated problems related. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.11.2.2 Baseline Change Notification (BCN)
The Contractor shall provide the Government access to attend the Contractor's change control board.

After the DUR, the Contractor shall submit a BCN to the Government for notification prior to all changes that affect the Allocated Baseline and all Class I changes to the Product Baseline. The Contractor shall maintain configuration authority of the Product Baseline. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A050)

After delivery of the vehicles, the Contractor shall develop an implementation plan for all design changes. The implementation plan shall include a vehicle version naming convention to delineate configurations. The Contractor shall maintain a database after TRR that tracks configuration versions and details each configuration change and rationale for that change. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.12 PRODUCT DATA MANAGEMENT
The Contractor shall possess and utilize a product management system to manage the design and manufacturing development including a quality management system (Ref. Section C.23.1 - Quality Management System) to organize and maintain best practices throughout the organization, during the contract period of performance.

C.12.1 Data Management System
The Contractor shall possess and utilize a product data management system to store, manage access, and track multiple versions and iterations of JLTV designs and related data. The system shall manage digital representations of development product (part and software) items, associated product structures (bill of materials), product definition (e.g. engineering drawings, solid models, specifications and standards, software documentation, schematics), computer-aided engineering (CAE) analysis models, testing and simulation results, and other related documentation. The Contractors data management system shall be discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.12.2 Technical Data Management

C.12.2.1 EMD Technical Data Package (TDP)
The Contractor shall maintain an appropriate level of TDP throughout the execution of this contract using MIL-STD-31000 as a guide. This TDP will form the basis of Change Management for LRIP in the follow-on contract.

C.12.2.2 TDP Cost Estimate
The Contractor shall deliver a cost estimate for Government to obtain Government purpose rights to a Production Level Technical Data Package for the JLTV. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A051)

C.12.3 CAD/CAE Technical Data Deliveries

C.12.3.1 Simulation-based Design Model Data
The Contractor shall deliver Simulation-based design Computer Aided Engineering (CAE) model data for each JLTV vehicle configuration IAW the M&S CAE Models (Attachment 28). Prior to submission, the Contractor shall verify that the Top Level Assembly opens without errors. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A052)

C.12.3.2 Developmental Design Technical CAD Data
The Contractor shall deliver Developmental Design Technical CAD Data for each JLTV vehicle configuration IAW the Developmental Design Models Technical Data (CAD Models) (Attachment 29). Prior to submission, the Contractor shall conduct solid model data geometric validation properties (GVP) checks on CAD and CAE solid models to identify part, assembly, and installation shape and fit (geometry and topology) problems that will affect downstream applications, such as analysis, modeling and simulation, rapid prototype, and data exchange. Prior to submission, the Contractor shall verify that the Top Level Assembly opens without errors. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A053)

C.13 ENVIRONMENTAL, SAFETY AND OCCUPATIONAL HEALTH (ESOH)

C.13.1 ESOH Program
The Contractor shall develop, implement, and maintain an ESOH program in accordance with MIL-STD-882D. The ESOH program shall include the following areas: system safety, occupational health, environmental impact, and hazardous materials management.

C.13.2 ESOH Working Group (WG)
The Contractor shall participate in the JLTV ESOH WG which is comprised of subject matter experts from the Contractor and Government communities whose primary focus is to ensure all ESOH issues and hazards are identified and addressed. The Contractor shall host quarterly face to face WG meetings at the Contractor location prior to vehicle delivery and also attend quarterly WG meetings at Aberdeen Proving Grounds (APG) after vehicle delivery. During ESOH WG meetings the Contractor shall present ESOH program status and updates, Hazard Tracking Log (HTL) status and updates, Hazardous Materials usage status and updates, and other ESOH data.

C.13.3 Hazard Tracking Log (HTL)
The Contractor shall prepare a HTL IAW the Hazard Tracking Log Content Requirements (Attachment 30). The Government will provide final disposition for all hazards. Closed out hazards shall remain on the HTL. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A054)

C.13.4 Safety Engineering and Health Hazards

C.13.4.1 Safety Assessment Report (SAR)
The Contractor shall provide a SAR which documents the results of system safety and health hazard analyses, hazard evaluations, and any independent testing. The SAR shall address each configuration and trailer within the JLTV. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A055)

C.13.4.2 Safety Review Support
The Contractor shall provide two SMEs to support two Government Weapon System Explosive Safety Review Board (WSESRB) reviews in the Dahlgren, VA area. Each review will be one day. The purpose of the WSESRB is to review the explosives safety of weapons or explosive systems. During the WSESRB the Contractor shall be prepared to discuss and answer questions about the technical aspects of integrated weapons, active and reactive protection systems, and lithium batteries.

C.13.4.3 Lithium Battery Safety Data Package
If lithium batteries are used in the system design, then the Contractor shall provide a safety data package that documents and demonstrates the stability of the design and validity of the battery selection. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A104)

C.13.5 Environmental Compliance
The Contractor shall ensure that all aspects of the contract execution, including all JLTV hardware, are in compliance with United States Federal, State, and Local environmental regulations and requirements; including activities associated with design, prototype build, test, storage, and disposal.

C.13.6 Hazardous Materials Management
For the purposes of this contract, hazardous materials are defined by FED-STD-313, Section 3.2 Specific Prohibited Hazardous materials for the JLTV are identified in PDFOV-3576 of the JLTV Purchase Description (Attachment 1). Hazardous materials prohibitions shall apply

to all components, parts, and materials provided under this contract, including items purchased through a subcontractor or supplier, COTS components, OEM parts, and manufactured parts.

C.13.6.1 Exceptions to Hazardous Materials Requirements
Waivers from the hazardous materials requirements shall not be permissible except where a suitable alternative does not exist. The Contractor shall present at the SOWM a list of anticipated waivers for any prohibited materials. The Contractor shall submit formal waiver requests to the COR no later than DUR, using the, Request for Use of Prohibited Materials (Attachment 31). Waiver requests shall also include detailed technical justification for the use of prohibited hazardous materials. The Government will make the final determination on whether sufficient justification has been provided to support approval of any waiver requests. The Contractor shall not deliver any items containing prohibited materials without the Government approval of the waiver request.

Beryllium-Copper (in electrical connectors), lead-acid batteries, and lead solder may be used without requesting a waiver from the Government.

C.13.6.2 Hazardous Materials Management Report (HMMR)
The Contractor shall prepare a HMMR in accordance with National Aerospace Standard (NAS) 411, section 4.4. In addition to the hazardous materials delivered and required for operation and support (NAS 411, section 4.4.1), the HMMR shall include Hazardous materials used in the system manufacture and assembly. The Contractor shall discuss status, changes or issues with the HMMR as part of DUR and each Program Management Review. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A056)

C.14 HUMAN SYSTEMS INTEGRATION (HSI) / MANPOWER & PERSONNEL INTEGRATION (MANPRINT)
The Contractor shall conduct a HSI/MANPRINT program in the areas of human factors engineering, manpower, personnel, training, health hazards, safety, and Soldier survivability in accordance with DoDI 5000.02 and AR 602-2.

The Contractor shall participate in the Joint HSI/MANPRINT Working Group (JMWG). The Contractor shall host monthly VTCs, and quarterly face to face JMWG meetings at the Contractor location prior to vehicle delivery and attend quarterly meetings at Aberdeen Proving Grounds (APG) after vehicle delivery. During the JMWG meetings, the Contractor shall present HSI/MANPRINT program status and updates, design data, planned HSI/MANPRINT events, and event findings.

C.14.1 Human Factors Engineering Analysis (HFEA)
For HFE requirements not specifically defined in the PD, the Contractor shall use the design standards contained in MIL-STD-1472, MIL-STD-1474, and MIL-HDBK-759 as a guide for application of human factors engineering practices during the design of the JLTV and applicable components. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A057)

C.14.2 Warfighter Workspace Analysis
The Contractor shall perform and provide a three-dimensional Jack Soldier Workspace Analysis, using the 2015 Land Warrior Body Dimensions (Annex N of the JLTV Purchase Description (Attachment 1) and the correlating 2015 Central 90% Computer Aided Design (CAD) Seven Boundary Condition ARL Jack (TM) Human Figure Models (provided as GFE/GFI per Attachment 36). The analysis shall include diagrams, illustrations, drawings with measurements and files used to perform three-dimensional Jack Soldier Workspace Analysis. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A058)

C.15 SUPPORTABILITY/INTEGRATED LOGISTICS SUPPORT (ILS)
The Contractor shall plan and implement an ILS program addressing all elements of Integrated Product Support:

(a) Product Support Management
(b) Design Interface
(c) Sustaining Engineering
(d) Supply Support
(e) Maintenance Planning & Management
(f) Packaging Handling Storage & Transportation
(g) Technical Data
(h) Support Equipment
(i) Training & Training Support
(j) Manpower & Personnel
(k) Facilities and Infrastructure
(l) Computer Resources

The Contractor shall conduct the ILS effort as an integral part of the design, development and integration process to define the range

and depth of the required support, and address all applicable and related elements of logistics.

The Contractor shall use the following reference documents for the ILS EMD areas of support:

i) Logistics Supportability Planning and Procedures in Army Acquisition, DA PAM 700-56, dtd. April 2006,
ii) Logistics Assessment Guidebook, dtd July 2011
iii) Integrated Logistics Support, AR 700-127, dtd 29 April 2009

C.15.1 Maintenance Plan, Analysis, and Reports

C.15.1.1 Level of Repair (LOR) Program
The Contractor shall conduct LOR Program Planning, employing industry best practices and including all system-level repairs, and all subsystem, assembly, and subassembly level candidates for analysis (e.g. designated configuration items (CI)). The Contractor shall examine the Service Components Maintenance Philosophies and respective Military Occupational Specialty (MOS) skill set(s) (Attachment 34, ILS Definitions). The Contractor's examination and analyses shall determine the system, subsystems, assemblies, and subassemblies level of repair and determine if discard is warranted using the latest version of the Computerized Optimization Model for Predicting and Analyzing Support Structures (COMPASS). This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.15.1.1.1 Level of Repair Analysis (LORA) Report
The Contractor shall provide a LORA report, to include all COMPASS input and output data files used in the assessment. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A060)

C.15.1.2 Reliability Centered Maintenance (RCM) Analysis
The Contractor shall perform RCM Analysis, based on the Job Task Analysis below, to identify and document system Operator and Maintainer service tasks based on scheduled and on-condition preventive maintenance requirements. The Contractor shall use the procedures outlined in Society of Automotive Engineers (SAE) JA 1011 and SAE JA 1012 to execute RCM Analysis predicated on the Army and Marines maintenance concepts.

C.15.1.2.1 RCM Report
The Contractor shall provide a final report that will summarize the findings of the RCM analysis and include:

(a) Fully described functions supported by the system under analysis
(b) Subsystems of the System under Analysis
(c) Appropriate and cost effective maintenance policies for the subsystems analyzed
(d) Shortcomings and recommended design changes for subsystems analyzed, if discovered
(e) Realized RCM output data that may be used as input for decision support tools that allow for electronic maintenance diagnosis

The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A061)

C.15.2 Job Task Analysis
The Contractor shall identify, evaluate, and document the mission essential, critical operation, and maintenance tasks of the JLTV system and provide the Job Task Analyses (JTA) identified below:

(a) Mission Task Analysis. The Contractor shall identify and document mission, collective, and individual tasks. The Contractor shall identify and document mission essential tasks as a part of the system analysis, and evaluate the appropriateness and feasibility of system functions and roles allocated to operators and maintainers. The Contractor shall describe the system functions which must be performed to meet the system objectives within the mission context. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A062)

(b) Workload Analysis. The Contractor shall conduct Workload Analyses to validate the suitability of the projected number of personnel and the team composition to perform required missions, maintain systems and equipment, and provide necessary technical, engineering, material, logistics, and administrative support. The Workload Analysis may include IMPRINT, spreadsheet, and paper-based modeling. The Contractor shall evaluate the workload execution of representative scenario(s) placed on the planned operators, maintainers, and support personnel. The reports shall summarize the workload analysis methodology, assumptions, data sources, results, and recommendations for human tasks vital to the operation and maintenance of the system. The Contractor shall conduct this analysis in coordination with Manpower analysis and estimations. The Contractor shall conduct workload analysis during various human test opportunities to verify performance and validate previous workload models. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A063)

(c) Skills Analysis. The Contractor shall conduct a Skills Analysis to document the knowledge, skills, and attitudes necessary for the operators, maintainers, and support personnel to execute all anticipated missions and tasks. The Contractor shall conduct the

analysis to validate the suitability of the number of personnel and the various combinations of knowledge, skills, and attitudes required. Within the Skills Analysis, the Contractor shall define the training process and capabilities required to ensure the knowledge, skills, and abilities can be developed and maintained. The Contractor shall coordinate the Skills Analysis results with training material, approaches, and methods. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A064)

C.15.3 Operator Manuals
The Contractor shall provide Operator Manuals (OMs) that support the planned evaluation events.

The OMs shall represent:

(a) Operations (to include driving restrictions) and Operator/Crew Maintenance necessary to support the configuration of the vehicle being tested.
(b) Preventative Maintenance Checks and Services (PMCS); the Contractor shall develop and prepare operator PMCS for each variant that ensures safe vehicle operation and preclude avoidable vehicle wear or damage. The sequence of the PMCS shall be ordered to complete the process with one pass around the vehicle.
(c) Vehicle Commander Interfaces and operations of the Vehicle Commander's Smart Display Unit (CSDU).

The Contractor shall submit a Validation Certificate with the final delivery of the OMs. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL Data Item A065)

C.15.4 Copyright License
In each contract deliverable, the Contractor shall identify any item of third party Copyrighted Material. In addition to complying with the requirements of DFARS 252.227-7013(d) and 252.227-7014(d), the contractor or subcontractor must also provide to the Government a copy of each copyright license identified under these subsections (d). When the Contractor will deliver commercial technical data relating to a Subcontractors or third party suppliers components or portions thereof, and that commercial technical data contains copyright material, the Contractor shall be responsible for obtaining a copyright release, suitable for all usual and proper governmental purposes related to the vehicles, from the Subcontractor or third party supplier, and furnishing such copyright release to the Government. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A066)

C.15.5 Packaging Data
The Contractor shall develop packaging data in accordance with (IAW) MIL-STD-2073-1D (1) (hereafter shown as MS2073), DoD Standard Practice for Military Packaging, and all appendices for the End Item and all repairable components. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.15.5.1 Special Packaging Assessment
The Contractor shall conduct an assessment to determine if new or existing commercially available reusable container designs are suitable for JLTV subassemblies and components. The Contractor shall validate preservation processing and packaging as well as assess form, fit, and function for selective and special group items. The Contractor shall compare costs to modify existing designs or alternate new designs. The Contractor shall develop a proposed container approach if a new or modified commercially available reusable container is required. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.15.6 Diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Plan
The Contractor shall develop and deliver to the Government, a DMSMS Management Plan for managing the loss, or impending loss of manufacturers or suppliers of parts and/or materials IAW DoD 4140.1-R, (chapter C 3.6) and DoD DMSMS Guidebook (SD-22) November 2006. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A069)

C.15.7 Markings
Each IUID marking shall consist of a Unique Item Identifier (UII) encoded within a two-dimensional data matrix symbol. The IUID data matrix shall include human and machine-readable information markings. The CAD drawings shall incorporate the IUID marking and location. For proof of principle, the Contractor shall only apply IUID markings to each vehicle, trailer and the following Subassemblies, if installed:

- Engine
- Transmission
- Integrated Starter Generator (ISG) or similar
- Transfer Case
- Steering Gear Box
- Differential Assembly

For purposes of this contract, Clause 252.211-7003, paragraph (c)(1)(i) shall only apply to the vehicles and trailers, for proof of principle. Clause 252.211-7003, paragraph (c)(1)(iii) applies to the Subassemblies, if installed, listed above. An example of the IUID

marking shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.15.8 Load Plan
The Contractor shall develop and deliver a Load Plan (including schematics) that details optimum vehicle locations for all payload items in the JLTV Purchase Description (Attachment 1), for each JLTV configuration at GVW and GCVW. The Load Plan schematics shall be developed using computer aided engineering software tools. The Contractor shall ensure that the Load Plan is a realistic stowage of items while maintaining functional usage of vehicle. Items shall be stowed as not to interfere with normal operation of vehicle including ingress and egress. The Government intends to conduct testing with the vehicles configured IAW this Load Plan. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A070)

C.15.9 Commonality Matrix
The Contractor shall submit a completed Commonality Matrix (per Attachment 35, Commonality Matrix) for each JLTV configuration, to identify the commonality of the JLTV within the JLTV and DoD vehicles. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A071)

C.16 GOVERNMENT FURNISHED EQUIPMENT (GFE) INTEGRATION AND GOVERNMENT FURNISHED INFORMATION (GFI)

C.16.1 GFE Integration
The Contractor shall integrate all applicable Government Furnished Equipment and Government Furnished Information provided IAW the GFE/GFI List (Attachment 36). Integration shall include software and hardware, providing space, power, weight allocation, heat rejection, cabling & cableways, through hull connections, and all other hardware & software interfaces necessary to meet the requirements as stated in the JLTV Purchase Description (Attachment 1). Dependent on design, the Contractor may be able to leverage complete GFE kits to fully perform integration, or the Contractor may need to provide new integration items (e.g. brackets, wiring). The Contractor shall integrate the current version of Software GFE/GFI as of the first SIL Demonstration (Section C.7.5). Throughout contract performance, the Contractor shall integrate updated versions of Software GFE/GFI, in the SIL and on all vehicles, for critical fixes or significant functionality improvements, when provided by the Government.

C.16.2 GFE/GFI Delivery
The Government will provide the GFE/GFI IAW the schedule outlined in the GFE/GFI List (Attachment 36). At the SOWM, the Government will provide the technical integration data or required Points of Contact (POCs) to receive proprietary information and data related to the GFE/GFI.

C.16.3 External Agreements
The Contractor shall establish Non-Disclosure Agreements (NDAs) and/or Memorandum of Agreements (MOAs) with non-PM JLTV organizations (both Government and Commercial), as required to receive data and integrate GFE/GFI. At the SOWM the Government will provide, at a minimum, the list of organizations with which the NDAs/MOAs may need to be arranged. These agreements will allow the Contractor to receive controlled technical integration data and facilitate direct technical collaboration in order to integrate GFE/GFI into the JLTV as identified in the JLTV Purchase Description (Attachment 1). Progress of NDAs/MOAs shall be discussed at the PMRs.

C.17 VERIFICATION AND VALIDATION ACTIVITIES

C.17.1 Contractor System-Level Verification Testing
The Contractor shall perform System-Level Verification Testing consisting of Break-in Testing, and Shakedown Testing (SDT), as detailed below. The Contractor shall provide 14 day advance notice and an invitation to the Government PMO to witness any Contractor System-Level testing. The Contractor shall confirm the event schedule three business days prior to event. The Contractor shall successfully complete the System-Level Verification Testing prior to pre-TRR.

C.17.1.1 Break-In Testing
The Contractor shall define break-in test procedures and conduct Break-In Testing on every deliverable vehicle and trailer to address all wear-in activities and procedures required before normal vehicle operation. Break-In Testing shall include a minimum of 500 miles per vehicle and 200 miles per trailer, over primary road surfaces IAW the JLTV Purchase Description (Attachment 1), Annex H. Break-In Testing shall confirm basic vehicle mobility-related functionality, including starting, stopping, turning, as well as providing confirmation of safe vehicle operation. Break-In Testing shall ensure that no additional wear activities are required prior to Government acceptance. Break-in activities shall cover all component, subsystem, and system level break-in such as: low speed operation, limited load operations, torque adjustments, brake burnishment, suspension calibration, ESC calibration and any other checks or actions to ensure full vehicle serviceability at vehicle delivery.

C.17.1.2 Shakedown Testing
The Contractor shall perform Shakedown Testing (SDT) to ensure workmanship and infant-mortality issues are surfaced and addressed. SDT shall be conducted following Break-In Testing on the vehicles and trailers designated for RAM testing IAW the EMD Vehicle Configuration

and Allocation Matrix (Attachment 37). SDT shall consist of 1000 miles on each of these vehicles and trailers, consisting of 500 miles over secondary surfaces and 500 miles cross-country IAW with the JLTV Purchase Description (Attachment 1), Annex H. SDT shall be conducted with vehicles configured IAW Attachment 37, and performed IAW RAM Duty Cycles (Attachment 40).

C.17.1.3 System-Level Verification Test Plan
The Contractor shall develop a test plan that addresses all system-level verification testing described in Section C.17.1. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A072).

C.17.1.4 System-Level Verification Test Findings
The Contractor shall conduct root cause analysis and define corrective actions for all deficiencies (e.g. build issues, quality discrepancies, hardware failures, or software failures) identified during System-Level Verification Testing, The Contractor shall record and classify each finding as informational, minor, major, or critical (as defined in AR 73-1), and record the failure level IAW the Failure Definition and Scoring Criteria (FDSC) (Attachment 38).

During System-Level Verification Testing, the Contractor shall conduct weekly meetings with the Government to review any major or critical level test deficiencies. The Contractor shall determine and execute applicable corrective actions, initiating their appropriate change management processes (e.g. engineering, material, manufacturing) to implement and validate the corrective action(s) and update FMEAs as required.

C.17.1.5 System-Level Verification Test Refurbishment
At the conclusion of the System-Level Verification Testing but prior to Government Acceptance, the Contractor shall inspect and refurbish all deliverable vehicles and trailers. The refurbish process shall consist of the following:

(a) The Contractor shall replace all Petroleum, Oil, and Lubricants (POL), all filters, and any other wear component with less than 50% life remaining.
(b) The Contractor shall replace all tires on all RAM vehicles, regardless of remaining tire life.
(c) The Contractor shall make all changes, modifications, and repairs to the JLTV test assets necessary to correct deficiencies identified during testing. Deficiencies include those described in Section C.17.1.4, plus any others identified and desired to be fixed by the Contractor.
(d) The Contractor shall repair and repaint major scratches, scrapes, or dents (of sufficient severity to cause operational issues).
(e) Any desired exceptions to a. - d. above shall be discussed with the Government on a case by case basis.

The Contractor shall make this information available for review by the Government during the weekly meetings that will occur throughout the System-Level Verification testing.

C.17.1.6 System-Level Verification Test Report
The Contractor shall provide a System-Level Verification Test Report. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A073)

C.17.2 Requirements Verification for Certification or Analysis Requirements
The Contractor shall provide copies of Certifications for all specified "Certification" requirements IAW Section 4 of the Purchase Description (Attachment 1). The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A074)
The Contractor shall provide a separate data submission to support Government Analysis for each specified "Analysis" requirement IAW Section 4 of the Purchase Description (Attachment 1). The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well at major reviews IAW the Government provided IMP. (CDRL Data Item A075)

C.17.3 Government Testing
Throughout Government testing, the Contractor shall be responsible to ensure JLTV test readiness and proper configuration (e.g. kit installs, parts availability, repairs, maintenance, including the availability of Petroleum, Oil, and Lubricants (POL), all filters, and any other wear components required for maintenance) for maximum operational availability throughout Government Testing. Prior to initiating steering and handling, and braking performance tests, the Contractor shall replace the tires (steering and handling) and brake pads and rotors (braking) on each vehicle involved in these performance tests (estimated 4 vehicles for each of these tests). The Contractor shall also have one extra set of wheels only (no tires) available during testing to facilitate tire change-out. This is in addition to the replacement parts needed to support the remaining tests for all test vehicles. Support of test assets is the responsibility of the Contractor. For contractor furnished material, parts, or equipment installed or incorporated on to Government owned test assets after inspection and acceptance of the test assets, (Refer to special clause H.10 of this contract).

Government Testing, referenced in the below sections, will be conducted to validate Contractor compliance in accordance with Section 4 of the Purchase Description (Attachment 1). The Government is not obligated to conduct any retest. The EMD Vehicle Configuration and Allocation Matrix (Attachment 37), contains the planned test sites, schedule, estimated test durations, and types of tests that will require Contractor support. Each planned test duration is subject to a schedule variance of 30 days. These test details are subject to change at the Government's discretion.

C.17.3.1 Contractor-Performed Government Testing
The Contractor shall perform Performance and RAM testing as specified below, IAW the test vehicle configuration and test timing described in Attachment 37. The Contractor shall perform this testing at a Government test site, or a non-Government test site audited by the Government to ensure site is appropriate for performing the Government testing outlined in this section, as outlined in the data required in the contractors test plan (CDRL A076). The contractor shall develop and provide a test plan for this testing effort. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP (CDRL Data Item A076). Criteria that the Government will be using to make a determination as to the suitability of the test equipment are as follows:

1. Cold/Hot Start, Heater Performance, Air Conditioning Performance, Defroster Performance:

a) Access to environmental test chamber with following attributes:

i) Of suitable size to accommodate JLTV vehicle of any configuration (as indicated in Attachment 37)
ii) Operational temperature range from -40F to 125F
iii) Able to operate engine in stationary vehicle throughout full operational range (rpm) within the chamber
iv) Able to start a vehicle via NATO slave receptacle
v) Data acquisition capable of capturing data necessary to verify compliance with PDFOVs indicated below in 17.3.1.1

2. Power Generation and Management:

a) Access to load banks capable of simulating power loads as required in PDFOVs indicated in 17.3.1.1
i) Separate load banks for AC and DC power capable of dissipating 10kW each
ii) Each load bank shall be capable of dynamic switching from 0% to 100% load. (in at least 5% increments)
iii) The DC load banks shall be required to interface with the vehicle using the test harnesses created for power testing. (ref. C.18.3.1)

b) Ability to simulate terrain loading as specified in PDFOV-1228 (and further detailed in Annex H of PD) via simulator (dynamometer or equivalent)

c) All Test and measuring equipment (detailed in A076) capable of:
i) Monitoring energy (current, voltage, and time) into and out of the energy storage device
ii) Measuring all the parameters necessary to conduct testing to MIL-STD-1275
iii) Supplying power to the vehicle through the NATO slave receptacle
iv) Measuring isolation between electrical buses
v) Any other special test equipment necessary to test the requirements indicated in C.17.3.1.1

3. Run Flat Testing test course layout must allow for vehicle to maintain 20mph for 18 continuous miles over a paved road (winding or non-winding). Must have capability to puncture tires IAW FINABEL 20.A.5

4. RAM Testing must have capability of conducting RAM testing IAW ITOP 2-2-506, with the exception that test course described in 4.a. is superseded by the Operation Terrain outlined in Annex H of PD. Test site must have instrumentation capability as described in paragraph 2.2 in referenced ITOP.

The Contractor selected test site shall perform test data collection. The Contractor shall provide 14 day advance notice and an invitation to the Government PMO to witness any Contractor-Performed Government Testing. The Contractor shall confirm the event schedule three business days prior to event. With the exception of the Facility Vehicle described in Section C.21, all test vehicles and GFE shall be returned to the Government at the conclusion of the Contractor-performed Government testing.

The Contractor shall develop and provide a test plan for this testing effort. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A076)

During this testing, the Contractor shall document and provide records of all test events and deficiencies IAW AR-73-1. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A077)

C.17.3.1.1 Contractor-Performed Government Performance Testing
The Contractor shall test the requirements listed below IAW Section 4 of the JLTV Purchase Description (Attachment 1).

(a) Environmental Testing (Hot and Cold)
Cold/Hot Start:
1) PDFOV-902 - Start
2) PDFOV-903 - Start
3) PDFOV-3942 - Engine Arctic Kit
4) PDFOV-3529 - Automatic Starting Aid

(b) Heater Performance:
1) PDFOV-916 - Heater
2) PDFOV-8147 - Heater

(c) Air Conditioning Performance:
1) PDFOV-928 - Air Conditioning
2) PDFOV-6987 - Air Conditioning

(d) Defroster Performance:
1) PDFOV-924 - Defroster

(e) Runflat Testing
1) PDFOV-1142 - Run-Flat Kit (note this testing shall be performed without trailer)
2) PDFOV-6901 - Run-Flat Kit
3) PDFOV-8851 - Run-Flat Kit

(f) Power generation and Management:
1) PDFOV-2573 - General
2) PDFOV-2581 - General
3) PDFOV-2583 - General
4) PDFOV-4316 - General
5) PDFOV-4318 - General
6) PDFOV-7844 - General
7) PDFOV-7847 - Low Voltage Distribution
8) PDFOV-1224 - DC Power Source/ On-board Electrical Power Requirement
9) PDFOV-1226 - DC Power Source/ On-board Electrical Power Requirement
10) PDFOV-1228 - DC Power Source/ On-board Electrical Power Requirement
11) PDFOV-7848 - DC Power Source/ On-board Electrical Power Requirement
12) PDFOV-1253 - Depleted Energy Storage Engine Start
13) PDFOV-1255 - Depleted Energy Storage Engine Start
14) PDFOV-6872 - Energy Storage
15) PDFOV-8489 - Energy Storage
16) PDFOV-8492 - Energy Storage
17) PDFOV-8531 - Energy Storage
18) PDFOV-1261 - Energy Storage
19) PDFOV-2586 - Power Management System
20) PDFOV-2588 - Power Management System
21) PDFOV-8494 - Power Management System
22) PDFOV-7394 - Power Interface for COTS
23) PDFOV-7851 - Power Interface for COTS
24) PDFOV-8497 - Power Interface for COTS
25) PDFOV-7853 - Power Interface for COTS
26) PDFOV-2618 - Power Interface for COTS
27) PDFOV-2622 - Power Interface for COTS
28) PDFOV-2655 - NATO Slave Interface
29) PDFOV-8606 - NATO Slave Interface
30) PDFOV-7619 - NATO Slave Interface
31) PDFOV-1234 - Exportable Electric Power Kit
32) PDFOV-7616 - Exportable Electric Power Kit
33) PDFOV-1238 - Exportable Electric Power Kit
34) PDFOV-8460 - Exportable Electric Power Kit

C.17.3.1.2 Contractor-Performed Government Reliability, Availability, and Maintainability (RAM) Testing
The Contractor shall conduct three months of RAM Testing with a minimum of 4,000 miles, a goal of 8,000 miles, over the Operational Terrain IAW the JLTV Purchase Description (Attachment 1, Annex H), and IAW RAM Duty Cycles (Attachment 40).

C.17.3.2 Government-Performed Testing

C.17.3.2.1 RAM
RAM testing will be conducted at the test sites indicated in EMD Vehicle Configuration and Allocation Matrix (Attachment 37) for a planned cumulative total of 160,000 miles (20,000 miles per vehicle x 8 vehicles). Vehicles planned for RAM testing, and their planned test configurations, are also indicated in the EMD Vehicle Configuration and Allocation Matrix (Attachment 37). Course terrain profiles are in the JLTV Purchase Description (Attachment 1, Annex H). Duty cycles and payload configurations are indicated in RAM Duty Cycles (Attachment 40).

C.17.3.2.2 Performance Testing
Performance testing will be conducted on the specific test vehicles indicated in EMD Vehicle Configuration and Allocation Matrix (Attachment 37) which also details the test sites and duration.

C.17.3.2.3 RESERVED

C.17.3.2.4 Limited User Testing (LUT)
The LUT will be conducted using performance vehicles at a location determined by the Operational Test Agency (OTA), and performed within the constraints specified by the U.S. Army Evaluation Command (AEC) and USMC PEO-LS safety release processes. The duration of the LUT is defined in Attachment 37. The Contractor shall be responsible for conducting all maintenance beyond Operator/Crew during the LUT. Prior to the start of the LUT, after completion of previous (pre-LUT) testing, the Contractor shall conduct refurbishment on all LUT vehicles to the same level specified in C.17.1.5.

C.17.3.3 Corrective Action Period (CAP)
CAPs are pre-defined blocks of time during Government testing to allow for Contractor implementation of design updates (e.g. engineering changes, part replacements, software updates) across RAM test vehicles. The Contractor shall implement these updates to Performance test vehicles as soon as possible with minimal test schedule disruption. Performance test vehicles will not have specifically defined CAPs. The Contractor may utilize CAPs to implement design updates previously reviewed with the Corrective Action Review Team (CART) as described in Section C.19. CAP duration and timing are defined in the CAP Execution Plan (Attachment 42). Each update may only be implemented if all RAM vehicles and trailers can be completed during the allotted CAP period. Corrective actions taken by the Contractor are at the Contractors discretion and the Contractor should consider, prior to implementation, the impact the corrective action may have on prior testing.

C.17.4 Contractor Support Facilities at Government Test Sites
The Government will provide the Contractor office space at:

- Yuma Test Center, Yuma, AZ, USA;
- Aberdeen Test Center, Aberdeen, MD, USA;
- One or more of the following locations to support C4ISR interoperability testing: Electronic Proving Grounds (EPG) Fort Huachuca, Arizona; White Sands Missile Range (WSMR), New Mexico; Yuma Test Center (YTC), Yuma Proving Grounds (YPG), Arizona);

The Government will provide these office facilities 14 days prior to vehicle delivery through the end of testing at each of these test locations.

Office space will be furnished with two desks, two phone lines, and storage area for CONEX boxes as required. If space for additional CONEX containers is required, beyond the number initially provided, or for additional test sites not indicated in this section (C.17.4), the Contractor shall negotiate directly with Test Centers.

C.17.5 Contractor Support for Government Testing

C.17.5.1 Training
The Contractor shall provide a single point of contact for all training requirements. The Contractor shall develop a training package that addresses the requirements of Section C.17.5.1.1 - 17.5.1.3.3 below. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A078)

C.17.5.1.1 Training Program Structure Document (Curriculum Outline of Instruction)
As part of the Training Package (reference CDRL Data Item A078), the Contractor shall include the Training Program Structure content (Curriculum Outline of Instruction (COI)) to address the key training events outlined in Section C.17.5.1.4. The COI shall identify the training schedule of events and include a breakdown of individual topics showing the purpose, learning objectives, time allotted for each session, academic hours by type of instruction, instructional materials required, facility and instructor requirements, media and training support equipment, reference materials, type of instruction (practical exercise, demonstration, lecture), and tools and Test, Measurement and Diagnostic Equipment (TMDE) required for each period of instruction.

C.17.5.1.2 Training Test Package
As part of the Training Package (reference CDRL Data Item A078), the Contractor shall include the training test documentation that includes written and performance tests for the examination of an individual's knowledge, skills, attitudes, and achievement of terminal.

Written test items shall consist of multiple choice, matching, and fill-in-the-blank questions. The test questions shall be written to evaluate the student's comprehension of knowledge-based learning objectives, and the Test Packages shall include a minimum of three test questions for each learning objective. The Contractor developed performance tests shall evaluate the student's ability to perform specific operator/crew tasks and be presented in checklist format.

C.17.5.1.3 Training Support Packages (TSPs)
As part of the Training Package (reference CDRL Data Item A078), the Contractor shall include all training materials and ensure Training Support Packages support all phases of Operator/Crew training for JLTV. The Contractor shall use the following as guidance: MIL-HDBK-29612-2, Instructional Systems Development/Systems Approach to Training and Education and TRADOC Regulation 350-70 Systems Approach to Training (SAT) Management, Processes, and Products. The Contractor shall emphasize hands-on instruction and use of the actual equipment for the conduct of training and to assess student performance. The Contractor shall develop one comprehensive TSP for Operator/Crew training to support the conduct of all training events. The Operator/Crew training and related TSP shall also address the commander's roles and responsibilities. The Contractor shall ensure each TSP consists of multiple lessons plans with supporting Trainee Guides and Visual Aids (described in 17.5.1.3.2 and 17.5.1.3.3 below) as determined by the selection of tasks to be trained and as identified in the Curriculum Outline of Instruction (reference C.17.5.1.1). The Contractor shall utilize the comprehensive Operator/Crew TSP and tailor each to support the training events.

C.17.5.1.3.1 Lesson Plans
The Contractor shall develop and provide Lesson Plans to trainees during training events. Lesson plans shall be sequenced and contain information relevant to each period of instruction, including the following:

(a) Administrative data, (tasks to be trained, academic hours, methods/media, student-instructor ratios, references and resources required),
(b) Training objectives,
(c) Instructions for the safe delivery of training,
(d) Media cues,
(e) Application of training visual aids,
(f) Conduct of demonstration
(g) Practical application exercises.

C.17.5.1.3.2 Trainee Guides
The Contractor shall develop and provide Trainee Guides to trainees during training events. The Trainee Guides shall contain information that enhances the student's mastery of tasks, and shall provide information and summaries relevant to each period of instruction to include training objectives and technical references.

C.17.5.1.3.3 Visual Aids
The Contractor shall develop visual aids, such as slides and graphic media, to be used by instructors in the conduct of training and that enhance the transfer of knowledge to the students and their mastery of tasks. Visual aids shall provide information relevant to each period of instruction to include training objectives and technical references.

C.17.5.1.4 Conduct of Training
The Contractor shall conduct training courses by employing standard techniques of military instruction. The Contractor shall use TRADOC Regulation 350-70 Systems Approach to Training (SAT) Management, Processes, and Products as a guide. Training courses shall employ various instructional methods (e.g. lectures, demonstrations, and practical applications). Each course shall emphasize practical application hands-on training. The student-to-instructor ratio shall not exceed 25:1 for lectures with a maximum of 50 students for each period of instruction, and shall not exceed 5:1 for hands-on training, practical exercises, and practical application. All training courses shall make maximum usage of the Technical Manuals (TMs) and actual equipment. Training related to operation of integrated GFE shall focus only on aspects of the integration of the equipment into the platform and not on the operation and maintenance of that GFE. Government personnel selected to receive training will have the prerequisite knowledge and skills necessary to operate GFE.

Training shall be conducted on weekdays (Monday through Friday), unless otherwise required and mutually agreed between the Government and the Contractor. Individual course length shall be determined by the number and complexity of the tasks to be trained and shall not to exceed 40 hours for Operator/Crew training unless otherwise specified in the test event in this section. The length of each training day shall not exceed eight hours of instruction. The Contractor shall coordinate access with the test sites to maximize the available time before start of testing for the conduct of training. For example, the Contractor is allowed to conduct the classroom portion of the training prior to the actual delivery of the vehicles.

The Government will provide classroom space, training equipment, computing resources, required common tools, and TMDE.

C.17.5.1.4.1 Tester Training - Operator/Crew
The Contractor shall conduct Operator/Crew Tester Training courses in support of testing at the locations indicated on test schedule contained in the EMD Vehicle Configuration and Allocation Matrix (Attachment 37). The Contractor shall only conduct one training event at each of the test sites indicated as Training required in Attachment 37 (with the exception of LUT training see 17.5.1.4.2 below). The course shall include tasks associated with proficient and safe operation of the JLTV during test and evaluation. The Government will confirm training dates at least 30 days in advance.

C.17.5.1.4.2 Limited User Testing (LUT) - Operator/Crew
The Contractor shall conduct Operator/Crew training courses in support of Limited User Testing (LUT), at the LUT location indicated in the EMD Vehicle Configuration and Allocation Matrix (Attachment 37). These training sessions are anticipated to be 40 hours (5 days) in duration, and will occur a the LUT site in four distinct, non-concurrent sessions, with each session being presented to a different user group. The Government will notify the Contractor at least 45 days in advance for training.

LUT Operator/Crew training shall cover the JLTV system's capabilities, functions, limitations, interfaces, and operation of the JLTV in a tactical environment. Training shall also cover the daily operator/crew level preventive maintenance for the JLTV system and components per the maintenance concepts for both services (Attachment 34, ILS Definitions). Upon completion, the hands-on instruction shall enable the student to:

(a) operate the system, subsystem, and equipment controls
(b) demonstrate knowledge of general equipment functions and operations
(c) perform system checks and verification procedures
(d) operate the integrated GFE interfaces

The course shall ensure the students receive the necessary hands-on instruction and driving time needed to enable proficient and safe operation of the JLTV during test and evaluation.

C.17.5.2 Field Service Representative (FSR)
The Contractor shall provide dedicated FSR support at test sites concurrently where testing is being performed, for the purpose of maintaining, repairing test assets, and reconfiguring test assets with GFE/CFE (e.g. radios, displays, B-Kit armor, or GPK) throughout the Government EMD test period whenever Government EMD testing is being performed. Refer to the EMD Vehicle Configuration and Allocation Matrix (Attachment 37) for test duration, location and types. The Contractor shall also provide dedicated FSR support for the ballistic testing of armor structures outlined in C.18.2.2. Ballistic testing of armor structures will be accomplished at the delivery location in Section F, and is estimated to be six months in duration immediately following delivery of these structures. FSR support is not required for coupon testing. FSRs shall be onsite at test site when vehicles arrive to address discrepancies as well as reconfigure the vehicle GFE/CFE for weight evaluations. For test sites working multiple shifts, dedicated FSR support shall be provided for each shift. At the completion of testing, the FSRs shall be responsible for removal of GFE from the vehicles and coordinating storage with the test sites.

Each vehicle is scheduled to undergo two ballistic or blast events, and the Contractor shall provide test asset repair support between these events. Between events, the Contractor shall repair these vehicles to a condition that allows for realistic assessment of accelerative load inputs to crew during blast events. In addition, vehicle armor shall be replaced or repaired to such an extent that no damage remains in areas on and around ballistic threat area for any upcoming events.

Maintenance shall be performed within the test site operating hours as defined below. However, when critical safety or catastrophic failure occurs, the Contractor can request from the Government additional test site facilities and personnel (data collectors and drivers at a minimum) to support additional hours of maintenance outside the base work day in order to facilitate more rapid repairs. All requests must be made as soon as practical to the PMO, but due to time and resource constraints, may not always be able to be granted by the Government.

The FSR(s) shall be knowledgeable in the fabrication, assembly, and operation of the vehicle in order to minimize down time. FSR(s) shall have sufficient knowledge to provide technical support for the following:

- Vehicle Displays,
- Computers,
- C4ISR,
- Electrical Systems,
- Mechanical Systems,
- Ballistic and Blast testing.

Government Performance Testing is planned for one shift of 10 hours per day, for up to six days per week. Government RAM Testing is planned for two shifts of 10 hours each per day, for up to six days per week.

C.17.5.3 System Support Management Strategy
The Contractor shall develop and conduct a system support management strategy. The Contractor's strategy shall minimize test down time. The strategy shall include a plan for providing parts to resolve issues and failures with test assets and ensuring assets can maintain the test schedule at each test location. The strategy shall identify special test equipment, tools, special lubricants required for testing and describe current calibration of required support equipment. All spare or replacement parts shall be marked or tagged with the contractors part number. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.17.5.3.1 System Support List (SSL)

The Contractor shall provide a System Support List (SSL). The SSL shall be an itemized listing of the resources used for test site support. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A081)

C.17.5.3.2 Spare Parts Storage
Where necessary, the Contractor shall provide the CONEX container(s) for storage of spare parts at test sites.

C.17.6 Test Design Data for Government Testing

C.17.6.1 Wiring Harness Design for Power Testing
The contractor shall provide wiring harness designs for all vehicle configurations that allows the Government to connect load banks to all locations in the vehicle where power can be drawn from the 28VDC On-board Vehicle Power (OBVP) system. The harness shall be capable of carrying the maximum current each attachment point is designed to provide. If the sum of the power that can be drawn from the connection points (e.g. outlets, terminal blocks) required by the JLTV Purchase Description (Attachment 1) is less than the threshold requirement in PDFOV-1224, the Contractor shall specify additional connection point(s) and supply an additional test harness (with each vehicle) designed to draw the remaining load in order to achieve the full power threshold. No later than 90 days prior to pre-TRR, the Government will provide the required length and harness interfaces necessary to connect to the Government load banks for testing. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A085)

C.17.6.2 Outrigger Designs for Performance Testing
The Contractor shall develop and provide outrigger designs and interfaces for all vehicle configurations. The Contractor shall collaborate with the JLTV Program Office concerning the requirements and design of each outrigger set. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A086)

C.17.7 Reserved

C.17.8 NATO Engine Testing - 400 Hour
The Government will conduct a modified 400 hour NATO Engine Test (reference Allied Engineering Publication (AEP)-5 NATO Standard Engine Laboratory Test, Part II for Diesel and Spark Ignition Engines, May 1988) with a Contractor engine (ref. Section C.18.3.3) operating on JP-8 fuel and in desert like operating conditions (DOC). DOC is defined as 120 degree F ambient, a fuel supply temperature determined by the Government based on the engine's fuel system and any vehicle level fuel cooling, and a Charge Air Cooler (CAC) outlet temperature determined by the Government based on the vehicle installation capacity of the CAC.

C.17.8.1 Engine Test Support

C.17.8.1.1 Engine Test Support Package (TSP) List
The Contractor shall provide an Engine TSP List for the supplied engine. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A101)

C.17.8.1.2 Engine Test Support FSR
The Contractor shall provide FSR test support in Warren, MI (seven days a week, two 8-hour shifts) for the 400 hour NATO Engine Test. Testing will begin upon delivery of the engine, and is expected to continue for four months. Engine TSP Items used shall be replenished by the Contractor within 48 hours of usage.

C.17.8.1.3 Tools and Test Equipment
The Contractor test support personnel shall utilize existing Government tools and test equipment to the maximum extent feasible throughout the NATO Engine Test.

C.17.8.1.4 Detailed Engine Information Package
The Contractor shall provide a Detailed Engine Information Package. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A034)

C.18 HARDWARE DELIVERABLE REQUIREMENTS
The Contractor shall meet all hardware deliverable requirements identified in Section E.1 prior to Government acceptance of hardware to enter Government test. The Contractor shall ensure all non-vehicle hardware deliverables (Sections C.18.2 C.18.3.3) correspond with the design of the delivered JLTV.

C.18.1 JLTV Test Assets

C.18.1.1 Vehicle
The Contractor shall fabricate, test, and deliver all JLTV configurations and quantities identified in the EMD Vehicle Configuration and

Allocation Matrix (Attachment 37). Vehicles shall be delivered in Left Hand Drive operation. Following vehicle delivery the Contractor shall reconfigure three Government selected vehicles to curb weight. The Contractor is responsible for ensuring vehicles are configured in the same manner as when previously weighed at Contractor site for curb weight verification.

C.18.1.2 Reserved

C.18.1.3 Trailer
The Contractor shall fabricate, test, and deliver the JLTV-T in the quantities defined in the Vehicle Configuration and Allocation Matrix, (Attachment 37).

C.18.2 Armor Test Assets

C.18.2.1 Armor Coupon Sets
The Contractor shall deliver to the Government an armor coupon set, in the quantities indicated in Section F.2.2, for each transparent, opaque, and Explosively Formed Penetrator (EFP) armor, recipe required to satisfy the protection levels defined in the JLTV Purchase Description (Attachment 1). Each recipe constitutes a unique set, such as different frontal, flank, rear, underbody, and roof armor recipes, according to the Contractor's design. The Contractor shall include a diagram of the vehicle with the coupon delivery that identifies the correlating location of each armor recipe. The Contractor shall label each coupon with the Contractor's name, vehicle configuration, location of solution on the vehicle (e.g. frontal, flank, underbody), and the attack/strike side.

C.18.2.1.1 Transparent Armor (TA)
The Contractor shall provide transparent armor coupons in the quantities indicated in Section F.2.2. Each TA coupon shall be 400mm by 400mm in size, with a +/- 5mm tolerance on each linear dimension.

If the actual component design is smaller than the prescribed minimum dimensions, coupons shall be delivered in the actual dimensions and include the designed window frame.

C.18.2.1.2 Opaque Armor (OA)
The Contractor shall deliver the OA coupons in the quantities indicated in Section F.2.2 and in the sizes specified below, depending on the type of material (e.g. metallic, ceramic, composite) and level of protection (e.g. B-kit, A-structure, EFP).

The Contractor shall deliver Protection Level 1 and Protection Level 2 B-kit solutions bolted to the appropriate A structure coupons near each corner. Each bolt center shall be located at least 1-1/4" from each edge (at corner) in order to allow testers adequate space to affix clamps to secure the target coupon to the test fixture. The Contractor shall provide torque specification for these bolts with the coupon delivery, in order to allow the testers to disassemble and reassemble the coupons.

C.18.2.1.2.1 Opaque Armor - Metallic Armor Solutions
For opaque armor solutions which contain only metallic layers, the Contractor shall deliver coupons which are 610mm by 610mm in size, with a +/- 5mm tolerance on each linear dimension.

C.18.2.1.2.2 Opaque Armor - Ceramic/Composite Armor Solutions
The Contractor shall deliver coupons for recipes containing ceramic and composite materials in the following sizes, with tolerances of +/- 5mm for each linear dimension:

(a) For armor solution which contain ceramics but no composite layers, the coupons shall be 610mm by 610mm in size.
(b) For armor solutions that have a composite backing, the composite backing shall be 610mm by 610mm in size, and centered on a 762mm by 762mm coupon.
(c) For armor where multiple layers of composites are used, all composite layers which follow the last metallic element in the coupon shall be 610mm by 610mm and all elements prior to this shall be 762mm by 762mm in size.

C.18.2.1.3 Explosively Formed Penetrator (EFP) Coupons
If the Contractor proposes a non-Government provided EFP protection kit solution, the Contractor shall provide EFP protection kit solutions in the quantities indicated in Section F.2.2.5 The EFP protection kit solutions shall be mounted on a large enough sample of the B-kit door in order to facilitate coupon testing. Each EFP protection kit coupon shall be no smaller than 460mm by 460mm in size. All required mounting hardware shall be provided by the Contractor. EFP coupons do not need to be assembled and bolted together, but they shall be delivered with the armor layers in the proper order (e.g. taped, bonded). If the coupons are bolted, the Government testers reserve the right to remove the bolts prior to testing (otherwise, twisted/bent bolts may make it difficult to disassemble targets after shots to assess damage).

C.18.2.2 Ballistic Armor Structures
The Contractor shall provide the ballistic armor structures in the quantities indicated in Section F.2.3 and described in the following paragraphs.

C.18.2.2.1 A-Structure Ballistic Cab
The ballistic cab in the A-structure armor level of protection shall be configured without the wheels, suspension, drivetrain, or any

interior components unless they are designed to provide ballistic protection (e.g. spall protection partitions or curtains).

The Contractor shall also deliver a test stand which attaches to the cab and supports it so that the bottom is at the Contractor designed operational ride height but does not block access to the cab sides or underbody. The four legs of the test stand shall be located where the vehicle tires would normally be.

C.18.2.2.2 Armored Rolling Chassis
The armored rolling chassis' shall include all occupant seats and restraints, but shall not include any other interior components unless they are designed to provide ballistic protection (e.g. spall protection partitions or curtains). Each armored rolling chassis shall incorporate wheels, suspensions, and the necessary drivetrain components to allow the chassis to roll (e.g. pushed or pulled), and shall be configured to the Contractor designed operational ride height. Each structure shall also include any components below the cab (e.g. driveshaft, transfer case, transmission), that would be located under the crew compartment floor or otherwise within the footprint of the crew space. The armored rolling chassis shall be configured with GPKs as follows: MCTAGs on rolling chassis in B1-kit configuration, OPGK 2.0 and Turret Ring and Hatch on rolling chassis in B2-kit configuration (this MCTAGS, OGPK 2.0 and Turret Ring/Hatch are accounted for within the quantities to be provided to the contractor in Attachment 36.) This MCTAGS and OGPK 2.0 (along with Turret Ring and Hatch for corresponding OGPK 2.0) will be returned to the contractor to be installed onto the vehicles prior to vehicle acceptance IAW Attachment 37. The Contractor is not required to use fully functional components as long as the proper masses and materials are in the appropriate locations defined by the Contractor design. The Contractor shall add surrogate weights to each armored rolling chassis to represent the weight of the engine and other missing components, so that each deliverable has the correct system Gross Vehicle Weight (GVW) and Center of Gravity (CG) location. The Contractor shall not place any artificial weights on the floor of the cab.

C.18.3 Additional Test Assets

C.18.3.1 Harnesses for Power Management Testing
The Contractor shall deliver a power generation test harness with each delivered vehicle that allows the Government to connect load banks to all locations in the vehicle where power can be drawn from the 28VDC On-board Vehicle Power (OBVP) system (reference section C.17.6.1).

C.18.3.2 Additional Energy Storage Devices for Ballistics and Abuse Testing
If the Contractor's design integrates anything other than lead acid type energy storage devices for starting, lighting, and ignition (SLI) only, the Contractor shall deliver extra JLTV energy storage devices as specified in Section F.2.4.3, to support ballistic, destructive, and cold requirements testing.

C.18.3.3 NATO 400 Hour Test Engine Delivery
The Contractor shall deliver one JLTV engine as specified in Section F.2.4.1

The following items shall be included with the engine:

(a) One Engine Control Unit (ECU) and wiring set (If the engine uses an ECU); all wiring harnesses and labeled connections from the ECU to interface with the Government data acquisition and control system. All interface leads must be a minimum of 25 feet long.
(b) All filtration systems (Air, Oil, Fuel, Coolant (if applicable)).
(c) All maintenance items (belts, filters) required for 500 hours of operation excluding Petroleum, Oil, and Lubricant (POL).
(d) One water heat exchanger (if the engine uses an air-to-air charge air cooler).
(e) One exhaust outlet flange.
(f) Two spare exhaust manifold gaskets sets.
(g) One dyno engine vibration mounts.
(h) One engine flywheel with ring feeder and starter, dyno shaft and damping coupling.
(i) One Engine Test Support Package as specified in C.17.8.1.1.

C.19 TEST DEFICIENCIES/FAILURES
This section outlines the process and procedures to address test deficiencies and failures identified during Government testing (reference Section C.17.3).

19.1 VISION Digital Library System (VDLS) Utilization
The Contractor shall be responsible for accessing VDLS (https://vdls.atc.army.mil) for all Test Incident Reports (TIRs) released during Government-required testing (reference CDRL Data Item A087 FACAR). The Contractor shall access Secret VDLS for the handling of classified TIRs. Receipt of a TIR is defined as the TIR Release Date.

C.19.2 Failure Analysis & Corrective Actions
The Contractor shall implement a closed-loop failure reporting system (Failure Reporting, Analysis, and Corrective Action System (FRACAS)) to track test deficiencies identified during Government testing. The Contractor shall adhere to Configuration Management Section C.11 for any changes to vehicle configuration as a result of any corrective actions. Corrective actions taken by the Contractor are at the Contractors discretion and the Contractor should consider, prior to implementation, the impact the corrective

action may have on prior testing.

The Contractor shall provide Failure Analysis and Corrective Action reports (FACARs) in response to all Critical and Major TIRs. The Contractor shall provide FACARs to Minor and Informational TIRs at the request of the Government. FACARs are not required for TIRs that are generated as a result of the following: crew, personnel, or Government Furnished Equipment (GFE - hardware and software) not attributed to the vehicle.

The Contractor shall analyze and classify each FACAR with one of the failure mode identification codes (A, BC, BD) defined in FDSC (Attachment 38). The Contractor shall conduct root cause analysis and corrective action for all FACARs classified as BC and BD. The Contractor shall utilize root cause analysis technical tools that are appropriate to the issue (e.g. utilize finite element analysis for a structural failure), such as:

(a) Material Analysis
(b) Finite Element Analysis (FEA)
(c) Physics of Failure (PoF)
(d) Dynamic and Static design modeling and simulation
(e) Environmental Stress Screening (ESS)
(f) Thermal and Vibration Analysis
(g) Regression Testing

The Contractor shall analyze and assign a Fix Effectiveness Factor (FEF) to each BC and BD classified FACAR to assess the redesign impact. The FEF analysis shall include a comparison of the allocated reliability value to the predicted reliability value and to the demonstrated reliability value. The FACAR shall address root cause determination, corrective action development and implementation, process control improvements, and test results. The FACAR shall also include schedule of repair, time to repair, and availability of parts.

For all Critical and Major TIRs, FACARs shall include subsystem testing as substantiating evidence.

For all corrective actions that include any software modification(s), regression testing shall be used to ensure that no functional impacts have occurred beyond those that were intended to be addressed by the software modification. The results of the regression testing shall be included in the FACAR. Similarly, during the course of conducting root cause analysis on test deficiencies, the investigation shall explore the possibility of the incident having occurred as an unwanted result of a previously-implemented software modification.

For corrective actions that involve non-software modifications, the concepts of regression testing shall also be applied. That is, testing shall be conducted to verify that the corrective action did not have any functional impact beyond those intended.

All FACARs shall include a functional block diagram.

The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A087)

C.19.3 TIR Response Time
The Contractor shall respond to TIRs that require a FACAR within the following time frames below.

C.19.3.1 Critical TIR
The Contractor shall provide an update via telephone to the Government PMO within 24 hours of Government notification of a Critical TIR. The Initial FACAR shall be submitted within three calendar days of TIR release date or TIR revision date if revision impacts TIR incident classification. Final FACAR submitted within seven calendar days of TIR Release Date, unless an extension is requested by the Contractor in writing, and approved by the Government.

C.19.3.2 Major TIR
For Major TIRs, the Contractor shall submit the initial FACAR to the Government within seven calendar days of TIR release date or TIR revision date if revision impacts TIR incident classification. The Contractor shall submit the final FACAR within 14 calendar days of TIR release date, unless an extension is requested by the Contractor in writing, and approved by the Government.

C.19.3.3 Minor/Informational TIRs
If requested by the Government, the Contractor shall submit a FACAR within 24 calendar days of date of request.

C.19.4 RESERVED

C.19.5 Identification of Failed Parts
The Contractor shall mark, tag, and control each failed part with the contractors part number, and its respective Test Incident Report (TIR) number.

The Contractor shall ensure that all identification markings and tagging placed on a failed test exhibit are legible.

The Contractor shall handle each failed parts supporting the Failure Analysis and Corrective Action Report (FACAR) in a manner that does not damage the failed test exhibit.

The Contractor shall be fully responsible for the storage of each failed parts (no matter where the storage facility is located) and the item(s) shall remain stored pending disposition of the failure analysis and Government notification and approval.

19.6 Scoring Conferences, Assessment Conferences, & CART Meetings

C.19.6.1 Scoring Conferences
The Contractor shall support monthly Government Scoring Conference meetings by presenting information, evidence, or opinions that the Government will consider when scoring test incidents. Each Scoring Conference is anticipated to be two days in duration. The Contractor shall document information, evidence, or opinions and present to Government. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.19.6.2 Assessment Conferences
The Contractor shall support all Government Assessment Conferences, which will occur during Government testing. The Government will provide Contractor notification of the Assessment Conference at least 10 business days prior to the event. For planning purposes, it is expected that three Assessment Conferences will be held, for duration of two days each. Prior to each Assessment Conference, the Contractor shall prepare and provide an Assessment Conference Package. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A089)

C.19.6.3 Corrective Action Review Team (CART) Meetings
The Contractor shall support the Corrective Action Review Team (CART) which is the Government group responsible for reviewing the Contractor's FACARs, including root cause analysis and proposed fixes. The CART may provide feedback to the Contractor regarding their root cause analysis methodology. The Contractor has final decision on design changes implemented on test vehicles. Any design modifications that are implemented, must be implemented across all JLTV test assets, unless specifically waived by the Government. The JLTV PMO will chair the CART meetings. The CART meetings will be weekly, one day events. The JLTV PMO will provide official notification on all CART Meeting schedules at the inception of each test project. The Contractor's corrective action team membership shall directly correlate with the Government CART members, as applicable, to reflect all relevant CART functions (e.g. Quality, RAM, Logistics, Maintenance, Systems Engineering, Safety, Transportability and MANPRINT/Human Factors.)

C.19.6.4 CART Meeting Agenda and Minutes Preparation
CART meeting agendas will be established by the Government. Meeting agendas will include a list of all TIRs numbers to be discussed by category. The Contractor shall provide official CART meeting minutes (reference C.3.1.2, CDRL Data Item A002).

C.20 Reserved

C.21 FACILITY VEHICLE
The Contractor shall maintain one JLTV-GP vehicle (IAW with Attachment 37) as GFE, which shall be subject to FAR 52.245-1. Following Government acceptance of this vehicle, the vehicle will initially undergo Contractor Performed Government Testing (reference Section C.17). Following Contractor Performed Government Testing, this vehicle will be under the Contractor's control and serve the following functions:

(a) Validation of proposed vehicle modifications (including Engineering Changes), and corrective actions. This vehicle shall include GFE (reference Section C.16).

(b) When not being used for validation of Engineering Changes, this vehicle shall serve as the configuration baseline for JLTV platform (reference Section C.11). This vehicle shall contain the latest engineering changes and will function as the master baseline for vehicle configuration.

(c) The Facility Vehicle shall be maintained throughout the contract period of performance, according to Contractors maintenance procedures that are in place for all EMD test vehicles. The Contractor shall prepare and maintain a vehicle log that stays with the vehicle at all times, is made available to Government for review as requested, is included with vehicle delivery to the Government, and contains the following information:

(i) All regular scheduled maintenance in accordance with the OEMs maintenance schedule (hours and miles)

(ii) All unscheduled service
(iii) Date, hours, and all mileage (beginning and end of each event) of all vehicle operation (static and dynamic)
(iv) Name or initials of operator or maintainer
(v) Type of use (parts removed/changed, configuration revision, general maintenance, etc.)

The Government reserves the right to utilize the Facility Vehicle as a test asset. The Contractor shall be responsible for preparing the vehicle for shipment to the Government.

C.22 MANUFACTURING AND PRODUCTION READINESS

C.22.1 Manufacturing Development Strategy
The Contractor shall create and utilize a Manufacturing Development Strategy. The strategy shall include: manufacturing processes and procedures used under this contract, changes to the manufacturing processes and procedures required to conduct Low Rate Initial Production (LRIP), and changes to the manufacturing processes and procedures required to conduct Full Rate Production (FRP). The Strategy shall include what evidence the contractor intends to provide to show the path to Manufacturing Readiness Level (MRL) 8 at PRR and MRL 9 following LRIP. The Contractor shall utilize the criteria and processes defined in MIL-HDBK-896 Manufacturing and Quality Program and DoD MRL Deskbook (latest editions) as guides for this effort, including definitions and measurement of MRLs.

The information used to develop this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A093)

C.22.2 Design for Manufacturability (DFM)
The Contractor shall perform assessments of DFM that include Digital Mockup Assembly (DMA) reviews, feasibility studies, and predicted assembly times for the Key Subsystems (per Attachment 9). The Contractor shall show how the JLTV has been designed for full rate production manufacturability per the Manufacturing Development Strategy (reference CDRL Data Item A093) by using methods to simulate full rate production manufacturing processes (e.g. DMA methods, including clearances and tolerances for tooling, personnel, and part installation).

This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.22.3 Manufacturing Environment
The Contractor shall manufacture the JLTV for this contract in an environment that is as representative of a production process as is practical, including tooling, facilities, documentation, and personnel. The Contractor shall monitor MRLs and provide status to the Government at all program reviews IAW the IMP for in-house and supplier MRLs, and shall re-assess MRLs in areas for which design, process, source of supply, or facility location changes have occurred that could impact the manufacturing readiness.

C.22.4 Process Failure Modes and Effects Analysis (PFMEA)
The Contractor and their suppliers shall use the Automotive Industry Action Group (AIAG) FMEA manual (latest edition) as a guide to create all PFMEAs. The PFMEA's shall be traceable to process changes and shall be included in the configuration management change process. This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

The Contractor shall provide all Key Subsystem (reference Attachment 9) PFMEA's necessary to build the JLTV. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A095).

C.22.5 Control Plans
The Contractor shall develop and implement Control Plans for each manufacturing process IAW latest AIAG Advanced Product Quality Planning and Control Plan (APQP) format and content. The Contractor shall document any temporary or interim off-standard operation (those that will not be used in LRIP). The Contractor shall maintain and update the Control Plan to reflect all changes to the manufacturing process through the execution of this contract.

This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.22.6 Manufacturing Consistency
The Contractor shall ensure that parts are manufactured in a consistent and repeatable manner, by using calibrated gages and Measurement System Analyses (MSA) where appropriate. The Contractor shall use the AIAG MSA manual and the requirements of TS-16949, 7.6.1, and 7.6.2 as guides for Gage Repeatability & Reproducibility (R&R). This information shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.23 QUALITY ASSURANCE

C.23.1 Quality Management System
The Contractor shall develop, implement, and maintain a Quality Management System (QMS) for all supplies and services to be provided under this contract. The quality system shall, as a minimum, be third party certified to ISO 9001:2008. ISO/TS 16949:2009 compliance is required for the ISO/TS 16949:2009 clauses specifically identified in the Scope of Work section C.5.16 and C.22.6. The Contractors Quality System requirements shall apply at engineering design, vehicle in-process and final assembly locations. The quality system shall address all software and hardware contractual requirements. The quality system and manual shall follow the guidelines within ISO 9004:2009 (reference CDRL A093).

C.23.2 Software Quality Assurance Plan
The Contactor shall develop and deliver a JLTV Software Quality Assurance Plan. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A099).

C.23.3 Supplier Quality Assurance Program
The Contractor shall develop and maintain a Supplier Quality Assurance (SQA) program that will be used to guide all Contractor supplier interaction. The Contractors supplier quality assurance program shall be compliant with ISO/TS 16949:2009 and shall ensure that each supplier has a documented quality program that directs all quality activities, and includes the process for regular monitoring of supplier quality and delivery performance. The Contractor's SQA program shall address, at a minimum, the items indicated in CDRL Data Item A100. The Contractor shall deliver a Supplier Quality Assurance Plan, including provisions for periodic audits. An existing Supplier Quality Assurance manual, that addresses all requirements of Section C.23.3 and this CDRL, is acceptable. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A100).

C.23.4 GOVERNMENT QUALITY AUDITS
The Government will monitor the contractor's performance using QA procedures established for the contract in Section C.23). This may involve quality audits (process audits, manufacturing audits, product audits) as required. The Contractor shall support the Government in performance of such audits (e.g. provision of required documentation, product, personnel, or other resources to conduct the audits). Government audits of sub-suppliers, if required, will be conducted with the prime Contractor.

C.23.4.1 Manufacturing Process Audits
Manufacturing Process Audits manufacturing process audits will consist of review of Contractor manufacturing processes, including process layout, documentation, material and information flow, tooling, and any other aspects of the process that may affect quality of the finished product.

C.23.4.2 Quality Management System Audits
Quality Management System (QMS) Audits QMS audits will consist of review of Contractor processes as contained in the Contractors QMS system, including those items outlined in CDRL A093, and CDRL A100. Such audits may involve accompanying the Contractor to a sub-supplier location to conduct audit activities.

C.24 SECURITY

C.24.1 Requirements
The Contractor shall comply with the security requirements imparted by the DD Form 254 (Attachment 44), NIST Special Publication 800-53 and DODI 8500.2, the National Industrial Security Program Operating Manual (NISPOM) and AR 25-2.
http://www.dss.mil/isp/fac_clear/download_nispom.html.

C.24.1.1 Information Assurance Program Management
The Contractor shall maintain an Information Assurance (IA) program that provides sufficient safeguards to ensure that all sensitive information, technical controlled unclassified information (CUI) or Critical Program Information (CPI) in the possession of the contractor is protected from unauthorized access and release. The Contractor's IA program must be robust enough to protect information using the DoDI 8500.2 confidentiality Level IA controls for sensitive information and ensure access to Army information is based on need-to-know. This information, including the Contractors Information Assurance program plans, shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP.

C.24.2 Program Protection Implementation Plan (PPIP)
The Contractor shall develop, implement, maintain, and provide a Program Protection Implementation Plan (PPIP) that is compliant with the security requirements imparted by the DD Form 254 (Attachment 44) and the NISPOM. The PPIP shall include demonstration of visibility into supply chain and Software Assurance for critical components. The Government Program Protection Plan will be provided at the SOWM. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A096).

C.24.2.1 Program Protection Working Group (PPWG)/Critical Program Information Assessment (CPIA)

The Contractor shall host a Program Protection Working Group (PPWG) within six months after award and a second PPWG within 12 months after award. Each PPWG will be chaired by the Government security manager and co-chaired by the Contractor security manager. The co-chair shall develop the agenda. The agenda shall include a CPIA that will identify Critical Program Information or Critical Technology (defined by DoDI 5200.39, July 16, 2008 Incl Change 1 Dec 28, 2010, Critical Program Information (CPI) Protection within the Department of Defense). Each PPWG will be a one day event. After the event, the Government will provide a PCO letter validating the CPI/CT for the program.

C.24.2.2 Anti-Tamper (AT) Planning
If the PPWG identifies Critical Program Information or Critical Technology, the Contractor shall design, develop and integrate an Anti-Tamper (AT) solution for hardware and software containing Critical Program Information and Critical Technology to deter, prevent, and detect the reverse engineering of those systems using the probability of an unplanned loss and/or for international sales across the program's lifecycle. The Contractor shall take the AT solutions through verification and testing to include any prototypes. The Contractor shall utilize reverse engineering countermeasures that are commensurate with the exposure levels and consequence of critical program information loss using the analysis process identified in the DoD Anti-Tamper (AT) Guidelines. The Contractor shall deliver the detailed Anti-Tamper solution as an Anti-Tamper Plan Annex to the PPIP (ref. CDRL Data Item A096) and shall incorporate the solution into the JLTV design.

C.25 OPTION - ADDITIONAL LEVEL OF EFFORT

C.25.1 Work Directive
All work under this CLIN shall be performed in accordance with work directives issued by the Contracting Officer (CO). No work shall commence until the Contractor has received a fully executed work directive. The Contractor shall provide all necessary labor, materials, supplies, services, facilities, and equipment to perform the specific work and services required by individual work directives. Each work directive shall include the following information as a minimum:

- Work directive number and title
- Reference to the applicable paragraph in section C
- Objective of this work directive
- Maximum number of hours authorized
- Detailed description of work to be performed
- Required completion date(s)
- Identification of applicable contract number, Contractor's name and address
- Identification of software, data, and/or hardware to be delivered
- Fixed Price (No Profit) for Other Direct Costs (ODC) (Material, Transportation, etc)
- Contracting Officers signature

The Contractor shall notify the Contracting Officer's Representative (COR) immediately by telephone or E-mail if delivery dates will not be met. The Contractor shall follow up with a letter to the Contracting Officer (CO) and the COR. Services specified in individual work directives shall include effort in the following category:

a) Emergency Repair to a Test Asset: Repair and/or refurbishment of a vehicle or trailer damaged as result of an accident or a non-test incident. This effort is not to be utilized for repairs or vehicle improvements covered under FACARs or TIR process that result from normal testing or any other repair specified within base contract of statement of work.

C.25.1.1 Funds and Man-Hours Expenditure Report
The Contractor shall deliver a Funds and Man-Power Report. This report shall provide data for each Work Directive. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews IAW the Government provided IMP. (CDRL Data Item A013)

*** END OF NARRATIVE C0001 ***

Name of Offeror or Contractor:

SECTION J - LIST OF ATTACHMENTS

List of Addenda	Title	Date	Number of Pages	Transmitted By
Attachment 0001	JLTV PURCHASE DESCRIPTION (PD)	08-MAR-2012	0NA	
Attachment 0006	MANUFACTURING COST ESTIMATE TEMPLATE	08-MAR-2012	0NA	
Attachment 0036	GFE/GFI LIST	09-MAR-2012	0NA	
Attachment 0037	EMD VEHICLE CONFIGURATION AND ALLOCATION MATRIX (FOUO)	09-MAR-2012	0NA	
Attachment 0038	FAILURE DEFINITION AND SCORING CRITERIA (FDSC)	29-FEB-2012	026	