

**AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT**

1. Contract ID Code  
Cost Plus Incentive Fee | Page 1 Of 198  
(Cost Based)

2. Amendment/Modification No. 0004	3. Effective Date 2014APR14	4. Requisition/Purchase Req No. SEE SCHEDULE	5. Project No. (If applicable)
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6. Issued By U.S. ARMY CONTRACTING COMMAND ERIC HAYDAMACK WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL  EMAIL: ERIC.HAYDAMACK@US.ARMY.MIL	Code W56HZV	7. Administered By (If other than Item 6)	Code
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8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code)	<input checked="" type="checkbox"/>	9A. Amendment Of Solicitation No. W56HZV-13-R-0022
		9B. Dated (See Item 11) 2013NOV26
	<input type="checkbox"/>	10A. Modification Of Contract/Order No.
		10B. Dated (See Item 13)
Code	Facility Code	

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

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

is extended,  is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:  
(a) By completing items 8 and 15, and returning 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.**

<input type="checkbox"/>	A. This Change Order is Issued Pursuant To: The Contract/Order No. In Item 10A.	The Changes Set Forth In Item 14 Are Made In
<input type="checkbox"/>	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).	
<input type="checkbox"/>	C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of:	
<input type="checkbox"/>	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

<b>CONTINUATION SHEET</b>	<b>Reference No. of Document Being Continued</b> <b>PIIN/SIIN</b> W56HZV-13-R-0022 <b>MOD/AMD</b> 0004	<b>Page</b> 2 <b>of</b> 198
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**Name of Offeror or Contractor:**

SECTION A - SUPPLEMENTAL INFORMATION

Buyer Name: ERIC HAYDAMACK  
Buyer Office Symbol/Telephone Number: CCTA-AHL-D/(586)282-3053  
Type of Contract: Cost Plus Incentive Fee (Cost Based)  
Kind of Contract: Research and Development Contracts

\*\*\* End of Narrative A0000 \*\*\*

Amendment 0004 to Solicitation W56HZV-13-R-0022 is to incorporate the following changes:

1. SECTION A - SUPPLEMENTAL INFORMATION

a. In Section A, AMPV Executive Summary, EMD Phase Overview subsection, the anticipated contract award period has been changed as follows:

From: first quarter (Q1) of FY15  
To: second quarter (Q2) of FY15

2. SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

a. In Sections C.5.31.4.2.1 and C.10.4.30.4.2.1 (Exceptions to the Hazardous Materials Requirements), the following item listed within this section has been amended:

FROM: Chemical agent resistant coating (CARC) primers and topcoats  
TO: Non-Chromate chemical agent resistant coating (CARC) primers and topcoats

b. In Section C.5.15.1 (Common Vehicle Architecture Description (CVAD)), the second sentence in the paragraph has been amended as follows:

FROM: The Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030), should be followed for documenting architectures instead of the CVAD.

TO: The Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030) shall be followed for documenting architectures instead of the CVAD.

c. In Section C.5.15.2 (Vehicle Network Configuration Package), the CDRL B013 reference has been removed from the end of the paragraph.

d. In Section C.7.4.2.3.4, the title of the paragraph has been revised as follows:

FROM: Spares Acquisition Integrated with Production (SAIP) List  
TO: Proposed Spare Parts List (PSPL) / Spares Acquisition Integrated with Production (SAIP) List

e. In Section C.7.5.1.1, the first sentence in the paragraph has been amended as follows:

FROM: If the schedule does not allow for the validation of TM materiel prior to the start of contractor and Government testing, the contractor shall deliver contractor-formatted operator and maintainer technical manuals as part of the SSP in accordance with CDRL D013.

TO: If the schedule does not allow for the validation of TM materiel prior to the start of contractor and Government testing, the contractor shall deliver MIL-STD-40051-formatted operator and maintainer technical manuals as part of the SSP in accordance with CDRL D013.

f. In Section C.10.4.15.1 (Common Vehicle Architecture Description (CVAD)), the second sentence in the paragraph has been amended as follows:

FROM: The Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030), should be followed for documenting architectures instead of the CVAD.

TO: The Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030) shall be followed for documenting architectures instead of the CVAD.

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g. In Section C.10.4.15.2 (Vehicle Network Configuration Package), the CDRL B013 reference has been removed from the end of the paragraph.

h. In Section C.5.26.8 (Software Documentation), the third sentence in the paragraph has been amended as follows:

FROM: Any documentation not listed below that was used to document the software architecture or help in its understanding should also be provided.

TO: Any documentation not listed that was used to document the software architecture or help in its understanding should also be provided.

i. In Section C.10.4.26.7 (Software Documentation), the third sentence in the paragraph has been amended as follows:

FROM: Any documentation not listed below that was used to document the software architecture or help in its understanding should also be provided.

TO: Any documentation not listed that was used to document the software architecture or help in its understanding should also be provided.

j. Sections C.5.25.1.1 & C.10.4.25.1.1 have been deleted in their entirety and changed to RESERVED.

**3. SECTION H SPECIAL CONTRACT REQUIREMENTS**

a. In Section H.7.3.3.1, the Section Reference H.7.2.3 has been changed to H.7.3.3.

b. In Section H.8.1.3.1.1 (RAM Scoring Event #1), the criteria sentence is being amended to incorporate PPP into the sentence as follows:

FROM: To prove that the MMBSA incentive has been demonstrated, the Program Management Office will evaluate the scored System Aborts (SAs) from all completed 2 and LUT testing to date.

TO: To prove that the MMBSA incentive has been demonstrated, the Program Management Office will evaluate the scored System Aborts (SAs) from all completed PPT 2 and LUT testing to date.

**4. SECTION J - LIST OF ATTACHMENTS, has been amended as follows:**

a. Exhibit A (Contract Data Requirements List (CDRL)) has been amended. The following CDRLs have been amended: B009, B013, B016, B024, and B036. The following changes have been incorporated:

i. CDRL B009, the following changes were incorporated:

a. Section 3 (Subtitle), in addition to references in Section 16 (Remarks) has been changed as follows:

FROM: In Vehicle Network VICTORY Design Report

TO: Vehicle Network Design Report

b. In Section 5 (Contract Reference), the following Contract References were incorporated: C.5.15.2 and C.10.4.15.2.

c. In Section 16 (Remarks), the first paragraph has been changed as follows:

FROM: The contractor shall prepare an In-Vehicle Network Systems VICTORY Design report for the Component Types listed in Section C.5.17.3, Table C.1 of the SOW. The Network Systems Design Report, in contractor format, shall include:

- a. A list of VICTORY system and component types implemented in each in-vehicle network
- b. Logical and physical architectures and designs that are both "open" and "data bus-centric" in accordance with the VICTORY Architecture.
- c. A mapping of the VICTORY component types to the hardware and software configuration items.
- d. Any completed VICTORY Compliance Test Plans or Compliance Test Reports (if available before TRR, required for TRR & later submissions).
- e. All exceptions to VICTORY Component Type Specifications and justification for the exceptions.

TO: The contractor shall prepare a Vehicle Network Design report for the entire AMPV FoV and shall include the following:

- a. A VICTORY section for the Component Types listed in Section C.5.17.3, Table C.1 of the SOW,

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that shall include:

1. A list of VICTORY system and component types implemented in each in-vehicle network,
  2. Logical and physical architectures and designs that are both "open" and "data bus-centric" in accordance with the VICTORY Architecture,
  3. A mapping of the VICTORY component types to the hardware and software configuration items,
  4. Any completed VICTORY Compliance Test Plans or Compliance Test Reports (if available before TRR, required for TRR & later submissions),
  5. All exceptions to VICTORY Component Type Specifications and justification for the exceptions.
- b. The detailed Internet Protocol (IP) Addressing schema to include addressing, sub-netting, routing/switching and other network attached device configurations for all internal and external networks configured on the AMPV FoV.
- c. A report describing AMPV compliance with IPv6 and IPv4 with IPv6 policies and the DoD IPv6 Capable definitions as specified in the DoD CIO Memorandum, DoD Internet Protocol Version 6 (IPv6) Definitions (26 June 2008).
- d. The detailed Controller Area Network (CAN) database file for the Vehicle Sensor data bus(es), including messaging, addresses, data fields, states, etc.
- e. Configuration files for routers/switches on the C4ISR/EW data bus for each delivered vehicle.
- ii. CDRL B013 (Vehicle Network Configuration Package) has been deleted in its entirety and changed to RESERVED.
- iii. CDRL B016, the following changes were incorporated:
- a. In Section 14 (Distribution), the following two changes have been incorporated:  
  
FROM: DRAFT: 1/Plan  
TO: DRAFT: 3 Total  
  
FROM: FINAL/REG: 1/Plan  
TO: FINAL/REG: 3
  - b. In Section 15 (Total - Draft and Final/Reg), has been for changed as follows:  
FROM: 1  
TO: 3
  - c. In Section 16 (Remarks), the first paragraph has been amended as follows:  
  
FROM: E3 Control Plan (IAW DI-EMCS-81540B) shall be submitted at SOWM and E3 Verification Plan (IAW DI-ECMS-81541B) shall be submitted 60 calendar days prior to DTRR.  
  
TO: E3 Control Plan (IAW DI-EMCS-81540B) shall be submitted at SOWM and E3 Verification Plan (IAW DI-ECMS-81541B) shall be submitted NLT 30 calendar days prior to CDR and NLT 60 calendar days prior to TRR.
- iv. CDRL B024, Section 16 (Remarks), the first paragraph has been amended as follows:
- FROM: The Contractor shall submit the FSM NLT 30 calendar days after the conclusion of the Software Qualification Test.
- TO: The Contractor shall submit the FSM NLT 30 calendar days prior to Software Critical Design Review.
- v. CDRL B036, the following changes were incorporated into Section 16 (Remarks):
- a. In the For Tactical Software section, the first paragraph has been amended as follows:  
  
FROM: The Contractor shall submit the Software User Manual (SUM) NLT 30 calendar days after the conclusion of the Software Formal Qualification Test. The Government will review and submit comments within 15 business days. The Contractor shall submit the updated SUM within 10 business days of receipt of the Government comments  
  
TO: The Contractor shall submit the Software User Manual (SUM) NLT 45 calendar days before qualification test of the software is to begin. The Government will review and submit comments within 30 calendar days. The Contractor shall submit the updated SUM within 10 calendar days of receipt of the Government comments.

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b. In the For Test Software section, the first paragraph has been amended as follows:

FROM: The Contractor shall submit the SUM NLT 30 calendar days after the conclusion of the testing. The Government will review and submit comments within 15 calendar days. The Contractor shall submit the updated SUM within 10 business days of receipt of the Government comments.

TO: The Contractor shall submit the SUM NLT 45 calendar days before qualification test of the software is to begin. . The Government will review and submit comments within 30 calendar days. The Contractor shall submit the updated SUM within 10 calendar days of receipt of the Government comments.

vi. In CDRL D005, the following changes were incorporated:

a. In Section 4 (Authority), the reference has been amended as follows:

FROM: DI-SESS-81872  
TO: DRAFT: DI-SESS-81872 (T) - SEE BLK 16

b. Section 16 (Remarks) has been amended as follows:

FROM: The Contractor shall provide a Level Of Repair Analysis (LORA) Report using GEIA-STD-0007 and TA-STD-0017 (latest versions) and deliver the summaries in Government and contractor agreed to format at the Critical Design Review (CDR). Should this data deliverable require revision after initial delivery, the Contractor shall update and redeliver the data on a date mutually agreed to by the parties.

Block 14: Electronic submissions of data requirements shall be uploaded for the AMPV Data Manager's review within the Government's Integrated Data Environment (IDE). The Contractor shall provide email notification of data submissions to the PCO, Contract Specialist, COR and PM Procurement Analyst.

TO: In addition to DI-SESS-81872, the Contractor shall refer to DI-SESS-81873 for delivery of LORA input data. Tailoring for these DIDs is as follows: DI-SESS-81872, paragraphs 2 and 3.9: Format shall be compatible with COMPASS. DI-SESS-81873, paragraph 3: Format shall be compatible with COMPASS.

The Contractor shall provide a Level Of Repair Analysis (LORA) Report using GEIA-STD-0007 and TA-STD-0017 (latest versions) and deliver the summaries in Government and contractor agreed to format at the Critical Design Review (CDR). The Contractor shall deliver the subsequent LORA Report and input data thirty (30) calendar days prior to the Functional Configuration Audit (FCA). Should this data deliverable require revision after initial delivery, the Contractor shall update and redeliver the data on a date mutually agreed to by the parties.

Block 14: Electronic submissions of data requirements shall be uploaded for the AMPV Data Manager's review within the Government's Integrated Data Environment (IDE). The Contractor shall provide email notification of data submissions to the PCO, Contract Specialist, COR and PM Procurement Analyst.

If CLINs 0004-0006 are exercised, the Contractor shall update and deliver the LORA report and input data one (1) year prior to FUE.

vii. CDRL D007, Section 4 (Authority), has been amended as follows:

FROM: DI-HFAC-80746C  
TO: DRAFT: DI-HFAC-80747B

viii. In CDRL D010, Section 16 (Remarks) the following paragraph has been incorporated:

The Contractor shall deliver the following LSA reports as described in the SOW:  
001 QQPRI, MARC and MER Input and BOIP Feeder Data (C.7.4.2.1.1, C.7.4.2.2)  
004 Maintenance Allocation Chart (C.7.4.2.5)  
005 Support Item Utilization Summary  
006 Critical Maintenance Item Summary  
009 Supply Support Lists/Support Equipment (C.7.4.2.3, C.7.11)  
019 Task Analysis Performance Objective (C.7.4.1.4)

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030 Indentured Parts List Report Specification  
032 Provisioning and Other Pre-procurement Screening Data (C.7.7.3)  
036 Logistics Modernization Program (LMP) Input (C.7.7.1)  
155 Spares Acquisition Integrated with Production (SAIP) (C.7.4.2.3.4)

ix. In CDRLs D011, D014, D015, D016, D041, D044, and D045, Section 16 (Remarks) the following sentence has been incorporated at the end of the fifth paragraph: Receipt of XML-tagged source files is an AR 25-30 requirement and should accompany all deliveries.

x. In CDRL D012, the following changes have been incorporated:

a. In Section 2 (TITLE OF DATA ITEM), the following was added in the block: Proposed Spare Parts List (PSPL)

b. In Section 16 (Remarks), where SAIP (Acquisition Integrated with Production) was referenced, PSPL was added, changing the references as follows:

FROM: SAIP  
TO: PSPL/SAIP

xi. In CDRL D013, Section 16 (Remarks), second paragraph, the third sentence has been amended as follows:

FROM: If the schedule does not allow the validation of TM materiel prior to the start of contractor and Government testing, the contractor shall deliver contractor-formatted operator and maintainer technical manuals (-10, -13 Security Manual, -13&P, and BD) as part of the SSP.

TO: If the schedule does not allow the validation of TM materiel prior to the start of contractor and Government testing, the contractor shall deliver MIL-STD-40051-formatted operator and maintainer technical manuals (-10, -13 Security Manual, -13&P, and BD) as part of the SSP.

xii. In Section J, the date listed for Exhibit A has been updated as follows:

FROM: 15 January 2014  
TO: 13 March 2014

b. Attachment 0001 (Performance Specification (P-Spec)) and Attachment 0083 (Performance Specification (P-Spec) - DOORS File) have been amended. The following changes have been incorporated:

i. PSPEC-479: Added F-24 fuel.

ii. The date listed within Attachment 0001 and Attachment 0083, and in Section J, has been updated as follows:

FROM: 6 December 2013  
TO: 29 January 2014

c. Attachment 0008 (Test Summary) has been amended as follow:

i. On Chart 2, EMD Test Schedule, the scheduled events moved 45 days to the right.

ii. On Chart 12, LRIP Test Schedule, the scheduled events moved 45 days to the right.

iii. The date listed within Attachment 0008, and in Section J, has been updated as follows:

FROM: 10 January 2014  
TO: 6 February 2014

d. Attachment 0009 (Cost and Software Data Reporting Plan) has been amended as follow:

i. The format of this attachment has been changed from an Excel file to a PDF file. This PDF file now contains the Office of the Secretary of Defense approval memorandum for an administrative change.

a. Administrative change: In Block 15 (REMARKS), the original release of the attachment cut off the 1921-2 Progress Curve elements at Armament due to limitation within the Excel document format. Please review section for the additional language.

ii. In Block 15 (CSDR Submission Dates), the dates have been updated to reflect the proposal due date extension.

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iii. The date listed within Attachment 0009, and in Section J, has been updated as follows:

FROM: 18 September 2013  
TO: 11 February 2014

e. Attachment 0010 (AMPV Systems Engineering Plan) has been updated to reflect the change in schedule resulting from the proposal due date extension. Refer to attachment for changes.

i. The date listed within Attachment 0010, and in Section J, has been updated as follows:

FROM: 5 November 2013  
TO: 21 February 2014

f. Attachment 0061 (AMPV Integrated Master Schedule) has been updated to reflect change in schedule resulting from the proposal due date extension.

i. The date listed within Attachment 0061, and in Section J, has been updated as follows:

FROM: 30 October 2013  
TO: 13 February 2014

g. Attachment 0089 (VHMS Portable Maintenance Aid Specification) is being re-posted due to Figure 1 (PMA subsystem architecture block diagram) on page 19 and Figure 2 (External interface context diagram) on page 32 of the attachment not appearing on the attachment. No changes were made to this attachment and the attachment date remains 22 Aug 2012.

h. Attachment 0095 (Full Rate Production Schedule) has been amended to remove the list of material. No other changes were made.

i. The date listed within Attachment 0095, and in Section J, has been updated as follows:

FROM: 19 November 2013  
TO: 11 March 2014

i. Attachment 0101 (Digital Architecture/Victory Report Instructions) has been amended. The following changes were incorporated:

i. References to Attachment 132 (Variant Guidance) were corrected to show the entire attachment number.

FROM: Attachment 132 (Variant Guidance)  
TO: Attachment 0132 (Variant Guidance)

ii. Under #2 (a), the second to last sentence in the paragraph has been amended to add the word submittal at the end.

FROM: The Offeror shall modify the Government-provided GFI draft AMPV SADD (Attachment 0104), where needed, to produce the final AMPV SADD.

TO: The Offeror shall modify the Government-provided GFI draft AMPV SADD (Attachment 0104), where needed, to produce the final AMPV SADD submittal.

iii. Under #2 (b), the following sentence was added to the end of the paragraph: The ISAM model, in its entirety, shall also be submitted in PDF.

iv. The date listed within Attachment 0101, and in Section J, has been updated as follows:

FROM: 23-Sept-2013  
TO: 05 February 2014

**4. SECTION L - INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS**

a. In Section L.1.1, subsection (g) Volume 7 (Classified Portions of Design & Build and Performance Factors Volumes) as follows:

FROM: Submit three identical sets of CD-ROMs or DVDs.  
TO: Submit three identical sets of CD-ROMs or DVDs and three paper copies.

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5. SECTION M EVALUATION FACTORS FOR AWARD

a. In Section M.4.2.2(b) 1), the following reference has been amended:

FROM: C-PSPEC 60; Paragraph 3.1.1.2.4  
TO: C-PSPEC 60; Paragraph 3.2.1.1.2.4

b. In Section M.4.2.2(b) 2), the following reference has been amended:

FROM: C-PSPEC 61; Paragraph 3.1.1.2.6  
TO: C-PSPEC 61; Paragraph 3.2.1.1.2.6

6. The following FAR/DFARS clauses have been updated to the most current versions:

- a. DFARS 252.211-7003 Item Unique Identification and Valuation
- b. DFARS 252.225-7000 Buy American Statute - Balance of Payment
- c. FAR 52.222-19 Child Labor - Cooperation with Authorities and Remedies
- d. FAR 52.244-6 Subcontracts for Commercial Items
- e. FAR 52.204-8 Annual Representation and Certifications

\*\*\* END OF NARRATIVE A0005 \*\*\*

PROGRAM: ARMORED MULTI-PURPOSE VEHICLE (AMPV) EXECUTIVE SUMMARY

The information below describes the planned acquisition approach for the AMPV program. The solicitation, clauses, Statement of Work (SOW), Performance Specification (P-Spec), and associated information is posted on the AMPV website at <http://contracting.tacom.army.mil/majorsys/ampv/ampv.htm>, except for Controlled Unclassified Information (CUI) and the Classified annex. The Government will post all changes/amendments/updates to the solicitation, as well as answers to industry-generated questions, on this site. This solicitation covers two contract types, a Cost Plus Incentive Fee for Engineering and Manufacturing Development (EMD) and Fixed Price Incentive (Successive Targets) for the Low Rate Initial Production (LRIP) options. Details regarding both contract types are provided below. Please note that a majority of the contract clauses within this solicitation are applicable to both contract types; however, some of the contract clauses herein are specific to either the Cost Plus Incentive Fee or Fixed Price Incentive (Successive Targets) effort.

AMPV PROGRAM OVERVIEW

The AMPV Family of Vehicles (FoV) is a materiel solution replacement for the M113 FoV to mitigate current and future capability gaps in force protection, mobility, reliability, and interoperability by mission role variant to support the Armored Brigade Combat Team (ABCT) across the Spectrum of Conflict. The AMPV FoV will replace the five mission roles currently performed by the M113 FoV by transferring the current M113 Mission Equipment Packages (MEP) to a new vehicle platform. The AMPV vehicle fleet will consist of the following five variants tailored to specific mission roles within ABCT:

Mission Command (MCmd) Vehicle: Vehicle platform will enable effective mission command planning and execution for both the Tactical Operations Center (TOC) and Tactical Command Vehicle (TAC) versions of the MCmd. Vehicle will host current Battle Command Systems, future replacements, and upgrades of hardware and software.

Medical Treatment (MT) Vehicle: Vehicle platform will provide a protected surgical environment with adequate lighting and accessible medical equipment and the capability for immediate medical care for one patient by a medical crew of four.

Medical Evacuation (ME) Vehicle: Vehicle platform will conduct ambulance type activities and provide casualty evacuation for up to four litter or six ambulatory patients with a crew of three medical attendants.

General Purpose (GP) Vehicle: Vehicle platform will operate throughout the battle space by conducting re-supply, maintenance, casualty evacuation, and other tasks within the formation.

Mortar Carrier (MC) Vehicle: Vehicle platform will provide immediate responsive fire support to conduct fast-paced offensive operations.

FUNDING & ELIGIBILITY FOR AWARD

For EMD, this includes affordability based on (a) the total available funding in Fiscal Year (FY)15-FY19 and, (b) available RDT&E

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funding within each of the FY15-FY19 funding periods since the contract will be RDT&E incrementally funded. For LRIP, this includes affordability based on (a) the total available Production funding for each option period and, (b) available Production funding within each of the option funding periods since the option year CLINs will be funded by fiscal year.

As described in the previous paragraph above, proposals specifying funding in excess of the following will be considered unaffordable and ineligible for award:

EMD Phase - The availability of funding for the AMPV EMD Phase is:

FY15: \$ 70 Million  
FY16: \$174 Million  
FY17: \$114 Million  
FY18: \$ 64 Million  
FY19: \$ 14 Million

LRIP Phase - The availability of funding for the AMPV LRIP Phase is:

Option 1: \$244 Million  
Option 2: \$479 Million  
Option 3: \$505 Million

**\*EMD PHASE OVERVIEW**

Each of the five AMPV FoV variants shall be configured with existing Mandatory Integration Items (MII), as defined in Attachment 0006 (Material and Equipment Matrix (MEM)). During the EMD phase, all five AMPV variants shall be developed, designed, modeled, simulated, fabricated, and tested, within the affordability constraints described in Section M.3.2.

The purpose of the AMPV EMD Phase is to:

- Complete full system integration
- Develop an affordable and executable manufacturing process
- Ensure operational supportability with particular attention to minimizing the logistics footprint
- Implement human systems integration (HSI)
- Ensure vehicles are designed for producibility
- Ensure affordability
- Protect Critical Program Information
- Demonstrate system integration, interoperability, safety, and utility

Full-scale prototype vehicles shall be transferred to the Government through use of a DD Form 1149, Requisition and Invoice/Shipping Document. The contractor shall have access to the prototypes for all issues agreed to by the Systems Engineering Integration Team (SEIT) after DD1149. The contractor will support Government testing by furnishing Test Support Packages and technically proficient maintenance personnel.

The EMD contract will require the contractor to perform fabrication, assembly, integration, testing and test support, and related requirements in accordance with the SOW and the AMPV P-Spec in Attachments 0001 and 0082. The contractor shall deliver 29 prototype vehicles, including all non-vehicle hardware, such as Basic Issue Items (BII), a System Support Package (SSP), Special Tools and Test Equipment, Cold Start Kits, Armor Coupon Sets, Ballistic Hull Structures, and data deliverables, as stated in Sections B & C below. Proposals will be due as stated on Standard Form 33, Page 1, Block 9 of this Request for Proposals (RFP). Contract award is anticipated for the \*second quarter (Q2) of FY15.

**Acquisition Strategy**

A full and open competition utilizing best value tradeoff procedures will be used. A Cost Plus Incentive Fee (CPIF) contract for EMD with three years of Fixed Price Incentive (Successive Targets) Low Rate Initial Production (LRIP) options will be awarded to one contractor. The EMD portion of this contract will be incrementally funded. All proposal submission requirements are located in Sections K and L of this RFP.

The Government intends to have discussions with the winning offeror, after contract award, regarding opportunities to expedite EMD Prototype deliveries, in an effort to accelerate the program milestones.

**EMD Incentives**

The EMD effort will have two incentives: cost and performance. The terms and conditions for the cost incentive are set forth in Federal Acquisition Regulation (FAR) Clause 52.216-10 (Incentive Fee). The performance incentive, including the scoring event associated with this incentive, is set forth in Sections H.8.1.3.

**Name of Offeror or Contractor:**EMD Vehicle Exchange Agreement

The Government may offer to enter into an exchange agreement with the contractor, as authorized by 40 USC Section 503(a), to exchange Bradley and M113 Family of Vehicles (FoV) for AMPVs. These vehicles are referred to as Optional Exchange Vehicles (OEVs), as referenced in Attachment 0006 and throughout the RFP. If the offeror chooses to enter into an exchange agreement with the Government, it shall provide proposal information in accordance with RFP Section H.7. The maximum quantity and model of vehicles that may be offered for exchange in the EMD and LRIP phases are specified in Section H.7. Offerors will have the opportunity to survey the vehicles offered for exchange prior to submitting a proposal, as described in the OEV Survey Opportunity section below.

OEV Survey Opportunity

The property being offered for exchange in accordance with Section H.7 of the RFP is located at Red River Army Depot (Bradley vehicles only) and Sierra Army Depot (M113 vehicles only). Interested prime offerors may inspect the property during a 14 business day period. Each day of the inspection period shall be eight hours in length. The Red River Army Depot and Sierra Army Depot surveys will occur simultaneously. Each prime offeror will be allowed no more than two representatives to attend each survey opportunity per survey location.

Interested prime offerors who would like to view the OEVs shall complete Attachment 0129 (AMPV OEV Survey Registration Form) and submit it via email to <mailto:usarmy.detroit.acc.mbx.ampv-program@mail.mil>. The email shall be titled, OEV Survey Registration Form, and shall contain the offeror's request to take part in the Red River Army Depot survey, the Sierra Army Depot survey, or both. The email must be received no later than 2 December 2013 at 12:00pm (EST). Interested prime offerors who fail to submit the above referenced email by the suspense date will not be permitted to attend the survey opportunities. The Procuring Contracting Officer (PCO) will inform all interested prime offerors of the timing and details of the surveys by 3 December 2013 at 5:00pm via an OEV survey coordination email.

At each OEV survey location, interested prime offerors will be given an opportunity to inspect the OEVs available during the EMD and LRIP phases. All interested offerors will be assigned a Government escort. The Government escort will accompany the interested offerors to ensure compliance with depot rules and regulations. Photography may be allowed, pending local depot restrictions. Prime offerors may climb onto OEVs, take measurements, and record written data as desired. The Government will attempt to open up as many vehicles as possible so that interested offerors can go inside the OEVs, but there is no guarantee as to the amount of OEVs that will be opened up due to the tight parking of the OEVs and the limited amount of time available for inspection. Interested offerors shall follow all depot rules and regulations throughout the OEV survey opportunities. Specific information on depot rules and regulations, including those regarding photography, will be addressed in the OEV survey coordination email and on-site at the start of the OEV surveys. Offerors will not be allowed to select the OEVs they wish to exchange during the survey opportunity.

PRODUCTION AND DEPLOYMENT PHASE ACQUISITION STRATEGYLow Rate Initial Production (LRIP) Option(s)

Included in the award of the EMD contract are three option years of LRIP. The LRIP vehicles shall be built in accordance with Section C.10 and the AMPV P-Spec in Attachments 0001 and Attachment 0082. These options will be separated into fifteen different CLINs, broken out by variant, for each option year, and placed on contract with Fixed Price Incentive (Successive Targets) (FPI(S)) pricing. Refer to Section H.11 and Section L for specific details.

LRIP Incentives

The LRIP options will have two incentives: cost and performance. The terms and conditions for the cost incentive are set forth in FAR Clause 52.216-17. The performance incentive, including the scoring events associated with this incentive, is set forth in Section H.11.2.

Full Rate Production (FRP) Award

The full rate production phase strategy will be determined prior to the end of LRIP. The Government will conduct an analysis to determine whether to compete FRP or pursue a sole source justification, in accordance with Federal Acquisition Regulations (FAR) 6.302.

CONTROLLED UNCLASSIFIED INFORMATION (CUI)

The AMPV RFP contains CUI that is not available via the Internet. However, CUI will be made available to offerors upon an approved request. Requests for CUI documents must be made through the Federal Business Opportunities (FBO) website. Direct links to the documents are available on the AMPV website at <http://contracting.tacom.army.mil/majorsys/ampv/ampv.htm>. A Vendor Instruction Manual is located on the FBO home page (<https://www.fbo.gov/>) to assist offerors in using the website and accessing documents. Once a request has been made, an automated email will be generated to the Government reviewer. The Government reserves the right to request additional information to support releasing documentation. CUI must be handled in accordance with the AMPV Security Classification Guide (Attachment 0069), Additional Guidelines for Controlled Unclassified Information and DD Form 254 (Attachment 0070). In addition to the provisions of the AMPV Security Classification Guide (Attachment 0069), proposal information and source selection evaluations must be handled in

**Name of Offeror or Contractor:**

accordance with FAR Subparts 2.101 and 3.104.

Foreign companies must submit requests for CUI through their embassy in the United States.

CLASSIFIED INFORMATION

The AMPV RFP contains a classified annex that is not available via the Internet. In order to obtain this annex, the below procedures must be followed and all requirements must be met.

Information Request Procedures

All offerors must have a valid United States (US) Security Clearance of SECRET or higher in order to respond to this RFP due to an attached annex being classified at the SECRET level. This annex will only be released to offerors possessing the appropriate clearance. ALL classified material must be marked and handled in accordance with the National Industrial Security Program Operating Manual (NISPOM), DoD 5220.22-M, the AMPV Security Classification Guide (Attachment 0069) and the DD Form 254 (Attachment 0070).

Requests for the classified portion of this RFP must be made by the offerors Facility Security Officer (FSO), via e-mail, to mailto:usarmy.detroit.acc.mbx.ampv-program@mail.mil with the Subject line, Request for AMPV RFP Classified Annex. Requests made by other than the FSO will not be processed.

Contractors must destroy classified material received or generated under contracts resulting from this RFP no later than two years following completion of the contract, or as soon as it is no longer needed, whichever comes first. Offerors that do not submit a proposal or withdraw its proposal must destroy or return classified material generated or received under this RFP no later than 180 days after the deadline for proposal submission or after proposal withdrawal. Offerors submitting a proposal that is not accepted by the Government or does not result in an award to the offeror have 180 days after receipt of Notice to Unsuccessful Offeror to destroy or return classified information, unless otherwise directed by the PCO.

The following information must be provided and must match the offeror's information in the Industrial Security Facilities Database (ISFD):

- The Company Name and Classified Mailing Address
- CAGE Code
- Name of Facility Security Officer (FSO) with Telephone Number(s), Data Fax Number, and E-mail Address. (Please note that the request for classified information must be made by the FSO so that this name will match the name of the requestor. All other parties should be copied furnished on the email request, if desired.)
- CAGE Code(s) and Address(es) of the Company Facility (Facilities) intended to participate in Proposal Preparation and Performance of the AMPV Program where classified material will be utilized

Foreign companies must submit requests for CUI through their embassy in the United States.

OSD ACCESS TO PROPOSAL INFORMATION

Certain contractor proposal information and source selection information may be disclosed to the Office of Secretary of Defense (OSD) in support of Milestone B approval, as required by DoD Directive 5000.02, prior to any award made in response to this RFP. Any Government personnel or non-Government personnel provided this information must be specifically authorized to receive the information by the PCO. In order to protect the integrity of the acquisition process, any information disclosed to OSD will be clearly identified as contractor proposal information or source selection information, with clear instructions that the information must be protected.

NOTICE REGARDING SUBCONTRACTING

There are important differences between the Small Business Participation Factor Submittal, submitted in accordance with Section L, and the Small Business Subcontracting Plan, submitted in accordance with the Section I clauses. These differences are as follows:

- (1) The Small Business Participation Factor Submittal:
  - (a) is developed and submitted in accordance with Section L
  - (b) is evaluated in accordance with Section M
  - (c) has goals that are expressed as a percentage of Total Contract Value
  - (d) is required of all offerors, including small businesses

- (2) The Small Business Subcontracting Plan:
  - (a) is developed and submitted in accordance with FAR 52.219-9, Small Business Subcontracting Plan, and its ALT II incorporated by reference in Section I, and TACOM Clause 52.219-4004 in Section L
  - (b) is evaluated in accordance with the FAR, DFARS, and AFARS
  - (c) has goals that are expressed as a percentage of Total Subcontracting Amount
  - (d) is not required of small businesses

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**Name of Offeror or Contractor:**PERIOD OF PERFORMANCE

The Period of Performance for this contract is estimated at 52 months for EMD, with three, 12-month LRIP options.

CLAUSES AND PROVISIONS

Clauses and provisions in this document may not appear in consecutive order. Clauses and provisions from the Federal Acquisition Regulation (FAR) and supplements thereto are incorporated in this document by reference and in full text. Those incorporated by reference have the same force and effect as if given in full text.

FORMAL COMMUNICATION

Any formal communication, such as requests for clarifications, discussions, and information concerning this solicitation should be submitted in writing electronically to the following address:

mailto:usarmy.detroit.acc.mbx.ampv-program@mail.mil

NOTE: Oral explanations or instructions given before the award of a contract will not be binding.

ACQUISITION WEB PAGE

All information relating to this request for proposal including pertinent changes/amendments and information will be posted on the following website: <https://contracting.tacom.army.mil/majorsys/ampv/ampv.htm>.

AMENDMENTS PRIOR TO DATE SET FOR RECEIPT OF PROPOSALS

The Government may revise or amend, the specifications, drawings, or any aspect of the Solicitation prior to the date set for receipt of proposals. If the revisions and amendments are of a nature which requires material changes in quantities, prices offered, or both, the date set for receipt of proposals may be postponed such number of days as in the opinion of the Contracting Officer will enable offerors to revise their proposals. In such cases, the amendment will include an announcement of the new date for receipt of proposals.

QUESTION AND ANSWERS

A question and answer period is available until 5:00pm Eastern Standard Time, 31 March 2014. Questions that are received by this office after the deadline will be considered late and will not be answered.

\*Revised via Amendment 0004

\*\*\* END OF NARRATIVE A0001 \*\*\*

**Name of Offeror or Contractor:**

## SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

## C.1 ENGINEERING AND MANUFACTURING DEVELOPMENT (EMD) STATEMENT OF WORK

This Statement of Work (SOW) encompasses the Engineering and Manufacturing Development (EMD) phase and Low Rate Initial Production option years of the Armored Multi-Purpose Vehicle (AMPV) 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.2 Scope

C.2.1 The AMPV requirements are found in the Performance Specification (Attachments 0001 and 0082). In this SOW, the term AMPV will refer to the entire AMPV Family of Vehicles (FoV) defined below, and the term variants will be used to refer to the vehicles fulfilling the five mission roles defined below.

## AMPV Variants:

- 1) General Purpose (GP) Will operate throughout the battle space while conducting resupply, maintenance, casualty evacuation, and other tasks within the formation.
- 2) Mortar Carrier (MC) Will provide immediate responsive fire support to conduct fast paced offensive operations.
- 3) Mission Command (MCmd) Will provide a platform to enable effective mission command planning and execution. Will host current Mission Command Systems, their future replacements, and upgrades of hardware and software. Consists of multiple sub- configurations based on mission roles that only differ in the Mission Command Systems being hosted.
- 4) Medical Evacuation (ME) Will provide casualty evacuation for up to four litter or six ambulatory patients throughout the battle space.
- 5) Medical Treatment (MT) Will provide a protected surgical environment, enabling immediate medical care for one patient by a medical crew of four with adequate lighting and accessible medical equipment.

C.2.1.1 The contractor shall design each variant vehicle according to the Performance Specification (Attachments 0001 and 0082) and shall be configured with existing Mandatory Integration Items (MII), as defined in Section C.9.1.

C.2.1.2 The AMPV variants shall be developed, designed, modeled, simulated, fabricated, tested, and delivered to maximize performance within the affordability constraints described in Section C.2.2. All Contract Data Requirements List (CDRLs) shall cover the AMPV FoVs by specifically addressing any unique differences in the variants. One CDRL submission may address all variants.

## C.2.2 Affordability

The contractor shall track and control costs and shall perform cost-performance analyses as described in Section C.4. The ground rules and assumptions for vehicle production, schedules, and quantities are provided in Attachment 0067 (Manufacturing Cost Estimate Template).

## C.2.2.1 Definition of Operating and Support (O&amp;S)

The Government has determined the Cost Per Mile (consumables, reparables, and fuel cost per mile) threshold target for the AMPV FoV is \$90 per operating mile (Fiscal Year 13 constant dollars). Consumables, reparables, and fuel costs are defined as the cost of reparables individual parts, assemblies, and subassemblies; consumed individual parts; and the cost of fuel, oil, and lubricants for the AMPV base vehicle on an annual recurring basis. Per the Operational Mode Summary/Mission Profile (OMS/MP) (Attachment 0073), the AMPV FoV assumed average OPTEMPO shall be 720 miles per year for live training. Each vehicle shall be assumed to operate at this OPTEMPO for a useful life of 26 years.

## C.2.3 Commonality

The AMPV FoV shall have a minimum 57% component commonality within the AMPV variants. In terms of commonality, components are defined as parts of a mechanical or electrical assembly that, during field level repair, are removed, ordered and replaced as assembled components. LRUs identified as field level repair will contain a Source, Maintenance, Recoverability (SMR) code with the third position as F. The contractor shall include commonality information in the Indentured Bill of Materials (IBOM) CDRL deliverable (CDRL B001). The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.2.3.1 The contractor shall design the AMPV FoVs to ensure the maximum commonality across components, interfaces, standards, and interchangeability of reparables and repair parts at the Line Replaceable Units (LRU) and Shop Replaceable Unit (SRU) level as further detailed in Section C.2.3.2. Commonality is defined as common components, interfaces, standards, and interchangeability of reparables

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and repair parts. Commonality shall include interchangeability of reparable and repair parts (excluding fasteners). Fasteners are defined as nuts, bolts, screws, washers, o-rings, seals, cotter pins, bushings and retaining clips used to fasten or secure repair parts or used to assemble multiple repair parts. Although fasteners are excluded from the 57% commonality across the AMPV FoVs, the contractor shall, to the maximum extent, use commonality of fasteners across the ABCT inventory.

C.2.3.1.1 The contractor 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, and use of support equipment. Commonality is based on a comparison of interchangeable reparable, components and repair parts which have the same National Stock Number (NSN). The NSN identity must be data found in FEDLOG or WebFlis. For commonality credit for new parts without NSN assignment, the parts must have part number assignment (see Section C.8.3). 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 development by considering the differences in operation and maintenance tasks as it relates across the AMPV variants, the base vehicle platform the AMPV FoV use as their foundation, and Mission Equipment Packages (MEP). 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 all design reviews.

**C.2.3.2 Commonality Prioritization**

The contractor shall prioritize the selection of components with respect to commonality (hardware and software) in accordance with the following commonality hierarchy:

**Functional commonality:**

- 1) Component
- 2) Interface
- 3) Standard

**Vehicular commonality:**

- 1) AMPV FoVs (GP, MC, MCmd, ME, MT)
- 2) United States Army Inventory
  - (a) Armored Brigade Combat Teams Inventory
  - (b) Program Executive Office Ground Combat Systems (PEO GCS) Inventory

**C.3 Program Structure & Management****C.3.1 Integrated Product Teams (IPTs)**

C.3.1.1 To reduce risk in delivering the desired performance, and to provide a common understanding of the requirements and subsystem interactions, the Government will chair and participate in all IPTs, which the contractor shall establish under this SOW. IPTs shall be established to serve as the primary contract management tool and key method of communication for this contract; however, all changes to the contract must be coordinated through the PCO. Whenever practical, the contractor shall enable Government approved videocom or telecom and net-meeting connections to remote attendees.

C.3.1.1.1 The first IPT meetings shall be held in conjunction with the Start of Work Meeting (SOWM) (see Section C.3.5.2). Subsequent IPT meetings shall be held weekly or as mutually agreed between the Government and contractor. Government and contractor IPT Leaders shall be identified no later than the SOWM. The contractor may propose changes to the number, composition, functionality, and responsibilities of the IPTs at the SOWM. Proposed changes will be jointly determined thereafter. Throughout the life of this contract, contractor and Government IPT members have the responsibility to propose new or modified IPTs when needed to focus efforts or improve effectiveness.

C.3.1.1.2 The contractor shall be responsible for developing all IPT agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings. Each IPT shall be responsible for the following activities within the domain and scope of the IPT: risk management, issue tracking and resolution, technical performance measure reporting and management, and updating the Systems Engineering Integration Team (SEIT).

**C.3.1.2 IPT Structure**

The IPT structure shall include the following areas: Program Management (see Section C.3.1.2.1), Business Management (see Section C.3.1.2.2), Engineering (see Section C.3.1.2.3), Product Assurance and Test (see Section C.3.1.2.4), RAM Product Support (see Section C.3.1.2.5), Product Support Management (see Section C.3.1.2.6), Manpower and Personnel Integration (see Section C.3.1.2.7), and GFM/GFI (see Section C.3.1.2.8). Working Groups may be created to address lower level technical assignments within the IPTs. These organizations may be ad hoc or may have standing relationships depending on its long-term involvement with the technical scope.

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C.3.1.2.1 For Program Management there shall be an Overarching Integrated Project Team (OIPT). The contractor shall participate in an every other week OIPT in accordance with the OIPT Charter (Attachment 0068) for the purpose of providing the integrated management, support, and functional area leadership for all efforts. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

C.3.1.2.2 The Business Management IPT shall be created to cover budget, cost and schedule issues. For planning purposes, the Business Management IPT shall meet monthly. The contractor shall participate in the required meetings, conferences, and reviews listed in the contract. Whenever possible, meetings shall be conducted virtually using Government agreed-upon technology. All program and technical meetings, conferences, and reviews shall be hosted by the contractor. The contractor shall prepare a meeting agenda and a read-ahead package (presentation material) prior to each of the review meetings (CDRL A002). The contractor shall distribute to all attending organizations meeting minutes (CDRL A001), including action items.

C.3.1.2.3 Engineering

C.3.1.2.3.1 Systems Engineering & Integration Team (SEIT)

C.3.1.2.3.1.1 The AMPV SEIT guides and directs subordinate IPTs in the technical execution of the program. The SEIT also provides a forum for discussing the program's technical planning and management to achieve user requirements, including future modifications and sustainment planning, and acts as the technical authority in establishing the program's technical strategy. The SEIT will also act as the technical conflict resolution authority. The SEIT is chaired by the Government Lead Engineer. The SEIT shall include representatives from IPTs outside of engineering.

C.3.1.2.3.1.2 The contractor shall administer, support, and conduct every other week SEIT meetings to enhance communication between the contractor and the Government, as well as document decisions made that affect the technical baseline. The Government Lead Engineer for the AMPV program will have the final determination on all SEIT decisions. The SEIT shall be comprised of Government and contractor participants to address technical development issues. The contractor shall establish a clear decision process to address and document decisions related to the development of the AMPV variant(s) baseline and present it for comment at the first SEIT meeting. The contractor shall ensure that all tradeoffs and modifications are documented against the baseline, and presented through the SEIT prior to implementation.

C.3.1.2.3.1.3 The contractor shall be responsible for developing all SEIT agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

C.3.1.2.3.2 Engineering IPTs

The contractor shall create, administer, support, and conduct engineering IPTs to address issues, tradeoffs, design, requirements, risks, disclosure of Design For Six Sigma (DFSS) tools, specific to its functional area, and shall include, as a minimum, Systems Engineering, Configuration and Data Management, Survivability, Lethality, Mobility, Power and Vehicle Electronics (VETRONICS), and Software. The IPTs shall be aligned to be consistent with the Contract Work Breakdown Structure (CWBS) identified in MIL-STD-881C, Appendix G Surface Vehicle Systems Work Breakdown Structure (WBS) Definitions. These IPTs shall schedule weekly standing meetings unless otherwise specified in the contract or more frequent contact is necessary (CDRLs A001 and A002) .

C.3.1.2.4 The Product Assurance and Test area shall include Test and Evaluation Working-level Integrated Product Team (T&E WIPT) and Reliability Availability Maintainability (RAM) IPT.

C.3.1.2.4.1 The primary purpose of the AMPV T&E WIPT is to optimize the use of T&E expertise, instrumentation, facilities, modeling and simulation (M&S), and the collected resources of the represented agencies and organizations to integrate the collective T&E efforts. The T&E WIPT will collectively plan, budget, resource, execute, and continuously evaluate the AMPV T&E program as a principal risk management agent for the Product Manager. The primary product of the T&E WIPT is the program test strategy, which is captured in the AMPV Test and Evaluation Master Plan (TEMP). The T&E WIPT shall meet every two months and be the instrument that will tailor the T&E tools and strategy to maximize effectiveness and efficiency of the test procedures, while determining which specific tests are required to support the system assessment for approval and systems safety certification.

C.3.1.2.4.1.1 The LFT&E IPT is a T&E sub-IPT responsible for analyzing the AMPV variants and recommending the most efficient means of assessing the system vulnerabilities. Members will recommend required live fire and prepare a Live Fire strategy for approval by DOT&E and incorporation into Part III of the AMPV TEMP. The Live Fire Sub-IPT shall meet monthly to manage the Live Fire program.

C.3.1.2.5 The RAM IPT is a T&E sub-IPT responsible for providing the integrated management, support, and functional area leadership for all efforts in the RAM functional areas for the AMPV program. The RAM IPT will also help to score Test Incident Reports (TIR) according to the FD/SC as the IPT moves through the acquisition life cycle. The RAM IPT will establish RAM objectives and evaluation baselines; define organization responsibilities and relationships; estimate costs and schedules for RAM; and identify needed RAM resources. The RAM IPT forum will maintain a continuous interchange of RAM-related issues, and identify and resolve potential problem areas. Members will develop, review, and track approval of all RAM documentation. The IPT will also assess contractor

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efforts toward identifying and implementing corrective actions. The primary product of the RAM IPT is the program RAM strategy, which is captured in the AMPV Reliability, Availability, Maintainability, and Cost (RAM-C) Rationale Report. The RAM IPT shall meet monthly to jointly manage the RAM program.

## C.3.1.2.6 Product Support Management Integrated Process Team (PSM-IPT)

The purpose of the PSM-IPT is to coordinate overall ILS planning and execution. The PSM-IPT members will work together to generate cost-saving and logistics footprint-reducing improvements in readiness, support, and supportability-related system design. The Government Product Support Manager (PSM) will schedule the PSM-IPT meetings. The contractor's Integrated Logistics Support (ILS) manager shall serve as vice chairperson of the PSM-IPT. For planning purposes, the PSM-IPT meetings shall be conducted on a quarterly basis in conjunction with key ILS and Program events. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

## C.3.1.2.6.1 PSM-IPT Support

The contractor shall provide suitable meeting space at the contractor's facility to conduct PSM-IPT meetings. For planning purposes, the PSM-IPT meetings shall be conducted on a quarterly basis in conjunction with key ILS and Program events. The contractor shall coordinate PSM-IPT meeting agenda issues, topics and schedules with the PSM-IPT members. The contractor shall prepare and deliver minutes of the PSM-IPT meetings. The minutes shall be delivered in accordance with CDRL A001. The minutes shall contain as a minimum, schedules; detailed results and proceedings of discussions, assessments, and guidance; action items; an attendees roster; and all presentations. Action items shall be assigned prior to the close of the meeting.

## C.3.1.2.7 Manpower &amp; Personnel Integration (MANPRINT) IPT

C.3.1.2.7.1 The AMPV MANPRINT IPT identifies and integrates all relevant information and considerations regarding the full range of manpower, personnel capabilities, training, human factors engineering, system safety, health hazards, and Soldier survivability into the system development and acquisition process. The AMPV MANPRINT IPT identifies and resolves technical and human resources required for operating, maintaining, training, and sustaining the AMPV.

C.3.1.2.7.2 The contractor shall administer, support, and conduct weekly MANPRINT IPT meetings to enhance communication between the contractor and the Government, as well as document decisions made that affect the technical issues affecting MANPRINT. The Government Lead Engineer for the AMPV MANPRINT IPT will have the final determination on all decisions related to MANPRINT issues. The contractor shall establish a clear decision process to address and document decisions related to the MANPRINT program and present it for comment at the first MANPRINT meeting. The contractor shall ensure that all tradeoffs and modifications are documented against the baseline, and presented through the MANPRINT prior to implementation. The MANPRINT IPT shall be comprised of the necessary Government and contractor participants from a variety of departments to address technical and human resource issues pertaining to MANPRINT.

C.3.1.2.7.3 The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

C.3.1.2.8 The GFM/GFE IPT shall be created to cover cost, schedule, and performance issues associated with GFM/GFE. GFM/GFE IPT meetings shall be held monthly or as mutually agreed upon by the Government and contractor. The purpose of the GFM/GFE IPT is to identify the status of all contractual GFM/GFE items as they relate to the vehicle production/testing/fielding schedules such that the Government can effectively manage GFM/GFE risk areas. At a minimum, each IPT meeting will discuss the following for each GFM/GFE item: current quantity on hand, current usage rate, current condition of items, forecasted usage schedule, and status summary of PQDRs submitted on the item (if any). GFM/GFE issues will be identified to allow the Government to fill inventory needs, replace/repair GFM/GFE items as needed, identify needs for production/test spares, and forecast future GFM/GFE requirements. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

## C.3.2 Internet-Based Collaboration

C.3.2.1 The ABCT Integrated Data Environment (IDE) consists of internet-based collaboration tools that shall be used to facilitate information sharing and collaboration within an encrypted Government server environment that provides controlled, distributed access to AMPV program information, both released and in-work. Types of information that shall be processed and maintained within the IDE will include AMPV program documents, reports, program management data, meeting-related information, modeling and simulation or analysis data, pertinent manufacturing information, and test data, consistent with the AMPV Security Classification Guide (Attachment 0069). Any posting to the IDE is considered a data deliverable in the context of Defense Federal Acquisition Regulation Supplement (DFARS) Data Rights clauses, including 252.227-7013 and 252.227-7014. The IDE shall only be used for sharing Controlled Unclassified Information (CUI) information. All classified information shall be sent via registered or express mail to the AMPV classified mailing address.

AMPV Classified Mailing Address:

PEO GCS PM AMPV

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6501 E. Eleven Mile Road, MS 463  
Warren, MI 48397

C.3.2.1.1 The contractor shall notify appropriate Government personnel via email 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 Procuring Contracting Officer (PCO) shall not be submitted via an internet-based collaboration tool without prior authorization.

C.3.2.1.2 IDE collaboration tools: The contractor shall utilize the designated AMPV area of the PEO GCS Knowledge Center to facilitate unclassified, encrypted internet-based information sharing between AMPV program participants. 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 for test data. Details on specific IDE tools, requirements for access, and approach for use will be discussed at the SOWM (see Section C.3.5.2).

C.3.2.1.3 The Government will sponsor Army Knowledge Online (AKO), PEO GCS Knowledge Center, DCO, VDLS, 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 no later than the SOWM for all systems except VDLS. The list of contractor personnel requiring VDLS access shall be provided to the Government 50 days prior to the Test Readiness Review (TRR).

C.3.2.1.4 In order to access these systems, the contractor shall have or obtain an AKO account, External Certification Authority (ECA) Certificates and Department of Defense (DoD) Common Access Cards (CAC) for appropriate personnel. The contractor shall designate an Information Assurance (IA) Officer to work with the Product Manager (PM) AMPV and the Government IA Manager in order to obtain and implement usage of the ECA and 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.3.2.2 Contract Data Requirements**

Data shall be delivered in accordance with the DD1423, CDRLs, as set forth in Exhibit A and as called out in the SOW. DIDs called out in the CDRLs can be found in the ASSIST website at <http://quicksearch.dla.mil/>. If data deliverables require revision after original delivery, and the date for delivery cannot be determined at time of award, the contractor shall deliver the data on a date mutually agreed to by the contractor and PCO. Except for those items that specifically require hard copy submission, all data specified in this contract shall be provided to the Government electronically through the IDE unless otherwise specified in the CDRL.

**C.3.3 Security Guidelines****C.3.3.1 Security Classification Specification**

The contractor shall adhere to the requirements of the DD Form 254 (Attachment 0070) (Contract Security Classification Specification) and CDRLs (Exhibit A) for the protection of the unclassified information, CUI, and classified information, data, hardware, and software generated for or provided in support of the program. To preserve national security interest, the contractor shall ensure all aspects of the contract and work performed are evaluated for conformance with security procedures and standards. The contractor shall evaluate all products for security implications and prepare appropriate security documents and plans.

**C.3.3.2 Classification**

The highest classification associated with this contract is Secret. The contractor shall ensure all personnel meet clearance and access requirements. Refer to the DD Form 254 (Attachment 0070) for additional security and personnel requirements.

**C.3.3.3 Manage Security**

The contractor shall manage security activities at the unclassified, CUI, and all applicable classification levels encompassing all security disciplines (Information Security, Operations Security, Anti-Terrorism and Force Protection, International Security, Physical Security, Communications Security, Information Systems Security, and Personnel Security). This requirement is to utilize the above security functions to protect the programs information and technology.

**C.3.3.4 Public Release Requests**

The contractor shall screen all information submitted for determination of public release to ensure it is both unclassified and technically accurate. A letter of transmittal must certify the review. PM AMPV information shall not be released outside AMPV channels in accordance with Distribution Statement D until the review process is complete. PM AMPV information is any Program information on the AMPV effort. Refer to the AMPV Security Classification Guide (Attachment 0069) on public release of information for additional information. The PM AMPV Program will require 45 working days to process the request and render a decision. Requests for public release

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shall be sent to the PCO electronically via encrypted email using cryptographic products that are National Institute for Standards and Technology/National Information Assurance Partnership (NIST/NIAP) approved or mail the Compact Disc/Digital Video Disc (CD/DVD) using U.S. Postal Service Registered Mail, U.S. Postal Service Express Mail or FedEx.

**C.3.3.5 Controlled Unclassified Information (CUI)**

CUI provided to or generated pursuant to this contract shall be protected. The procedures for the protection of CUI are outlined in the DD254 and Additional Guidelines for CUI Attachment (Attachment 0070).

**C.3.3.6 Marketing Proposals and Export Considerations**

The contractor shall coordinate with the Government program office staff and counterintelligence support staff, all proposals to market or otherwise obtain a export license to sell portions of the system being acquired or like systems to foreign countries.

**C.3.3.7 Information Flowdown**

The contractor shall ensure the security requirements and guidelines contained in Section C.3.3 is flowed down to U.S. subcontractors, teammates and consultants.

**C.3.3.8 Operations Security (OPSEC) Requirements**

The contractor is not required to produce an OPSEC Plan. All U.S. contractors with access to CUI or classified information shall be required to follow the ABCT OPSEC Plan. The ABCT OPSEC plan will be provided at the SOWM. To ensure awareness of the ABCT OPSEC Plan, the contractor shall provide annual training for all AMPV personnel on the contents of the ABCT OPSEC Plan. New AMPV personnel shall receive ABCT OPSEC Plan specific training within 30 days of program assignment. OPSEC compliance records shall include names and dates of when training was completed by each individual. Compliance records will be available for Government Security Officer to review during working hours. Contractor's AMPV Security Manager shall submit a letter on an annual basis certifying 100% of the Contractor's AMPV staff and the staff's of subcontractors and suppliers supporting AMPV have completed annual OPSEC training (CDRL B055).

**C.3.4 Program Protection**

If Critical Program Information (CPI) is identified, either organic or inherited, the contractor shall develop and implement an Anti-Tamper plan (see Section C.3.4.3.8.1.) and protection measures consistent with DoD Anti-Tamper policies and directives. For organic CPI the contractor shall be responsible for all aspects of Anti-Tamper planning, development, validation, verification and implementation. For inherited CPI the contractor shall be responsible for all aspects of integration of the CPI and or the critical components hosting the CPI. The contractor shall develop, implement, and maintain the processes for management and implementation of the program protection that is compliant with the security requirements imparted by the DD Form 254 (Attachment 0070), the NISPOM, and applicable DoD regulations with appropriate coordination from the Government. The contractor shall comply with the Government PPP, provided at the SOWM, and ensure its US subcontractors adhered to guidelines provided in the Government PPP.

**C.3.4.1 Critical Program Information Assessment (CPIA)**

The contractor shall participate in CPIA. These activities shall occur as part of an annual meeting at the contractors facility throughout the period of performance of this contract.

**C.3.4.2 Mission Critical Analysis**

The contractor shall develop and update mission criticality analysis(es), vulnerability assessment(s), risk evaluation(s), and identification and counter measurement implementation(s) for Mission-Critical Functions, the failure of which would result in either total compromise of mission capability (catastrophic) (Level I) or unacceptable compromise of mission capability or significant mission degradation (critical) (Level II).

**C.3.4.3 Mission Critical Levels**

Adapting the MIL-STD-882 System Safety Program definitions of criticality to mission criticality, the contractor shall define the following criticality levels:

(a) Level I (Catastrophic) protection failure that results in total compromise of mission capability;

(b) Level II (Critical) protection failure that results in unacceptable compromise of mission capability or significant mission degradation;

(c) Level III (Marginal) protection failure that results in partial compromise of mission capability or partial mission degradation;

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(d) Level IV (Negligible) protection failure that results in little or no compromise of mission capability.

## C.3.4.4 Program Protection Working Group (PPWG)

The contractor shall host a PPWG within three months after contract award and on a quarterly basis throughout period of performance of the contract. Each PPWG will be chaired by a Government systems engineer and co-chaired by either the contractor security manager or a contractor engineer. The co-chair shall develop the agenda (CDRL A002), minutes, and action items (CDRL A001). The agenda shall include Critical Analysis (CA), CC, CPIA, and Supply Chain Risk Management (SCRM). Contractor shall ensure any updated assumptions, rationale, and results related to criticality analysis, vulnerability assessments and risk evaluations, as well as supply chain risk information and mitigation are made available for Government review at PPWGs. It is expected that each of the PPWGs will be a one day event.

## C.3.4.5 Critical Functionality Analysis (CFA)

The contractor shall conduct a CFA for the purpose of identifying CCs that can lead to Level I and Level II mission critical failures. The CFA shall assess CC for the following war fighting functions: movement and maneuver, intelligence, fires, protection, sustainment, command and control, casualty evacuation, and treatment. The CFA shall identify all logic bearing critical components as well as the hardware and software suppliers for the logic bearing components. The contractor shall host a one day review with the PM AMPV team to discuss and review the results of the CFA. The contractor shall develop the agenda for the CFA review (CDRL A002). The CCs shall be prioritized, assessed for supply chain risk (as defined in DoDI 5200.44), and based on risk the contractor shall develop mitigations or countermeasures to minimize the risk posed from supply chain. The contractor shall develop meeting minutes and action items (CDRL A001) for the CFA review. The CFA, supply chain risk, and mitigation or countermeasures for risks shall be included in the meeting minutes. The CFA shall assess both Organic CC as well as the integration of Inherited CC.

## C.3.4.6 Countermeasures

The contractor shall plan for and implement countermeasures that mitigate the risk of foreign intelligence or foreign influence, technology exploitation, threats to supply chain, and battlefield threats and vulnerabilities that result in Level I and Level II protection failures of the system. The plan shall include:

- 1) The application of supply chain risk management best practices, applied as appropriate to the development of the system. Supply chain risk management key practices may be found in the National Institute of Standards and Technology Interagency Report 7622, Piloting Supply Chain Risk Management for Federal Information Systems, and the National Defense Industrial Association Guidebook, Engineering for System Assurance, both publicly available.
- 2) The enumeration of potential suppliers of critical components, as identified, including cost, schedule, performance information, and proposed selection decisions, for the purposes of obtaining approval from the Government and engaging in the development of mutually agreeable risk management plans for the selected suppliers of critical components.
- 3) The processes to control access by foreign nationals to program information, including, but not limited to, system design information, DoD-unique technology, and software or hardware used to integrate commercial technology.
- 4) The processes and practices employed to ensure that genuine (i.e., not counterfeit) information and communications technology (ICT) are employed in the solution and that processes and requirements for genuine ICT are levied upon subcontractors. ICT includes all categories of ubiquitous technology used for the gathering, storing, transmitting, retrieving, or processing of information (e.g., microelectronics, printed circuit boards, computing systems, software, signal processors, mobile telephony, satellite communications, and networks). ICT is not limited to information technology (IT), as defined in Section 11101 of title 40, U.S.C. (Reference (u)). Rather, this term reflects the convergence of IT and communications.
- 5) The processes used to protect both unclassified and classified DoD information, technical data (e.g., source code), and computer software in the development and support environments (e.g., Government or contractor owned facilities and the integrated development environment) from entities without a need to know.

## C.3.4.6.1 Countermeasures for Suppliers

Above countermeasure provisions shall be included in all solicitations, contracts, and subcontracts for all suppliers of critical functions (Attachment 0131, Criticality Analysis) and associated components at all tiers.

## C.3.4.7 Subcontractors

The contractor shall comply with the requirements of FAR Subpart 44.2, Consent to Subcontracts. The Government requires prior approval to subcontract for those systems or subsystems identified by the PPWG as CCs that have logic bearing components. If the contractor issues a contract to subcontract for an item that, at the time of issuance of the contract, has not been identified as a CC by the PPWG, but later the item is identified as CC, the contractor will notify the Government and adhere to following guidance. The contractor shall provide a definitive list of all known or proposed subcontractors and suppliers of CCs with logic bearing components (i.e., software, firmware, network cards, and printed circuit boards) at Program Protection Working Group (PPWG). The subcontractor

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supplier list will be included in the minutes of the PPWG (CDRL A001). The list will be reviewed and approved by the PCO in coordination with Defense Intelligence Agency (DIA). DIA will assess the foreign intelligence and technology exploitation threat for the supply chain associated with the CC. A threat assessment can take 3-6 months. The results of the threat assessment must be used to inform the subcontractor's risk mitigation strategy for all CC's. Mitigation could include disapproval to use a prospective subcontractor or supplier in accordance with Sec 806 of NDAA FY 2011 (authority extension in Sec 806 of NDAA FY 2013). The contractor shall take steps to ensure that commercial products purchased or obtained shall not be identified as being destined for inclusion in a Government system.

**C.3.4.8 Threat Information**

The contractor shall evaluate Government-provided foreign intelligence and technology exploitation threat information, along with the traditional acquisition and battlefield threat information, as part of System Security Engineering (SSE), systems engineering, and procurement decision processes.

**C.3.4.9 Component Control**

The contractor shall ensure that products purchased or obtained shall not be identified as being destined for inclusion in a Government system. The contractor shall certify that the underlying software, firmware, and hardware, which in totality constitute the managed service, have been controlled, evaluated, and tested to ensure that the service delivers what it is designed to deliver and nothing more. The contractor shall not provide functionality, additions, or enhancements to CCs unless explicitly requested and approved by the Government. The contractor shall not knowingly create the capability for unauthorized access to the system or knowingly introduce such capability into the Army network. All contractor developed code shall be provided to the Government for independent system assurance testing. Contract code will be tested against the top 25 Common Weakness Enumerator <http://cwe.mitre.org>.

**C.3.4.10 Secure Coding**

The contractor shall develop a set of secure coding standards and secure design features for components developed for the AMPV. The standards and features shall draw upon the top 10 secure coding practices (<https://www.securecoding.cert.org/confluence/display/seccode/Top+10+Secure+Coding+Practices>) and the Common Weakness Enumeration/SysAdmin, Audit, Networking, and Security (CWE/SANS) top 25 most dangerous software errors (<http://cwe.mitre.org/top25/>) and the secure design patterns (<http://www.sei.cmu.edu/reports/09tr010.pdf>). The contractor shall develop, document and update actual software assurance countermeasures implemented in Table 5-5 of the Program Protection Plan, in accordance with the table description provided in Section 13.7.3 in the Defense Acquisition Guide.

**C.3.4.11 Critical Technologies**

The contractor shall conduct a crosswalk of their system specifications with the Military Critical Technology List (MCTL) and other DoD and Army tools in conjunction with the Government at initial planning and throughout the acquisition life cycle. MCTL and information on accessing DoD and Army tools will be provided at the PPWG. The crosswalk may or may not trigger parameters which cause a technology to be designated as Critical Program Information (CPI) or Critical Technologies (CT). Should the assessment result in identification of CPI or CT then the contractor will be required to assess methods of protection and in conjunction with the Government, develop and implement an Anti Tamper (AT) Plan (see Section C.3.4.11.1).

**C.3.4.11.1 Anti-Tampering (AT) Plan**

If Anti-Tamper is identified as a solution for hardware and software containing CT, the contractor shall design, develop and integrate an AT protection solution to deter, prevent, or detect the reverse engineering of those systems using the probability of an unplanned loss or for international sales across the program's life cycle in a Anti Tamper Plan (CDRL B056). The contractor shall implement AT in system engineering activities across the programs life cycle to include science and technology efforts, research, design, development, implementation, testing, maintenance, upgrade, and disposal of the system. 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 AT Guidelines. An Anti-Tamper Plan is classified at a minimum classification level of SECRET, when plan development begins.

**C.3.4.11.2 AT Implementation**

The USG may incorporate AT protection into weapon systems and components that contain CPI. The AT protection solution will not impact operations, maintenance, or logistics, provided that all terms delineated in the system technical documentation are followed.

**C.3.4.12 Inherited Critical Program Information and Critical Technology (CPI/CT)**

Identification of CPI and CT and implementation of AT for inherited technologies is the responsibility of the specific external program(s) that originates the CPI and CT. The contractor shall be responsible for implementing security countermeasures identified by the external program(s) in order to ensure the inherited CPI/CT is protected to the level outlined in the respective inherited technologies program protection plan.

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## C.3.5 Meetings, Audits, Assessments and Reviews

## C.3.5.1 Reviews and Audits

C.3.5.1.1 The contractor shall prepare minutes, attendee lists, and action items resulting from reviews and audits in accordance with the contractor's standard business process (CDRL A001). Whenever practical, the contractor shall enable Government approved videocom or telecom and net-meeting connections to remote attendees. The contractor shall prepare a meeting agenda and presentation material prior to each of the review meetings (CDRL A002). The contractor shall post all meeting data (agendas, supporting documentation and minutes) to the ABCT IDE.

## C.3.5.2 Start of Work Meetings (SOWM)

The contractor shall participate in a SOWM, in accordance with TACOM Provision 52.204-4003 -- Start of Work Meeting, at or near the contractor facility. This meeting will introduce and align the Government and contractor teams. The SOWM will consist of a Scope of Work review and Integrated Master Schedule (IMS) Review. The agenda topics for the SOWM are identified in the SOWM Agenda (Attachment 0007). Refer to Section C.3.5.9 for IMS Review requirements.

## C.3.5.3 Program Management Reviews (PMR)

The contractor shall conduct bi-annual PMRs, beginning with the first quarter after contract award. The PMRs shall include contractor senior-level program management personnel and shall alternately be held near the Government Product Manager site and near the contractor's facility. 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, schedule progress, risks and mitigation, and cost impact.

## C.3.5.4 Provisioning Guidance Conference

The contractor shall lead a Provisioning Guidance Conference at its facility no later than 45 days after contract award. The purpose of this conference is to communicate provisioning guidance to the contractor for compliance in completing the Provisioning Parts List (PPL) (CDRL D022). Attendees shall include contractor provisioning data developers, contractor engineers and contractor logistics personnel as well as Government representatives. The contractor shall be responsible for developing all agendas and meeting minutes unless otherwise stated in the IPT Charter (CDRLs A001 and A002). The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

## C.3.5.5 Technical Manual (TM) Guidance Conference

The contractor shall conduct a TM Guidance Conference at its facility to discuss with the Government any issues the contractor is facing with TM development. The contractor shall lead the TM Guidance Conference in conjunction with the Provisioning Guidance Conference, which will be held no later than 45 days after contract award. The contractor shall be responsible for developing all agendas and meeting minutes unless otherwise stated in the IPT Charter (CDRLs A001 and A002). The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

## C.3.5.6 Test Readiness Reviews (TRRs)

## C.3.5.6.1 Contractor Attendance at Government TRRs

The contractor shall send technical personnel to attend TRRs to be held at the Government test site(s) and Operational Test locations in accordance with the IMS and Attachment 0008 (Test Summary).

## C.3.5.6.2 Government Conducted TRRs for System Level Test

The Government TRRs for Developmental Test (DT) testing are anticipated to be held within seven to twenty-one calendar days prior to start of testing and will assess both the contractor's and the Governments test readiness. The Government pre-TRRs for Operational Test (OT) testing are anticipated to be held six months, two months and two days prior to start of Limited User Test (LUT) testing.

## C.3.5.6.3 Line Replaceable Unit (LRU) TRR

The contractor shall conduct TRRs on the LRU tests. The LRU tests include LRU Qualification Tests, LRU Highly Accelerated Life Tests (HALTs) and LRU First Article Tests (FATs). The Government shall be informed no less than five business days prior to the start of the LRU TRR. The contractor shall have technical personnel attend LRU TRRs. The LRU TRR is to be held no more than five business days prior to start of test and will assess both the contractor's and the Governments test readiness. The contractor shall prepare and provide a LRU TRR Package in accordance with CDRL C001.

## C.3.5.7 Contractor Manufacturing Cost Estimate Reviews

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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, 14 calendar days prior to the Manufacturing Cost Estimate Report submittal (CDRL A003).

**C.3.5.8 Cost and Software Data Reporting (CSDR) Readiness Review**

The contractor and the Government shall conduct a post contract award conference (see Section C.3.5.12) to include a discussion of the contractor's standard CSDR process that satisfies the guidelines contained in the DoD 5000.04-M-1, CSDR Manual, the requirements in the Government-approved CSDR Contract Plan (Attachment 0009), and the CSDR Contract RDT (Attachment 0080).

**C.3.5.9 Integrated Master Plan (IMP) and IMS Reviews**

The contractor shall attend and participate in monthly Government-contractor teleconferences that will be conducted to analyze the contractors progress to date. Monthly schedule review dates and times shall be determined and agreed to by the Government and the contractor. The contractor shall prepare and provide minutes in accordance with CDRL A001.

**C.3.5.10 Integrated Baseline Review (IBR)**

C.3.5.10.1 The contractor and the Government shall conduct a joint assessment of the Performance Measurement Baseline (CDRL A004) to verify the baselines realism, accuracy, and technical content. The IBR shall take place at the contractors facility within 180 calendar days of contract award. Subsequent IBRs shall be conducted as agreed to by the parties throughout the life of the contract for initiation of all major changes to the baseline. The contractor shall provide access to all pertinent records and data requested by the PCO or duly authorized representative to adequately prepare for the IBR (including, the detailed, time-phased Performance Management Baseline (PMB), Responsibility Assignment Matrix, Control Account Authorizations, and Work Package Authorizations) and permit Government surveillance to ensure Earned Value Management System (EVMS) compliance. The PMB shall be detail-planned to MIL-STD-881C WBS Level III 14 calendar days prior to the IBR. The contractor shall provide the Government Control Account Managers (CAM) with a read-ahead copy of the IBR topics to be covered at the IBR, focusing on its assigned WBS elements.

C.3.5.10.1.1 A 12-month rolling wave detailed IMS plan (CDRL A004) should be presented at the initial IBR. The Government shall provide acceptance or rejection of the detailed plan within 14 calendar days of the IBR closeout. After the initial IBR, the contractor shall continue to provide a detailed IMS plan at a minimum of every six months in subsequent IBRs.

**C.3.5.10.2 IBR Training**

The contractor shall provide IBR training at the contractor's facility. The training should take place at least 14 calendar days before the initial IBR. The IBR training shall cover the basics of what an IBR is; how to prepare for an IBR; topics that will be covered in an IBR; examples of the contractor's reports and documentation will be provided as a read-ahead package; and instructions on how to read and understand the reports and documentation. The joint training is intended to level-set both the contractor's CAMs and the Government Leads on what to expect in an IBR. The contractor may work with the Government AMPV Earned Value Management (EVM) Lead for assistance.

**C.3.5.11 Selected Acquisition Report (SAR) and Milestone (MS) C Preparation Meeting and Support**

The contractor shall review and clarify its methodologies utilized to produce technical and cost data (e.g., CDRLs). The Government shall require the attendance of contractor Subject Matter Experts (SMEs). For planning purposes, the meeting is anticipated to be a one day event in Washington, D.C. The contractor shall prepare and provide minutes in accordance with CDRL A001.

**C.3.5.12 Office of the Secretary of Defense (OSD) and Defense Cost and Resource Center (DCARC) Post Contract Award Meeting**

A post contract award conference to be held with the SOWM will include a discussion of the contractor's standard CSDR process that satisfies the guidelines contained in the DoD 5000.04-M-1, CSDR Manual, and the requirements in the Government-approved Contract CSDR plan, Government-approved Program CSDR Plan, DD Form 2794, and related program and contract RDTs. 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 and can be held at the contractors facility, PM ABCT, DCARC, or via teleconference.

Defense Cost and Resource Center  
4800 Mark Center Drive, Room 10G07  
Alexandria, VA 22350-2400  
Phone: (571)-372-4400  
Fax: (571) 372-4138

**C.3.5.13 Weekly Status Update Meetings**

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The contractor and the Government shall participate in weekly status update meetings, conducted via phone. Each meeting shall last no more than two hours. Open actions, late or deficient items, in addition to time sensitive deliverables shall be discussed. A separate meeting shall be held for each of the following functional groups: Engineering, Logistics, RAM, GFM, Business Management, MANPRINT, Program Management, Quality Engineering, T&E, and LFT&E. These meetings will begin at time of contract award with the exception of T&E and LFT&E, which shall begin with contractor test.

**C.3.6 Risk Identification and Management****C.3.6.1 Risk Management Review Board**

The contractor shall conduct monthly Risk Review Boards with Government participation. The Risk Review Board shall decide which risks are accepted, approved, and tracked at the system level.

**C.3.6.2 Risk Identification**

The contractor shall provide a Risk Management Plan (RMP) that outlines the processes and procedures for establishing and managing risks for the program in accordance with CDRL A005. In this plan, the contractor shall show how risk sources and categories are determined, define risk parameters (such as likelihood, consequence, etc.) and establish thresholds to trigger management activities. Supporting products to the risk management process, such as risk source lists, risk evaluation sheets, risk logs, vendor risk processes and supporting identification documentation, and watch lists shall be provided to the Government as supporting data. The contractor shall update these throughout the performance of the contract in accordance with CDRL A005 and Attachment 0002 (Risk Management Plan).

**C.3.6.3 Risk Management**

C.3.6.3.1 The contractor shall manage risks to the program and technical baselines through examination of each element in the CWBS. The contractor shall conduct formal risk assessments, interview SMEs, and utilize lessons learned from similar programs and products and conduct an examination of Government Furnished Information (GFI). The contractor shall produce a list of risks that shall be evaluated, categorized, and prioritized. The contractor shall establish a strategy to handle each risk, along with a strategy for the allocation of resources to support the management of the risk. The contractor shall develop and maintain a closure strategy for these risks. These closure strategies shall be reviewed and coordinated with the Government during the monthly Risk Review Boards.

C.3.6.3.2 The contractor shall include risks identified by its subcontractors in the risk identification, tracking, and management listing identified in Section C.3.6.2 above.

**C.4 Business Management**

At the SOWM (Section C.3.5.2), the contractor shall present and submit the contractors fiscal accounting calendar. The contractors fiscal accounting calendar shall encompass the duration of the contract (CDRL A006). The calendar shall identify all recurring Business Management CDRL submissions including all EVM, CSDR, and financial CDRLs. In addition, the calendar shall contain CDRL reporting as-of dates and reporting submittal dates. The contractor shall notify the Government when there are any changes to the contractors fiscal accounting calendar (CDRL A006).

**C.4.1 Contractor Manufacturing Cost Estimates**

The contractor shall provide a Manufacturing Cost Estimate Report (CDRL A003) that demonstrates auditable estimates for expected Production & Deployment (P&D) phase contract prices based on the AMPV concept and the contractor's delivered designs in accordance with the contractor Manufacturing Cost Estimate Template (Attachment 0067). Attachment 0067 provides the formatted delivery template and ground rules and assumptions for vehicle, and kit production schedules and quantities. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

**C.4.2 Contractor Cost Software Data Reporting (CSDR)**

C.4.2.1 The contractor shall systematically collect and report to the Government actual contract costs in the following reports:

Title	CDRL
Cost Summary Data Report 1921	A007
Functional Cost-Hour Report 1921-1	A008
Progress Curve Report 1921-2	A009
Contractor Business Data Report 1921-3	A010
Software Resources Data Report (SRDR): Initial SRDR and Data Dictionary	A011

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Software Resources Data Report: Final SRDR and Data Dictionary A012

Financial Bill of Materials A015

C.4.2.1.1 The contractor reports shall be prepared in accordance with the instructions contained in the above CDRLs and the Defense Cost and Resource Center (DCARC) approved Contract CSDR Plan (Attachment 0009).

C.4.2.1.2 The contractor shall systematically collect and report actual contract costs to provide DoD cost analysts with needed data to estimate future costs. Contractor reports shall be prepared in accordance with the instructions contained in the most recently approved versions of DI-FNCL-81565, DI-FNCL-81566, DI-FNCL-81567, and DI-FNCL-81765. In accordance with DoDI 5000.02 and DFARS 252.234-7003 (Notice of Cost and Software Data Reporting System) and DFARS 252.234-7004 (Cost and Software Data Reporting System):

1) The contractor shall have at the SOWM:

(a) The Government-approved Contract CSDR plan (Attachment 0009) for the contract; and

(b) The related RDT.

2) In the performance of this contract, the contractor shall:

(a) Describe the process to be used to satisfy the requirements of the DoD 5000.04-M-1, CSDR Manual, and the Government-approved CSDR plan for the proposed contract;

(b) Demonstrate how CSDR will be based, to the maximum extent possible, upon actual cost transactions and not cost allocations;

(c) Demonstrate how the data from its accounting system will be mapped into the standard reporting categories required in the CSDR Data Item Descriptions (DIDs);

(d) Describe how recurring and nonrecurring costs will be segregated;

(e) Accept or propose changes to the approved Contract CSDR plan and related RDT;

i. The Contract CSDR plan will include level 3 of the contract WBS and any lower level WBS elements designated by the Government as being high risk, high value, or high technical interest;

ii. The contractor may further extend the WBS for its own reporting or management purposes;

iii. If proposed changes are accepted, a revised Government-approved CSDR plan will be incorporated into the contract;

(f) Submit the DD Form 1921, Cost Data Summary Report, and summary DD Form 19211, Functional Cost-Hour Report, with its pricing proposal;

(g) Identify any subcontractor at any tier with a subcontract that exceeds \$50 million, by providing comments on the RDT, the subcontractors, or, if the subcontractors have not been selected, the subcontracted effort in this category and provide to the Government.

3) In the performance of this contract, the contractor shall have:

(a) A documented standard CSDR process that satisfies the guidelines contained in the DoD 5000.04M1, CSDR Manual;

(b) Management procedures that provide for generation of timely and reliable information for the contractor CSDRs and SRDRs required by the CSDR and SRDR data items of the contract;

(c) The Government-approved CSDR plan for this contract, DD Form 2794, and the related RDT as the basis for reporting in accordance with the required CSDR DIDs;

(d) The contractor shall require and flow down the requirement for CSDR reporting from subcontractors at any tier with a subcontract that exceeds \$50 million or any subcontracts valued between \$20 million and \$49 million that are designated by the Government as being high risk, high value, or high technical interest. If, for subcontracts that exceed \$50 million, the contractor changes subcontractors or makes new subcontract awards, the contractor shall notify the Government.

C.4.3 Contract Work Breakdown Structure (CWBS)

C.4.3.1 The contractor shall develop and maintain the CWBS and CWBS Dictionary in accordance with CDRL A013. The contractor shall use

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the CWBS as the primary framework for contract planning, budgeting, and reporting of the cost, schedule, and technical performance status to the Government. The CWBS shall be product-oriented. The contractor shall extend the CWBS down to the appropriate level required to provide adequate internal management, surveillance, and performance measurement. The contractor shall update both the CWBS and the dictionary during the life of the contract.

C.4.3.2 The contractor shall submit a CWBS Dictionary in accordance with CDRL A013 no later than 30 calendar days after contract award. The contractor shall update the CWBS Dictionary throughout the life of the contract, but no more often than Integrated Performance Management Report (IPMR) submission per CDRL A004. The CWBS definitions provided by the contractor for each level three WBS element must be traceable to the contract SOW. Changes to the CWBS or associated definitions, at any reporting level, require approval from the PCO.

**C.4.4 Bill of Materials (BOM)**

The contractor shall deliver a Bill of Material (BOM) for each AMPV configuration. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews in accordance with the Government provided IMP. (CDRL A015)

**C.4.5 Program Performance Management**

C.4.5.1 The contractor shall meet all program cost, schedule, supportability, and technical objectives set forth in the contract and its related documents. The contractor shall monitor:

(a) The attributes of the work products and tasks required under this contract (i.e., measure the actual attributes of the work products and tasks, such as size and complexity, in the context of changes to contract or schedule requirements, comparing these changes to the baseline in order to identify significant deviations);

(b) The resources used to perform the contract (resources include, but are not limited to, physical facilities, computers, peripherals, software used in design, manufacturing, testing and operation, networks, security environment, project staff, processes); and

(c) The knowledge and skills of program personnel (critical skills acquisition, actual training versus projected, and deviations from plan).

C.4.5.1.1 The contractor shall prepare and deliver to the Government an IPMR in accordance with CDRL A004.

C.4.5.1.2 The contractor shall identify, with supporting rationale, any deviations or changes to the program baseline, and review all program plans, activities, and work products for consistency with the baseline requirements and any approved changes made to them. The contractor shall document all changes, including those to be made to the plans and work products resulting from changes to the requirements baseline. The contractor shall initiate and complete corrective action for all inconsistencies reported (CDRL A004).

**C.4.5.2 Timely Incorporation of Baseline Changes**

Upon PCO approval, new work must be included in the contractor's distributed budget with appropriate performance measurement techniques included in the work package.

**C.4.5.3 Current Period and Retroactive Changes**

The contractor shall use American National Standards Institute (ANSI) 748 and the approved System Description in complying with changes. Current period or retroactive changes must be approved by the PCO.

**C.4.6 Integrated Program Management Report (IPMR) and Integrated Master Plan (IMP)**

C.4.6.1 The IPMR is a contractually required monthly report containing original baseline, performance data (earned value), and actual costs. From these three data points, cost and schedule variances can be determined and analyzed. Per the MILD-STD 881C, CDRL A013, DiD Di\_MGMT-81334D, and Table 5 (EVM Implementation Policy) in DoDI 5000.02 (Operation of the Defense Acquisition System), all seven formats of the IPMR are required for contracts exceeding \$50M: Format one (Work Breakdown Structure), Format two (Organizational Breakdown Structure), Format three (Baseline), Format four (Staffing), Format five (Variance Analysis), Format six (Integrated Master Schedule), and Format seven (Electronic History and Forecast File). The IPMR shall be developed and submitted at Level 3 of the CWBS, in accordance with CDRL A004. Reporting at lower levels may be specified for high-cost, high risk and high variance items at no additional cost to the Government and may be required until the problem is resolved. The Government and the contractor shall periodically review and adjust the CWBS reporting levels as necessary, to ensure the contractor continues to provide appropriate visibility without providing excessive information. Thresholds for reporting Format five shall also be periodically reviewed and adjusted as necessary by the Government. Format six shall be developed and maintained in an IMP. The IMP is an event-based plan consisting of a hierarchy of program events, with each event being supported by specific accomplishments, and each accomplishment

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reinforced by specific criteria that must be satisfied. The IMS shall roll up directly to the IMP and corresponding IMP event and criteria. The contractor shall develop and maintain an IMS by logically networking detailed program activities. The schedule shall be consistent with the CWBS and contain the planned events and milestones, accomplishments, exit criteria, and activities from contract award to the completion of the contract. The IMS and time-phasing of the Performance Measurement Baseline shall be consistent. The IMS shall be resource loaded and clearly identify critical path activities and reflect those risks identified and documented in the contractor's risk management plan (see Section C.3.6). All IMS and IMP monthly submissions shall include written schedule analysis.

C.4.6.2 The contractor shall include issues identified by its subcontractors in the identification, tracking and management listing identified in the paragraph above.

C.4.7 Earned Value Management System (EVMS)

In the performance of this contract, the contractor shall use an EVMS that complies with Table 5 (EVM Implementation Policy) in DoDI 5000.02 (Operation of the Defense Acquisition System), the American National Standards Institute/Electronic Industries Alliance Standard 748 (ANSI/EIA-748), DI-MGMT-8161, DFARS Clauses 252.234-7001, 252.234-7002, 252.234-7003, and 252.234-7004, the Integrated Program Management Report (CDRL A004), and the contractor's own documented System Description. The contractor shall use an EVMS that has been formally reviewed and determined by the Defense Contract Management Agency (DCMA) to be in compliance with the EVMS guidelines in ANSI/EIA-748.

C.4.8 Contractor Funds Status Report (CFSR)

The contractor shall submit the CFSR in accordance with CDRL A014. The contractor shall reconcile reporting elements in the CFSR with the IPMR when these documents are submitted in the same month. The contractor shall provide a reconciliation of the CFSR with the IPMR as an addendum to the IPMR.

C.4.9 Over-Target Baseline (OTB) or Over-Target Schedule (OTS)

In exceptional circumstances indicated by contract performance (per the contractor's EVMS Description), the contractor shall submit a request to the PCO for Government approval to initiate an OTB or OTS. The request shall include a top-level projection of cost or schedule growth, a recommendation of whether or not performance variances should be retained on record, and a schedule for implementing a new baseline. The contractor shall not implement the OTB or OTS restructuring prior to receiving written approval from the PCO.

C.4.9.1 Application to Subcontractors

The contractor shall flow-down EVM requirements to subcontractors meeting the applicable thresholds (per DFARS 252.234-7001, 252.234-7002, 252.234-7003, and 252.234-7004). The performance information reported by the subcontractors shall be incorporated and integrated into the contractor's management system. The contractor shall conduct IBRs on any subcontractors with contracts requiring EVM. Although the Government may attend these IBRs, the actual event shall be the contractor's responsibility.

C.5 Systems Engineering (SE)

C.5.1 System Engineering Management Plan (SEMP)

The contractor shall prepare and execute a SEMP detailing the systems engineering process being used to develop the system and supporting the Government's Systems Engineering Plan, provided as Attachment 0010. The SEMP shall define the role of system architecture and system architecture modeling in the systems engineering process and its role in analyzing and establishing an allocated baseline for design. The SEMP shall be prepared in accordance with CDRL B002.

C.5.1.1 Technical Reviews

The contractor shall conduct a System Requirements Review (SRR), a Preliminary Design Review (PDR), a Critical Design Review (CDR), an Interim Design Review (IDR), TRRs, a Functional Configuration Audit (FCA), a System Verification Review (SVR), a Physical Configuration Audit (PCA), and a Production Readiness Review (PRR) in accordance with the IMP (Attachment 0075). The contractor shall provide an agenda and meeting minutes for all technical reviews in accordance with CDRLs A001 and A002. The contractor shall follow the AMPV Systems Engineering Plan (SEP), provided as Attachment 0010, which provides high-level entrance and exit criteria for each technical review. The contractor may reference the detailed DoD Checklists (Attachments 0011-0015 and Attachments 0133-0135) in its approach to developing the review materials. The SRR shall be held at least 60 days prior to PDR. The Government will provide the entrance and exit criteria for the SRR. The contractor shall finalize entrance and exit criteria jointly with the Government no later than 30 days after contract award for the PDR and 60 days after the previous technical review for the CDR, IDR, FCA, SVR, PCA, and PRR. The contractor shall remedy all red, yellow, or unsatisfactory checklist ratings prior to entry into technical review. The contractor shall describe, in its proposal and in the SEMP (CDRL B002), the internal processes that will be used to prepare for and conduct the technical reviews. Reviews may be combined as long as the entrance and exit criteria can be satisfied and Government approval is granted. The contractor shall support Knowledge Points conducted in conjunction with PDR, CDR, IDR, and LUT, as described in the SEP, provided as Attachment 0010. The PCO will have the sole authority to certify the successful completion of the reviews and provide authorization to proceed based on successful completion of the entrance and exit criteria and closure of critical action items.

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## C.5.1.2 Technical Performance Measures

The contractor shall recommend to the SEIT for approval, the technical performance parameters and the plan for continuing verification of projected versus actual achievement of technical performance in accordance with the approach provided in the SEP (Attachment 0010). The contractor shall execute the plan approved by the SEIT for measuring technical performance parameters. The approved plan shall be documented in the SEMP (CDRL B002).

## C.5.2 System Requirements

## C.5.2.1 System Segment Specifications (SSS)

The contractor shall conduct analysis to flow-down the AMPV Performance Specification from the DOORS file format .PAR (Attachment 0083) into the SSS. The contractor shall establish the technical feasibility of the requirement prior to creating the various physical architectures. The contractor shall present progress to the Government at the individual IPT and SEIT meetings. The contractor shall provide the unclassified SSS to the Government for review in accordance with CDRL B003.

## C.5.2.2 Specification Requirements Verification

The contractor shall deliver the traceability and verification of the AMPV Performance Specification from the DOORS file format .PAR (Attachment 0083), SSSs, subsystem specifications, and component specifications. The contractor shall track verification of these specifications throughout development and operational testing. This information shall be used to establish risk ratings on meeting requirements based on initial predicted values. Requirements verification tracking is limited to developmental and operational testing only, and does not include functional test and evaluation. The contractor shall provide the traceability and verification to the Government for review and approval along with the SSS in accordance with CDRL B003.

## C.5.2.3 Requirements Non-Compliance

The contractor shall provide requirement compliance status for all requirements and details in the case of partial or non-compliance to the Government in accordance with CDRL B003. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

## C.5.2.4 Specification Tree (ST)

The contractor shall prepare and provide a ST in accordance with CDRL B004 for each AMPV variant that identifies the Functional, Allocated, and Product Baseline documentation. The ST shall trace to the Standard Product Classification Hierarchy (SPCH) instantiated in the Component Classification View required in the Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030). The SPCH baseline is found in Attachment 0064. The ST shall include generic specification blocks for LRU Interface Control Documents (ICDs), Technotes, component item specifications, LRU Performance Specs, Drawing Packages, and other baseline documentation so as to fit onto one page. The ST shall contain the detailed Baseline list of LRU ICDs, Technotes, component item specifications, LRU Performance Specifications, Drawing Packages, and other baseline documentation that relate to the generic blocks on the first page. Each detailed Baseline list shall include the document or drawing title, number, revision letter, date, and previous Engineering Change Proposal (ECP) or Engineering Release Record (ERR) number. Each detailed Baseline list shall map to a generic block on the first page. The Component Classification view, ST, and Bill of Material (BOM) indentures shall correlate.

## C.5.3 System Architecture

C.5.3.1 The contractor shall prepare and deliver System Architecture Description Documents (SADDs) compliant to JCGV GSAF that fully support all system requirements for the AMPV variants. The contractor shall modify the Government-provided GFI draft AMPV SADD (Attachment 0104) where needed to produce the final AMPV SADD. Proposed modifications shall be identified and reviewed during the technical review process. System architectures shall identify and depict all hardware and software subsystems and components (including hosted and integrated items identified in the Materials and Equipment Matrix (Attachment 0006)) and their respective interfaces and definitions and reflect the system design baseline. An example of a component view is found in Attachment 0071. The contractor shall declare and define viewpoints prior to the generation of any views, capture all viewpoints in a conceptual framework, and ensure mapping, integration and consistency among viewpoints. The contractor shall deliver these system architectures in CDRL B005.

C.5.3.2 The System Architectures shall include the mandatory views identified in the JCGV GSAF, other views described herein, and any required Joint Capabilities Integration and Development System (JCIDS) DoDAF (Attachments 0108-0123 and 0126) views. Viewpoints shall also include the following:

- (a) Vehicle Chassis, Mission Equipment, and Integrated System Architectures for each of the AMPV variants
- (b) Cable Interconnect (One-Wire) Diagrams

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(c) Cable Signal Interface (Two-Wire) Diagrams

**C.5.3.3 Software Architecture View/Viewpoint**

The contractor shall develop a software architecture, including a view/viewpoint into the system architecture, with a Modular Open Systems Approach (MOSA) that takes into consideration software reconfigurability, portability, maintainability, technology insertion, vendor independence, reusability, scalability, interoperability, upgradeability, and long-term supportability. The contractor shall modify or develop software architecture to meet the performance requirements of the AMPV FoV. Software components shall reflect the JCGV GSAF SPCH structure as appropriate. The software architecture shall describe software items used to implement software requirements, define internal and external interfaces of each software item, and establish consistency and traceability between software requirement and software design. All requirements for software items shall be allocated to software components and further refined to facilitate detailed software design. (CDRL B067)

**C.5.3.4 System Architecture Modeling**

The contractor shall define and develop an Integrated System Architecture Model (ISAM) using the Object Management Group (OMG) System Modeling Language (SysML) and appropriate tool(s). The ISAM shall reflect the integrated architecture and shall contain or link to the necessary data so as to be able to generate all required views of the architecture. The contractor shall modify the Government GFI-provided AMPV Integrated System Architecture Modeling (ISAM) Guide (Attachment 0087) as needed to generate the final AMPV ISAM. Proposed modifications shall be identified during the technical review process. The ISAM shall be considered part of the Technical Data Package and included in the ST. The ISAM shall be developed and delivered according to CDRL B068.

**C.5.4 Vulnerability Analysis Data Package**

The contractor shall provide a Vulnerability Analysis Data Package that includes: the data described in Vehicle Vulnerability Data Sheet (Attachment 0016), a Structure Design Data Sheet (Attachment 0017), and detailed performance descriptions of the AMPV structure and the unique armor recipes for each vehicle surface (e.g. sides, top, front, rear, underbody, Explosively Formed Penetrator (EFP)) (Attachment 0018, Armor Recipe Data Sheet). The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B006)

**C.5.5 Underbody Protection Analysis**

The contractor shall perform underbody blast analyses against all threshold and objective underbody threats defined in the Classified Annex of the AMPV Performance Specification (Attachment 0001 and 0082), for each AMPV variant at all armor protection levels. All vehicle simulations shall include the finalized vehicle designs, including all subsystems, payloads, components (including hosted and integrated items identified in the MEM (Attachment 0006), and occupants.

**C.5.5.1 Underbody Protection Analysis Package**

The contractor shall provide an Underbody Blast Analysis Package which includes the results of the Underbody Protection Analysis and fully completed Blast Protection Data Sheets (Attachment 0019). The information used to create the CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B007, CDRL B008)

**C.5.6 Armor Recipe Analysis**

The contractor shall perform armor recipe analyses against all threshold and objective side and top attack threats defined in the Classified Annex of the AMPV Performance Specification (Attachment 0082), for each AMPV variant at all armor protection levels. Armor recipes that are currently fielded on a US vehicle are exempt from this analysis. The armor recipe analysis shall include the finalized vehicle armor designs.

**C.5.6.1 Armor Recipe Analysis Data Package**

The contractor shall provide an Armor Recipe Analysis Package which includes the results of the above analysis and fully completed Armor Recipe Data Sheets (Attachment 0018). The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B006)

**C.5.7 Protection Kits**

If protection kits are required, the contractor shall conduct the necessary engineering and design analyses to integrate the kits onto the AMPV FoV to defeat specified threats identified in the AMPV Performance Specification (P-Spec) (Attachment 0001). The protection kits shall be integrated to meet force protection and survivability requirements for the entire vehicle region, as described in the Classified Annex to the P-Spec (Attachment 0082). Seams, gaps, and any other areas of reduced coverage will be considered areas of non-compliance unless the Government has reviewed and concurred with these areas.

**C.5.7.1 Vehicle Variants**

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The contractor shall implement the protection kits as necessary to defeat specified threats identified in the AMPV P-Spec requirements for all AMPV variants, to include the General Purpose (GP), Mission Command (MCmd), Mortar Carrier (MC), Medical Evacuation (ME) and Medical Treatment (MT) vehicles, in addition to all configurations of these variants.

## C.5.7.2 Contractor and Government Testing

The contractor shall support, using on-site Field Service Representatives (FSRs), contractor and Government system level testing with the armor protection kit, which may include Class V ammunition at a Government owned test site. The support shall include timely repair or replacement of non-repairable armor protection kit components.

## C.5.8 Signature Management

The contractor shall use signature management capabilities to enable the AMPV FoVs to avoid detection and enhance survivability. The AMPV shall minimize signatures for visual, acoustic, thermal, and electromagnetic and they shall not be worse than the signature of the base legacy platform it is part of. Each visual, acoustic, thermal, and electromagnetic signature should be met under all assumed vehicle operating and environmental conditions, including idle, tactical idle, and fully exercised vehicle running at full load. The contractor shall present their signature management capabilities at the SOWM. All developed assumptions, conducted analysis, and test data shall be available to the Government and discussed at IPT meetings as well as major reviews (CDRLs A001 and A002).

## C.5.9 AMPV Cold Start Kit

The contractor shall develop and provide for evaluation, four cold start kits that are suitable for fielding with the AMPV fleet that will enable all variants to start and remain running after a 12 hour cold soak at ambient temperatures from -25 to -50 degrees Fahrenheit, if a unique add on kit is required to meet the performance requirements.

## C.5.10 Mass Properties and Weight Control and Reporting

The contractor shall develop and implement a mass properties and weight control program for the design, development, fabrication, and test of each AMPV variant. The contractor may develop its 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 (Attachment 0020). The contractor shall use metrics that reflect the level of confidence in mass properties and weight estimates or actual data, if available, and are applied individually to each entry in the mass properties and weight reports (CDRL B010). 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 technical reviews.

## C.5.10.1 Mass Properties and Weight Estimating and Reporting

The contractor shall prepare and update mass properties and weight estimates or actual data, if available, throughout design, development, fabrication, and test. The mass properties and weight information shall be comprised of component and LRU level item weight information and additionally the Center of Gravity (CG) location, weight, and mass moment of inertia for the entire vehicle. The contractor shall validate mass properties and weight estimates or actual data, if available, by using tracking and monitoring activities during the design, development and fabrication of the first deliverable vehicle for each variant. Mass property and weight estimates or actual data, if available, shall be under configuration control consistent with design configuration management requirements (see Section C.8). The contractor shall update, maintain, and replace mass property and weight estimates with actual mass property and weight data when available throughout the duration of this contract. The contractor shall organize and format mass property, weight estimates, and data down to the component or LRU detail level in accordance with the IBOM and WBS (CDRL B010). Mass property and weight estimates or actual data, if available, shall provide the CG location for all awarded variants and compare it against the limits developed by the contractor for compliance to performance requirements. Mass property and weight estimates or actual data, if available, shall include the following: Curb Weight, Combat Weight, and Gross Vehicle Weight (GVW). Curb Weight is defined as the total weight of a vehicle with all kits, attachments, accessories, standard mission equipment, Basic Issue Item (BII), all necessary operating consumables (e.g., motor oil and coolant), a full tank of fuel, while not loaded with either crew, passengers, ammunition or cargo. Combat Weight is defined as the Curb Weight in addition to crew, passengers, ammunition, and cargo. GVW is defined as the maximum weight including the crew, passengers, mission equipment and cargo that the vehicle is rated to operate at. Estimates shall be consistent with the Load Plan (CDRL B011), refer to Section C.5.27, and ensure that weights are carried in the respective locations on and in the vehicles. All mass properties and weights shall be available to the Government and discussed at IPT meetings as well as technical reviews.

## C.5.10.2 Weighing of Vehicles

Prior to shipment, the contractor shall measure and report the mass properties and weight of each AMPV vehicle in its defined Curb Weight configuration (CDRL B010). Each delivered AMPV vehicle is expected to meet the weight and center of gravity restrictions needed to meet the requirements in the AMPV Performance Specification (Attachments 0001 and 0082) and is expected to vary by no more than +/- 2% from the documented Curb Weight and CG as stated in the mass property and weight report. Any corrective adjustments to the documented weights and CG or vehicle operational limits shall be made in accordance with the Configuration Management procedures in Section C.8. This information shall be available to the Government and discussed at IPT meetings as well as technical reviews.

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The contractor shall provide detailed wiring diagrams, schematics, and physical routing diagrams (harnesses, cables, and plumbing) of all electrical, fluid, and air lines in the AMPV. The contractor shall update the diagrams for any changes as a result of obsolescence or new capabilities. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B012)

**C.5.12 MIL Grade Connector Waivers**

Connectors shall be MIL grade and meet appropriate MIL Standard associated with the MIL grade selected by the contractor. The contractor shall submit waiver requests for non-MIL grade connectors using the format defined in MIL Grade Connector Waiver Form (Attachment 0021), and shall include technical justification and qualification standards for the use of the alternate connector. Waivers will be dispositioned (approved or rejected) by the Government prior to contract award. 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.

**C.5.13 Environmental Survivability and Reliability****C.5.13.1 Common Environmental Standard**

C.5.13.1.1 The contractor shall design newly developed subsystems, LRUs, and Line Replaceable Modules (LRMs) (i.e., those being developed for the AMPV) in compliance with Automotive Tank Purchase Description (ATPD) 2404 (Attachment 0024).

C.5.13.1.2 For non-developmental items in the AMPV, the contractor shall evaluate select subsystems, LRUs, and LRMs for future compliance to ATPD 2404 (Attachment 0024) and present a cost and benefit analysis of re-design and verification to achieve compliance. Upon request, the contractor shall provide additional information that will enable the Government to conduct a cost-benefit analysis for using these select subsystems, LRUs, and LRMs on platforms beyond the AMPV; such information would include unit costs at higher production rates, production schedule at higher production rates, and cost and schedule of design coordination with other contractors. The select subsystems, LRUs, and LRMs to be evaluated shall be proposed by the contractor at IPT meetings and approved by the Government.

**C.5.13.2 Electromagnetic Environmental Effects (E3)**

C.5.13.2.1 The contractor shall perform analyses, studies, inspections, and tests to verify the AMPV FoVs are designed to comply with the applicable E3 standards. The analyses, studies, inspections, and tests shall also be sufficient to characterize the E3 performance of the integrated system, including spectrum dependent subsystems.

C.5.13.2.2 All electrical and electronic subsystems developed, selected or revised for the AMPV program by the contractor shall comply with MIL-STD-461F. For non-developmental items (NDI), compliance to previous revisions of MIL-STD-461 is acceptable. Results of previous EMI tests of the NDI from other EMI standards may be submitted to the USG for their review and potential waiver. The contractor shall evaluate NDI that are not compliant to MIL-STD-461 and provide a cost benefit analysis for the re-test and/or redesign required to comply with MIL-STD-461F. The USG has authority to grant or deny waivers against MIL-STD-461F as necessary. The contractor shall develop and deliver the Electromagnetic Interference Test Procedures (EMITP) and Electromagnetic Interference Test Report (EMITR) for each electrical and electronic subsystem or component developed, selected, or revised in accordance with CDRLs B014 and B015.

C.5.13.2.3 The contractor shall develop and deliver an E3 Control Plan and an E3 Verification Plan and shall be documented in accordance with CDRL B016. The contractor shall document the design and test support analysis defined in ATPD 2407, E3 for US Army Tank and Automotive Vehicle Systems tailored from MIL-STD-464C in the E3 Verification Plan, Attachment 0023.

C.5.13.2.4 The contractor shall evaluate the GFI electromagnetic test procedures and results of all hosted and integrated items identified in the MEM (Attachment 0006) that are available at the time of development to ensure electromagnetic compatibility at the system level.

C.5.13.2.5 A system level bonds and grounds inspection procedure shall be developed and documented in accordance with CDRL B016.

**C.5.14 Nuclear Survivability**

Any non-GFE equipment which affects Mission Essential Functions (MEF) of the vehicle shall be hardened to withstand the effects of air blast, thermal radiation, and initial nuclear radiation. The nuclear survivability hardening criteria for the mission essential equipment mounted on the inside and outside of the vehicle shall be as specified in the AMPV Performance Specification, Attachments 0001 and 0082 and in accordance with Section 5.3 of ATPD 2404, Interface Standard for the Environmental Conditions for the ABCT Tracked Vehicle Systems (Attachment 0024). Equipment that has already been qualified to meet the nuclear hardening criteria in either the Quadripartite Standardization Agreement (QSTAG) 1031, Addition 1, Annex D (Attachment 0081) or the United States Army Nuclear and

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Combating WMD Agency (USANCA) Memorandum for Project Manager HBCT; Subject: Chemical, Biological, Radiological, Nuclear (CBRN) Survivability Criteria for the Abrams; 25 July 2011 (or previous revisions of this memoranda) (Attachment 0086), and has not been revised or redesigned since the time it was proved to meet such criteria, will not need to meet the nuclear hardening criteria of ATPD 2404. The MEF pertaining to a battlefield nuclear event are outlined in Attachment 0025 (Signed Nuclear Hardness Memorandum). The Contractor shall conduct monthly dedicated E3 and Nuclear Survivability working meetings through CDR and quarterly meetings thereafter with PM ABCT. The contractor shall develop and deliver a Nuclear Survivability Program Plan (CDRL B017) that describes the contractor's system and subsystem nuclear survivability. Subsystem information shall include, for example, rationale explaining why the subsystem was designed to be nuclear survivable (i.e., what mission critical function it supports), the method in which the subsystem achieves nuclear survivability, and the processes and resources used to comply with the AMPV Performance Specifications nuclear survivability requirements. The contractor shall provide the Nuclear Survivability Program Plan to the Government for review and approval.

C.5.15 Vehicle Electronics (VETRONICS) and Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance and Electronic Warfare (C4ISR and EW) Subsystems

**\*C.5.15.1 Common Vehicle Architecture Description (CVAD)**

The contractor shall address commonality and comply with the PEO GCS CVAD 1.3, C1092-04-0010 (Attachment 0022) and its corresponding CVAD checklist (Attachment 0078) as applicable, unless approved to do otherwise by the PCO. The Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030) shall be followed for documenting architectures instead of the CVAD. The GSAF supersedes the CVAD in the areas that they conflict. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

**\*C.5.15.2 Vehicle Network Configuration Package**

The contractor shall provide a Vehicle Network Configuration package including the Internet Protocol (IP) Addressing schema, IPv6 Capable report, Controller Area Network (CAN) database, and configuration files of the vehicle networks. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

**C.5.15.3 Co-site Interferences, Mounting Location Deconfliction, Mounting Location Restrictions and Antenna Optimization Model**

The contractor shall analyze potential interference patterns (co-site interferences) and optimize placement of all vehicle antennas (including EW) for each vehicle variant. The contractor shall support Government Co-Site Interference Studies and antenna pattern analysis for final placement of all antennas. The final placement of antennas shall be approved by the PCO to be considered complete. The contractor shall provide the results of this analysis, including expected performance, antenna placement diagrams, Radio Frequency (RF) characteristics, and potential conflicts or obstruction with primary and secondary weapons and their trajectories. To support Government conducted Communications-Electronics Research, Development and Engineering Center (CERDEC) RF Antenna and jamming analysis and Army Research, Development and Engineering Center (ARDEC) E3 Hazards of Electromagnetic Radiation to Ordnance (HERO), Hazards of Electromagnetic Radiation to Fuel (HERF), and Hazards of Electromagnetic Radiation to Personnel (HERP) efforts, the contractor shall also provide a Computer Aided Design (CAD) model of the outer surface of the vehicle hull updated with potential antenna placements. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B018)

**C.5.15.4 Electrical Architecture Metrics**

The contractor shall track a set of metrics in contractor format for the AMPV electrical architecture for the following aspects of the vehicle command and control systems (excluding hosted and integrated items identified in the MEM (Attachment 0006)).

**C.5.15.4.1 Functionality Operation**

This metric shall include start-up time for displays; time shall commence from vehicle ignition-on to when full functionality of the display is available. This metric shall be tracked at climatic categories hot, basic, and cold specified in the AMPV P-Spec (Attachments 0001 and 0082). These metrics shall initially be tracked as estimates and shall be updated with actual values as the development progresses. The contractor shall identify any unacceptable capacity and margin projections and recommend a resolution plan. The contractor shall update these metrics for any changes as a result of obsolescence or new capabilities, and ensure the resources are adequate. These metrics will be reviewed by the Government initially at SOWM 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.

**C.5.15.4.2 Power Budget Accounting Metrics**

The contractor shall track on-board, external, and export power loads (steady-state, transient, peak, and duty cycle) for each AMPV variant during all modes of operation 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 electrical device (including hosted and integrated items identified in the MEM (Attachment 0006)) for each AMPV variant. Included in the breakdown, the contractor shall list the total load draw of each configuration or mission role. The contractor shall identify any unacceptable capacity and margin projections and recommend a resolution plan. The contractor shall

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update the Power Budget Accounting Metric for any changes as a result of obsolescence or new capabilities, and ensure the electrical systems and power distribution is adequate. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

## C.5.15.5 Common LRM Standard

C.5.15.5.1 The contractor shall design newly developed LRUs and LRMs (i.e., those being developed for the AMPV) in compliance with Purchase Description LRM for the PEO GCS (Attachment 0079).

## C.5.16 Network

The contractors network design information shall be available to the Government and discussed at IPT meetings as well as major reviews.

## C.5.16.1 1553 Data bus

The contractor may use 1553 for all reused legacy LRUs.

## C.5.17 Diagnostics

Contractor shall provide a method to store diagnostic data from individual electronic Line Replaceable Units (LRU) or Line Replaceable Modules (LRMs) to be retrieved at a later date or shall provide an easily accessible Diagnostic Connector Assembly (DCA) that is compatible with Simplified Test Equipment (STE) and Internal Combustion Engine (ICE) or Maintenance Support Device (MSD) based ICE equipment for retrieving diagnostics data. For any electronic Government Furnished Equipment (GFE) or Non Developmental Items (NDI) LRUs/LRMs with test points, contractor shall provide a method to store diagnostic data or shall provide a method to retrieve diagnostics data via DCA or MSD based ICE equipment.

## C.5.17.1 Basic Vehicle Health Management System (VHMS)

The contractor shall implement a VHMS that diagnoses and presents the VHMS functions to the crew and maintenance personnel.

## C.5.17.1.1 VHMS Report

The contractor shall provide a VHMS Report to include its Diagnostic Fault Data Table, Sensor Strategy, the Fault Notification Strategy, and the Data Strategy. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews (CDRL B053).

## C.5.18 Cross Domain Design

If the contractor design dictates storage of unclassified data persistent over a power cycle or automated exchange of data across multiple classification enclaves, a cross-domain solution shall be required. If multiple classification enclaves have physical separation and automated exchange of data is not needed or performed by other means, then design may dictate other acceptable solutions (i.e. KVM switch or similar technology). The contractor's Cross Domain Design shall consider using validated products on the Unified Cross Domain Management Offices Baseline list or shall be required to include a Product Assessment with their Cross-Domain Implementation Plan that details why the currently validated products are not suitable for the contractor's Cross Domain Design solution and detail a path and schedule to obtain validation not later than nine months prior to the end of contract. The Unified Cross Domain Management Offices Baseline list is found at either: <http://www.intelink.sgov.gov/sites/ucdmo/> (SIPRNet) or <http://www.intelink.ic.gov/sites/ucdmo/> (JWICS) (both with a secure log-in). In order to receive a copy of the Classified SECRET Baseline list, Offerors must provide proof of valid Industrial Facilities Security Clearance and personnel security clearances by sending an email to (current security person) with your Company Name, address, CAGE Code, Facility CAGE Code as per the NISPOM. The response shall also include contact information for the Facility Security Officer (FSO).

## C.5.18.1 Cross Domain Implementation

The contractor shall provide a Cross-Domain Implementation Plan describing its design approach for secure information sharing across security domains in accordance with the AMPV P-Spec (Attachments 0001 and 0082). The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews (CDRL B054).

## C.5.19 Vehicular Integration for C4ISR/EW Interoperability (VICTORY)

## C.5.19.1 In-Vehicle Network Design

On newly designed or modified LRUs and LRMs, the contractor shall implement the VICTORY Architecture A2 document (Attachment 0096) by including one or more unclassified and classified in-vehicle networks to ensure interoperability between C4ISR/EW mission equipment (i.e. component types). Interoperability between systems on the vehicle shall be achieved by implementing the on-the-wire interfaces in accordance with VICTORY Component Type Specifications V.1.5 (Attachment 0048). Each in-vehicle network shall include the necessary

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processing and network resources (hardware) to host software implementing the VICTORY component types listed in Section C.5.19.5, an Ethernet data bus, and the necessary cabling to support interconnectivity between the data bus and all C4ISR-EW mission equipment and all platform systems. The processing and networking resources on each in-vehicle network shall implement the VICTORY Switch component type and Shared Processing Unit component type.

**C.5.19.2 In-Vehicle Network VICTORY Design Report**

The contractor shall prepare a Network Systems Design report that includes a list of VICTORY system and component types implemented in each in-vehicle network, logical and physical designs that are both open and data bus-centric (in accordance with the VICTORY Architecture), and a mapping of the VICTORY component types to the hardware and software configuration items. The report will also document all exceptions to VICTORY Component Type Specifications and justification for the exceptions. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B009)

**C.5.19.3 VICTORY Interface Specifications**

C.5.19.3.1 Newly designed or modified LRUs and LRMs shall implement the VICTORY Component Types, shown in Table C.1, in services compliant with the appropriate component type specifications (including all required interfaces) on the allocated processing and network resources. The contractor shall use the applicable VICTORY specifications throughout the system design.

Table C.1 Component Types

VICTORY Type	Spec ID	Spec Version
Time Synchronization Service	VT50000	V1.5
Position Service	VT50100	V1.5
Orientation Service	VT50200	V1.5
Direction of Travel Service	VT50300	V1.5
Switch	VT50900	V1.5
Shared Processing Unit	VT51900	V1.5
VDB Management Service	VT52200	V1.5

C.5.19.3.2 VICTORY specifications will include errata, which are published as VX.X.X (e.g. V1.4.1) updates. These errata are updates or clarify the specifications, but do not add additional features or capabilities.

**C.5.19.4 VICTORY Compliance Test Reporting**

The contractor shall verify the system design via compliance testing. The contractor shall conduct compliance testing against the VICTORY Component Types implemented in accordance with applicable VICTORY Compliance Test Plans. The contractor shall develop, deliver, and update the applicable completed VICTORY Compliance Test Reports (CDRL B009) for each VICTORY Component Type Specifications implemented.

**C.5.19.5 VICTORY Workgroup Participation**

The contractor shall participate in and actively support the VICTORY Standards Body by attending meetings and providing comments to the VICTORY Working Groups. The VICTORY Standards Body consists of three working groups: Data Bus, Application Interfaces, and Information Assurance. There are bi-weekly two-hour teleconferences per working group and three two-day face-to-face meetings, per year. (CDRLs A001 and A002)

**C.5.19.6 VICTORY Government Furnished Information (GFI)**

All VICTORY Framework products included in the VICTORY GFI list can be accessed via the VICTORY Portal. Access can be gained by registering at <http://www.victory-standards.org>.

(a) VICTORY Architecture: A domain specific architecture which provides a framework for integrating C4ISR and EW systems on military ground vehicles, and interfacing with the vehicle systems. The architecture identifies the conceptual entities (system and component types, interfaces) and how they are integrated (structures and patterns).

(b) VICTORY Specifications: The VICTORY Standard Specifications provide the technical details of the systems, components, and interfaces identified in the architecture document. Each of these items is described by a specification. The VICTORY specifications document the technical details of interfaces from the physical (PHY) layer to the application (APP) layer of the open systems interconnection (OSI) layered network model. The goal of the specifications is to provide enough technical detail that independent implementations of systems and components will result in a high level of interoperability at all levels. The standard specifications documentation is developed and matured by a standards body, which consist of Government stakeholders, manufacturers of components, systems, vehicles, and system integrators.

(c) VICTORY Reference Designs: The VICTORY Reference Designs provide samples on how to use the standard specification. They demonstrate how implementers of VICTORY standards can scale the architecture to provide various levels of capability.

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(d) VICTORY Initial Validation Artifacts: The VICTORY Initial Validation Artifacts are a set of results from the initial implementation of the standard specifications. Artifacts include the documentation, data, and software developed to perform the initial validation on each VICTORY component type.

(e) VICTORY Reference Software Library: The VICTORY Reference Software Library contains reusable executable code which can jumpstart implementation. The library provides industry and the Government a starting point for experimenting with, understanding, and implementing the network-interfaces. This library includes software implementation of each component type, including service and client sides of every network interface.

(f) VICTORY Compliance Test Suite (CTS):

i. Compliance Test Plan (CTP): The VICTORY CTP provides detailed test configuration and methodologies for conducting compliance verification tests;

ii. Compliance Test Tool (CTT): The VICTORY CTT provides a mix of capabilities: various automated compliance tests; guidance for non-automated tests; provisions for user input based on inspection and demonstration; and guidance on generating/viewing CTRs;

iii. Compliance Test Reports (CTR) Templates: The VICTORY CTR templates provide for a standard format to document compliance test results.

#### C.5.20 Future Growth - Network Systems Design

C.5.20.1 The contractor is not limited to implementing only the mandatory components in Table C.1. The contractor can add additional items as described in the VICTORY Component Type Specifications V.1.5 (Attachment 0048), but the additional components must meet the specifications described in Attachment 0048.

C.5.20.2 The contractor shall design the system in such a way that additional components shall be integrated without a major rework of the VICTORY system, allowing for future growth. Any LRUs and LRMs added to the platform in the future shall be VICTORY compatible, as applicable.

#### C.5.21 Power Management

The contractor shall develop Power Management Software, including a Battery Management System, as part of a power management system to manage vehicle power loads, electrical power distribution, power generation, and mechanical power generation and distribution for each AMPV variant. The power management software shall prioritize loads according to power generation modes of operations. Power management shall be active in all modes of operation, in all operating conditions called out in the AMPV OMS-MP (Attachment 0073). The power management system shall be designed specifically for each AMPV variants mission needs. The Power Management System shall perform the following:

- (a) Manage loads, distribution, and generation
- (b) Prioritize loads according to power generation and modes of operations
- (c) Distribute power specifically for each AMPV variants mission needs

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

#### C.5.22 Displays

Displays shall disseminate relevant information for the specific station (Commanders, Drivers, Crew) and shall consist of warning and indication devices that alert AMPV crew of conditions requiring crew action (per Attachment 0001 (P-Spec)).

#### C.5.23 Human Systems Integration (HSI) and Manpower & Personnel Integration (MANPRINT)

The contractor shall conduct an HSI and MANPRINT program in the areas of manpower, personnel capabilities, training, human factors engineering, health hazards, safety, and Soldier survivability in accordance with DoDI 5000.02, Operation of the Defense Acquisition System, and AR 602-2, MANPRINT in the System Acquisition Process.

##### C.5.23.1 Manpower and Personnel Integration (MANPRINT)

The contractor, in conjunction with the Government shall conduct a MANPRINT program. MANPRINT is a comprehensive technical effort to identify and integrate all relevant information and considerations regarding the full range of manpower, personnel capabilities, training, human factors engineering, system safety, health hazards, and Soldier survivability into the system development and acquisition process. This system is to improve Soldier performance and total system performance, as well as reduce the cost of ownership to an affordable level throughout the systems entire life cycle. The main focus of the MANPRINT program is to ensure the AMPV MANPRINT

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performance baseline, defined during the EMD phase, is achieved or exceeded in delivered production vehicles. The AMPV MANPRINT program shall continue to quantify and minimize the human resources required for operating, maintaining, training, and sustaining the AMPV. The contractor shall use, as a guide, the design standards contained in MIL-STD-1472G, Department of Defense Design Criteria Standard, Human Engineering, and MIL-STD-1474D, Department of Defense Noise Limits. MANPRINT information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.5.23.2 MANPRINT Management Execution

The contractor shall ensure that the interdependent considerations of Human Factors Engineering (HFE), Manpower, Personnel and Training (MPT), System Safety, Health Hazards and Soldier Survivability, are properly integrated into the design of the AMPV and deliverable documentation under this contract. Any time AMPV design changes are implemented, the contractor shall assess the effect of the changes on MANPRINT requirements. Similarly, the contractor shall assess whether the fluctuation in frequency of performing tasks leads to increases or decreases either in manpower requirements or in system requirements. The contractor shall update and present, at design and program reviews and MANPRINT IPT meetings, the results of MANPRINT Program efforts. The MANPRINT program effort shall include:

- (a) Quantitative and qualitative issues and criteria pertaining to all MANPRINT domains.
- (b) Critical operator and maintainer tasks.
- (c) Assemblies and subassemblies in terms of workload.
- (d) Recommendations addressing resolution of issues and risks, including the effect of issues upon MANPRINT performance baseline.
- (e) Update of quantitative and qualitative analysis based upon Government testing.
- (f) Partitioning of crew tasks among crew members.
- (g) Recommended design changes or improvements to resolve MANPRINT issues.
- (h) Review and enforcement of MANPRINT requirements in vendor specifications and solicitations.
- (i) Evaluation of design changes, test, demonstration and logistics validation and verification activities to identify and maintain an audit trail for MANPRINT issues, as well as resolution of them.
- (j) Ensure critical MANPRINT issues identified during all testing, validation activities, and User Juries are resolved. The contractor shall identify unresolved critical MANPRINT issues at the appropriate Configuration audits or Configuration Control Boards.

C.5.23.3 Contractor System MANPRINT Management Plan (SMMP)

The contractor shall deliver and update the contractor SMMP (CDRL B019). The SMMP describes the contractors MANPRINT program, identifies the MANPRINT elements, and how the MANPRINT domains will be managed and integrated with other program elements.

C.5.23.4 MANPRINT Risks and Issues

The contractor shall manage MANPRINT risks and issues in accordance with AMPVs risk and issue management processes (see Section C.3.6). All risks and issues (see AR 602-2, Appendix C for a MANPRINT checklist) shall have mitigation plans, corrective actions, or trades that identify what organization and person is responsible for resolution of the issue, with the resourced schedule for resolution. All MANPRINT risks and issues shall be managed in accordance with DoDI 5000.02, Operation of the Defense Acquisition System, and AR 602-2, MANPRINT in the System Acquisition Process. Information on MANPRINT risks and issues shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.5.23.5 Contractor MANPRINT Events (User Juries, Demonstrations, Assessments and Testing)

The contractor shall conduct MANPRINT events to validate the systems Soldier centric design. The contractor shall establish a schedule for the events and create the necessary documentation to conduct the event. The contractor shall allow the Government access to MANPRINT events and contractor data collection, as well as the ability to collect its own data at these events.

C.5.23.6 Contractor MANPRINT Reports and Information

The contractor shall submit MANPRINT reports and information gathered from MANPRINT events or analysis to support the Armys MANPRINT Assessments (CDRL B069). All MANPRINT domains shall be covered, including MPT, HFE (including Soldier Workspace Analysis, Soldier Performance and Workload Assessment, and Operator and Maintainer Task Analysis), System Safety and Health Hazards, and Soldier Survivability, in accordance with DoDI 5000.02, Operation of the Defense Acquisition System and AR 602-2.

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## C.5.23.6.1 Soldier Workspace Analyses

The initial Soldier Workspace Analyses shall include diagrams, illustrations, drawings with measurements, and files used to perform the three-dimensional Jack Soldier Workspace Analysis using the 2015 Central 90 Percent Accommodation U.S Army Soldier Boundary Mannequin Set (as documented in Attachment 0125) while wearing Personal Protective Equipment (PPE) for all variants, including sub-configurations (mission roles) of the MCmd variant (CDRL B069). The Government will furnish physical models of the 2015 Boundary Mannequin Set to support soldier workspace analysis.

C.5.23.6.1.1 The Jack Soldier analysis shall cover a combat loaded platform with: seated and standing workstations; emergency egress routes and exits for all soldiers; lines of sight and fields of view for crew and squad leader; access and line of sight to displays, interfaces, interface panel(s), equipment, instruments, control panel(s), control(s) devices (hand, foot), and periscopes to include maximum and minimum viewing distances; deployed litter configurations (if applicable), litter configurations in stowage; platform mounting and dismounting routes and aids; air guard position; maintenance access; internal and external stowage access; and all name tag defilade (if so designed) with interior and exterior views of seating and/or standing platforms and exterior illustrations. If more than one hatch position (i.e. open and open protected), illustrations and dimension showing all hatch positions with JACK tm human figure manikins shall be shown. The analysis shall be available to the Government and discussed at IPT meetings and technical reviews.

C.5.23.6.1.2 The documentation, diagrams, illustrations, and drawings with measurements shall include the following:

- (a) Functional groupings and arrangements of controls, displays/ interface panel(s), interfaces, control panel(s) and control(s) devices (hand, foot and Remote Vehicle Device) to include purpose, hardware, software and corresponding assumptions,
- (b) Controls, display/interface panel(s), display portal(s), and control devices (e.g. hand, foot and Remote Vehicle Device) to include subsystems shown in relation to the overall crew or mission workstation/work area. Indicate where the controls/display/interface/control panel will be placed in the platform (crew and squad) to include GFX systems and subsystems,
- (c) Proposed crew decision aids, notifications, portal(s), windows, software menus and/or other GUIs showing subsystem and GFX integration with narration providing basic information about physical layout,
- (d) Crew and squad compartment design to include seating, interior views of hatches, restraints, BII, stowage of crew and squad equipment to include GFX,
- (e) Crew and squad seating with standard design dimensions (to include padding, seat slope, backrest to seat angle, head clearance, dimensions of crew seat adjustability), clearances in compartments and seating materials,
- (f) Standing platform(s) designs (if any) for crew and air guard,
- (g) Air guard station(s) design,
- (h) Ramp, ramp door, ramp opening designs in both closed and closed configurations,
- (i) Maintenance panels on the platform to include panel opening and locking mechanism and panel positions on vehicle,
- (j) Driver FOVs (to include ground intercept) thorough periscopes only, open hatch and utilizing other platform indirect vision systems,
- (k) Commander FOVs (to include ground intercept) thorough periscopes only, open hatch and utilizing other platform indirect vision systems,
- (l) Combined crew FOVs thorough periscopes only, open hatch and utilizing other platform indirect vision systems,
- (m) Air Guard FOVs, separate and combined, open hatch (if so designed),
- (n) Rear periscope FOV, to include ground intercept (if so designed),
- (o) All hatches and door(s) design on the platform to include hatch opening and locking mechanisms to include all positions of hatches (closed, open, open-protected),
- (p) Internal and external stowage areas/compartments.

C.5.23.6.1.3 Follow-on analysis shall be conducted based on surrogate crew compartment simulator, reconfigurable simulators, or the actual system with the integration of Soldier Machine Interface (SMI) components. SMI components shall consist of actual (or as near as actual subsystem as possible) controllers, displays, interfaces, hand and foot controls, seats, restraint control panels, and other

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crew station components. Approval of surrogates will be a joint effort between the contractor and Government. At the conclusion of the follow on analysis, the contractor shall generate a report that identifies capabilities and limitations identified as a result of the analysis. The contractor shall document the differences, if any, between the analysis and the AMPV P-Spec requirements for the vehicle design. The contractor shall provide to the Government both overall and subsystem functionality risks with a detailed risk mitigation plan, to include all necessary cost, schedule, and technical data, if the Soldier Workspace Analysis shows that the design does not meet the design specification (CDRL B069).

C.5.23.6.2 Soldier Performance and Workload Assessment

The contractor shall conduct an analysis and submit a report on the design considerations for Soldier performance and workload (CDRL B069). The contractor shall conduct system level design analysis and events to verify that Soldier performance and workload requirements are within the capabilities and allocated crew size using the Operational Mode Summary/Mission Profile (OMS/MP) (Attachment 0073). The contractor shall verify that the design allows the crew to complete its mission without excessive workload. The contractor shall evaluate and document differences, if any, between the analysis and the specifications for the vehicle design. The contractor shall conduct and provide an overall and subsystem functionality risk assessment and provide a detailed risk mitigation plan to include all necessary cost, schedule, and technical data to the Government if the Soldier Performance and Workload Assessment show that the design does not meet the design specifications. The Soldier Performance and Workload Assessment will utilize, as a part of its analysis, the Operator and Maintainer Task Analysis (see Section C.7.4.1.4.2).

C.5.23.6.3 System Safety and Health Hazards

The contractor shall develop, implement, and maintain an ESOH program in accordance with MIL-STD-882E (see Section C.5.31).

C.5.23.6.4 Soldier Survivability

The contractor shall follow best system Soldier Survivability engineering practices during the design and after any modification of the system and its components including the application of established design standards. The contractor shall identify Soldier Survivability issues for the system(s). All issues shall have mitigation plans or trade studies in place that specifically identify what organization and person/s responsible for resolution of the issue, with the resourced schedule to completion.

C.5.23.6.4.1 Soldier Survivability Assessment (SSvA)

The contractor shall perform and provide a Soldier Survivability assessment utilizing the Army Research Laboratory Parameter Assessment List and the SSV Severity Scales (see Attachments 0127 and 0128) based on the results of modeling and simulations, independent assessments, and tests (CDRL B069). All six components (reduce fratricide, reduce detectability of the Soldier, reduce probability of being attacked, minimize damage, minimize injury, and reduce physical and mental fatigue) and the corresponding 21 subcomponents will be addressed in this assessment. Soldier Survivability (SSv) Severity Ratings (Issues) shall use the Army SSV Severity Rating scale. The SSvA shall document the status of the systems Soldier Survivability program and contain adequate data to support the contractors assertions the system meets the Soldier Survivability requirements.

C.5.24 Information Assurance (IA)

C.5.24.1 IA Strategy

The contractor shall establish or leverage appropriate administrative, technical, physical safeguards, and security controls to protect all Government data, to ensure the confidentiality, integrity, and availability of Government data. 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. The contractor shall support IA certification and accreditation of the system by providing the IA artifacts, analyses, test, evaluation and assessments. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

Security requirements in the below documents shall be met:

- (a) AR 25-2, Information Assurance
- (b) NIST SP 800-37, Rev 1, Guide for applying the Risk Management Framework to Federal Information Systems: A security Life Cycle Approach
- (c) NIST SP 800-53 Rev 3, Recommended Security Controls for Federal Information Systems and Organizations
- (d) Department of Defense (DOD) through its DoD IA Certification and Accreditation Process (DIACAP) DODI 8510.01. Note DIACAP process will be evolving to the Risk Management Framework
- (e) 6212.01E Interoperability and Supportability of Information Technology and National Security Systems

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- (f) DoD 5220.22-M; National Industrial Security Program Operating Manual (NISPOM)
- (g) DoDI 8551.1, Ports, Protocols and Services Management (PPSM)
- (h) Best Business Practices (BBPs) as listed on milWiki portal for Army Information Assurance/Best Business Practices at: [http://www.milsuite.mil/wiki/Portal%3AArmy\\_Information\\_Assurance/Best\\_Business\\_Practices](http://www.milsuite.mil/wiki/Portal%3AArmy_Information_Assurance/Best_Business_Practices)
- (i) Security Technical Implementation Guides (STIGs)
- (j) Department of Defense Federal Information Security Management Act (FISMA) (IA milestones through system lifecycle).
- (k) DoDI 8500.2; IA Implementation
- (l) DoDD 8500.01E; Information Assurance
- (m) NIST SP 800-18; Guide for Developing Security Plans for Federal Information Systems
- (n) SSE-100-1; NSA IA Guidance for Systems Based on a Security Real-Time Operating System
- (o) Appropriate Best Business Practices, Security Technical Implementation Guides and NSA Information Assurance Technical Framework

## Reference documentation:

- (a) Risk Management Framework (RMF) for DoD Information Technology (IT)
- (b) DoDD 5205.02; DoD OPSEC Program
- (c) CJCSM 6510.01A; IA and Computer Network Defense (CND) Volume I (Incident Handling Program)

The contractor shall comply with IA requirements in accordance with AR 25-2, Information Assurance, and support the IA documentation needed for the accreditation as outlined in DODI 8510.01. The contractor shall develop the following documents to meet or exceed the guidelines outlined in the NIST Handbook (NIST 800-12), update and review them as needed, and submit the following per CDRL B020, unless otherwise specified:

- 1) Systems Security Plan (SSP)
- 2) Security Test and Evaluation (ST&E) plan (testing and evaluation policies, procedures, controls and schedule)
- 3) Cross Domain Appendix (CDA) (CDRL B054 if needed)
- 4) Cross Domain Validation and Approval Request (CDVAR) (CDRL B054 if needed)
- 5) SW Development Plan (reference Software Section C.5.26.1, CDRL B022)
- 6) Evidence of applied Best Business Practices (BBPs) and STIGs
- 7) Data Flow Diagram
- 8) Detailed Architecture Diagram
- 9) Hardware and Software List (included vendors, versions)
- 10) Ports Protocols and Services List.
- 11) Risk assessment to identify the threats and vulnerabilities, and the impact if exploited.
- 12) Policies, procedures and controls in place to mitigate the risk throughout the developmental lifecycle.
- 13) Security awareness training program guidelines
- 14) Procedures to document remediation strategies and actions to correct vulnerabilities
- 15) Procedures to monitor, detect, report, and respond to security incidents
- 16) Identify a primary and alternate Information Systems Security Officer to serve as the central POC for all information security issues

The contractor shall ensure that all IA and IA enabled products be National Security Telecommunications and Information Systems Security Policy Number 11 (NSTISSP-11) compliant. The products shall also be validated by accredited labs under NSA, the NIAP Common Criteria Evaluation and Validation Scheme or NIST Federal Information Processing Standards (FIPS) Cryptographic Module Validation Program (CMVP). Encryption guidance can be found in FIPS Pub 197, Advanced Encryption Standard, FIPS; FIPS Pub 140-2, Security Requirements for Cryptographic Modules, FIPS Pub 198-1, The Keyed-Hash Message Authentication Code (HMAC); IETF RFC 2560, X.509 Internet Public Key Infrastructure; DoDI 8580.1, Information Assurance in the Defense Acquisition system.

## C.5.24.1.1 IA Mitigation Strategies

The contractor shall ensure that all IA mitigation strategies have been applied to the development environment prior to any Government data being loaded onto any assets or software for testing or delivery. IA mitigation strategies include security updates, service packs, and changes to operating procedures as physical and cyber vulnerabilities are detected.

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C.5.24.1.2 IA Training

The contractor shall develop an IA awareness training program in accordance with NIST 800-16, NIST 800-50, and AR 25-2 and ensure that IA awareness refresher training is provided annually for all contractors working on this program. Contractor personnel with IA duties shall be trained to a level commensurate with the highest level and complexity of facilities and systems. The contractor shall ensure all contractor personnel who access Government Databases have successfully passed a security investigation.

C.5.24.1.3 IA Risk

The contractor shall evaluate (at a minimum) annually the security, both physical and logical, identifying exposures, and providing protective options for reducing security risk. This assessment shall be conducted and reported in accordance with the NIST 800-30 framework using the Common Vulnerabilities and Exposures (CVE) dictionary identifiers, and shall identify assets that need additional security, protection, or have vulnerabilities. The contractor shall develop a set of recommendations to eliminate or mitigate those threats within 30 days of discovery and submit it to the Government per SSP and IA Artifacts package (CDRL B020). This information shall be made available to the Government and discussed at IPT meetings as well as major reviews.

C.5.24.1.4 IA Accreditation Artifact Package

The contractor shall provide an IA Accreditation Artifact Package. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B020)

C.5.24.1.5 IA and Software Scans

C.5.24.1.5.1 The IA Scans will be conducted on the contractor C4ISR and EW and VETRONICS architectures to determine if there are any vulnerabilities or nonconformance in the system. The contractor shall conduct and provide the Government a report (CDRL B021) of the IA scans completed on the Systems Integration Lab (SIL) for all AMPV software. Initial scan will be completed by PDR. A second scan will be conducted at TRR on final configuration managed software build that has gone thru a pre-software qualification test by the contractor. The contractor shall fix Category I (CAT I) and Category II (CAT II) risks that are found during the vulnerability scans. The report shall address root cause determination, corrective action development and implementation, process control improvement, and scan results. The report shall also include a schedule to fix the risks. This information shall be available to the Government and discussed at IPT meetings as well as major reviews. CAT I and CAT II risks shall be mitigated 30 days prior to the TRR. CAT III risks shall be mitigated, if possible.

C.5.24.1.5.2 Contractor shall allow Government access to AMPV software source code repositories to conduct baseline software scans on contractor developed software and open source software for up to five business days. Contractor shall provide assistance during the Government scans. Contractor shall ensure source code repository can accept Hewlett Packard Fortify 360 Suite Static Code Analyzer scanning software tool. The software scan will be conducted within 30 days after software CDR. Contractor shall mitigate any vulnerabilities discovered in Level I or Level II critical functions as a result of the baseline software scan. Mitigation information shall be available to the Government and discussed at IPT meetings. The contractor shall conduct and provide to the Government a software scan report on the final configuration managed software source code that has gone thru pre-software qualification test by the contractor. Government representatives will witness the software scan test. SQT software shall not have any vulnerabilities in Level I or Level II critical functions. Any changes in Level I or Level II critical function software after SQT will require rescan and mitigation of vulnerabilities.

C.5.24.1.5.3 The contractor shall allow an approved ACA (authorized certification authority) representative access to AMPV SIL for a period of up to five business days to conduct IA vulnerability scans. Contractor shall provide assistance during the Government scans. The contractor shall jointly determine with the Government on what platform configuration the test is to be conducted on. Changes in software and hardware interfaces may require a rescan and an updated scan report.

C.5.24.2 IA Program Management

The contractor shall maintain an IA program that provides sufficient safeguards to ensure that all sensitive information, technical CUI or 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 contractor's IA program plans, shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.5.25 Systems Integration Lab (SIL)

C.5.25.1 The contractor shall develop and use a SIL(s) or other equivalent simulation lab to integrate and test the AMPV system electronics, LRUs, LRMs, and Configuration Items (CIs) prior to full vehicle integration. The SIL shall be located at the contractors facility. The SIL(s) shall contain all AMPV production-intent electrical and electronic components (modules, displays, controls, clusters, cabling and harnesses) and hosted and integrated items identified in the MEM (Attachment 0006) electronic hardware and software to enable the replication of fully integrated vehicles. The SIL(s) shall be able to demonstrate actual hardware for all AMPV

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variants.

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C.5.25.1.2 The SIL(s) shall be functional and the contractor shall provide a SIL demonstration prior to any IA and Software Scans. 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 contractor shall procure material to keep the SIL(s) current using the Configuration Management process defined in Section C.8 for configuration changes developed by the contractor in order to reflect the current state of the vehicles until the end of the contract.

C.5.25.2 SIL Demonstration Procedures

The contractor shall develop and discuss recommended operating procedures for the execution of the events identified:

- (a) Operations - Driver's Station Controls (vehicle start-up; display vehicle levels, current vehicle status and conditions; adjust vehicle systems; and turn vehicle subsystem(s) on and off in dynamic conditions)
- (b) Operations - Commander's Station Controls (display information; launching applications; turn vehicle subsystem(s) and MEP on and off in dynamic conditions; sends and receives messages; plan a route of travel with subsystems and waypoint information from driver's station)
- (c) Health and Maintenance System.

The complete list of subsystems and correct operating procedures (CDRL B033) shall be mutually agreed to by the Government and the contractor. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.5.26 Software

C.5.26.1 The contractor shall perform the detailed planning necessary for requirement analysis, design, code development, integration, test, documentation, and delivery of a system and subsystem software and component firmware. Contractor shall use J-STD-016 or IEEE/EIA 12207 or equivalent Government standard for Software Development Plan (SDP). The contractor shall describe the software development program in a SDP (CDRL B022). The plan shall include a schedule of incremental progress to facilitate tracking of the project and subcontracting activities.

C.5.26.1.1 Software requirements shall specify the total product software and provide full implementation of all required functions.

C.5.26.1.1.1 Software requirements shall be derived directly from higher level requirements contained in or traceable to system specifications. The contractor shall develop a cross reference matrix indicating where each of the high level requirements are implemented in the detailed requirements. All higher level requirements shall be completely satisfied but shall not exceed those requirements unless approved by the PCO. Each detailed requirement shall be reviewed by the Government to ensure that it can be achieved.

C.5.26.1.1.2 Testability

The contractor shall ensure that the software performance requirements are expressed in quantitative terms that can be directly translated into acceptance criteria.

C.5.26.1.1.3 The contractor shall conduct assessments of the software design during its development to ensure that all software requirements, as approved by the PCO, are being satisfied and that the design is being documented in software design description (CDRL B023).

C.5.26.1.1.4 The contractor shall establish and maintain Software Development Files (SDF) for all software that is developed and integrated for the AMPV FoV. SDF will be available for Government review. SDF shall include following:

- (a) Complexity numbers for each Computer Software Unit (CSU)
- (b) Baseline Method test paths for each CSU
- (c) Regression test analyses (CSU, Computer Software Components (CSC), Computer Software Configuration Item (CSCI))
- (d) Regression test requirements and results (CSU, CSC, CSCI)

C.5.26.2 Organizational Accreditation Requirements

The contractor shall be certified through an independent Software Engineering Institute Standard Capability Maturity Model Integration

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(CMMI) Appraisal Method for Process Improvement (SCAMPI) assessment external to the contractor's business unit, division, site, or program office assessment to be CMMI Maturity Level 3 or higher. The contractor shall provide proof of Level 3 or higher certification with initial proposal submission.

## C.5.26.3 Software Quality Assurance Program (SQAP)

The contractor shall plan, develop, document, and implement a SQAP to ensure that high levels of software quality and reliability are attained and all contractual requirements are fully complied with. The contractor's SQAP shall have sufficient, well-defined lines of responsibility, accountability, and authority, as well as the organizational freedom to identify and evaluate quality and reliability compliance problems and to initiate, recommend or provide solutions and shall be available for Government review. The contractor shall regularly review the status and adequacy of the program and realign the program to ensure its requirements and those provided in this scope are satisfied. Results of all software quality assurance activities shall be documented in an established format and shall be available for Government review. Results of software quality activities (audits, reviews, desk checks) shall be presented at IPT meetings and engineering reviews. Failure by the contractor to report discovered discrepancies will be considered a non-compliance with contractual requirements.

## C.5.26.4 Software Programming Language

The contractor shall justify the programming language used for AMPV software. Justification shall take the following into consideration:

- (a) Appropriateness of the language for the problem (e.g real time support)
- (b) Availability of tools (such as compilers, debuggers, auto-coders)
- (c) Availability of programmers (now and foreseeable future)
- (d) Stability of language (established standard vs. fad)
- (e) Cost of supporting environments
- (f) Licenses

## C.5.26.5 Firmware

All software developed under this contract identified as Firmware, shall be developed and managed in accordance with the contractual requirements for both software and hardware. For this contract, Firmware is defined as software that has been implemented in hardware using memory devices such as Read Only Memory (ROM), Programmable ROM (PROM), Erasable PROM (EPROM), Field Programmable Gate Array (FPGA) and Electrically Erasable PROM devices (EEPROM). Firmware source material shall be provided in accordance with CDRL B024.

## C.5.26.6 Internet Protocol (IP)

AMPV hardware and software components interfacing to Global Information Grid shall be able to support both IPv4 and IPv6 packets.

## C.5.26.7 Common Operating Environment (COE)

The contractor shall integrate the latest mission command software available (e.g., Joint Battle Command Platform (JBC-P) with KGV-72 and Blue Force Tracker 2 (BFT-2)) without impacting schedule.

## C.5.26.7.1 Newly Designed or Developed Software (NDS) Documentation

The contractor shall specify all deliverable and non-deliverable NDS documentation in the SDP. All software documentation shall reference NDS wherever necessary or appropriate.

## \*C.5.26.8 Software Documentation

The contractor shall deliver the following documents:

- (a) Software Development Plan (DI-IPSC-81427A) (CDRL B022)
- (b) Software Programmer Guide (DI-IPSC-81633) (CDRL B025)
- (c) Software Reliability Program Plan (SAE-JA1003) (CDRL B026)
- (d) Software Configuration Management Plan (DI-CMAN-80858B) (CDRL B027)
- (e) Software Requirements Specification (DI-IPSC-81433A) (CDRL B028)
- (f) Interface Requirements Specification (DI-IPSC-81434A) (CDRL B029)
- (g) Interface Design Document (DI-IPSC-81436A) (CDRL B030)
- (h) Software Design Description (DI-IPSC-81435A) (CDRL B023)
- (i) Software Version Description Documents (DI-IPSC-81442A) (CDRL B031)
- (j) Software Test Plan (DI-IPSC-81438A) (CDRL B032)
- (k) Software Test Description with Test Procedures (DI-IPSC-81439A) (CDRL B033)
- (l) Software Test Report (DI-IPSC-81440A) (CDRL B034)

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- (m) Integration Problem Reports and Status (DI\_MISC\_80711A) (CDRL B035)
- (n) Software User Manual (DI-IPSC-81443A) (CDRL B036)
- (o) Software Product Specification (DI-IPSC-81441A) (CDRL B037)
- (p) Subcontractor Management Control Plan (DI-MISC-80711A) (CDRL B038)
- (q) Firmware Support Manual (DI-IPSC-81448A) (CDRL B024)

\*The documents shall include any test software and models developed for the system. It shall also include user manuals for the Computer System and Software Integration Lab and configuration documentation that define the test facility set up. Any documentation not listed that was used to document the software architecture or help in its understanding should also be provided. These items may include such things as Harel state charts, use case diagrams, sequence diagrams, flow charts, system block diagrams, and state diagrams. The documents may be in the contractors format.

C.5.26.9 The contractor shall deliver software executables and source code, including subcontractors software executables and source code used on the AMPV FOV. Executable and source codes for any models, functional test environment (with documentation), and verification test procedures developed for system validation, build scripts and install scripts used for productions shall also be delivered to the Government (CDRL B037).

## C.5.26.10 Software License

The contractor shall deliver all software, including NDI and COTS software, in each delivered vehicle with appropriate licenses and without restrictions for usage in its intended vehicle application. The contractor shall provide status of acquiring and delivering software licenses at IPTs and major reviews.

## C.5.26.11 Software Metric Program

C.5.26.11.1 The contractor shall track and present the Software Metrics identified below. The Software Metrics shall clearly portray variances between actual and planned performance, provide early detection or prediction of situations that require management attention, and support the assessment of the impact of proposed changes on the program. These indicators shall be implemented consistent with internal developer systems. The contractor shall update the Software Metrics for any changes as a result of obsolescence or new capabilities, and ensure the resources are adequate. The Software Metrics shall be presented at IPT meetings and design reviews.

- (a) Software Size
- (b) Effort
- (c) Requirements Definition and Stability
- (d) Software Progress (Design, Coding, and Testing)
- (e) Software Development Staffing
- (f) Earned Value Management (Cost and Schedule Variance)
- (g) Quality (Discrepancy Reports or Defect Density)
- (h) Development Tools and Laboratories Status
- (i) Computer Resources Utilization and Reserve Capacity (see below)

C.5.26.11.2 Computer Resources Utilization and Reserve Capacity metrics shall include peak processor throughput and utilization (per processor) and volatile and nonvolatile memory usage (per board level or processor application) for each workstation per each AMPV variant. The contractor shall also track data bus resource metrics for each workstation per each AMPV variant. These metrics shall measure throughput and utilization for all Vehicle Sensor Data Buses and the C4ISR and EW Data Bus. The contractor shall identify data busses and monitoring or recording provisions (hardware and software) that are designed to facilitate fault diagnosis and support VHMS.

## C.5.26.12 Software Problem Reports (SPR)

The contractor shall implement a corrective action process in accordance with J-STD-016 or IEEE/EIA 12207 or DoD equivalent standard that documents all reported anomalies, errors, or omissions that affect software, or associated documentation in the software problem report. The SPR document shall only be used to document software problem reports and not unrelated changes or hardware requests. The contractor shall adjust the emphasis of resolution efforts based on the SPRs severity priority ranking. All changes needed to resolve SPR anomalies, errors, or omissions shall be identified in the SPR documentation and the SPR shall not be closed until all those changes are completed. Changes not associated with SPRs shall be processed outside the SPR system. Software problem reports shall be prioritized using the priority scheme listed below:

Priority: Priority of the change

## 1) Priority 1: A software problem that does one of the following:

- (a) Prevents the accomplishment of an operational or mission essential capability specified by baselined requirements
- (b) Prevents the operator's accomplishment of an operational or mission essential capability

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(c) Jeopardizes personnel safety.

2) Priority 2: A software problem that does one of the following:

(a) Adversely affects the accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which no alternative work-around solution is known

(b) Adversely affects the operator's accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which no alternative work-around solution is known.

3) Priority 3: A software problem that does one of the following:

(a) Adversely affects the accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which an alternative work-around solution is known

(b) Adversely affects the operator's accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which an alternative work-around solution is known.

4) Priority 4: A software problem that is an operator inconvenience or annoyance and which does not affect a required operational or mission essential capability.

5) Priority 5: All other errors

**C.5.26.12.1 SPR Data Base**

The contractor shall maintain an SPR data base to fully record and aid in the management and tracking of SPRs. The contractor shall make the data base accessible to the Government electronically via Internet access.

**C.5.26.12.2 Software Problem Report (SPR) Status Reporting**

The contractor shall provide monthly status reports of SPR resolution progress (CDRL B035). The report shall show the SPR resolution status to the engineering staff level.

**C.5.26.13 Subcontractor Management Control Plan**

The contractor shall submit a Subcontractor Management Control Plan (in accordance with CDRL B038 (DI-MISC-80711A)). The contractor shall ensure that all requirements, as defined in this SOW, are flowed down to all suppliers performing software tasking under this effort. The contractor shall be responsible for ensuring that the quality of all software, documentation, and programming materials procured from subcontractors conform to the contract requirements. The contractor is responsible for imposing the software quality requirements on any and all subcontractors employed for the development of AMPV software.

C.5.26.14 The contractor shall deliver a vehicle Software Version Description (SVD) for each software release (DI-IPSC-81442A) (CDRL B031). The SVD shall include version, purpose, new features, planned usage, compatibility with mission command, compatibility with support equipment, specific problems fixed, and hardware compatibility, downloading instructions, logistic impacts, training impacts, and training device impacts.

**C.5.26.15 Software Reliability**

The contractor shall prepare and deliver a Software Reliability Program Plan in accordance with SAE - JA1002 (Software Reliability Program Standard) and SAE-JA1003 (Software Reliability Program Implementation Guide) (CDRL B026). The Software Reliability Plan shall address software coding practices, algorithm complexity, implementation of best practices, error handling, data integrity, component reuse, dead code, transactions, and any other software reliability features incorporated for the AMPV software.

**C.5.26.16 Software Testing**

The contractor shall perform software testing to ensure the software satisfies documented requirements. Government representatives will have the opportunity to attend and witness Software Qualification Testing and will determine which tests to witness.

C.5.26.16.1 The contractor shall present evidence of clean compiled code, that is free of patches and dead code, at Software Qualification Test Readiness Review (SQTRR). All test procedures and documentation must be placed under configuration management control prior to the start of the Software Qualification Test (SQT). The contractor shall provide a Software Test Description report that traces all software and system requirements to test procedures in accordance with CDRL B033 prior to the SQTRR. The contractor shall provide results of automated static code analysis performed prior to SQTRR, including any measures of software complexity and adherence to contractor's coding standards. A measure of software complexity of modules or CSCIs is required. The contractor shall

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prepare and deliver a software qualification test report to the PCO for approval or rejection after completion of SQT, in accordance with CDRL B034.

C.5.26.16.2 The contractor shall conduct stress testing at both CSCI and CSU level. Contractor performed stress testing shall be conducted with the results documented as engineering testing in a contractor formatted report and delivered to the Government (CDRL B034).

C.5.26.16.2.1 Functional Stress Testing (all levels)

The contractor shall stress test the software up to and beyond its designed capabilities. The contractor shall demonstrate the AMPVs ability to perform within the limits of its design capacities, and to degrade safely while being stressed beyond the design limits.

C.5.26.16.2.2 Duration Stress Testing (subsystem level)

The contractor shall define nominal load conditions and shall demonstrate that the software shall not degrade when stress tested for a period of 24 continuous hours loading conditions representing 150% of the softwares nominal load conditions.

C.5.26.16.2.3 Throughput Stress Testing

The following throughput stress testing shall be conducted:

C.5.26.16.2.3.1 Central Processing Unit (CPU) Loading (all levels)

The contractor shall define peak operational load and demonstrate that the software shall not degrade under twice that load, including start-up.

C.5.26.16.2.3.2 Data bus Loading (subsystem level)

The contractor shall define normal data bus loading and demonstrate that the software shall not degrade under twice that load.

C.5.26.16.2.3.3 Memory (Random -access Memory)

The contractor shall demonstrate that the software shall not degrade during peak CPU loading when 50% of the addressable memory is made unavailable to the software program. Software shall also be tested for memory leaks using an automated tool.

C.5.26.16.2.3.4 Memory (Hard Drive)

The contractor shall demonstrate that the software shall not degrade during peak CPU loading when 50% of the addressable Hard Drive memory is made unavailable to the software program. Software shall also be tested for memory leaks using an automated tool.

C.5.26.16.3 The contractor shall perform regression testing to validate corrective actions taken as a result of software errors. Software corrective actions rectifying these errors shall be regression tested to the CSCI level prior to a release for subsequent use. The PCO shall approve the selection of regression test cases and procedures prior to the start of retest.

C.5.26.17 Software Releases

Contractor shall conduct Preliminary Software Qualification Test (PSQT) and SQT on all software before delivering software. A software Test Readiness Review (TRR) will be held between PSQT and SQT to insure software, supporting documents, and required hardware are ready and under configuration control prior to start of software qualification test. Any issue that requires a software change after the CDR must be approved by the PCO and scheduled by the Government Configuration Control Board (CCB) before it can be installed on EMD vehicles.

C.5.26.17.1 Initial Software Release: Contractor shall develop, test, and release full functional AMPV vehicle software (as required by the AMPV P-Spec, and SOW) in support of first developmental vehicle deliveries under EMD.

C.5.26.17.2 EMD Corrective Action Release: Contractor shall plan to deliver a AMPV vehicle software release to incorporate Government approved changes for each Corrective Action Period (CAP) of Production Prove out Test (PPT). Refer to the Test Summary in Attachment 0008.

C.5.26.18 Compatibility with Maintenance Support Devices (MSDs) fielded to Armor Brigade Combat Teams (ABCT)

An ABCT uses MSD to support multiple functions such as at-platform diagnostics, off-platform diagnostics, software loading, software verification, and viewing IETMs. Armored Brigade Combat Team Maintenance Support Device Common Hardware and Software Resource Analysis (Attachment 0054) identifies existing applications that are resident on MSD in a ABCT along with hardware and software interfaces associated with the MSDs. Any software designed for AMPV shall be compatible with MSDs associated with a ABCT.

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C.5.27 Load Plan

C.5.27.1 The contractor shall develop and deliver a Load Plan (including schematics) that details optimum vehicle locations for all payload items for the AMPV, for each AMPV variant at GVW and Combat Weight. Each vehicle variant load plan shall also include components and systems that must be removed for transport. The contractor shall ensure that removed items are either securely stowed on or in the vehicle during transport. 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 the lethality and survivability aspects of the vehicle, as well as not to interfere with the normal operation of vehicle including ingress and egress. The Load Plan shall include the BII, Components of the End Item (COEI) and Additional Authorized List (AAL) comparable to the legacy M113 vehicle (see Attachment 0042 (M113 COEI, BII, and AAL)). Any additional BII, COEI, and AAL identified during task analysis to support the AMPV configuration and operational tasks shall be included in the load plan. The Government intends to conduct testing with the vehicles configured in accordance with this Load Plan. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B011)

C.5.27.2 The contractor shall conduct stowage demonstrations at its facility on facility vehicles. The contractor shall plan for two demonstrations lasting two days each. The contractor shall use actual components that require stowage, or mock ups, if those items can't be obtained. The contractor shall provide a maintenance engineer and Human Factors Engineer for the duration of the verification. The contractor shall document stowage demonstration findings in minutes (CDRL A001) and update applicable drawings. The stowage plan for each variant will be approved by the Government prior to the selection of live fire shots. The stowage demonstration results will be incorporated in validated AMPV TMs.

C.5.28 Obsolescence

C.5.28.1 The contractor shall have sole responsibility for the screening and subsequent replacement or redesign of a substitute part or system because AMPV unique parts or subsystems are no longer available or are obsolete. For parts or subsystems common with other programs, the contractor shall coordinate with the design authorities for those common items to identify availability or obsolescence issues.

C.5.28.1.1 For both common and AMPV unique components, the contractor shall notify the Government of any availability or obsolescence issues that will impact the AMPV program, as well as any planned procurement activity to remedy obsolescence shortages throughout the period of performance of this contract. Any technical data generated as a result of this paragraph shall be a deliverable in accordance with CDRL B039.

C.5.28.2 Obsolescence Management Plan and Report

The contractor shall develop an Obsolescence Management Plan and Report in accordance with CDRL B040.

C.5.29 Technology Readiness Level (TRL), Manufacturing Readiness Level (MRL), and Integration Readiness Level (IRL)

C.5.29.1 TRL Assessments

The contractor shall track and conduct assessments of technology readiness for each critical technology element and its current TRL using the definitions, criteria, and processes defined in the DOD Technology Readiness Assessment Guidance, April 2011, as a guide. A technology element is critical if it may pose major technological risk during development, the system being acquired depends on this technology element to meet operational requirements (within acceptable cost and schedule limits), or if the technology element or its application is either new or novel or in an area that poses major technological risk during detailed design or demonstration. The contractor shall evaluate and present system technology maturity based on the WBS. This assessment shall include: the TRL assigned to each critical technology, a description of the technology, the function it performs, how it relates to other parts of the system, 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. The contractor shall present appropriate risk analysis and associated maturation plans. 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. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.5.29.2 Manufacturing Planning and Readiness Assessment

C.5.29.2.1 The contractor shall track and conduct assessments of manufacturing readiness using the definitions, criteria, and processes defined in the MRL Deskbook, October 2012, as a guide. MRL Implementation plans shall be incorporated into the contractor's Manufacturing Plan (CDRL B041). The MRL implementation plans shall include a schedule for completion of the assessment, and locations of all facilities. The contractor shall present appropriate risk analysis and associated maturation plans. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.5.29.2.2 The contractor shall be assessed, with Government concurrence, at a minimum of MRL-7 in all areas no later than 180 calendar days after initiation of the period of performance of CLIN 0001. The contractor shall develop and implement Manufacturing Maturation

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Plans (MMP) or their equivalent, for areas lower than MRL-7. MRL Implementation plans (CDRL B041) shall include what evidence the contractor intends to provide to show the path to MRL 8 at PRR and MRL 9 following LRIP.

C.5.29.2.3 The contractor shall monitor both in-house and supplier's MRLs, and provide the status of same at all program reviews. The contractor shall re-assess MRLs where they may have been affected by design, process, source of supply, or facility location changes.

**C.5.29.3 IRL Assessments**

The contractor shall track and conduct assessments of integration readiness for each critical technology integration and their current IRL using the definitions, criteria, and processes defined in IRL Definitions, Attachment 0026, as a guide. This assessment shall include: the IRL assigned to each technology, all inputs and outputs for critical technologies, all external interfaces (hardware, software, physical interfaces, functional interfaces), how individual systems interface to other parts of the system, a description of the end-to-end functionality of the systems in which the integration has been demonstrated, and an analysis of the similarities between the simulated and demonstrated environment and the intended operational environment. The contractor shall present appropriate risk analysis and associated maturation plans. If IRL 8 has not been achieved for any component at TRR, the contractor shall present an integration maturation plan at the event, detailing how IRL 8 will be achieved by PRR. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

**C.5.30 Corrosion Requirements****C.5.30.1 Contractor Corrosion Team**

C.5.30.1.1 The contractor shall establish a Corrosion Control Team (CCT) to manage and integrate corrosion prevention and control throughout contract performance.

C.5.30.1.2 The CCT shall be responsible for the following: ensure implementation of adequate Corrosion Prevention and Control (CPAC) requirements in accordance with the project contract, plans, and specifications; ensure implementation of CPAC documentation and submission of documents in accordance with the required schedule; coordinate and synchronize the contractor Corrosion Prevention and Control Plan (CPCP) (CDRL B042) with the Government CPCP after initial Government review of contractor CPCP; establish periodic meetings and convene impromptu meetings when a critical or major problem arises which requires action by the CCT or Government Corrosion Prevention Advisory Team (CPAT); notify the program office of each meeting date, the topics to be discussed, and any decisions resulting from the previous meeting; and maintain a continuing record of all action items and their resolutions.

**C.5.30.2 Corrosion Prevention Advisory Team (CPAT)**

The contractor shall participate in the Governments CPAT. The contractor shall provide support to the CPAT, to include attending meetings, completing assigned action items, informing the CPAT of new corrosion issues and reviewing ECPs and their impact on the corrosion prevention and control of the system. CPAT meetings will be held on an annual basis in conjunction with the Environmental Management Team (EMT) meetings (CONUS travel required). In addition, monthly CPAT teleconferences will be held (no travel required).

**C.5.30.3 Corrosion Documentation****C.5.30.3.1 Contractor Corrosion Prevention and Control Plan (CPCP)**

The contractor shall maintain, and implement a contractor CPCP. The contractor CPCP shall be prepared in accordance with CDRL B042. The Corrosion Prevention and Control Planning Guidebook, Spiral 3, dated September 2007, may be used as a guideline for development of the CPCP.

**C.5.30.3.2 CPCP Item Corrosion Report**

The contractor shall prepare and deliver a CPCP Item Corrosion Report in accordance with CDRL B043 detailing all corrosion issues and resolutions. The information shall be available to the Government and discussed at CPAT meetings.

**C.5.30.3.3 Corrosion Test Results Report**

The contractor shall develop and deliver a Corrosion Test Results Report in accordance with CDRL B044. This report shall be available to the Government and discussed at CPAT meetings.

**C.5.31 Environmental, Safety, and Occupational Health (ESOH)****C.5.31.1 ESOH Program**

The contractor shall develop, implement, and maintain an ESOH program in accordance with MIL-STD-882E. The ESOH program shall include

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the following: system safety, occupational health, environmental impact, and hazardous materials management.

## C.5.31.2 ESOH IPTs

## C.5.31.2.1 ESOH Working Group (WG)

The contractor shall participate in the Governments AMPV 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 provide support to the ESOH WG, to include attending meetings, completing assigned action items, and providing information related to the development of ESOH documentation. During ESOH WG meetings, the contractor shall present ESOH program status and updates, Hazard Tracking System (HTS) status and updates, Hazardous Materials usage status and updates, and other relevant ESOH data. ESOH WG meetings will be held on a semi-annual basis (CONUS travel required).

## C.5.31.2.2 ESOH Hazard Review Board

The contractor shall participate in the Governments AMPV ESOH Hazard Review Board, in an advisory capacity. The contractor shall present and discuss issues affecting ESOH program implementation. The contractor shall pursue the issues through completion and close out any in-scope action items assigned. The ESOH Hazard Review Board meetings will be held on a bi-weekly basis (no travel required).

## C.5.31.2.3 Environmental Management Team (EMT)

The contractor shall participate in the Governments EMT, which is a multi-disciplinary group chartered by PM ABCT, dedicated to addressing environmental issues and supporting the PM ABCT environmental program. This team will include subject matter experts from Government and industry. The contractor shall provide support to the EMT, to include attending meetings, completing assigned actions items, and providing information related to environmental impact reduction efforts. EMT meetings will be held on an annual basis (CONUS travel required).

## C.5.31.3 Environmental Compliance

The contractor shall ensure that all aspects of contract execution are in compliance with applicable International, United States Federal, State, and Local environmental regulations and requirements, including activities associated with design, prototype build, test, storage, and disposal. The contractor shall immediately notify the PCO if the Government gives any direction that may result in violation of law or regulation.

C.5.31.3.1 The AMPV shall be designed such that the user shall have the ability to dispose of the system in full compliance with applicable United States Federal environmental quality laws and regulations.

## C.5.31.4 Hazardous Materials Management

For the purposes of this contract, hazardous materials are defined by FED-STD-313D, Section 3.2.

## C.5.31.4.1 Ozone Depleting Materials

The Contractor shall not use Class I and Class II Ozone-Depleting Chemicals.

## C.5.31.4.2 Prohibited Materials

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. These requirements do not apply to items identified in the MEM as GFM (Attachment 0006). These requirements also do not apply to components provided through the exchange agreement on this contract and identified as such in the Materials and Equipment Matrix, with the exception of (1) fasteners and (2) coatings used during the painting process. A fastener is defined as a hardware device that mechanically joins or affixes two or more objects together. Examples include nuts, bolts, washers, screws, rivnuts, clamps, clasps, and clips.

Prohibited Materials are as follows:

- Asbestos
- Beryllium
- Cadmium
- Hexavalent Chromium
- Lead
- Mercury
- Radioactive Materials
- Group 1 Agent classified as "carcinogenic to humans" by the International Agency for Research on Cancer (IARC) Monographs

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Exceptions to the Prohibited Materials listed in Section C.5.31.4.2 are as set forth below:

- Beryllium used in electrical components
- Cadmium on electrical connectors and back shells used to mate with cadmium electrical connectors on mandatory items identified in the MEM (Attachment 0006)
- Hexavalent Chromium used as a post-treatment on Cadmium plated electrical connectors and back shells used to mate with cadmium electrical connectors on mandatory items identified in the MEM (Attachment 0006)
- Lead-acid batteries
- Lead solder
- Steel containing up to 0.35% lead by weight
- Aluminum containing up to 0.4% lead by weight
- Copper and Brass alloys containing up to 4% lead by weight
- Lead in engine bearings
- Mercury containing components compliant with European Union (EU) Directive 2002/95/EC (RoHS)
- \*- Non-Chromate chemical agent resistant coating (CARC) primers and topcoats
- Trace amounts of identified prohibited materials contained in base materials or alloys are to be reported in the Hazardous Materials Management Report (HMMR), but do not require a waiver. For the purposes of this contract, trace amounts are defined as <0.1% for carcinogens and <1% for all other materials.

**C.5.31.4.3 Refrigerant Restriction**

The AMPV cooling system shall operate using refrigerant with a global warming potential (GWP) less than or equal to 1300 over a 100 year time horizon in accordance with Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: Climate Change 2001, 'The Scientific Basis', Chapter 6.12, 'Global Warming Potentials'.

**C.5.31.4.4 Coolant Requirement**

If liquid cooled, the engine shall be serviced with a coolant conforming to Commercial Item Description (CID) A-A-52624A, Antifreeze, Multi-Engine Type.

**C.5.31.4.5 Rubber Products**

C.5.31.4.5.1 The contractor shall use rubber products that meet the requirements of American Society for Testing and Materials (ASTM) D2000 for the intended purpose.

C.5.31.4.5.2 The contractor shall use rubber products that are ozone resistant consistent with best commercial practice.

**C.5.31.4.6 Hazardous Materials Waivers**

Waivers from the hazardous materials requirements shall not be permissible except where a suitable alternative does not exist. The Government will consider waivers in these situations on a case by case basis. The contractor shall prepare and deliver a list of anticipated waiver requests at the SOWM. The contractor shall submit formal waiver requests to the Government no later than 30 days prior to the CDR, using the Prohibited Materials Request (Attachment 0027). 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 use or deliver any prohibited hazardous materials without prior Government waiver acceptance, with the exception of the materials listed in Section C.5.31.4.2.1.

**C.5.31.5 Environmental Protection Agency (EPA) Emissions Requirements**

The contractor AMPV 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 in accordance with 40 CFR, Sections 85.1703, 89.908, and 1068.225.

**C.5.31.5.1 EPA Engine Labeling Requirements**

The contractor shall comply with the national security exemptions for engine labeling requirements in EPA regulations.

**C.5.31.6 ESOH Program Documentation****C.5.31.6.1 Hazard Tracking System (HTS)**

The contractor shall prepare a HTS in accordance with MIL-STD-882E, Task 106 (Hazard Tracking System). The HTS shall include the findings from MIL-STD-882E Task 205 (System Hazard Analysis) and Task 210 (Environmental Hazard Analysis). The contractor shall document

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and track all hazards from identification until the hazard is eliminated or the associated risk is reduced to a level acceptable to the Product Manager (PM) AMPV. The HTS shall include all hazards identified through testing and other analyses in accordance with Severity Categories and Probability Levels provided in Section 4.3 of MIL-STD-882E. The HTS shall be delivered to the Government in accordance with CDRL B045.

All hazards shall receive final disposition by the PCO. Closed out Hazards shall remain documented in the HTS.

**C.5.31.6.2 Safety Assessment Report (SAR)**

The contractor shall develop a SAR in accordance with MIL-STD-882E Task 301. The SAR shall be delivered to the Government in accordance with CDRL B046.

**C.5.31.6.3 System Safety Program Plan (SSPP)**

The contractor shall develop a SSPP in accordance with MIL-STD-882E Task 102. The SSPP shall be delivered to the Government in accordance with CDRL B047.

**C.5.31.6.4 Health Hazard Analysis (HHA)**

The contractor shall develop a HHA in accordance with MIL-STD-882E Task 207. The HHA shall be delivered to the Government in accordance with CDRL B048.

**C.5.31.6.5 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 final assembly. If OEVs are utilized, the HMMR shall include a list of all components that have been reused. This list shall indicate whether or not hazardous materials content is known for each component. When known, the hazardous materials shall be identified in the HMMR. The contractor shall discuss status, changes, or issues with the HMMR as part of the ESOH WG meetings. The HMMR shall be delivered to the Government in accordance with CDRL B049 [DI-MISC-81397].

**C.5.31.6.6 Lithium Battery Safety Data Package**

If lithium batteries are used in the system design, the contractor shall prepare a safety data package that documents and demonstrates the stability of the design and validity of the battery selection. The Lithium Battery Safety Data Package shall be delivered to the Government in accordance with CDRL B050.

**C.5.31.7 Critical Safety Program**

The Critical Safety Program described herein is applicable to new items designed under this contract and to non-development items.

**C.5.31.7.1 Critical Safety Program Definitions****C.5.31.7.1.1 Critical Safety Items (CSI)**

A part, assembly, installation, or production system with one or more critical characteristics that, if not conforming to the design data or quality requirements, would result in a probable occurrence of an unsafe condition. Unsafe conditions include conditions which would cause loss or damage to the end item or major component or loss of control or serious injury to personnel. Unsafe conditions relate to hazard severity categories I A-D, II A-C and III A-B of the risk acceptance level definitions in accordance with MIL-STD-882E.

**C.5.31.7.1.2 Critical Safety Characteristics (CSC)**

Features (i.e., tolerance, finish, material composition, manufacturing, assembly, or inspection process) of product, material, or process, which, if nonconforming or missing, would cause the failure or malfunction of the critical safety item.

**C.5.31.7.2 Identification of Critical Safety items**

The contractor shall clearly identify each CSI and assembly process as such on the engineering top drawing, part drawing, or assembly drawing. The contractor shall also clearly identify the CSC(s) for each CSI as such on the engineering parts, engineering top drawings, part drawings, assembly drawings, or process documentation. The contractor shall ensure that all designated or identified CSCs have an associated control method. The control method shall be either a Statistical Process Control (SPC) with a Process Capability Index (Cpk) greater than or equal to 1.66, or 100% inspection. The contractor shall annotate the control method in the notes for all designated or identified CSCs. The specific method for marking drawings shall be as delineated in MIL-STD-31000 (Attachment 0028) and ASME Y14.100.

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## C.5.31.7.3 Critical Safety Items Data Sources

Identification of CSIs shall be based on the following data sources:

- Use of engineering analysis and judgment
- Failure Modes and Effects, Criticality Analysis (FMECA) (CDRL C006) (MIL-STD-1629A)
- Safety Assessment and Safety Hazard Analysis (MIL-STD-882E)
- Development Testing and Operational Testing results
- RAM engineering assessments
- Previous experience using like items or designs
- Logistics support analysis (LSA) data
- Component qualification test results

The contractor shall validate the CSI requirements expressed herein to ensure that all critical safety aspects of the design are accurately depicted on deliverable drawings, and parts or materials operate well below fatigue limits or stress levels. The contractor shall ensure that the Government can verify these requirements without the use of destructive inspection equipment. The contractors validation shall be based on engineering analysis of the CSI characteristics and shall consider design changes, and deterioration through time from use, fatigue life, and operating conditions.

## C.5.31.7.4 Critical Safety Item, Characteristic and Critical Defect Report

A Critical Safety Item, Characteristic and Critical Defect Report shall be developed and delivered to the Governmental in accordance with CDRL B051. The contractor shall maintain and update the Critical Safety Item, Characteristic and Critical Defect Report throughout the life of the contract. The contractor shall also reference the CSIs on the vehicle class and division drawing. This list shall be dynamic in nature with changes taking place as experience and knowledge are obtained and design changes are incorporated into the system.

## C.5.32 Battle Damage Assessment and Repair (BDAR)

The contractor shall conduct a by-variant analysis of the AMPV FoV Battle Damage Assessment and Repair (BDAR) requirements and assess contents of the Army Crew-Level BDAR Kit (NSN 5180-01-502-9504) to determine if additional contents are required for inclusion into the kit. If additional items are required, the contractor shall complete an ECP to the kit drawings. The ECP shall include configuration management coordination across all users of the Army BDAR kit. Any additional contents shall be included in the existing kit and stowage of the BDAR kit shall be accounted for and included in the AMPV FoV load plan as well as additional supporting documentation.

## C.6 Quality Engineering and Test

## C.6.1 Quality Engineering

## C.6.1.1 Quality Engineering Responsibilities

The contractor shall ensure that Quality Engineering personnel are involved in meetings, design reviews, verification and qualification planning, conducting verification and qualification testing, and technical data finalization, to ensure the objectives of its overall production quality programs are achieved and continuously improved upon. Quality Engineering personnel shall participate in determining the type and amount of verification and qualification necessary to ensure all requirements are satisfied and verified. The contractor shall notify designated Government Quality Engineering personnel 14 calendar days prior to conducting any LRU or System Level Tests, regardless of the location or facility, to allow for Government participation and witnessing of test execution. Government representatives shall have the opportunity to attend and witness any LRU or System Level Tests and will determine which tests to witness.

## C.6.1.2 Quality Engineering Reviews

The contractor shall perform quality engineering reviews of Technical Data Package (TDP) documentation on a quarterly basis or more frequently if necessary. These reviews shall decide the amount of process control(s), product control(s), and test(s) necessary to achieve a quality product. The contractor shall define the required process control(s), product control(s), and test(s) on engineering drawings. If a separate document is required for the quality requirements due to their complexity or criticality, the contractor shall prepare the separate document in the same format as any existing quality assurance provisions.

## C.6.1.3 LRU Qualification Tests

The contractor shall conduct qualification testing on the LRUs. The specific LRUs, the quantity of LRUs to be tested, as well as the specific qualification tests to be performed shall be determined jointly with the Government using LRU historical data, integration information, technology maturity and manufacturing maturity levels. Qualification testing shall include, as determined jointly with the Government using the criteria above, verification of natural and induced environments such as temperature, humidity, ice, rain, wind,

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altitude, fungus, sand, dust, salt fog, vibration, shock, fluids, cleaning, electrical and combinations thereof. The contractor shall continually provide and maintain a document specifying the quantities of LRUs that shall be tested along with the specific tests that are required for each LRU qualification in accordance with CDRL C002. The contractor shall re-qualify any LRUs for which there are design changes after the initial qualification.

**C.6.1.3.1 LRU Qualification Test Plans**

The contractor shall develop and implement LRU qualification test plans for all LRU qualification tests and shall provide contractor approved final versions of the aforementioned test plans for review and approval to the Government in accordance with CDRL C003.

**C.6.1.3.2 LRU Qualification Test Responsibilities**

The contractor shall plan, coordinate, and control verification and qualification testing for all LRU items, alternate source items, and new components. Acceptance tests shall not be offered as a substitute for qualification testing.

**C.6.1.3.3 LRU Qualification Test Reports**

The contractor shall submit LRU Qualification test reports to the Government for review and approval after completion of the final LRU qualification test on each LRU in accordance with CDRL C004.

**C.6.1.4 Acceptance Tests**

The contractor shall develop, conduct, validate, and verify acceptance tests and Automated Test Equipment (ATE) for LRUs. The LRUs subject to acceptance testing shall be determined jointly with the Government (CDRL C002). The contractor shall inform the Government of any failed acceptance test(s) within three calendar days of failure.

**C.6.1.5 LRU First Article Tests (FAT)**

The contractor shall conduct a FAT on LRUs prior to production, including LRIP, and using production intent design(s), materials, and manufacturing processes. The LRUs subject to a FAT shall be determined jointly with the Government using LRU historical data, integration information, technology maturity and manufacturing maturity levels. Changes to the manufacturing process, facility, location, or manufacturer itself shall result in the need to perform a FAT as determined jointly with the Government using the criteria listed above (CDRL C002).

**C.6.1.5.1 LRU FAT Plans**

The contractor shall develop, or oversee subcontractor development of, LRU FAT Plans for all LRU FATs and shall provide contractor approved final versions of the aforementioned FAT plans for review and approval to the Government in accordance with CDRL C003.

**C.6.1.5.2 LRU FAT Responsibilities**

The contractor shall develop and implement, or oversee subcontractor development and implementation of FAT planning, coordination, and control of FAT testing.

**C.6.1.5.3 LRU FAT Reports**

The contractor shall submit FAT reports to the Government for review and approval after completion of the FAT on each LRU. These FAT test reports shall be submitted in accordance with CDRL C004.

**C.6.1.6 Environmental Stress Screening (ESS)**

The contractor shall establish and implement an ESS program for LRUs. The LRUs subject to ESS shall be determined jointly with the Government (CDRL C002). The contractor shall develop ESS profiles to determine optimum screens. The objective of the ESS effort shall be to improve design, product quality, product reliability, increase production yields, and reduce ownership costs.

**C.6.1.6.1 ESS Proof of Screen (POS)**

The contractor shall develop and utilize a POS to establish the ESS program for the LRUs. The LRUs subject to the ESS POS shall be determined jointly with the Government. The objective of the POS is to determine that the best ESS profile is being used to successfully screen hardware while not overstressing hardware and inducing unnecessary failures.

**C.6.1.6.2 ESS Program Feedback**

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The contractor shall document, analyze, and report on all available data to determine the ESS programs effectiveness. The contractor shall provide the effectiveness results of ESS to the Government, with all issues noted and resolved in accordance with CDRL C005.

C.6.1.7 LRU Highly Accelerated Life Tests (HALT)

The contractor shall conduct a HALT on the LRUs prior to production, including LRIP, using production-intent design(s), materials, and manufacturing processes. The LRUs subject to a HALT shall be determined jointly with the Government (CDRL C002).

C.6.1.7.1 LRU HALT Plans

The contractor shall develop LRU HALT plans for all LRU HALTs and shall provide contractor approved final versions of the aforementioned HALT plans for review and approval to the Government in accordance with CDRL C003.

C.6.1.7.2 LRU HALT Responsibilities

The contractor shall develop and implement HALT planning, coordination, and control of HALT testing.

C.6.1.7.3 LRU HALT Test Reports

The contractor shall submit LRU HALT reports to the Government for review and approval after completion of the final HALT on each LRU in accordance with CDRL C004.

C.6.1.8 Design For Six Sigma (DFSS) and Lean Manufacturing Techniques

The contractor shall utilize DFSS and Lean Manufacturing tools and processes for work conducted under this contract. DFSS and Lean Manufacturing shall be an institutionalized, documented process and the tools selected for each project shall be documented.

C.6.1.9 Failure Modes Effects and Criticality Analysis (FMECA)

The contractor shall conduct a FMECA on LRUs down to the component level, except for COTS items for which the FMECA shall be performed to the lowest level possible. The LRUs subject to the FMECA shall be determined jointly with the Government. The contractor shall identify and evaluate potential failure modes to determine their effect on the LRU, subsystem, and system as a whole. The FMECA shall be performed either as a hardware analysis or as a combination of a hardware analysis with functional analysis as required. The FMECA data shall be submitted in accordance with CDRL C006.

C.6.1.10 Lead (Pb) Free Control Plan

A lead (Pb) free control plan that describes policies, procedures, manufacturing processes, and monitoring in regards to all lead (Pb) free electronic components that are, or have the potential to be utilized, shall be provided to, and approved by the Government. The aforementioned lead (Pb) free control plan must make extensive use of Government Electronics & Information Technology Standard 0005-1 (GEIA-STD-0005-1) and GEIA-STD-0005-2 to assure product performance, reliability and safety. The lead (Pb) free control plan shall be submitted in accordance with CDRL C007.

C.6.2 Reliability, Availability and Maintainability (RAM) System Assessments

C.6.2.1 Reliability Growth Curve (RGC)

The contractor shall continuously monitor and control all aspects of system and subsystem reliability performance throughout the period of performance of this contract to ensure the programs approved RGC (Attachment 0098, AMPV Reliability Growth Models) provided by the AMPV program is met.

C.6.2.2 RAM Program

C.6.2.2.1 The contractor shall maintain a RAM program to assure required vehicle reliability and maintainability performance is being monitored, evaluated and achieved throughout the vehicle's life cycle.

C.6.2.2.2 RAM Program Plan

The contractor shall develop, implement, and maintain a comprehensive RAM Program Plan. The contractor shall develop engineering processes to ensure a reliable design reflected in a corresponding reliability model. The contractor shall use American National Standards Institute document GEIA-STD-0009-2008, including the Checklist for Evaluating Reliability Program Plans as a guide for reliability program development. The contractor shall monitor the system design throughout the entire period of performance to identify, assess, and implement failure analysis and corrective actions and to correct any incidents, which would adversely affect RAM.

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The contractor shall develop a RAM analysis and predictions to ensure compliance with the Performance Specifications. The plan shall encompass all aspects of reliability and maintainability with respect to design selection of components, predictions, and testing. The contractor shall maintain and make available to the Government all RAM data on any vendor or subcontractor supplied item and shall inform the Government of any part or component that will degrade system RAM requirements. The RAM program plan shall include the following tasks as outlined in Sections C.6.2.2.3-C.6.2.2.8. The contractor shall submit its RAM program plan in accordance with CDRL C008.

**C.6.2.2.3 RAM Reports**

The contractor shall develop and maintain a RAM Report. The report shall provide data to support the contractors claim that it meets or exceeds the RAM requirements. The contractor shall also identify how best commercial engineering and DFSS approaches are being incorporated early in the system design process to achieve the requirements. The contractor shall submit RAM reports in accordance with CDRL C008.

**C.6.2.2.4 Procedures and Controls**

The contractor shall establish and maintain procedures and controls, which ensure products obtained from vendors and subcontractors meet RAM requirements. The contractor shall establish, implement, and maintain documented procedures, which detect and preclude the use of substandard or counterfeit parts in the production process and impose similar requirements on subcontractors. In addition, the contractor shall provide the Government notice of any special RAM review meetings scheduled with subcontractors so that Government representatives can attend at their discretion (CDRL C008).

**C.6.2.2.5 RAM Program Review**

The contractor shall conduct RAM program reviews with the Government. The RAM program reviews may be held in conjunction with design reviews and program management reviews or stand-alone.

**C.6.2.2.6 Reliability Predictions**

The contractor shall develop and maintain a reliability prediction report in accordance with CDRL C008. The report shall provide detailed reliability predictions based on a defined configuration and associated models. The predictions shall be allocated from the system level to one level below installation level. The contractor shall update the predictions each time significant design or mission profile changes significantly impact the vehicle or any of its subsystems.

**C.6.2.2.7 RAM Modeling and Analysis**

C.6.2.2.7.1 The contractor shall develop and utilize a reliability model for each variant. 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.

C.6.2.2.7.2 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.

C.6.2.2.7.3 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; and
- (e) Enable the application of proactive tools such as 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.

**C.6.2.2.8 RAM Predictions**

C.6.2.2.8.1 The contractor shall develop and provide RAM predictions that correlate with the contractor Reliability Model. RAM predictions shall include reliability design predictions for Mean Miles Between System Abort (MMBSA) 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

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Repair (MaxTTR). RAM 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). RAM predictions shall be rolled up to the system level. The contractor shall analyze and update the RAM predictions whenever a design change or manufacturing change occurs. The contractor shall include RAM predictions in the reliability model. The contractor shall document any assumptions, boundary conditions and any test or modeling inputs used in developing RAM predictions.

C.6.2.2.8.2 If possible, the contractor shall generate the RAM predictions by utilizing actual component and subsystem test-generated data with test inputs at least as demanding as the Operational Terrain (Performance Specification). The contractor may also use previously generated data for COTS items to generate RAM predictions, provided that the testing represents the Operational Terrain environment. The contractor shall not base its RAM predictions solely on models, on Non-Electronic Parts Reliability Data (NPRD), or on MIL-HDBK-217 data. If inputs used to generate RAM 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 deliverable for any adjustment factors. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews (CDRL C008).

**C.6.2.3 Test Incident Reports (TIRs)**

C.6.2.3.1 The contractor shall establish and maintain a system for analysis of TIRs generated during Government tests. The contractor shall access all TIRs directly through VDLS. The system shall be capable of tracking the status of TIRs to include necessary distribution, failure analysis, corrective action, and management reports. The contractor shall also be responsible to distribute TIRs down to suppliers and subcontractors to ensure failure analysis and corrective action reports include their input.

**C.6.2.3.2 TIR Scoring Conferences and Assessment Conferences**

Formal scoring and assessment conferences will be conducted at the discretion of the Government. Scoring conferences will be conducted during and immediately after Government testing to assure that a proper and consistent determination is made for categorizing test incidents against RAM requirements in accordance with the Failure Definition (FD) and Scoring Criteria (SC) in Attachment 0100. Conferences may alternate between test sites. The contractor shall support all scoring and assessment conferences as part of the RAM program. During the scoring conference, each TIR revision shall be scored, to include revising the incident classification (Critical, Major, Minor, Information). At least 72 hours prior to the conference, the contractor may present TIR scoring recommendation(s) to the Government. Further discussions with the contractor may be required to ensure full technical understanding of test incidents. All discussions with the contractor will be held separately from scoring and assessment activities. The contractor shall not witness the actual scoring of the TIRs. The Government will notify the contractor of the scoring conference results within 10 calendar days of the meeting.

**C.6.2.4 Failure Analysis and Corrective Action Report (FACAR)**

C.6.2.4.1 The contractor shall submit FACARs in response to TIRs. The contractor shall prepare and submit FACARs in accordance with CDRL C009.

**C.6.2.4.2 Corrective Action Review Board (CARB)**

During and after Government testing, CARB meetings will be held at the discretion of the Government to review the contractor's FACARs (CDRL C009) for acceptance or rejection. CARB reviews shall be hosted by the contractor at locations specified by the Government. The contractor shall prepare CARB packages, including copies of all applicable FACARs, for meetings and provide minutes of CARB results for Government review in accordance with CDRL C009. Upon completion of the TIR evaluation, failure analysis, and corrective action coordination, the contractor shall prepare an incident close out sheet, using contractor format. The contractor shall coordinate TIR responses from subcontractors for submission to the Government. The contractor shall submit closeout information including finalized FACARs and supporting test data in accordance with CDRL C009.

C.6.2.4.3 If the contractor's FACAR response is rejected, the Government will notify the contractor within 30 calendar days of submission of the FACAR to AMS. The contractor shall be required to resubmit a response within 30 calendar days of that notification.

**C.6.2.5 Identification of Failed Parts**

The contractor shall handle each failed part supporting the FACAR in a manner that does not damage the failed test exhibit. The contractor shall mark, tag, and control each of these failed parts found during Government and contractor testing with the contractor's part number, and its respective TIR number. The contractor shall ensure that all identification markings and tagging placed on a failed test exhibit are legible. Failed items are to be segregated so that they cannot be commingled with new LRUs or parts provided for testing System Support Package. The contractor shall be fully responsible for the storage and care of each failed part(s). The item(s) shall remain stored pending disposition of the failure analysis and Government notification and approval.

**C.6.3 EMD Phase Test and Evaluation****C.6.3.1 Testing Overview**

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The system test strategy and key decisions will be captured in the Test and Evaluation Master Plan (TEMP) as they pertain to the unique phases of contractor and Government testing. The AMPV T&E WIPT will be the mechanism for refining the TEMP in support of the contractor testing, Production Prove Out Test (PPT), LUT, and Live Fire Test (LFT). Data from all testing will support AMPV variant independent assessments, and support the MS C and FRP decisions.

C.6.3.1.1 Contractor Maintenance & Upkeep of Facility and Log Vehicles

The contractor shall:

- (a) Provide ongoing maintenance and repair of facility and Log vehicles and to ensure they are in functional working order and kept up to the latest approved hardware and software configuration.
- (b) Provide planning, coordination and management of the scheduled vehicle usage and configuration changes.
- (c) Provide accurate identification and record of expenditures for labor, troubleshooting, and failure analysis, as well as component replacement and repair.
- (d) Provide labor for the removal and installation of failed components and the transfer of components between vehicles to meet test configuration requirements.
- (e) Remove, package and ship defective LRUs to vendors for repair.
- (f) Obtain, ship and return replacement components to and from supply points.
- (g) Track the status and cost of defective parts being repaired and ensure that they are returned back to the appropriate vehicles.
- (h) Track the status of vehicle components, serial numbers and locations in a database.
- (i) Prepare, inspect and ship vehicles and components.

C.6.3.2 Contractor T&E Authority

C.6.3.2.1 The contractor effort, in support of T&E, shall be continuous from the contract award to the contract close out. The contractor shall appoint or designate a single T&E authority responsible for the T&E teams roles, assignments, practices, processes, and a seamless unity of effort across all the programs functional groups (e.g., Engineering, Logistics, Safety, Quality, HFE). The contractor T&E authority shall plan and execute contractor testing, support for Government testing and perform risk and configuration management.

C.6.3.2.2 The contractor T&E Authority shall review program related documents (including the TEMP) that may have an impact on the test program. The contractor shall advise the Government on recommended changes to the TEMP. The contractor shall notify designated Government Quality Engineering personnel 14 calendar days prior to conducting any LRU or System Level Tests, regardless of the location or facility, to allow for Government participation and witnessing of test execution. Government representatives shall have the opportunity to attend and witness any LRU or System Level Tests and will determine which tests to witness.

C.6.3.3 Contractor Testing

C.6.3.3.1 The contractor shall perform vehicle system level testing for each variant, in accordance with a Government approved contractor test plan (CDRL C003) prior to the start of the different phases of Government testing, as outlined in Attachment 0008. The contractor shall conduct vehicle system level testing at Government test facilities in accordance with Attachment 0008 to verify that the vehicle systems and subsystems meet critical performance specification technical parameters and to reduce overall program risk. At a minimum, System Level contractor testing shall consist of the following tests:

- (a) Automotive Performance
  - i. Acceleration, Minimum and Maximum speeds
  - ii. Braking Performance
  - iii. Dash Speed
  - iv. Fording Operations
  - v. Gradeability
  - vi. Vertical Climb
  - vii. Gap Crossing
- (b) Power Management Compliance Testing

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- (c) 1500 miles of testing over the terrain profile mix found in the OMS-MP.
- (d) Climate Control compliance testing (Medical Variants only)
- (e) Mortar Basic Firing Structural Integrity Test (Mortar Variant Only)
- (f) Three axis combat weight and CG verification on each variant in conjunction with load plan verification

C.6.3.3.1.1 For the mandated subtests above, the contractor shall use applicable Test Operating Procedures (TOPs) or International Test Operating Procedures (ITOPs) as guidance for the preparation of test plans. A listing of TOPs/ITOPs can be found at <http://www.atec.army.mil/publications/topsindex.aspx>.

**C.6.3.3.2 Contractor Shakedown Testing**

Prior to the start of Government RAM Testing during PPT, the contractor shall conduct a system level shakedown test of each of the Government RAM test vehicles to ensure workmanship and infant-mortality issues are surfaced and addressed in accordance with a Government approved contractor test plan (CDRL C003). Within two business days of completion of the shakedown test for the specific vehicle under test, the contractor shall conduct a teleconference with the test site personnel, as well as PM ABCT Test and RAM personnel to advise them of the suitability for the vehicle to begin RAM missions. At a minimum, shakedown testing shall consist of 250 miles of testing over the terrain profile mix found in the OMS-MP (Attachment 0073).

**C.6.3.4 Government Testing**

The Government will conduct DT and OT as part of the AMPV program. DT is planned to be conducted at Aberdeen Proving Ground (APG), Yuma Proving Ground (YPG), and Electronic Proving Ground. The OT test site has not been determined but is anticipated to be in the Southwest U.S. Government safety testing will be performed as soon as practical after test site initial inspection to obtain a safety release in support of any user events or logistic demonstrations.

**C.6.3.4.1 Production Prove Out Testing (PPT)**

PPT will consist of Automotive Performance tests, RAM testing, ballistic testing, firing performance and accuracy testing, environmental testing, Electromagnetic Interference (EMI), and Electromagnetic Compatibility (EMC) safety. APG and YPG personnel will conduct the majority of the effort for this test phase. Additional test activities include: safety assessment, human factors assessment, and performance characteristics. A full list of sub-test performed during the PPT is defined in Attachment 0008.

**C.6.3.4.2 Limited User Testing (LUT)**

LUT will be conducted at a location in the Southwest United States, and performed within the constraints specified by the U.S. Army Test and Evaluation Command (ATEC) and safety release processes. The duration of the LUT is defined in Attachment 0008.

**C.6.3.5 Contractor Support for Government Testing**

The contractor shall provide the personnel and level of work as described in the following sub-sections.

**C.6.3.5.1 Test Site Field Service Representatives (FSRs)**

FSRs are as specified in Section C.7.14. For testing at all Government Test Sites, the FSRs shall be available during the entire test schedule. The FSRs shall coordinate with test site personnel to assist and conduct repairs. The FSRs shall possess sufficient knowledge to assist and direct test site personnel in maintenance tasks should TMs be unavailable to conduct testing. The contractor shall provide sufficient FSRs to support two, daily 10-hour shifts at YPG and APG.

**C.6.3.5.2 Subject Matter Experts (SMEs)**

The contractor shall have SMEs available to travel to any of the test sites to support troubleshooting or failure analysis of critical or major incidents (as defined by the TIR) for any of the vehicles under Government testing. The contractor SMEs shall arrive onsite at the test site within two business days after the PCO requests their assistance.

**C.6.3.5.3 Operational Test Support**

The contractor shall support the LUT by having FSRs and Test Engineers (TEs) available on site, and design engineers on call, to assist Government test personnel at Government sites, as specified in Attachment 0008, in diagnosing and fixing vehicle incidents. The contractor shall be responsible for conducting all AMPV maintenance beyond Operator-Crew level during the LUT. These contractor FSRs and TEs shall also ensure that the System Support Package (SSP) (reference Section C.7.12.2.1) is maintained with the proper quantity of repair and replacement parts for the vehicles under test at the LUT test sites.

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The Government ballistic and LFTE testing will be conducted at APG. The contractor shall provide FSRs and SMEs to assist Government test personnel in preparation for LFTE events, as well as post-test vehicle analysis.

**C.6.3.5.5 Contractor Corrective Actions RAM Corrective Action Periods (CAPs) and Refurbishment Time**

The contractor shall be responsible for conducting hardware replacements, software updates and vehicle upgrades required to meet vehicle requirements. The contractor shall focus its corrective action implementation to take place during Corrective Action Periods that are scheduled during Reliability testing. Test vehicles that are required to be used in more than one test (e.g. Performance to LUT, or RAM to LUT) and LUT back-up vehicles shall be brought to fully serviceable (-10/-20) operating condition prior to the start of LUT activities (see Attachment 0008). All repairs, replacements and upgrades to all vehicles shall be completed prior to the start of LUT training.

**C.6.4 Verification Data**

The contractor shall make available verification data such as test data, results, demonstration documents, videos or pictures, analyses, reports and inspection results to the Government (CDRL C010).

**C.6.5 SL LFTE Vehicles**

Two assets, one GP and one MC, will be utilized to conduct system level ballistic testing in accordance with Attachment 0008.

**C.6.6 Quality Assurance and Manufacturing****C.6.6.1 Quality Management System (QMS) Requirements**

The contractor shall develop, implement, and maintain a quality management system acceptable to the Government for all supplies and services to be provided under this contract. The quality system shall meet the requirements of ANSI/ISO/ASQ Q9001-2008 or an equivalent standard. Government approval of the Quality System is not required, if at the time of contract award, the contractor is a Registrar Accreditation Board (RAB) certified or registered ANSI/ISO/ASQ Q9001-2008, QS 9000/TS 16949, or AS 9100 supplier. The contractor shall make all QMS documents and procedures available for review upon request.

**C.6.6.2 Final Inspection Record (FIR)**

C.6.6.2.1 The contractor shall develop a validated vehicle end item FIR for each vehicle variant. The FIR shall be organized to be compatible with assemblies and installation and reflect all inspections and tests performed to verify conformance to requirements.

C.6.6.2.2 The contractor shall update the FIR throughout the contract period, as requirements or vehicle configuration changes. The contractor shall execute a FIR inspection or test prior to vehicle presentation for Government acceptance.

C.6.6.2.3 The contractor shall notify designated Government personnel (PM-ABCT-Q, DCMA) 14 calendar days prior to conducting any FIR activities, regardless of the location or facility, to allow for Government participation and witnessing of FIR execution.

C.6.6.2.4 The contractor shall execute a FIR and correct all noted deficiencies prior to presentation for final vehicle delivery to the Government.

**C.6.6.3 Supplier Quality Assurance (SQA) Program**

The contractor shall develop and maintain an SQA Program that shall be used to guide all contractor supplier interaction. The contractor's SQA Program shall be compliant with ANSI/ISO/ASQ Q9001-2008 or equivalent 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 information used to develop the SQA Program shall be available to the Government and discussed at IPT meetings as well as major reviews. The contractor shall make information used to develop the SQA Program, as well as all documents and procedures associated with the SQA Program, available for review upon request.

C.6.6.3.1 The contractor shall develop a SQA Plan as part of the SQA Program. The contractor shall make information used to develop the SQA Plan, as well as all documents and procedures associated with the SQA Plan, available for review upon request.

The SQA Plan shall include, at a minimum, the following:

- (a) Requirements for becoming an approved supplier
- (b) Part approval process
- (c) Quality Management System requirements, including third party quality registration requirements

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- (d) Preventive and Corrective action requirements
- (e) Quality Problem Reporting requirements
- (f) Critical and Safety Parts Control
- (g) Lot Control and Traceability
- (h) Delivery and shipping information
- (i) Provisions for periodic audits

C.6.6.4 Government Quality Audits

The Government shall monitor the contractor's performance using the Quality Assurance procedures established for this contract. This shall involve quality audits (process audits, manufacturing audits, product audits). 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, shall be conducted with the contractor.

C.6.7 Hardware Deliverable Requirements

The contractor shall meet all hardware deliverable requirements identified in Section E prior to Government acceptance of hardware to enter Government test. The contractor shall ensure all non-vehicle hardware deliverables (Section C.6.7.2) correspond with the design of the delivered AMPVs.

C.6.7.1 Vehicle

The contractor shall fabricate and deliver all AMPV vehicles in accordance with F.3.2 and the Test Summary (Attachment 0008).

C.6.7.2 Non-vehicle Hardware Deliverables

C.6.7.2.1 The contractor shall provide all of the BII and COEI identified within Section C.7.4.2.3.2 with each vehicle delivery in accordance with Exhibit B.

C.6.7.2.2 The contractor shall provide the SSP identified within Sections C.7.4.2.4 and C.7.12.2.1, to each of the supporting USG test sites, in accordance with Exhibit B. The SSPCL (CDRL D013), including LCN breakdown, shall accompany the SSP.

C.6.7.2.3 Contractor shall provide all Special Tools and Test Equipment identified within Sections C.7.11.1 and C.7.11.2.1 in accordance with Exhibit B.

C.6.7.2.4 The contractor shall provide the cold start kits identified within Section C.5.9 in accordance with Section Exhibit B.

C.6.7.2.5 Armor Coupon Sets

The contractor shall deliver to the Government, armor coupons in the quantities indicated in Section C.6.7.2.5.1, for each armor recipe that has not been previously qualified through Government testing and approved to meet the AMPV protection levels defined in the AMPV P-Spec (Attachments 0001 and 0082). The coupons are required to meet the protection levels defined in the AMPV P-Spec (Attachments 0001 and 0082). Each recipe constitutes a unique configuration, 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 or strike side. The contractor shall deliver the armor coupon solutions secured in a manner consistent with the production method for armor and spall liner installation used on the vehicle. If bolts are used as a securing mechanism, 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.6.7.2.5.1 The contractor shall provide the Government one armor coupon set for each transparent, opaque, and reactive armor recipe required to satisfy the protection levels defined in the AMPV Performance Specification (Attachments 0001 and 0082).

C.6.7.2.5.1.1 Coupon sets shall be as follows:

C.6.7.2.5.1.1.1 Transparent Armor (TA)

One complete window assembly armor coupon set of each TA unique solution shall consist of 40 coupons.

C.6.7.2.5.1.1.2 Armor - Metallic Armor Solutions

For armor solutions that contain only metallic layers (not including spall liner), one armor coupon set of each unique solution shall consist of 29 coupons.

C.6.7.2.5.1.1.3 Armor - Ceramic/Composite Armor Solutions

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For armor solutions that contain ceramic and composite layers, one armor coupon set of each unique solution shall consist of 38 coupons.

C.6.7.2.5.1.1.4 Armor - Explosive Reactive Armor Solutions

For armor solutions that contain Class V materials, one armor coupon set of each unique solution shall consist of 357 coupons"

C.6.7.2.6 Ballistic Hull Structures

The contractor shall provide the ballistic armor structures in the quantities indicated in Section F.2.5 and described within this section. The ballistic hull structure shall be configured with the roadwheels, track, suspension, and drivetrain, but no interior components unless they are designed to provide ballistic protection (e.g. spall protection partitions or curtains). Ballistic hulls include: the basic hull structure, spall liners, armor modules (not including supplemental armor packages as described in the Classified performance specification), grilles, hatches, and access covers, rear ramp or doors, fuel tanks, periscopes, structural components required for transportability such as lifting eyes.

C.6.7.2.7 Protection Kits

If the contractor chooses to use a vehicle protection kit solution required for the defeat of specified threats in the Performance Specification, instead of an armor solution that stays on the vehicle, the Contractor shall provide 29 full protection kits with 24 being used for test and five for Technical Manual (TM) and Logistics Demonstration (Log Demo) during EMD. If the protection kit solution contains Class V materials, the contractor shall provide 29 inert protection sets with the EMD vehicles. The inert kits shall be representative of the Class V kits in terms of size, weight, integration and installation. The inert kits will maintain the same vehicle center of gravity when installed as the Class V kits.

C.6.7.2.8 Class V Protection and Installation Kits

If the protection kit solution that the contractor chooses contains Class V materials, the contractor shall provide the Government four (two MC and two GP) live protection kit solutions containing the Class V materials, including installation kits. If Class V protection kits are used they must enable the vehicle to meet the protection levels defined in the AMPV Performance Specification (Attachments 0001 and 0082).

C.6.7.3 Long Lead Items

The contractor shall order long lead items no earlier than successful completion of PDR.

C.6.7.4 Refurbishment of EMD Test Assets

C.6.7.4.1 The contractor shall provide all personnel, equipment, tools, materials, repair parts, transportation, supervision and other items and services to inspect and rebuild 27 of EMD AMPV variant test assets (all but the MC and GP being used for LFT). These test assets are to be brought to the current production variant configuration and Bill of Material (BOM), in accordance with CDRL B001, after the end of EMD Testing using production process. Rebuild is a near zero time and zero mile maintenance process defined as an end item total tear down and replacement of all expendable components, all aged components, reconditioning of structural components, and the procedures identified for overhaul of the end item. Rebuild results in a system with the same model and a new life. The vehicles shall be rebuilt to meet rebuild quality standards and current AMPV P-Spec. Assemblies, components and Line Replaceable Units (LRU's) shall follow applicable rebuild requirements within National Maintenance Work Requirements (NMWR) and Depot Maintenance Work Requirements (DMWR), if they exist. Otherwise, vehicles shall be rebuilt to the -10/-20 Preventative Maintenance Checks and Services standards identified in the validated system TMs and the engineering drawings.

C.6.7.4.1.1 The Government will provide in a timely manner the Government Furnished Items identified in the BOM as configuration required to complete the rebuild. GFM shall be provided to the contractor on or before the agreed upon rebuild schedule.

C.6.7.4.1.2 After rebuild, the contractor shall thoroughly inspect and test the vehicles and submit a Final Inspection Report (FIR), per CDRL C011. The completed vehicles shall be delivered to the Government within 180 days after the completion of EMD testing.

C.6.7.4.2 Shipping of Test Assets

The contractor shall ship the 27 test vehicles from the test facility to the contractors refurbishment location.

C.7 Integrated Logistics Support (ILS) for EMD Phase

C.7.1 ILS Program

The contractor shall plan, manage and execute an ILS Program for the AMPV program.

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C.7.1.1 ILS Program Objectives

1) The contractor shall conduct an effective Logistics Support Analysis (LSA) program that:

(a) Ensures that the supportability characteristics for the AMPV identified in the AMPV Performance Specification (Attachments 0001 and 0082) are satisfied and demonstrated via testing and Logistics Demonstration (Log Demo) activities, and

(b) The contractor shall effectively translate the design of the AMPV into validated logistics support package products. The contractor shall conduct a Log Demo to support AMPV activities that are required to achieve a successful Milestone C, and to define the logistics support package contents to be acquired under the LRIP contract to support production vehicle testing and initial fielding.

2) The ILS program shall focus on the development of a validated logistics support package that maintains currency with the AMPV product configuration identification and serves as the baseline to be verified using LRIP vehicles in the next phase.

3) The contractor shall provide effective test support by developing and managing system support packages for contractor and Government tests and logistics events under this contract.

4) The contractor shall maintain facility vehicles to ensure they are available and in the latest approved configuration to support the logistics activities required for their use under this contract. Facility vehicles shall be maintained in a TM - 10/-20 standard condition and be able to obtain a safety release for logistics events. For each variant, the Contractor shall maintain a full set of current BII, COEI, and AAL.

C.7.2 ILS Program Management

The contractor shall establish and maintain the management processes and controls for the AMPV ILS program. A joint Government and contractor PSM-IPT shall be established to oversee the AMPV ILS program.

C.7.2.1 ILS Management Planning

The contractor shall present a plan for managing and executing the ILS program at a PSM-IPT meeting 30 calendar days after contract award (CDRL D001). The plan shall describe the contractors organization, lines of communication, and schedule of activities, with associated resources and management controls. This planning information shall be presented for PSM-IPT approval. Required adjustments shall be documented in the PSM-IPT Meeting Minutes (CDRLs A001 and A002).

C.7.2.2 ILS Master Schedule

The contractor shall develop and maintain an ILS Master Schedule to manage the AMPV ILS program through completion of the EMD contract. The ILS master schedule shall reflect the details of the ILS work content requirements of this contract. The contractor shall incorporate the ILS Master Schedule into the AMPV IPMR and IMP (CDRL A004). The contractor shall present the ILS Master Schedule at each PSM-IPT meeting and incorporate any PSM-IPT approved changes to the schedule into the AMPV IMS.

C.7.3 Life Cycle Sustainment Strategy

The contractor shall execute the AMPV ILS program in accordance with the Government approved AMPV Life Cycle Sustainment Plan (LCSP).

C.7.3.1 LCSP Support

The contractor shall develop content and provide input for the LCSP and all associated annexes in support of the Governments LCSP development effort.

C.7.3.2 Depot Maintenance Strategy

The Core Depot Assessment is a key LCSP annex. The contractor shall participate in the formulation of the AMPV Depot Maintenance Strategy via a Joint contractor and Government Depot Maintenance team. The contractor shall assist the Government in documenting the Depot Maintenance Strategy through an update to the AMPV LCSP following the timeline established in the AMPV ILS Master schedule. This update includes providing data required to develop the Core Logistics Analysis (CLA), Core Depot Assessment (CDA) and Source of Repair Analysis (SORA) in accordance with AR 700-127, Chapter 5, Section III.

C.7.4 Logistics Support Analysis (LSA) and Logistics Management Information (LMI) Objectives

1) The contractor shall perform LSA of the design of the AMPV variants to ensure they are meeting or exceeding the supportability requirements contained in Performance Specifications.

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2) The contractor shall make maximum use of LSA and LMI data developed under previous Government contracts and maintain an ILS design change tracking system which provides logistics tracking data, to include the estimated cost to implement proposed design changes and the authority directing the change, from contract award through Government approval.

3) The contractor shall ensure LSA and LMI data is available to develop, validate and provide a logistics support package for prototype vehicles at the time of their scheduled use for testing, training or other demonstrations or evaluations required by this contract.

4) The contractor shall analyze the data resulting from testing, manufacturing prototypes, quality, and other evaluations of the AMPV systems, including the Log Demo, in order to ensure that LMI reflects the results of these activities. The result should ensure that AMPV logistic support planning and the AMPV logistics support package properly represent the best information available to support the AMPV.

**C.7.4.1 LSA Tasks**

The contractor shall perform the following LSA efforts, tailored as stated in Sections C.7.4.1.1 through C.7.4.1.9.1.

**C.7.4.1.1 Supportability Design Factors**

The contractor shall develop and maintain the following design related supportability parameter functions for the AMPV.

**C.7.4.1.1.2 RAM Input**

The contractor shall leverage the results of the RAM Analysis (Section C.6.2), including the FMECA (Section C.6.1.9), to initially develop or update LMI maintenance task frequencies, parts replacement rates, troubleshooting and diagnostic symptoms and procedures, maintenance times, reliability centered maintenance based scheduled and unscheduled maintenance task determination, and essentiality determinations.

**C.7.4.1.1.2.1 RAM Allocations and Predictions**

The contractor shall utilize the initial RAM allocations and predictions (Sections C.6.2.2.6 and C.6.2.2.8) to develop the quantitative elements of the LMI data. The contractor shall develop allocations to primary systems and subsystems for meeting system level diagnostics requirements.

**C.7.4.1.2 Logistics Analysis**

The contractor shall develop and update the existing Operator and Maintenance Task Lists to reflect the AMPV product baseline and maintain these lists in the AMPV LMI. The contractor shall also perform the following analysis efforts in accordance with the approved ILS Master Schedule.

**C.7.4.1.2.1 Supportability Analysis**

The contractor shall prepare an assessment of supportability for the AMPV design. Supportability considerations shall be based on the current product configuration. The contractor shall assess the adequacy of the AMPV design from the repairable item level through the system level. The contractor shall provide its assessments at PSM-IPT meetings and LMI reviews. The contractor shall identify any shortcomings in the design in the LMI data base and present them at LMI reviews, PSM-IPT meetings, configuration audits, engineering reviews and program reviews. The contractor shall provide recommendations and corrective action plans based on their assessment and system specification requirements.

**C.7.4.1.2.2 Army Oil Analysis Program (AOAP)**

The contractor shall analyze the AMPV engine and transmission, leveraging data developed under previous Government contracts if applicable, to determine the effect on current AOAP information. Changes to the current AOAP information required to support AMPV shall be submitted in accordance with CDRL D002.

**C.7.4.1.3 Support System Alternatives**

The contractor shall perform analysis of support system alternatives. Results shall be presented by the contractor at PSM-IPT meetings, program and design reviews. Results of Support System Alternative analysis shall be documented in PSM-IPT and program and design review meeting minutes in accordance with CDRL A001.

**C.7.4.1.3.1 Testability**

The contractor shall comply with MIL-HDBK-2165 to implement the necessary testability tasks and activities to achieve Fault Detection

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and Isolation, Built in Test (BIT), and Built in Test Equipment (BITE) requirements. The contractor shall also request current Test Program Set (TPS) guidance from the Program Management Office prior to the development or update of TPSs.

C.7.4.1.3.1.1 Testability Tasks

The contractor shall develop, or update, and implement the necessary testability tasks and activities to meet the AMPV Performance Specifications. The contractor shall do so in order to minimize the system downtime required for diagnostics and troubleshooting. The contractor shall do so by ensuring adequate test points are integrated into the system, thereby minimizing TPS test and fault detection time, and overall fault isolation performance. The contractor shall develop AMPV Embedded Diagnostics, Software Downloader, and TPS diagnostic products. The contractor shall submit the Testability Analysis Report, in accordance with MIL-HDBK-2165 and DI-ATTS-81271 (CDRL D003). The contractor shall execute the testability program in accordance with direction from the PSM-IPT.

C.7.4.1.3.2 Product Support (PS) Business Case Analysis (BCA)

Upon request, the contractor shall provide data and input to the Government to support the development of a PS BCA. In developing the PS BCA, the assumption shall be full organic support for the AMPV systems as a base case; however, the Government will formulate a PS strategy that provides optimal support for AMPV. The contractor shall provide access to all pertinent records and data as necessary to adequately prepare the PS BCA.

C.7.4.1.3.3 Spares Acquisition Integrated with Production (SAIP) Planning

The contractor shall present an AMPV SAIP strategy to address the contractor's approach to managing the AMPV SAIP program. The contractor shall brief its SAIP plan at a PSM-IPT meeting at least 12 months prior to Milestone C and include the SAIP plan in the minutes of the PSM-IPT meeting where it is briefed, in accordance with CDRL A001.

C.7.4.1.3.4. Total Package Fielding (TPF) Planning

The contractor shall present an AMPV TPF Plan(s) to address the contractor's approach to managing the AMPV TPF effort. The plan shall address such matters as the process for identifying TPF elements, and managing, procuring, storing, transporting, and distributing TPF materials. The plan also shall address manpower, equipment, time lines, and funding requirements. The contractor shall brief the plan at a PSM-IPT meeting at least one year prior to Milestone C and include the TPF plan in the minutes of the PSM-IPT meeting where the plan is briefed, in accordance with CDRL A001.

C.7.4.1.4 Task Analysis Performance Objective

The contractor shall conduct the task analysis for AMPV. The analysis shall mirror the AMPV product configuration baseline in LMI in order to facilitate development of the AMPV logistics support package. The contractor shall tailor the analysis so that each logistics product is based upon the appropriate LMI baseline. The contractor shall deliver the Task analysis documentation to the Government as a part of the overall LMI submissions in accordance with CDRL D004 (AR 700-127, Chapter 5, Section 3).

C.7.4.1.4.1 Maintenance Task Analysis

The contractor shall conduct Maintenance Planning and Supportability Analyses in order to develop logistics products based on the Army's two-level maintenance policies in accordance with AR 750-1 (Chapter 3, Section 2) and AR 700-127 (Chapter 5, Section 3). The contractor shall use GEIA-STD-0007 (latest version), and shall also use GEIA-HB-0007 and TA-HB-0007 (latest versions) if applicable, to identify content, format, delivery, and related guidance for logistics data. The contractor shall provide logistics data to the Government in a format compatible with current and future (approved) automated logistics operating systems and shall be readily acceptable to Army system/processes without adjustments, refinements, or conversion processes.

C.7.4.1.4.1.1 Maintenance Task Analysis Baselines

The contractor shall develop a complete LMI baseline for each AMPV variant based upon a maintenance task analysis. The maintenance task analysis shall initially reflect the design (as-built) baseline of each AMPV variant that will enter DT. The AMPV baselines shall reflect the results of the latest RAM, safety, health hazards, and human factors engineering analyses. The contractor shall tailor the task analysis to meet the requirements of LMI and the resulting logistics support package during this program phase. The contractor shall update the maintenance task analysis to reflect the results of testing, training, quality, manufacturing, the Log Demo, and other AMPV prototype events and evaluations. In performance of maintenance task analysis, the contractor shall:

- (a) Provide sequential narrative instructions or procedures for all tasks below depot level maintenance including: (1) maintenance source data for TMs and (2) Interactive Electronic Technical Manuals (IETM).
- (b) Identify all support requirements for performing each task. These shall include Military Occupational Specialty (MOS), skill levels, tools, support equipment, ATE, TPSs, and repair parts. As a result of the maintenance analysis, recommend repair parts and special tool requirements, technical manuals, kits, tools or other equipment.
- (c) Develop the quantitative assessment of each maintenance task, RAM analysis and test, to develop task frequencies,

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quantities of support items required for each task, and maintenance times for each duty position and the overall task. Based upon the examination of each repairable assembly, use maintainability Design Criteria information in MIL-HDBK-470 to assess the supportability of the design.

C.7.4.1.4.1.2 Level of Repair Analysis (LORA)

The contractor shall perform LORA for new items introduced by the AMPV based on Army two-level maintenance policies, using the Army approved model (Computerized Optimization Model for Predicting and Analyzing Support Structures (COMPASS)). The contractor shall leverage the LORA analyses for other items or systems managed by the Government to perform the LORA for the AMPV. The Maintenance task list that is based upon this LORA shall be presented at LMI reviews. The contractor shall prepare and deliver a current LORA report (CDRL D005) that addresses both new and existing items at the reviews. The LORA will be used to support final decisions on the maintenance plan for the AMPV systems.

C.7.4.1.4.1.3 Software Downloading and Verifying Capability Maintenance

The contractor shall develop and maintain an embedded software downloading and verifying capability for the AMPV. The contractor shall also develop the capability to update vehicle software using the latest version of the MSD. The procedures for updating software shall be documented in LMI and serve as the basis for the published procedures in the appropriate TM or IETM.

C.7.4.1.4.2 Operator and Maintainer Task Analysis

The contractor shall use the HFE data already compiled on any portion of the system to develop the Human Engineering Design Approach Document - Operator (HEDAD-O) (CDRL D006) and Maintainer (HEDAD-M) (CDRL D007) for AMPV. The contractor shall update the operator and maintenance task lists for each AMPV variant in sufficient detail to develop the outlines for operator technical manual information, both embedded and standalone. The task inventory for each operator position will include the identification of which tasks and predecessor skills are required to be trained.

C.7.4.1.5 Provisioning Plan and Analysis

The contractor shall identify, as a part of maintenance task analysis, all support items required to support the system. The contractor shall prepare a provisioning plan in accordance with CDRL D008 for those items that are not currently available through the DoD supply system. For those support items that are currently available through the DoD supply system, the contractor shall prepare and deliver to the Government information that identifies the application and anticipated usage of the item with CDRL D008.

C.7.4.1.6 Support Item Sourcing Analysis

The contractor shall identify to the Government any new AMPV unique support items recommended for stockage or initial issue (items with a source code of "P") that are a part of the product baseline. The contractor shall document whether these items are available as repair parts from the Government supply system or from the contractor. This includes parts that are bought in production as complete assemblies yet will be purchased by the Government as repair (down) parts. The documentation shall be made available at PSM-IPT meetings. If support items are not available, the contractor shall provide to the Government a proposed alternative support strategy.

C.7.4.1.7 Packaging Item Classification

For each AMPV support item, the contractor shall classify the items packaging requirements and document these requirements in the LMI.

C.7.4.1.8 Facilities Analysis

As a part of the operator and maintenance task analysis, the contractor shall identify any new or unique facilities essential to the maintenance or training of the AMPV variants.

C.7.4.1.8.1 Facilities Annex

The contractor shall prepare and deliver to the Government a facilities analysis at a PSM-IPT meeting no later than 90 calendar days after contract award. The facilities analysis shall become part of the meeting minutes for that PSM-IPT review (CDRL A001).

C.7.4.1.9 Transportability Analysis

The contractor shall develop transportability design data to reflect the AMPV product baselines. The contractor shall provide the data as part of the Transportability Report (CDRL D009) used to develop vehicle loading plans for all modes of transportation required to transport them, and to conduct transportability-related Government test events. The AMPV transportability design data shall be updated whenever design changes affect the AMPV systems envelope, weight, center of gravity or any other transportability characteristics. The contractor shall validate changes to the AMPV's transportability data in conjunction with validation of the AMPV TM source material. The contractor shall provide transportability design data and other transportability information in the vehicle -10 level TMs.

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## C.7.4.1.9.1 Transportability Report

The contractor shall develop Transportability Reports for the AMPV in accordance with DI-PACK-80880D, and deliver the Transportability Reports in accordance with CDRL D009. The contractor shall review the plans and outputs for these transportability related activities with the PSM-IPT.

## C.7.4.2 Logistics Management Information (LMI)

The contractor shall generate LSA data and document this data in the LMI in accordance with GEIA-STD-0007 (latest version), and shall also use GEIA-HB-0007 and TA-HB-0007 (latest versions) if applicable. The contractor shall deliver the LMI in accordance with CDRL D010. The contractor shall include LMI milestones and activities in the AMPV ILS Master Schedule. The contractor shall maintain an automated LMI data processing system, which is compatible with the Logistics Modernization Program (LMP). The contractor's data processing system shall be capable of producing the LMI output summaries specified in GEIA-STD-0007 (latest version). The LMI shall include:

## C.7.4.2.1 Manpower, Personnel and Training Requirements

Task lists by MOS to include the identification of those tasks that need to be trained at the institution, for transition, and sustainment. Task lists shall include frequency, times, skills and other key information to support:

## C.7.4.2.1.1 Quantitative and Qualitative Personnel Requirements Information (QQPRI), Manpower Allocation Requirements Criteria (MARC) and Manpower Estimate Report (MER) Input

The contractor shall utilize AR 611-1, and current Modification Table of Organization and Equipment (MTOE) provided as GFI provided 30 calendar days after contract award, to support the assessment of skills for each operator and maintenance task. Any new MOS or skills required to operate or maintain the AMPV shall be identified to the PSM-IPT as soon as the assessment is completed. The assessment will be used by the Government to determine the number and skill levels of personnel (per AR 71-32) within each Table of Organization and Equipment (TOE) and Table of Distribution and Allowances (TDA), required to support each AMPV variant and any AMPV COEI and AAL items.

## C.7.4.2.2 Basis of Issue Plan Feeder Data (BOIPFD)

The contractor shall document and identify, in LMI, TOE and TDA personnel and equipment requirements to operate, maintain, and transport the AMPV variants. Changes (additions or deletions) in requirements of this kind from existing Army systems (i.e., M113 variants) to AMPV shall be presented to the PSM-IPT at least six months prior to the Log Demo.

## C.7.4.2.3 Supply Support Lists

The contractor shall establish and maintain support item lists that identify the specific support item, at the level it is utilized or authorized for use. The contractor shall maintain the statistics from these lists (e.g. number of repair parts, number of repairables, number of special tools, number of repair parts without NSNs) and present the statistics at PSM-IPT meetings. These lists and statistics shall include:

## C.7.4.2.3.1 Authorized Stockage List (ASL)

The contractor shall provide an initial recommended ASL for the AMPV at least one year prior to Milestone C, in conjunction with presentation of the proposed SAIP List. (See Section C.7.4.1.3.3)

## C.7.4.2.3.2 Basic Issue items (BII), Components of the End Item (COEI) and Additional Authorized List (AAL)

The contractor shall identify the BII, AAL and COEI required to support the configuration of all AMPV variants at least 30 calendar days prior to PDR.

## C.7.4.2.3.3 Repair Parts Special Tools List (RPSTL)

The contractor shall prepare and deliver the RPSTL required for Log Demo in accordance with the validation plan CDRL D018 and CDRL D011.

## \*C.7.4.2.3.4 Proposed Spare Parts List (PSPL) / Spares Acquisition Integrated with Production (SAIP) List

The contractor shall develop a recommended list of AMPV support items that will be considered for concurrent procurement with the LRIP AMPVs. The list shall include:

- 1) 100% of the Authorized Stockage List (ASL) for two (2) brigades.
- 2) Fly Away Package for two (2) brigades, defined as all parts a Brigade requires to support a 96 hour operation.

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- 3) All Essentiality Coded "1" items that are not ASL items (30 each or economic order quantity).
- 4) Items with a lead-time of twelve (12) months or more, that are not essentiality coded "1" or ASL (30 each or economic order quantity).

This list shall include prices and quantities for each support item. The Government will review and approve the list. The initial approved list shall be delivered to the Government at least 12 months prior to Milestone C, in accordance with CDRL D012. The contractor shall maintain the list of items approved by the Government.

C.7.4.2.4 System Support Package Components Lists (SSPCL)

The contractor shall prepare and submit for approval an SSPCL (CDRL D013) no later than 90 calendar days prior to test, based upon the results of LSA documented in LMI (CDRL D010).

C.7.4.2.5 Maintenance Allocation Chart (MAC)

The contractor shall maintain a maintenance task list and the resulting MAC and Maintenance technical manual outlines based upon the Maintenance Task Analysis (CDRL D004) documented in LMI. The contractor shall present a draft MAC at CDR. This shall support the contractors delivery of the outlines and MAC in the draft and validated TM and IETM deliveries.

C.7.4.2.6 System Software Configuration

The contractor shall document the draft and official release of AMPV software within the LMI (CDRL D010).

C.7.5 Technical Manuals (TMs)

C.7.5.1 TM Program Objectives

The objectives of the AMPV technical publications program are to develop and validate AMPV variant publications. The contractor shall ensure that all TMs delivered match the configuration of the vehicles they are provided to support. The contractor shall prepare, validate and deliver, as part of the SSP, the following to support contractor and Government tests and logistics events, with the exception of those TMs described in Section C.7.5.1.1:

- (a) Outlines for all TMs. If a legacy platform is the basis for the AMPV design, the contractor shall identify those tasks that are 100% common (i.e., identical) to both the AMPV and the legacy platform.
- (b) TM X-XXXX-XXX-10 Operator Manuals in accordance with the latest version of MIL-STD-40051-2, CDRL D014 and TM Requirements Matrix for AMPV Operators - Table A-II (Attachment 0031).
- (c) TM X-XXXX-XXX-10-HR in accordance with MIL-PFR-32436 and CDRL D015.
- (d) TM X-XXXX-XXX-13&P Operator and Field Maintenance Manual, including RPSTL, IETM in accordance with the latest version of MIL-STD-40051-1, CDRL D011, IETM Requirements Matrix Table A-XX (Attachment 0032) and TM Functionality Matrix Table A-XVII (Attachment 0033).
- (e) TM X-XXXX-XXX-BD BDAR Manuals in accordance with the latest version of MIL-STD-40051-2 and MIL-PRF-63003, CDRL D016 and BDAR Requirements Matrix Table A-XVI (Attachment 0034).
- (f) TM X-XXXX-XXX-13 Users Security Manual in accordance with the latest version of MIL-STD-40051-2 and CDRL D044.
- (g) Safety related TM changes required to allow the Government to proceed with AMPV tests, demonstrations, and evaluation activities in a safe manner.

\*C.7.5.1.1 If the schedule does not allow for the validation of TM materiel prior to the start of contractor and Government testing, the contractor shall deliver MIL-STD-40051-formatted operator and maintainer technical manuals as part of the SSP in accordance with CDRL D013. The contractor shall provide the test sites validated materiel on a monthly basis, or as mutually agreed to by the parties. The contractor shall ensure that validated TMs are available to support the Log Demo and the second phase of RAM testing in accordance with Sections C.7.5.1 and C.7.5.4.

C.7.5.2 Meetings

C.7.5.2.1 The contractor shall host a TM Guidance Conference in accordance with Section C.3.5.5.

C.7.5.2.2 In-Process Reviews (IPRs) will be held at the discretion of the Government. These IPRs will usually occur before or directly after PMRs. The IPRs can be used to clarify requirements, provide guidance to the contractor and to ensure the publications are written

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to conform to the SOW and other Government requirements that may arise.

C.7.5.2.3 The Government shall notify the contractor 30 calendar days in advance of each IPR. IPR locations shall be specified by the Government. If scheduled at a contractor's site, the contractor shall make available adequate space, facilities and personnel for Government scheduled IPRs at no additional cost to the Government.

C.7.5.3 Publications Development and Delivery

C.7.5.3.1 The contractor shall develop and deliver technical manuals developed under the Two-Level Maintenance (TLM) philosophy based on the LSA and resulting LMI. The contractor shall develop procedures in the same sequential order as the Government approved two-level MAC (Section C.7.4.2.5). The contractor shall comply with the specifications, standards, and guidelines for the development of the AMPV Publication Series found within the Document Summary List (DSL) (Attachment 0035). Technical Bulletin (TB) 750-93-1, found on Attachment 0035, requires that technical manuals be organized in Functional Group Code Order. However, Logistics Control Number (LCN) sequence is acceptable, if the contractor is reutilizing work packages or data to build the AMPV TMs, which use the LCN sequence and reutilization results in a cost savings to the program.

C.7.5.3.2 The contractor shall brief for approval, either at the PSM-IPT or TM IPR, the most effective media (paper, laminated, embedded, or external electronic) for each operator task and function and the most effective diagnostic strategy (e.g. symptom based, system based, BIT and Fault Isolation Test (FIT) based, logistic trees, fault tables) for presenting system troubleshooting information in the TMs. Embedded diagnostics are subject to software development and test, not TM specifications. However, diagnostics, including those embedded in the vehicle, shall be reviewed for effectiveness by user representatives during the Log Demo. The contractor's focused method of troubleshooting shall be diagnostic strategy accepted by the Government.

C.7.5.3.3 The contractor shall provide all personnel, equipment, tools, materials, supervision, other items, and non-personnel services necessary to develop the publications as defined in this SOW.

C.7.5.3.4 The contractor shall provide the Government with a TM Development Schedule and Status Report showing critical tasks involved with TM development in accordance with CDRL D017. All key TM milestones, such as validations, IPRs, and deliveries, shall be identified on the AMPV ILS Master schedule (Section C.7.2.2).

C.7.5.3.5 The contractor shall develop IETMs using Electronic Maintenance System-Next Generation (EMS-NG) software and deliver the IETMs on CD ROM/DVD. During the development process, the contractor shall be responsible for obtaining and utilizing updated releases of the EMS-NG suite to ensure they are providing the best product to the Field.

C.7.5.4 Technical Publications Validations

C.7.5.4.1 The contractor shall submit a Validation Plan in accordance with CDRL D018. The contractor shall inform the Government of its planned Validation schedule, start date, time, and location of validation 30 calendar days prior to start of the Validation. This will allow time for the Government to attend and observe the contractor's processes, if the Government so chooses. The contractor shall complete the validation at least thirty (30) calendar days prior to delivery of the initial PTMs.

C.7.5.4.2 The contractor shall validate all technical and equipment publications 100% (with the exception of those troubleshooting procedures that could cause damage) dynamically on a vehicle (hands on) using the latest vehicle configuration (not drawings) to ensure completeness, accuracy, usability, and adequacy of content against the related system or equipment. The contractor shall validate troubleshooting procedures to the extent possible without damaging equipment. The contractor shall capture those maintenance tasks that can cause damage as a part of any repairs performed for production, quality or vehicle testing. The contractor shall conduct the validation using tools available to the soldier at the designated level of maintenance. The contractor shall maintain records of validation reviews that show when the material was reviewed, how the procedures were performed, what the findings were, and all corrective actions taken. The records shall be signed and certified by two separate contractor representatives. Validation personnel must include personnel who did not author the procedure. The contractor shall have and use documented Quality Assurance (QA) Review Processes and Inspections. The Government has the right to verify all publication deliverables. The Government does not intend to review and verify every task, but relies on complete, careful editing and review by the contractor. If there are indications that the contractor has performed incomplete or inadequate QA Reviews, the Government may elect to return products for rework and perform additional reviews on reworked products at the contractors expense.

C.7.5.4.3 Upon completion of the validation, the contractor shall deliver a Technical Manual Validation Report to the Government in accordance with CDRL D019. The contractor shall notify the Government, in writing, of the results of the contractor Validation through the use of this report and shall certify that each equipment publication identified has been satisfactorily validated in accordance with the requirements of this contract ensuring that the content therein is complete and technically accurate. If there are indications that the contractor has performed incomplete or inadequate QA Reviews, the Government may elect to return products for rework and perform additional reviews on reworked products at the contractors expense.

C.7.5.5 Warranty Information

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C.7.5.5.1 If any commercial components have a warranty, the contractor shall include warranty information in -10 and -13&P manuals. This information shall include a listing of items under warranty, the term of the warranty and procedures for pursuing a warranty.

C.7.5.6 Final Delivery of Validated TMs

C.7.5.6.1 At the end of the contract, the contractor shall make final Preliminary Technical Manual (PTM) deliveries (CDRLs D011, D014, D015, D016, and D044) which include resolution of all comments and recommendations made as a result of all testing, Government reviews, contractor validation, and Log Demo. If errors are found in the final PTM delivery, it shall be considered an initial draft until the contractor corrects the errors.

C.7.5.6.2 The contractor shall package and deliver validated PTMs on CD ROMs/DVDs in a jewel case or CD box containing all XML-tagged source code files. This includes artwork (in accordance with AR 25-30), Document Type Definition (DTD), publisher file, style sheets, presentation applications, hard copy instructions, and any output coming out of publisher file or program to fulfill the requirements of final delivery under this contract.

C.7.6 Training

The contractor shall develop an AMPV training program and shall brief status of the training program at PSM-IPT meetings. Any training performed shall be conducted in a manner that ensures: 1) training materials reflect the appropriate vehicle variants used in training; and, 2) the training shall meet the needs of the individuals who will operate, maintain, train or provide technical support to the system. The primary objectives shall be to ensure the training conducted reflects each AMPV variant used at PPT, LUT, Log Demo and Instructor and Key Personnel (I&KP) training. The contractor shall support the development and documentation of training and training materials in accordance with AR 350-1 and TRADOC Reg 350-70. The Training products shall be developed and delivered using the Army Systems Approach to Training (ASAT) format. The contractor shall conduct Operator New Equipment Training (OPNET) and Field Maintenance New Equipment Training (FMNET) for all test events of the AMPV program. The contractor shall provide all necessary equipment and materials to conduct training. For each class conducted, the contractor shall provide a completion report in accordance with CDRL D020.

C.7.6.1 Training Management

C.7.6.1.1 New Equipment Training (NET) Plan

The contractor shall design and develop training courses and curriculum outlines, student training course guides, instruction and lesson guides, audio visual aids, master reproducible training courses, and classroom spares (hereinafter, "Training Materials"), in accordance with CDRL D021. The contractor shall brief the NET Plan at PSM-IPTs no later than 120 calendar days prior to all training events and shall include the NET Plan in the PSM-IPT meeting minutes in accordance with CDRL A001. The NET Plan shall include the recommended tasks for training. The Government will select specific tasks to use for the training course.

C.7.6.1.2 Training Evaluation

The contractor shall host training evaluation events at its facility to allow the Government to review the contents of the training material, as written, and to conduct a simulated training session. AMPV facility vehicles, which match the latest approved configuration in the training materials, shall be available for this evaluation. The contractor shall document Government recommendations regarding the training via meeting minutes (CDRL A001) and update training materials based on Government recommendations. The contractor shall plan to conduct two of these events. The first event shall be conducted 30 calendar days after CDR and the second event shall be conducted 90 calendar days prior to PPT.

C.7.6.1.3 Operator Transition Training

C.7.6.1.3.1 Program of Instruction (POI) Outlines for DT

C.7.6.1.3.1.1 DT Training Package

The contractor shall conduct training at the PPT test site for PPT personnel using PPT vehicles. The training shall ensure PPT personnel have been trained to perform their respective roles as data collectors, test directors, operators, and crew maintainers of the AMPV for PPT.

C.7.6.1.3.2 POI Outlines for LUT

C.7.6.1.3.2.1 LUT Training Package

The contractor shall deliver Training Materials in accordance with CDRL D021. Students for the LUT shall receive student guides. The contractor shall provide an I&KP instructor and student materials for both the Staff Planners Course and the LUT Course.

C.7.6.1.3.3 Conduct LUT Training

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The contractor shall conduct operator and data collector or evaluator training for LUT test personnel using the AMPV. The training shall ensure LUT personnel have been trained to perform their respective roles as data collectors, test directors, operators, and crew maintainers of each AMPV variant at APG, YPG and southwestern United States.

**C.7.7 Provisioning Technical Documentation Objectives**

1) The contractor shall develop, maintain and update AMPV Provisioning Technical Documentation (PTD) and required supply support summaries in accordance with GEIA-STD-0007 (latest version) (and GEIA-HB-0007 and TA-HB-0007 [latest version] if applicable). The contractor shall update the PTD based on LMI changes, engineering changes, screening results, and Provisioning Bill of Material (PBOM) feedback.

2) The contractor shall maintain the PTD so as to ensure that the PBOM is updated with NSN assignments for SAIP parts prior to Milestone C. As a result of developing and maintaining the PTD, the contractor shall prepare and deliver to the Government:

(a) PPL in accordance with CDRL D022 (DI-SESS-81715) and DD Form 1949-2 (Provisioning Requirements statement). The PPL shall contain the elements identified on DD Form 1949-1.

(b) Engineering Data For Provisioning (EDFP). The contractor shall prepare and present drawings at conferences, meetings or IPRs in accordance with Section C.8 to enable updates to the PPL. The drawings shall be in accordance with CDRL B058 and CDRL D023 (DI-SESS-81874). Drawings for components with other than unlimited rights to the Government can be envelope drawings or list drawings. Submission of TACOM-controlled common drawings is not required. The contractor shall complete all updates to PTD, and deliver all EDFP in time to allow completion, in the LRIP follow on phase, of requirements computation, assignment of NSNs, and delivery of SAIP items. This shall be accomplished prior to delivery of the AMPV vehicles containing updated configuration changes.

**C.7.7.1 Logistics Modernization Program (LMP) Input****C.7.7.1.1 Provisioning Parts List (PPL)**

The contractor shall maintain and continuously update its provisioning file with the PBOM feedback data provided by the Government (i.e., changes; additions or deletions to part numbers; Source, Maintenance and Recoverability (SMR) codes; and failure factors) (CDRL D022). The contractor shall make the quantity, per assembly, and the quantities, per end item, the same to ensure compatibility with LMP. The contractor shall correct validation rejects within 30 calendar days of receipt. The contractor shall ensure that all submitted LMI Data Products are compatible with LMP and can be transferred electronically to the Government for successful updating of the PBOM. The contractor shall host the first Provisioning Conference/Logistics Support Analysis Records (LSAR) Review 90 calendar days after the Provisioning Guidance Conference to verify the provisioning files. The contractor shall host subsequent Provisioning Conferences/LSAR Reviews once per quarter, or on dates mutually agreed to by the parties.

**C.7.7.2 Engineering Data For Provisioning (EDFP)**

The contractor shall maintain electronic access to Military and Federal Specifications and Standards. EDFP, to include the top assembly drawing, shall be submitted in accordance with Section C.8 and CDRL D023. All drawings shall be submitted in the English language. Provisioning Technical Documentation not translated into the English language will not be accepted by the Government. The contractor shall cite all approved vendors Commercial and Government Entity (CAGE) codes. The CAGE codes shall be typed, stamped, or legibly written with an authorized signature and date on drawings, when furnished concurrently with each submitted increment of provisioning documentation for each "P" coded item.

**C.7.7.2.1 Cataloging Input**

The contractor shall update the LMI to reflect the results of cataloging actions, including changes to item nomenclature. Inconsistencies in nomenclature between the drawings and draft TMs must be resolved in LMI and the TMs before final TMs are delivered to the Government.

**C.7.7.3 Provisioning and Other Pre-procurement Screening Data**

The contractor shall conduct pre-procurement screening for all items selected as repair parts. Standardization of commercial items selected as repair parts is required. The contractor shall use Government or industry association, specifications, drawings, or standards numbers as the preferred reference number (e.g., Federal (FED), Military (MIL), Joint Army and Navy (JAN), Air Force and Navy (AN), National Electrical Manufacturers Association (NEMA), Society of Automotive Engineers (SAE)). The contractor shall conduct pre-procurement screening for standardization of all commercial items selected as repair parts. The contractor shall perform this screening to select valid part numbers for the PBOM. All vendor source information identified on the drawing will be screened. Results of pre-procurement screening for standardization and component selection will be used to update the contractors provisioning file. The screening results must accompany the provisioning documentation for each new or revised commercial item selected as a repair part. The contractor shall deliver this documentation in accordance with CDRL D024. The contractors submittals shall be updated to reflect the current part numbers that have a NSN resulting from the screening process.

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C.7.7.4 Provisioning Bill of Material Feedback

The contractor shall maintain and continuously update the AMPV LMI data base using the PTD Report provided by the Government.

C.7.7.5 Provisioning Quality Acceptance Standards

The quality standards outlined in GEIA-STD-0007, GEIA-HB-0007, and TA-HB-0007 (latest versions) apply to all phases of the provisioning effort. During the term of the contract, changes may occur that are due to formal program or process requirements. The Government will notify the contractor of these provisioning changes.

C.7.7.6 PTD Guidance

C.7.7.6.1 Maintenance Replacement Rates

Results from the RAM program shall be used to determine the Maintenance Replacement Rates I and II (or Failure Factors). These rates may vary by variant and configuration of the end item. The Maintenance Replacement Rate (MRR) will be a consolidation of all known RAM information. The contractor shall develop rationale and methodology for determining MRRs, in accordance with GEIA-STD-0007 (latest version) (and GEIA-HB-0007 and TA-HB-0007 [latest versions] if applicable) using the following data:

- (a) Engineering Data
- (b) Warranty Data
- (c) Testing and Developmental Documentation
- (d) Historical Data on an analogous piece of equipment. When using historical data, the MRR II will be, at least 2.5 times greater than that of MRR I.

C.7.7.6.2 Documentation of Parts Pricing

The contractor shall screen the Government databases for data on all parts and shall document the price(s) cited. In the event the price is not contained in the Government databases, the contractor shall develop and provide a suggested retail price considering the Unit of Measure. The contractor shall enter the suggested retail price in the LMI data base.

C.7.7.6.3 Next Higher Assembly (NHA) Provisioning List Item Sequence Numbers (PLISNs) and Overhaul Quantities (OVHL QTY)

NHA PLISNs and OVHL QTYS are used to identify and forecast repair parts requirements for all assemblies, subassemblies or components. The contractor shall enter OVHL QTY for each item, in accordance with GEIA-STD-0007 (latest version):

- (a) Identify the immediate NHA PLISN. Enter an OVHL QTY.
- (b) Using the top down break down structure, identify all subsequent assemblies preceding the down part. Enter NHA PLISN and OVHL QTY.
- (c) Identify the model record PLISN(s) as a NHA PLISN and enter an OVHL QTY, if called for by the Government.

C.7.8 Packaging Data Development

The contractor shall develop and provide packaging data for all new items identified during the provisioning process with a SMR code beginning with P, excluding PR and PZ. Items previously provisioned by the Government do not require new or updated packaging instructions. Packaging data development priority shall be given to repairable items, LRUs, NMWR and DMWR candidate items, and any large, high cost item classified as a Special Group Item. Packaging shall be developed in accordance with MIL-STD-2073-1D and all items shall be classified as a selective group item or special group item. The contractor shall provide facilities, equipment, materials, and access to the provisioned items for packaging development. The contractor shall complete validation and provide support data with each data submittal. Validation support data shall include item drawings presented at validations, conferences, meetings or IPRs and copies of any applicable Material Safety Data Sheets for Hazardous Material items. Items with assigned CAGE Codes of: 1T416, 21450, 80204, 96906, 10060, 24617, 80205, 99237, 80244, 81343, 81346, 81348, 81349, 81352, 88044, 05047 are excluded from packaging data development.

C.7.8.1 Selective Group

Items classified as Selective group shall not have a unit pack weight exceeding 40 pounds and shall not have a dimension greater than 40 inches. In addition, the unit pack length and girth combined shall not exceed 84 inches. A Select group item must not require disassembly for packaging. Reconfiguration for packaging of Select items is limited to folding or coiling. Items shall not be classified as Select if they are repairable, recoverable, contain hazardous material, or if assigned a shelf life.

C.7.8.2 Special Group

Items excluded from the Selective group shall be classified as Special group items. Special group items often require sketches,

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figures, or narrative instructions to describe packaging requirements. This includes kits, sets and items of separate parts, items requiring disassembly, repairable items, items requiring special handling or condemnation procedures, items classified as hazardous material or hazardous goods in transport, items assigned a shelf life, electrostatic discharge sensitive items, fragile, sensitive, and critical items.

C.7.8.3 Logistic Management Information (LMI) Data Products - Packaging

The contractor shall develop LMI packaging data and provide for the entry of information to the Governments data repository. At the contractors request, the Government may provide a MS ACCESS application that provides data formatting and edit features for coding of packaging LMI data products. The contractor shall develop, maintain and update packaging data in accordance with MIL-STD-2073-1D and CDRL D025 including Attachment 0037 and Attachment 0038 (DI-SESS-81758 Logistics Management Information Packaging Data Products and DI-SESS-81758 Incomint Transaction Format).

C.7.8.4 Special Packaging Instructions (SPI)

The contractor shall develop a SPI for each item classified as a Special group item. Figures and narrative data shall be developed to describe the form, fit, and function of packaging in sufficient detail for production. SPI format shall be in accordance with MIL-STD-2073-1D and CDRL D026.

C.7.8.4.1 Validation Testing of Packaging

Validation testing of Special group items shall be in accordance with ASTM D 4169 (Standard Practice for Performance Testing of Shipping Containers and Systems) Distribution Cycle 18, Assurance Level I, with Acceptance Criterion 3 (product is damage free and packaging is intact). Validation testing may be limited to Test Schedule A and Test Schedule F. Replicate testing and climatic conditioning are not required. Validation reports shall be submitted concurrently with SPI submittal and in accordance with CDRL D027.

C.7.8.5 Development and Preparation of Shipment and Storage Instruction (SSI)

The contractor shall develop SSI for the system. The contractor shall include requirements for disassembly procedures to meet clearance requirements for land, air, and sea shipments (reference Transportability section). Procedures shall ensure an option for drive-on and drive-off capability. Packaging requirements for BII and COEI shall be developed by the contractor. BII shall be packed separate from COEI. HAZMAT (if applicable) shall be packaged and shipped separately in accordance with CFR Title 49. The contractor shall ensure the stowage locations shall deter pilferage and shall not interfere with lifting, tie down or other transportation handling of the vehicle. The contractor shall revise the SSI to reflect design changes that affect the system's shipment configuration, weight, or transportability. The contractor shall also provide revisions to the SSI for each provisioning change affecting packaging of BII or COEI. Report shall be formatted and delivered in accordance with CDRL D026, SPI.

C.7.8.5.1 Short term transport and storage instructions

Short term transport and storage instructions, 180 calendar days maximum in a warehouse, shall be used when items are in transport. Short term shipping and storage (S&S) processing instructions shall be sufficient to protect the items when they are intended for immediate use.

C.7.8.5.2 Long term storage instructions

The Government will use these instructions to prepare a system for open storage for a period of up to two years. The contractor shall ensure these instructions, to include any cyclic maintenance or exercising requirements necessary to prevent the system from deteriorating due to inactivity.

C.7.8.5.3 Validation of SSI

The Government will determine if all or selected portions of the SSI shall be validated to determine the adequacy of the vehicle preservation procedures. Primary considerations will be given to the complexity and uniqueness of the process and materials involved. Government representative may attend and witness contractors validation. A validation report shall be delivered in accordance with CDRL D027.

C.7.8.6 Reusable Containers

C.7.8.6.1 Container Design Retrieval System (CDRS)

This is a management system program to provide a DoD centralized automated data base system for storing, retrieving, and analyzing existing container designs and test information concerning specialized containers. The contractor shall use this system when making search requests for DoD Long Life Reusable Container (LLRC) designs.

C.7.8.6.2 Reusable Container Searches

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The contractor shall identify engines, transmissions and other major repairable items, including LRUs, and items requiring special handling or condemnation procedures as possible LLRC candidates. The contractor shall make a CDRS search request for any item that TACOM approves as a LLRC candidate. The contractor shall search for new or existing commercially available reusable container designs that are suitable for LLRC candidates. Format of CDRS search request shall be in accordance with CDRL D028.

C.7.8.6.3 Reusable Container Assessment

The contractor shall perform assessments to determine if existing container designs are suitable. The contractor shall assess the fit and function of existing containers and compare costs of modifications with the cost of new designs. Assessment data shall include analysis of the need for a new or modified LLRC. Assessment data shall compare costs for conventional packaging and LLRC packaging.

C.7.8.6.4 Reusable Container Proposal

The contractor shall propose reusable container development for TACOM approved LLRC candidates. Each proposal shall include assessment data, cost of development, design, LLRC prototype manufacture, validation, and completion of the technical data package for competitive procurement. Container proposals, testing and validation, and TDP development shall be in accordance with CDRL D029 and Attachment 0039 (LLRC Design Proposal Format).

C.7.8.6.5 Development and Validation

Upon approval of a LLRC design proposal or container modification proposal, the contractor shall build a prototype and validate the design. A Government representative will witness validation. Validation report and technical data shall be delivered in accordance with the approved design proposal and CDRL D027.

C.7.8.7 Material Safety Data Sheet (MSDS)

The contractor shall over-pack a MSDS with each hazardous material item.

C.7.9 Air Transportability

The contractor shall prepare Air Transportability Reports necessary for the US Army to obtain an Air Transportability Certificate. These reports shall be delivered in accordance with CDRL D030.

C.7.10 Item Unique Identification (IUID) Markings

The contractor shall plan for and implement IUID markings on the AMPV variants and unique components.

C.7.10.1 IUID Marking Plan

The contractor shall deliver an IUID Marking Plan in accordance with CDRL D031, DI-MGMT-81803. The Plan shall include a list of all AMPV components or spares for which an IUID is required as defined by the latest version of the DOD Guide to Uniquely Identifying Items, Assuring Valuation, Accountability and Control of Government Property and the latest version of MIL-STD-130. The Plan shall include a recommended prioritization of IUID marking on components or spares, based on Government input, and a recommended list of components on which to affix an IUID marking.

C.7.10.2 IUID Review Session

The contractor shall conduct an IUID review session with the Government no later than 30 calendar days after submission of the proposed Marking Plan. The purpose of the review session is to finalize the plan, and for the Government to approve the list of components that must include IUID markings.

C.7.10.3 Component Assessment

The contractor shall assess approved IUID Marking Plan components to determine:

- (a) The location for the marking on the component or part to ensure it does not interfere with component operation.
- (b) The means for marking the component or part.

C.7.10.4 Technical Data

The contractor shall identify technical data revisions, (e.g. drawings, technical manuals, etc.) that must be reviewed to enable the application of the IUID markings on approved components. The contractor shall revise technical data for the approved components.

C.7.11 Support Equipment

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C.7.11.1 Special Tools and Test Equipment Development, Validation and Documentation

The contractor shall develop, maintain, and update Special Tool and Test Equipment technical documentation for the AMPV. The contractor shall ensure sufficient quantities of validated special tools and support equipment are available for conducting PPT, LUT, Log Demo, TM validations and I&KP Training.

C.7.11.2 Common Support Equipment

The contractor shall identify and present at the PSM-IPT all equipment required to support the AMPV to include common support equipment. The contractor shall validate common support equipment through Log Demos and TM validations.

C.7.11.2.1 Special Tools and Test Equipment

The contractor shall provide and deliver Special Tools and Test Equipment for the AMPV systems for testing, training, and other events per the approved SSPCL. The source data for this list will be the Maintenance Task Analysis. The list shall be in tabular form and shall identify tools and test equipment that is not available through U.S. Army Supply Catalogs for Set Kits and Outfits. Maximum use of common tools, support equipment, and Test, Measurement and Diagnostic Equipment (TMDE) organic to the user is preferred (see Attachment 0040, M113 Special Tools List). Any specific part of the AMPV design that is driving the need for special tools shall be a candidate for re-design for use of common tools and equipment.

C.7.11.2.2 Automated Test Equipment (ATE)

The contractor shall develop embedded diagnostics for on-system AMPV troubleshooting. To perform troubleshooting that cannot be addressed through embedded diagnostics, the contractor shall maximize the use of embedded IETMs (e.g., no power for displays for BIT, FIT or embedded diagnostic routines).

C.7.11.2.3 Sets, Kits, Outfits and Tools

The contractor shall identify the specific tools contained within the sets, kits and outfits as a part of the maintenance task analysis.

C.7.12 Logistics Demonstration (LD) Objectives

The objective of the LD is to evaluate the following: 1) The supportability engineered and established for the system; 2) Human factors engineering aspects and MANPRINT related to operator and maintainer tasks; 3) The adequacy of maintenance planning for the system (such as maintenance concept, task allocation, maintenance procedures [to include repair procedures], troubleshooting procedures, Training Support Package [TSP], and peculiar support equipment); 4) Training and training devices; 5) Technical publications; 6) Common tools and special tools; 7) Spares and repair parts list; 8) The TMDE, including the embedded diagnostics, test program set, and diagnostic procedures in the technical manual; 9) The Logistics Management Information (LMI) data, including updates. The contractor shall validate the AMPV logistics support package prior to the Log Demo.

C.7.12.1 Log Demo

The contractor shall provide all necessary facilities, parts, tools and other support items necessary to conduct a Log Demo. The contractor shall submit a Log Demo Plan six months prior to the Log Demo (CDRL D032). The Log Demo shall be performed in accordance with the Government approved Log Demo Plan. The Log Demo shall commence per the ILS Master Schedule.

C.7.12.1.1 Log Demo Results

The contractor shall prepare and deliver a report that records the results of each Log Demo (e.g., evaluation of operations and maintenance procedures, support items, manpower and skill requirements, maintenance allocation, and maintenance times). The contractor shall update all logistics products deliverable under this contract (e.g., LMI, provisioning documentation, technical manuals, training documentation), based on the results of the Log Demo. Log Demo updates shall be incorporated into the respective deliverables prior to each next scheduled delivery, all in accordance with CDRL D033.

C.7.12.2 Test Support Objectives

The following objectives are applicable for test support: (1) The contractor shall deliver and manage an SSP at the site of each Government test and training activity; (2) The SSP shall be sufficient in quantity and anticipated components to maintain test or demonstration schedules; (3) The contractor shall maintain a contractor formatted report, which details all parts consumed during test events.

C.7.12.2.1 System Support Package (SSP)

The contractor shall deliver an SSP (CDRL D013) to each test site no later than 30 calendar days prior to the start of any training that

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precedes DT or OT testing. Each package shall consist of the items listed on the contractor-developed and Government-approved SSPCL (CDRL D013). The contractor shall be responsible for performing all maintenance and controlling the on-site SSP during all testing events. Should any testing event be interrupted because a particular support item is unavailable, to the extent the part is available within the SSP, the contractor shall provide that item to the Government within 24 hours of being notified. In the event the SSP is deficient, the contractor shall remedy the deficiency within 24 hours for OT SSPs and 48 hours for DT SSPs. The contractor shall replenish the SSP, as needed, throughout the duration of the contract.

## C.7.13 Training Devices and Trainers

The contractor shall provide technical services for Training Device programs. The contractor shall maintain interface for existing appended devices. The contractor shall provide an assessment of existing ABCT training devices and their compatibility with AMPV variants at CDR, including a plan to address any incompatibility or gaps. To ensure compatibility between training devices, the contractor shall coordinate design changes with appropriate Training Device contractors and Government agencies prior to finalization of those changes.

## C.7.14 Technical Support

## C.7.14.1 General

The contractor shall provide technical support during all Government tests. Technical support includes technical assistance and advice, operating Government vehicles, user training, technical data collection and reporting, troubleshooting, repairing, deprocessing, storing, and assisting in shipping vehicles and their respective components during transition and training. User training consists of assembly and subassembly troubleshooting, component and system fault isolation, and repair. This training may be informal in nature and done principally by demonstrating the function. The FSR shall be experienced and qualified to advise, make recommendations, and to orient and instruct key Government personnel with respect to operation, maintenance, and repair of the AMPV variants and their components. The effort consists of investigation and diagnosis of problems or issues in the field related to vehicle performance, maintenance, and training.

## C.7.14.2 Government Provisions

The Government shall provide the following items to technical support personnel, when available:

- (a) Existing TMDE and field authorized common, common, and special support equipment to include tools.
- (b) Appropriate office space and furnishings to include a Local Area Network (LAN) drop.

## C.7.14.3 Contractor Provisions

The contractor shall provide all support for FSRs not provided by the Government.

## C.7.14.4 Field Service Representative (FSR) Reporting

All FSRs shall prepare and submit, via e-mail, Field Service Reports in accordance with CDRL D034 and DI-MGMT-81238, covering their activities.

## C.7.14.4.1 FSR Personal Data

The contractor shall make available personal data related to the FSR, including documentary evidence such as birth certification and other evidence requested by the local Government installation or area in which services are to be performed.

## C.7.15 Vehicle Serial Numbers

The contractor shall include the appropriate serial number on the vehicle data plate. The contractor shall ensure that all facility and test vehicle data plates reflect an AMPV serial number. The contractor shall ensure that the vehicle data plates are updated with the Government provided serial numbers prior to providing vehicles for test.

Mission Command Vehicle	5AMC0001-5AMC00XX
General Purpose Vehicle	5AMG0001-5AMG00XX
Medical Treatment Vehicle	5AMT0001-5AMT00XX
Medical Evacuation Vehicle	5AME0001-5AME00XX
Mortar Carrier Vehicle	5AMM0001-5AMM00XX

C.7.15.1 To ensure that the official Government LOGSA database for recording vehicle NSN and serial number information is complete and accurate, an Equipment Change Report (ECR) must be generated on a DA Form 2408-9 to track any washed out, new or OEV hulls, if OEV hulls are used. NOTE: The USA Registration Number for the vehicle shall never be changed, only the Serial Number.

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C.7.15.2 To record these changes, the contractor shall access the Logistics Information Warehouse (formerly WEBLOG and WEBLIDB). ECRs are available in the system, as follows: Select "Maintenance Management", then select "TAMMS Equipment DB", and then select "DA 2408-9 (ECR).

C.7.15.2.1 If the hull has a serial number, this is a two-step action: The contractor shall prepare one ECR to drop the old serial number from LOGSA's records, and the second ECR to show the gain with the new vehicle and serial number.

C.7.16 Deprocessing

C.7.16.1 Deprocessing is the checkout of vehicles at the test and fielding sites or contractor facilities, if necessary, upon arrival from production facilities. The contractor shall deprocess all equipment after delivery to the deprocessing site and assure it is ready to operate prior to issue to the receiving test site or unit. Deprocessing consists of:

(a) Removing all preservative coatings, grease, tape, and packing materials.

(b) Inspecting for any damage from shipment.

(c) Installation of all hosted items and checkout shall be performed in accordance with the contractor-developed procedures. Checkouts shall include the following: review of vehicle operations, oil analysis, road testing (if applicable), and replacement of failed or discrepant components, and a power-up check to verify that the vehicle provides power to all hosted items identified in Attachment 0006 (Materials and Equipment Matrix).

(d) All aspects of vehicle operation are checked and verified and all known deficiencies are corrected to ensure vehicle is fully operational for issue.

C.7.16.1.1 The contractor shall ensure all work activities are properly resourced and controls established to monitor activity and cost to ensure the project is completed within time and budget constraints.

C.7.16.1.1.1 The contractor shall plan, coordinate, attend, and conduct meetings, reviews, and conference calls.

C.7.16.1.1.2 The contractor shall prepare reports and track action items to make available to the Government upon request.

C.7.16.1.2 Per approved PCO or Designated COR direction, the deprocessing activities shall be performed with a final inspection at the vehicle test site.

C.7.16.1.3 The contractor shall have appropriate personnel present at the deprocessing site per approved PCO or Designated COR schedule.

C.7.16.1.4 Per approved PCO or Designated COR direction, the contractor shall assist with loading or off-loading vehicles onto trucks or rail transport, and movement of vehicles to or from designated rail hub.

C.7.16.1.5 The contractor shall adjust, repair, clean, or replace any items found discrepant or missing during the joint -10 PMCS inspection of vehicles with the Test site.

C.7.16.1.6 The contractor shall prepare and provide Supply Discrepancy Reports for material found to be damaged, non-conforming, or missing during deprocessing in accordance with CDRL D035 and DI-MGMT-80503.

C.7.16.2 Spares and Repair Parts Repair and Return Program

The contractor shall provide labor and repair associated with the handling, inventory control, shipment, and repair and return of failed components for AMPV platforms. Upon receipt of failed AMPV LRU, LRM or Shop Replaceable Unit (SRU), the contractor shall return them to the appropriate vendor for failure diagnosis and repair. If any upgrades have been applied to these LRU, LRM or SRU components, the contractor shall upgrade them as a part of the repair process. Upon completion of repair or upgrade activity, the contractor shall return the part to a PM-ABCT designated location.

C.8. Configuration Management (CM) and Technical Data Package (TDP)

C.8.1 CM Program

The contractor shall establish a CM program for configuration identification, control, status accounting, verification, audit, and data management of the AMPV. To maximize return on investment and reduce life cycle costs, the contractor is encouraged to use the latest version of ANSI/EIA-649, Configuration Management Standard with GEIA-HB-649, Implementation Guide for CM; GEIA-859, Data Management; MIL-STD-973, Configuration Management; and DoD MIL-HDBK-61 (SE), Configuration Management Guidance, as references to implement the technical and program management principles fundamental to CM and Data Management (DM). The contractor is responsible for all original data in its possession, including drawings, models, and associated documents. The contractor shall flow down CM and DM requirements to

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subcontractors and suppliers to provide an appropriate application of CM functions and principles to the entire supply chain. The contractor shall prepare and submit a Configuration Management Plan (CDRL B027).

## C.8.1.1 Configuration Identification

## C.8.1.1.1 Configuration Baselines

The contractor shall have a process in place for initial release of design information and release of approved changes to the design information. The contractor shall be responsible for creating and maintaining the design release configuration (i.e., developmental baseline, design release baseline) up to date, by incrementally releasing new design data and incorporating approved engineering changes to the AMPV design as they occur. The contractor shall maintain an up to date incremental developmental baseline for the AMPV throughout the developmental phase. At completion of the CDR, the contractor shall establish the initial production configuration baseline (i.e., initial product baseline). This initial baseline shall identify and document the functional and physical characteristics of the AMPV. The design release configuration shall then be incrementally updated as the design evolves, to incorporate approved changes, resulting in a verified initial production configuration baseline at the end of testing, as an output of the Functional Configuration Audit (FCA). (CDRL B001, B058)

C.8.1.1.2 Product and Enterprise identifiers (i.e., Part or Identifying Number (PIN) and CAGE code) shall be used to uniquely identify products. The Government is the design activity (i.e., design authority, customer, procuring activity) for all products (e.g., hardware, software, models, drawings, associated documents) newly developed, or altered or modified from already developed products. The contractor shall assign Army Ordnance Part Numbers (AOPNs), using CAGE code 19207, to these products. The Government will be the only entity with decision authority over these products. Already developed products used in AMPV, including commercial products, products defined by Government or Non-Government standards, and products for which a Government organization is the design activity, shall retain the existing identifiers (document number, part number and CAGE code), unless modified to the extent that interchangeability is affected. (CDRLs B001, B058). Design activity is defined as an organization that has, or has had, responsibility for the design of an item, or an enterprise that commissions the engineering or design of a product. Product is defined in EIA-649. Developed is defined in DFARS 252.227-7013.

## C.8.1.1.3 Indentured Bill of Materials (IBOM) and As-Built Configuration List (ABCL)

The contractor shall deliver all IBOMs in accordance with CDRL B001.

## C.8.1.1.3.1 Development and Test IBOMs

The contractor shall deliver to the Government an Indentured Bill of Material (IBOM) for each AMPV variant, to include kits, for the initial production configuration baseline and for each approved change to the baseline (CDRL B001). The contractor shall incorporate approved changes and deliver the initial production configuration baseline-verified after test completion.

## C.8.1.1.4 Design Freeze for Test

The AMPV design is frozen upon delivery of the first test asset(s) to the test site; all test assets delivered shall be identical in configuration. The contractor shall not incorporate changes without prior Government approval.

## C.8.1.1.5 Engineering Release Record (ERR)

After CDR, the contractor shall prepare an Engineering Release Record (ERR) Package for the release of the initial product baseline and for each subsequently-approved ECP, or initial release of a product. The ERR Package is defined as the ERR form submitted concurrently with the new and revised product data for initial release or change release. Data submitted shall comply with the requirements contained within Sections C.8.2 through C.8.3. The contractor shall prevent premature release of product data related to an ECP until the Government has approved the ECP and subsequent ERR. Multiple ECPs on one ERR are not allowed. (CDRL B057, CDRL B061, CDRL B058).

## C.8.1.1.5.1 ERR Number

ERR numbers are the same as ECP numbers and can be obtained from the Government CM representative. The contractor shall assign the ERR number to drawings, models and associated lists prior to completion and submission of any new or revised product data. The contractor shall add his Government assigned three-character prefix to the five-character alpha-numeric ERR number furnished by the Government. The resulting eight-character ERR number shall be the engineering initial release or change release authority reflected on models and in the revision block of drawings, documents, and associated lists. The ERR number used for change release shall be the same as the approved ECP number. (CDRL B061, CDRL B057, CDRL B058)

## C.8.1.1.5.2 ERR Submittal

The contractor shall create and submit ERR packages containing data required by Sections C.8.2 through C.8.3, to reflect the current, Government-approved, initial Product Baseline configuration for the AMPV TDP for the entire contract performance period. There shall be no missing down parts, interface data, or other deficiencies. When the contractor's ERR package is found to have errors, the contractor

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shall correct and resubmit the ERR package(s). The contractor shall submit ERR packages as digital files in accordance with CDRL B061 using the Governments Windchill PDMLink database, except for classified SECRET ERR submittals, which the contractor shall submit via registered mail to the AMPV classified mailing address. For any deliverable that is classified SECRET, the contractor shall only submit an Unclassified or FOUO cover sheet report to PDMLink that contains the date the SECRET deliverable was submitted.

## C.8.1.1.5.3 ERR Approval

Approval of drawings, models and associated lists for the AMPV TDP (CDRL B058) does not imply nor constitute ERR approval. The ERR will be approved only after all required product data has been delivered as part of the ERR package and the data is accurate, complete, and approved for release by the Government. (CDRL B061).

## C.8.1.2 Configuration Control (Change Management)

The Government will assume configuration control of the system level AMPV at CDR, and is the only entity with change approval authority over Class 1 (i.e., major) changes. Class 2 (minor) changes shall be submitted to the PCO for concurrence in classification. Class 1 and 2 Criteria are defined in the Data Delivery Description (DDD) for ECPS & VECPS, Attachment 0044 (CDRL B057).

## C.8.1.2.1 Engineering Changes

The contractor shall submit formal Class 1 engineering changes after CDR to the Government for evaluation and disposition. The contractor shall prepare and submit all Class 1 and Class 2 ECPS in accordance with CDRL B057 and the DDD for ECPS and VECPS in Attachment 0044. Proposed changes to non-CAD data (e.g., specifications) shall be described using Notices of Revision (NORs) in accordance with CDRL B059 and the DDD for NORs in Attachment 0045. NORs are not required if data is electronically marked-up to clearly show proposed changes or if CAD files are furnished as CAD mark-ups or preliminary data showing the revisions incorporated, with a copy of the previous revision for comparison.

C.8.1.2.2 Each change request shall assign a change identifier, justify the need for change, identify the Test Incident Report (TIR) or other event or action that prompted the engineering change, and identify proposed effectivity and all affected impacts (such as, cost, schedule, requirements, documentation generated to date, tooling design, material orders). Government non-concurrence of Class 2 changes shall not be implemented, but shall be resubmitted as a Class 1 change for Government disposition. The contractor shall incrementally update the design information, including the IBOM, to incorporate each approved Class 1 and 2 change as it occurs, and deliver a copy of the resulting released documentation to the Government via ERR package for verification that the design release configuration has been updated. (CDRLs B001, B061) All change activity shall be reported on the Configuration Status Accounting Information reports (CDRL B060).

## C.8.1.3 Functional Configuration Audit (FCA)

The contractor shall deliver a Configuration Audit Plan for the FCA. The FCA will review the results of the tests, analyses, inspections, demonstrations and simulations performed to prove specified performance requirements were achieved in the latest approved AMPV configuration. Any findings that require corrective actions resulting from the FCA, shall be the responsibility of the contractor (CDRL B062).

## C.8.1.3.1 Configuration Audit Summary Report

The contractor shall submit a Configuration Audit Summary Report after the FCA to identify discrepancies found between hardware, software, and contract requirements. The contractor shall identify action items and address each issue to include resulting close out action (CDRL B063).

## C.8.1.4 Configuration Status Accounting Information (CSAI)

The contractor shall submit CSAI reports and this information shall be recorded and maintained by the contractor for the term of this contract. CSAI reports shall include status of changes, status of resulting action items, effectivity, and incorporation status of approved changes, and completion status of the Technical Data Package (TDP). As part of the contractor's design release configuration process, approved changes shall not be reported to the Government as completed or closed until the new or revised documentation (incorporating the approved change) has been incorporated into the baseline documentation and delivered to the Government (CDRL B060).

## C.8.1.5 Product Data Management (PDM) System Windchill PDMLink

Windchill PDMLink is the Governments Product Data Management (PDM) System for Configuration Management, Product Data, and Technical Data Packages (TDPs).

## C.8.1.5.1 PDMLink Workflow

The PDMLink workflow is the automation of a business process, in whole or in part, during which documents, information, or tasks

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are passed from one participant to another for action, according to a set of procedural rules. A workflow instance coordinates user and system participants, together with appropriate data resources, to achieve defined objectives by set deadlines.

C.8.1.5.1.1 The contractor shall create, revise, and deliver product data on-line using PDMLink in accordance with the requirements of this contract. The contractor shall notify the AMPV Configuration Data Management (CDM) representative by e-mail that the ECP, VECP (with applicable NORs), or ERR has been submitted to the PDMLink workflow. For any deliverable that is classified SECRET, the contractor shall only submit an Unclassified-FOUO cover sheet report that contains the date the SECRET deliverable was submitted via registered mail to the AMPV classified mailing address. The contractor shall obtain a login and password to PDMLink for all contractor personnel responsible for either preparing ECPs, VECPs and ERRs or submitting them to the Government using the automated workflow. Contractor personnel who may have a need to search, view, and print in PDMLink, should also obtain a login and password for read-only permissions. (CDRL B001, B057, B058, B059, B061).

**C.8.1.5.2 PDMLink Access**

Contractor personnel who require access to PDMLink to use the workflows (i.e., anyone submitting CM-related contract deliverables to the Government, etc.) shall first coordinate with the AMPV CDM representative, who will determine the applicable access permission level based on the role(s) of each individual. The ACE Support Team Representative will assist you in completing the forms to access the PDMLink System. Forms can be found at <https://ace2.tacom.army.mil/newuser/>. Complete the ACE Access Request Form. A copy of Section C of the current awarded contract shall accompany each PDMLink request form.

**C.8.1.5.3 PDMLink Training**

The contractor shall attend PDMLink training as deemed necessary by the Government and comply with requirements of Windchill PDMLink. The contractor shall also request training, as needed via a formal e-mail request to the primary or alternate AMPV CDM representative. The type and location of training will be at the Governments discretion. Training may be either formal classroom session(s) at the contractor, Government, or off-site location, or informal desktop instructions at the individual contractors workstation.

**C.8.1.5.4 PDMLink Software Issues**

The contractor shall notify the Helpdesk via e-mail message to: <mailto:ace.support@conus.army.mil> when changes or corrections to product data cannot be accomplished by the contractor due to software deficiencies or bugs. The contractor shall courtesy copy the AMPV CDM representative on all software-related helpdesk requests. The contractor shall notify the Helpdesk and AMPV CDM representative by e-mail when PDMLink or the data in PDMLink is not accessible.

**C.8.1.5.5 PDMLink Problem Reports**

The contractor shall utilize the Problem Report feature in PDMLink as instructed during training.

**C.8.2 Technical Data Requirement and Delivery**

The contractor shall maintain the AMPV Technical Data Packages (TDPs) keeping them current and legible for their intended uses. These uses include: follow-on vehicle production, spare parts procurements, vehicle modification, system design, and integration. The contractor shall maintain a record of past and ongoing engineering changes and drawing revisions. (CDRL B058 and Attachment 0003, Developmental Technical Data Requirements)

**C.8.2.1 Product Data Structure**

The contractor shall employ an authoritative product data, engineering or configuration management system and the processes to effectively manage, securely store, release, validate, and track multiple versions and iterations of the as-designed, as-integrated, as-built, and as-delivered configuration baselines. This includes management of product structures, product definition data, contractor test and analysis data, GFI and other related technical data.

**C.8.2.2 Version Control and Item Identification Traceability**

The contractor shall assign a unique identifier to product data and utilize disciplined version control in managing digital data. Each revision shall be a new master, and the contractor shall retain all approved revisions (versions) of each document and model representation to provide a traceable history in order to access the correct revision when needed. The content of a document and model revision is fixed once approved. The contractor shall prepare the technical data so all applicable product definition documents and Part Identifying Numbers (PIN) (i.e. associated lists, test criteria, program-unique and process specifications, standard parts, etc.) are referenced (top to lowest part item level) within the TDP for traceability. The design data shall include a Parts List with a complete product structure.

**C.8.2.3 Product Data Standards and Best Practices**

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The contractor shall develop the technical data package in accordance with DoD adopted ASME industry standards Y14.1, Y14.5, Y14.24, Y14.34, Y14.35, Y14.38, Y14.100, and MIL-STD-31000. The product data shall contain complete product definition per Attachment 0003.

**C.8.2.4 Government vs. Company Standards**

In accordance with MIL-STD-31000, the contractor shall not reference company standards in the TDP. Company standards are company documents that establish engineering and technical limitations for materials and engineering practices unique to that company. The contractor shall extract essential information contained in company standards and directly cite the essential information in the product data and TDP.

**C.8.2.5 Product Data Deliverable File Formats**

Models and associated drawings shall be delivered in Pro/Engineer CAD Software format. Pro/Engineer version will be agreed upon at the SOWM. All parts and assemblies in CAD formats shall include appropriate Government metadata attributes, per Attachment 0003.

Parts and assemblies shall be named using the following convention:

(a) CAGE code Part Number.prt i.e. 19207\_12345678.prt

(b) Associated PDF files shall have the same filename with extension .pdf

Product data shall be delivered in these file formats:

**C.8.2.5.1 Parametric 3D and 2D Native CAD Models**

All parts and assemblies developed under this contract shall be parametric, feature-based, fully dimensioned and include appropriate tolerances, notes, and metadata attributes. The 3D solid models and 2D CAD drawings of parts and assemblies shall be associative. Any change in either the 3D or 2D will be automatically updated in the associated files.

**C.8.2.5.2 Form, Fit and Function Technical Data**

All Form, Fit, and Function solid models shall include metadata attributes per Appendix B of Attachment 0003. Key Metadata attributes shall be populated as agreed upon at the SOWM.

(a) COTS and Standard Parts. The contractor shall model all Military and Industry Standard parts, and Commercial-of-the-Shelf (COTS) items for form, fit and function with sufficient envelope, mounting, and mating features to provide adequate visualization and interface characteristics. Associated drawings are not required to be generated for commercial and standard parts.

(b) NDI & IR&D Technical Data. The contractor shall provide interface shrink-wrap solid models for Non Developmental Items (NDIs) and Independent Research & Development (IR&D) items. IR&D items are the items that are approved by the Government from the assertion list. NDIs and IR&D parts and assemblies shall be complete with sufficient envelope, mounting and mating features to provide adequate visualization and interface characteristics. Associated drawings are not required to be generated for proprietary parts.

(c) Source and Vendor Control Items. The contractor shall model all Source Control and Vendor Item Control parts with sufficient information for identification and for form, fit, and function with sufficient envelope, mounting interface and mating features to provide adequate visualization and interface characteristics. Associated drawings are not required to be generated for commercial parts purchased from other contractors for the developmental TDP.

**C.8.2.5.3 2D PDF**

The contractor shall export all 2D CAD drawings to PDF with at least 300 dpi resolution.

**C.8.2.6 Security Markings**

The contractor shall apply the applicable DoD Technical Distribution Statement and Export Control Warning to all technical data produced or delivered and in accordance with AMPV Security Classification Guide (SCG) (Attachment 0069). Preliminary determination for survivability data is Export Controlled, with Distribution Statement C or D, subject to confirmation from the Government at the SOWM.

**C.8.2.7 Proprietary Items**

The contractor shall identify all deliverables that will be provided to the Government with other than unlimited license rights by asserting restrictions (including flow down to subcontractors and suppliers) in the rights the Government will get. The contractor

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shall justify those assertions in the Assertions List, per the DFARS, and submit as part of their proposal for evaluation and approval by the PCO prior to contract award.

**C.8.2.8 Data Rights Markings on Tech Data Deliverables**

The contractor shall mark, appropriately, all deliverables in accordance with DFARS 252.227-7013 and 252.227-7014.

**C.8.2.9 Item Unique Identification (IUID) Marking Requirement**

The contractor shall incorporate labeling or marking information as part of the AMPV TDP in accordance with MIL-STD-130 on all items requiring IUID markings, in accordance with DFARS 252.211-7003 (c).

**C.8.3 Part Number Assignment****C.8.3.1 Army Ordnance Part Numbers (AOPNs)**

The contractor shall assign Government-issued AOPNs to all product data, items, components, or processes (ICPs) created or developed, under this contract. Product data shall use the AOPN as both the drawing number and base Part Identifying Number (PIN), along with CAGE code 19207 as the original design activity to establish unique item identification. Items described on a vendor item drawing or source control drawing shall be assigned an AOPN and that AOPN shall be called out on all up assemblies. The contractor shall request AOPNs from the designated AMPV CDM Representative. The contractor shall request additional blocks of numbers on an as needed basis via e-mail to the AMPV CDM representative.

**C.8.3.2 True Manufacturer Part Numbers**

C.8.3.2.1 The contractor shall utilize the true manufacturer's part number and CAGE code to identify parts that the contractor does not manufacture. The contractor shall not re-identify or re-mark supplier or purchased parts or related product data with its own part number and CAGE code. The contractor shall not use supplier part numbers for items that can be defined by Government or industry standards or specifications. With the exception below, the only parts reflecting the prime contractor's part number and CAGE code shall be those items for which the prime contractor is the true manufacturer of the item. The contractor's product data, including BOMs, Drawings, Models, Parts Lists, and reports, shall be consistent in calling out the true manufacturer part number and CAGE code as the primary part.

Exception: The contractor is only allowed to include re-identified parts in product and associated data and reports as reference, alternate, or substitute parts, providing the true manufacturer part number and CAGE code is identified as the primary, preferred part.

C.8.3.2.1.1 The contractor shall maintain and deliver configuration records to cross-reference any re-identified or re-marked part number and CAGE code to its original, true manufacturer part number - CAGE code, or specification-identified part number and CAGE code, and vice versa for the Exceptions allowed above. These items shall be reported in the Configuration Status and Accounting Reports (CSAR) or Technical Reports or other reports with updates as changes occur. Reports shall include an additional, separate annotation, column, etc., to reflect the actual part number and CAGE code on the as-built configuration if different from the as-designed configuration reflecting either the re-identified part number or true manufacturer part number, or both.

C.8.3.2.1.2 Army items having an AOPN and Government CAGE code that are modified for the AMPV shall not be re-identified with the contractor's or other vendor part number. The item and its product data shall reflect a new AOPN with TACOM CAGE code 19207. The contractor shall maintain configuration records that links or otherwise retains history of the original Government part number and CAGE code to the new Government part number and CAGE code and include this information in Configuration Status Accounting Information reports. (CDRL B060)

**C.8.3.3 Military and Industry Standard Parts**

In lieu of contractor, OEM, supplier, or other commercial and vendor part numbers, the contractor shall use the military, industry, or specification-identified part numbers in the product data. This shall be done for all fasteners, standard hardware, bulk material, and other items that can be defined by Government and non-Government standardization documents, as well as international or foreign standardization documents, adopted by the ANSI for use in the U.S., in accordance with Sections 5.3.1 and 5.3.1.1 of MIL-STD-31000 (Attachment 0028).

C.8.3.3.1 The contractor shall use the part numbering convention defined by these Government, non-Government, or adopted international or foreign standardization documents, in all product data prepared under this contract. In accordance with ASME Y14.100, the product data shall cite the PIN established by the standardization document as the part call out, in the parts list, etc. The standardization document number shall also be shown on the product data (in the parts list, notes, etc.) if it is not discernible from the PIN.

C.8.3.3.2 The contractor shall investigate and convert all vendor, supplier, and commercial part numbers to the standardization document PINs prior to submitting product data to the Government for approval. The contractor may utilize the on-line tool called WEBFLIS

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(<http://www.dlis.dla.mil/webflis/>) for researching part numbers, or contact the Defense Logistics Agency (DLA) customer service at: <http://www.dlis.dla.mil/cust.asp> for assistance with web access, accounts, or assistance in finding part numbers for standard items. The contractor may be required to model certain standard parts or include existing models in 3D model assemblies, but shall not create 2D drawings for parts that are defined by existing Government or non-Government standardization documents. (CDRL B058)

C.8.3.3.3 Commercial, vendor, OEM, manufacturer, etc., parts, Government-approved for use in the TDP, and NOT defined by a Government or non-Government Standard, shall be called out on all up assemblies using the unique identifier consisting of the complete PIN and CAGE code.

C.8.3.4 National Stock Numbers (NSNs) and Part or Identifying Numbers (PINs)

The PIN, in combination with the CAGE code, establishes unique item identification of items in the product data. The NSN for items may be cited in the product data in addition to the PIN-CAGE code; however, NSNs do not establish unique item identification and shall not be cited within the product data in lieu of the PIN-CAGE code.

C.8.3.4.1 NSNs placed within the product data either in lieu of a PIN-CAGE code or that conflict with the PIN-CAGE code provisioning data found in WebFLIS will be reason for Government rejection of the product data containing the conflicting data, and will be returned to the contractor for correction and re-submittal. (CDRL B058)

C.8.4 End of Contract (EOC) Submittals

The contractor shall transfer the latest version for all Unlimited Rights and Government Purpose Rights master product data not already in the Governments possession to the AMPV CDM Representative by the end of contract. The contractor shall transfer the master data, 2D digital, native and neutral 3D CAD solid models, engineering changes, deviations, IBOMs, and other digitally generated master files as one or more closeout data submittals (CDRL B001, B057, B058, B059, B061).

C.9 Government Furnished Property (GFP), Government Furnished Information (GFI), and Optional Exchange Vehicles (OEVs)

C.9.1 Definitions

(a) Mandatory Hosted Items (MHI) are subsystems or components that will be installed after the AMPV is delivered that require a combination of space, weight, power, cooling, and other interfaces to be fully functional. MHI may be installed by the Government or contractor as described in Attachment 0006. MHI may be Government or contractor provided as described in Attachment 0006.

(b) Optional Hosted Items (OHI) are subsystems or components (that the contractor has the option to include in its material solution) that will be installed after the AMPV is delivered that require a combination of space, weight, power, cooling, and other interfaces to be fully functional. OHI may be installed by the Government or contractor as described in Attachment 0006. OHI may be Government or contractor provided, as described in Attachment 0006.

(c) Mandatory Integration Items (MIIs) are subsystems or components that will be installed on and delivered with the vehicle in a fully functional state. MII will be Government or contractor provided, as described in Attachment 0006.

(d) Optional Integration Items (OIIIs) are subsystems or components (that the contractor has the option to include in its material solution) that will be installed on and delivered with the vehicle in a fully functional state. OII may be Government or contractor provided, as described in Attachment 0006.

(e) Mandatory Stowage Items (MSI) are subsystems or components that will be stowed after the AMPV is delivered that require space and securing provisions to remain in place, without sustaining damage, while the vehicle is in operation. MSI may be Government or contractor provided, as described in Attachment 0006.

(f) Government Furnished Property is defined in FAR Clause 52.245-1 of this contract.

(g) Mandatory Government Furnished Material (MGFM) is Government Furnished Material (GFM) that the contractor is required to use in the performance of this contract. GFM is defined in FAR Clause at 52.245-1 of this contract. All MGFM are identified in Attachment 0006.

(h) Optional Government Furnished Material (OGFM) is Government Furnished Material (GFM) that the contractor may opt to use in the performance of this contract. GFM is defined in FAR Clause at 52.245-1 of this contract. All OGFM are identified in Attachment 0006.

(i) GFI is defined as technical information or data furnished to the contractor by the Government.

(j) Golden Sets are sample quantities of components or subsystems provided to the contractor as Government Furnished Equipment (GFE) to represent the items that will be integrated, hosted, or stowed on the AMPV. GFE is defined in FAR Clause at 52.245-1

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of this contract.

(k) Optional Exchange Vehicles (OEVs) are the Bradley and M113A3 FoV vehicles available to the contractor if they opt to enter into an exchange agreement with the Government.

C.9.2 Government Furnished Property, Government Furnished Information, and Optional Exchange Vehicles in the EMD Phase

C.9.2.1 Government Furnished Equipment (GFE)

C.9.2.1.1 Golden Sets

The Government will provide the contractor golden sets of all MII, MHI, MSI, and GFE within 30 days of the EMD contract award in the quantity specified in the Golden Set QTY column in Attachment 0006. The Government will provide the contractor with golden sets of contractor selected OII and OHI that were identified and submitted in the proposal, in accordance with Section L.4.6.7 of this RFP, within 30 days of contract award in the quantity specified in the Golden Set QTY column in Attachment 0006. Golden sets will be managed as GFE for the performance of this contract.

C.9.2.2 Government Furnished Material (GFM)

C.9.2.2.1 GFM Quantity, Condition, and Reports

C.9.2.2.1.1 GFM Delivery

The Government will provide all MGFM and contractor selected OGFM in the quantity specified in the QTY On Hand column in Attachment 0006. The property will be provided in a condition that is suitable for its intended use, and will be delivered within 60 days of contract award. Contractor shall inform Government of receipt of all MGFM and contractor-selected OGFM. In the event that unsuitable material is provided, the contractor shall prepare and submit a PQDR in accordance with Section E.1.2.

C.9.2.2.1.2 GFM Monthly Updates

The contractor shall prepare and submit a GFM monthly update as required by CDRL B065.

C.9.2.2.1.3 GFM Deficiency Reporting

The contractor shall prepare and submit a PQDR in accordance with CDRL B066 as required. The Government will determine the best method for correcting the deficiency, and will provide the contractor with instructions to repair or replace the deficient material.

C.9.2.3 Hosted, Integrated and Stowed Items

C.9.2.3.1 Mandatory Hosted Items (MHI)

The contractor shall make all necessary provisions to host MHI on AMPV vehicles delivered under this contract and deliver the vehicles in a state ready to accept the MHI with no additional material required for it to be successfully hosted (no degradation to current material), other than the MHI itself. Cables, connectors, cooling equipment, mounts, and similar components commonly referred to as A-Kits will not be provided by the Government unless specifically identified as such in Attachment 0006. All MHI are identified in Attachment 0006. If Attachment 0006 specifies that MHI are to be installed by the contractor, the contractor shall perform the installation at the deprocessing location specified in Section C.7.16.

C.9.2.3.2 Optional Hosted Items (OHI)

The contractor shall make all necessary provisions to host contractor selected OHI on AMPV vehicles delivered under this contract. Vehicles shall be delivered in a state ready to accept the OHI with no additional material required for it to be successfully hosted, other than the OHI itself. Cables, connectors, cooling equipment, mounts, and similar components commonly referred to as A-Kits will not be provided by the Government unless specifically identified as such in Attachment 0006. All OHI are identified in Attachment 0006. If Attachment 0006 specifies that OHI are to be installed by the contractor, the contractor shall perform the installation at the deprocessing location specified in Section C.7.16 of the RFP.

C.9.2.3.3 Mandatory Integration Items (MII)

The contractor shall integrate MII on AMPV vehicles delivered under this contract. Vehicles shall be delivered in a state where the MII are fully operational. Cables, connectors, cooling equipment, mounts, and similar components commonly referred to as A-Kits will not be provided by the Government unless specifically identified as such in Attachment 0006. All MII are identified in Attachment 0006. If Attachment 0006 specifies that MII are to be installed by the contractor, the contractor shall perform the installation at the deprocessing location specified in Section C.7.16.

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C.9.2.3.4 Optional Integration Items (OII)

The contractor shall integrate all contractor selected OII on AMPV vehicles delivered under this contract. Vehicles shall be delivered in a state where the OII are fully operational. Cables, connectors, cooling equipment, mounts, and similar components commonly referred to as A-Kits will not be provided by the Government unless specifically identified as such in Attachment 0006. All OII are identified in Attachment 0006. If Attachment 0006 specifies that OII are to be installed by the contractor, the contractor shall perform the installation at the deprocessing location specified in Section C.7.16.

C.9.2.3.5 Mandatory Stowage Items (MSI)

The contractor shall make all necessary provisions to be able stow MSI on AMPV vehicles delivered under this contract. Vehicles shall be delivered in a state ready to accept the MSI with no additional material required for it to be successfully stowed. All MSI are identified in Attachment 0006. If Attachment 0006 specifies that MSI are to be installed by the contractor, the contractor shall perform the installation at the deprocessing location specified in Section C.7.16.

C.9.2.3.6 Mandatory Government Furnished Material (MGFM)

The contractor shall integrate, host or make hosting provisions, or stow or make stowage provisions for all MGFM onto the AMPV to be delivered at the contractor's facility. Contractor shall be responsible for secure storage and handling of the MGFM to include any damage or loss.

C.9.2.3.7 Optional Government Furnished Material (OGFM)

The contractor shall integrate, host or make hosting provisions, or stow or make stowage provisions for all contractor selected OGFM onto the AMPV to be delivered at the contractors facility. Contractor shall be responsible for secure storage and handling of the contractor selected OGFM to include any damage or loss.

C.9.2.4 Government Furnished Information (GFI)

The Government will provide the GFI listed in the Referenced Documents column of Attachment 0006 for all MII, MHI, MSI and those OII and OHI selected for use by the contractor. The GFI listed in Attachment 0006 is provided as reference material for integration design purposes and shall be utilized to properly account for all integration design interfaces.

C.9.2.5 External Agreements

The contractor shall establish Non-Disclosure Agreements (NDAs) and Memorandums of Agreement (MOAs) with required Government and commercial organizations as required to receive GFP and GFI. GFP and GFI requiring external agreements are identified in Attachment 0006, and different items require a different process to pursue the external agreement. The Government will broker all agreements for GFP and GFI listed in Attachment 0006. The contractors failure to obtain the required external agreement may necessitate the Government to deviate from the delivery schedule of GFE, GFM, and GFI.

C.9.2.6 Optional Exchange Vehicles (OEVs)

If the contractor enters into an exchange agreement with the Government for OEVs, the contractor shall prepare and transport, at its own expense, the selected OEVs to the contractors facility within 30 days of contract award. Transfer of title of the OEVs will occur prior to shipment.

C.10 LOW RATE INITIAL PRODUCTION (LRIP) STATEMENT OF WORK - OPTION

C.10.1 Scope

C.10.1.1 The AMPV requirements are found in the Performance Specification (Attachments 0001 and 0082). In this SOW, the term AMPV will refer to the entire AMPV Family of Vehicles (FoV) defined below, and the term variants will be used to refer to the vehicles fulfilling the five mission roles defined below.

AMPV Variants:

- 1) General Purpose (GP) Will operate throughout the battle space while conducting resupply, maintenance, casualty evacuation, and other tasks within the formation.
- 2) Mortar Carrier (MC) Will provide immediate responsive fire support to conduct fast paced offensive operations.
- 3) Mission Command (MCmd) Will provide a platform to enable effective mission command planning and execution. Will host current Mission Command Systems, their future replacements, and upgrades of hardware and software. Consists of multiple sub- configurations based on mission roles that only differ in the Mission Command Systems being hosted.

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4) Medical Evacuation (ME) Will provide casualty evacuation for up to four litter or six ambulatory patients throughout the battle space.

5) Medical Treatment (MT) Will provide a protected surgical environment, enabling immediate medical care for one patient by a medical crew of four with adequate lighting and accessible medical equipment.

The AMPV variants shall be fabricated, tested, and delivered to maximize performance within the affordability constraints described in Section C.10.1.2. If any design changes are required to the AMPV FoVs during LRIP, the contractor shall continue to ensure the maximum performance within constraints described in Section C.10.1.2. All Contract Data Requirements List (CDRLs) shall cover the AMPV FoVs by specifically addressing any unique differences in the variants. One CDRL submission may address all variants.

**C.10.1.2 Affordability**

The contractor shall track and control costs and shall perform cost- performance analyses as in Section C.10.3. The ground rules and assumptions for vehicle production, schedules, and quantities are provided in Attachment 0067 (Manufacturing Cost Estimate Template).

**C.10.1.2.1 Definition of Operating and Support (O&S)**

The Government has determined the Cost Per Mile (consumables, reparable, and fuel cost per mile) threshold target for the AMPV FoV is \$90 per operating mile (Fiscal Year 13 constant dollars). Consumables, reparable and fuel costs are defined as the cost of reparable individual parts/assemblies/subassemblies; consumed individual parts; and the cost of fuel/oil/lubricants for the AMPV base vehicle on an annual recurring basis. Per the OMS/MP (Attachment 0073), the AMPV FoV assumed average OPTEMPO shall be 720 miles per year for live training. Each vehicle shall be assumed to operate at this OPTEMPO for a useful life of 26 years.

**C.10.1.3 Commonality**

The AMPV FoV shall have a minimum 57% component commonality within the AMPV variants. In terms of commonality, a component is defined as a part of a mechanical or electrical assembly that, during field level repair, are removed, ordered and replaced as assembled components. The contractor shall include commonality information in the Indentured Bill of Materials (IBOM) CDRL deliverable (CDRL B001). The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.10.1.3.1 If any design changes are required to the AMPV FoVs during LRIP, the contractor shall continue to ensure the maximum commonality across components, interfaces, standards, and interchangeability of reparable and repair parts at the Line Replaceable Units (LRU) and Shop Replaceable Unit (SRU) level as further detailed in Section C.10.1.3.2. Commonality is defined as common components, interfaces, standards, and interchangeability of reparable and repair parts. Commonality shall include interchangeability of reparable and repair parts (excluding fasteners). Fasteners are defined as nuts, bolts, screws, washers, o-rings, seals, cotter pins, bushings and retaining clips used to fasten or secure repair parts or used to assemble multiple repair parts. Although fasteners are excluded from the 57% commonality across the AMPV FoVs, the contractor shall, to the maximum extent, use commonality of fasteners across the ABCT inventory.

C.10.1.3.1.1 The contractor 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, and use of support equipment. Commonality is based on a comparison of interchangeable reparable, components and repair parts which have the same National Stock Number (NSN). The NSN identity must be data found in FEDLOG or WebFlis. For commonality credit for new parts without NSN assignment, the parts must have part number assignment (see Section C.8). 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 development by considering the differences in operation and maintenance tasks as it relates across the AMPV variants, the base vehicle platform the AMPV FoV use as their foundation, and Mission Equipment Packages (MEP). 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 all design reviews.

**C.10.1.3.2 Commonality Prioritization**

The contractor shall prioritize the selection of components with respect to commonality (hardware and software) in accordance with the following commonality hierarchy:

**Functional commonality:**

- 1) Component
- 2) Interface
- 3) Standard

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Vehicular commonality:

- 1) AMPV FoVs (GP, MC, MCmd, ME, MT)
- 2) United States Army Inventory
  - (a) Armored Brigade Combat Teams Inventory
  - (b) Program Executive Office Ground Combat Systems (PEO GCS) Inventory

**C.10.2 Program Structure & Management****C.10.2.1 Integrated Product Teams (IPTs)**

C.10.2.1.1 To reduce risk in delivering the desired performance, and to provide a common understanding of the requirements and subsystem interactions, the Government shall chair and participate in all IPTs which the contractor is obligated to establish by this SOW. IPTs shall be established to serve as the primary contract management tool and key method of communication for this contract; however, all changes to the contract must be coordinated through the PCO. Whenever practical, the contractor shall enable Government approved videocom or telecom and net-meeting connections to remote attendees.

C.10.2.1.1.1 The first IPT meetings shall be held in conjunction with the Start of Work Meeting (SOWM) (see Section C.10.2.5.2). Subsequent IPT meetings shall be held weekly or as mutually agreed between the Government and contractor. Government and contractor IPT Leaders shall be identified no later than the SOWM. The contractor may propose changes to the number, composition, functionality, and responsibilities of the IPTs at the SOWM. Proposed changes will be jointly determined thereafter. Throughout the life of this contract, contractor and Government IPT members have the responsibility to propose new or modified IPTs when needed to focus efforts or improve effectiveness.

C.10.2.1.1.2 The contractor shall be responsible for developing all IPT agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings. Each IPT shall be responsible for the following activities within the domain and scope of the IPT: risk management, issue tracking and resolution, technical performance measure reporting and management, and updating the Systems Engineering Integration Team (SEIT).

**C.10.2.1.2 IPT Structure**

The IPT structure shall include the following areas: Program Management (see Section C.10.2.1.2.1), Business Management (see Section C.10.2.1.2.2), Engineering (see Section C.10.2.1.2.3), Product Assurance and Test (see Section C.10.2.1.2.4), RAM (see Section C.10.2.1.2.5), Product Support (see Section C.10.2.1.2.6), Manpower and Personnel Integration (see Section C.10.2.1.2.7), and GFM/GFI (see Section C.10.2.1.2.8).

Working Groups may be created to address lower level technical assignments within the IPTs. These organizations may be ad hoc or may have standing relationships depending on its long-term involvement with the technical scope.

C.10.2.1.2.1 For Program Management there shall be an Overarching Integrated Project Team (OIPT). The contractor shall participate in an every other week OIPT in accordance with the OIPT Charter (Attachment 0068) for the purpose of providing the integrated management, support, and functional area leadership for all efforts. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

C.10.2.1.2.2 The Business Management IPT shall be created to cover budget, cost and schedule issues. For planning purposes, the Business Management IPT shall meet monthly. The contractor shall participate in the required meetings, conferences, and reviews listed in the contract. Whenever possible, meetings shall be conducted virtually using Government agreed-upon technology. All program and technical meetings, conferences, and reviews shall be hosted by the contractor. The contractor shall prepare a meeting agenda and a read-ahead package (presentation material) prior to each of the review meetings (CDRL A002). The contractor shall distribute to all attending organizations meeting minutes (CDRL A001), including action items.

**C.10.2.1.2.3 Engineering****C.10.2.1.2.3.1 Systems Engineering & Integration Team (SEIT)**

C.10.2.1.2.3.1.1 The AMPV SEIT guides and directs the technical execution of the program. The SEIT also provides a forum for discussing the program's technical planning and management to achieve user requirements, including future modifications and sustainment planning, and acts as the technical authority in establishing the program's technical strategy. The SEIT will also act as the technical conflict resolution authority. The SEIT is chaired by the Government Lead Engineer. The SEIT shall include representatives from IPTs outside of engineering.

C.10.2.1.2.3.1.2 The contractor shall administer, support, and conduct SEIT meetings to discuss production engineering issues, tradeoffs, design, requirements, risks, and disclosure of Design For Six Sigma (DFSS) tools, specific to its functional area, as well as

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document decisions made that affect the technical baseline. The Government Lead Engineer for the AMPV program will have the final determination on all SEIT decisions. The SEIT shall be comprised of Government and contractor participants to address technical development issues. The contractor shall establish a clear decision process to address and document decisions related to the development of the AMPV variant(s) baseline and present it for comment at the first SEIT meeting. The contractor shall ensure that all tradeoffs and modifications are documented against the baseline, and presented through the SEIT prior to implementation.

C.10.2.1.2.3.1.3 The contractor shall schedule weekly standing meetings unless otherwise specified in this contract or more frequent contact is necessary. The contractor shall be responsible for developing all SEIT agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

C.10.2.1.2.4 The Product Assurance and Test area shall include Test and Evaluation Working-level Integrated Product Team (T&E WIPT) and Reliability Availability Maintainability (RAM) IPT

C.10.2.1.2.4.1 The primary purpose of the AMPV T&E WIPT is to optimize the use of T&E expertise, instrumentation, facilities, modeling and simulation (M&S), and the collected resources of the represented agencies and organizations to integrate the collective T&E efforts. The T&E WIPT will collectively plan, budget, resource, execute, and continuously evaluate the AMPV T&E program as a principal risk management agent for the Product Manager. The primary product of the T&E WIPT is the program test strategy, which is captured in the AMPV Test and Evaluation Master Plan (TEMP). The T&E WIPT shall meet every two months and be the instrument that will tailor the T&E tools and strategy to maximize effectiveness and efficiency of the test procedures, while determining which specific tests are required to support the system assessment for approval and systems safety certification.

C.10.2.1.2.4.1.1 The LFT&E IPT is a T&E sub-IPT responsible for analyzing the AMPV variants and recommending the most efficient means of assessing the system vulnerabilities. Members will recommend required live fire and prepare a Live Fire strategy for approval by DOT&E and incorporation into Part III of the AMPV TEMP. The Live Fire Sub-IPT shall meet monthly to manage the Live Fire program.

C.10.2.1.2.5 The RAM IPT is a T&E sub-IPT responsible for providing the integrated management, support, and functional area leadership for all efforts in the RAM functional areas for the AMPV program. The RAM IPT will also help to score Test Incident Reports (TIR) according to the FD/SC as the IPT moves through the acquisition life cycle. The RAM IPT will establish RAM objectives and evaluation baselines; define organization responsibilities and relationships; estimate costs and schedules for RAM; and identify needed RAM resources. The RAM IPT forum will maintain a continuous interchange of RAM-related issues, and identify and resolve potential problem areas. Members will develop, review, and track approval of all RAM documentation. The IPT will also assess contractor efforts toward identifying and implementing corrective actions. The primary product of the RAM IPT is the program RAM strategy, which is captured in the AMPV Reliability, Availability, Maintainability, and Cost (RAM-C) Rationale Report. The RAM IPT shall meet monthly to jointly manage the RAM program.

C.10.2.1.2.6 Product Support Management Integrated Process Team (PSM-IPT)

The purpose of the PSM-IPT is to coordinate overall ILS planning and execution. The PSM-IPT members will work together to generate cost-saving and logistics footprint-reducing improvements in readiness, support, and supportability-related system design. The Government Product Support Manager (PSM) will schedule the PSM-IPT meetings. The contractor's Integrated Logistics Support (ILS) manager shall serve as vice chairperson of the PSM-IPT. For planning purposes, the PSM-IPT meetings shall be conducted on a quarterly basis in conjunction with key ILS and Program events. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

C.10.2.1.2.6.1 PSM-IPT Support

The contractor shall provide suitable meeting space at the contractor's facility to conduct PSM-IPT meetings. For planning purposes, the PSM-IPT meetings shall be conducted on a quarterly basis in conjunction with key ILS and Program events. The contractor shall coordinate PSM-IPT meeting agenda issues, topics and schedules with the PSM-IPT members. The contractor shall prepare and deliver minutes of the PSM-IPT meetings. The minutes shall be delivered in accordance with CDRL A001. The minutes shall contain as a minimum, schedules; detailed results and proceedings of discussions, assessments, and guidance; action items; an attendees roster; and all presentations. Action items shall be assigned prior to the close of the meeting.

C.10.2.1.2.7 Manpower & Personnel Integration (MANPRINT) IPT

C.10.2.1.2.7.1 The AMPV MANPRINT IPT identifies and integrates all relevant information and considerations regarding the full range of manpower, personnel capabilities, training, human factors engineering, system safety, health hazards, and Soldier survivability into the system development and acquisition process. The AMPV MANPRINT IPT shall identify and resolve technical and human resources required for operating, maintaining, training, and sustaining the AMPV in the MANPRINT domains.

C.10.2.1.2.7.2 The contractor shall administer, support, and conduct weekly MANPRINT IPT meetings to enhance communication between the contractor and the Government, as well as document decisions made that affect the technical issues affecting MANPRINT. The Government Lead Engineer for the AMPV MANPRINT IPT will have the final determination on all decisions related to MANPRINT issues. The

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contractor shall establish a clear decision process to address and document decisions related to the MANPRINT program and present it for comment at the first MANPRINT meeting. The contractor shall ensure that all tradeoffs and modifications are documented against the baseline, and presented through the MANPRINT IPT prior to implementation. The MANPRINT IPT shall be comprised of the necessary Government and contractor participants from a variety of departments to address technical and human resource issues pertaining to MANPRINT.

C.10.2.1.2.7.3 The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

C.10.2.1.2.8 The GFM/GFE IPT shall be created to cover cost, schedule, and performance issues associated with GFM/GFE. GFM/GFE IPT meetings shall be held monthly or as mutually agreed upon by the Government and contractor. The purpose of the GFM/GFE IPT is to identify the status of all contractual GFM/GFE items as they relate to the vehicle production and testing schedules such that the Government can effectively manage GFM/GFE risk areas. At a minimum, each IPT meeting will discuss the following for each GFM/GFE item: current quantity on hand, current usage rate, current condition of items, forecasted usage schedule, and status summary of PQDRs submitted on the item (if any). GFM/GFE issues will be identified to allow the Government to fill inventory needs, replace/repair GFM/GFE items as needed, identify needs for production/test spares, and forecast future GFM/GFE requirements. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

**C.10.2.2 Internet-Based Collaboration**

C.10.2.2.1 The Armor Brigade Combat Team (ABCT) Integrated Data Environment (IDE) consists of internet-based collaboration tools that shall be used to facilitate information sharing and collaboration within an encrypted Government server environment that provides controlled, distributed access to AMPV program information, both released and in-work. Types of information that shall be processed and maintained within the IDE will include AMPV program documents, reports, program management data, meeting-related information, modeling and simulation or analysis data, pertinent manufacturing information, and test data, consistent with the AMPV Security Classification Guide (Attachment 0069). Any posting to the IDE is considered a data deliverable in the context of Defense Federal Acquisition Regulation Supplement (DFARS) Data Rights clauses, including 252.227-7013 and 252.227-7014. The IDE shall only be used for sharing Controlled Unclassified Information (CUI) information. All classified information shall be sent via registered or express mail to the AMPV classified mailing address.

AMPV classified mailing address:

PEO GCS PM AMPV  
SFAE-GCS-AAM  
6501 E. Eleven Mile Road, MS 463  
Warren, MI 48397

C.10.2.2.1.1 The contractor shall notify appropriate Government personnel via email 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 PCO shall not be submitted via an internet-based collaboration tool without prior authorization.

C.10.2.2.1.2 IDE collaboration tools: The contractor shall utilize the designated AMPV area of the PEO GCS Knowledge Center to facilitate unclassified, encrypted internet-based information sharing between AMPV program participants. 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 for test data. Details on specific IDE tools, requirements for access, and approach for use will be discussed at the SOWM (see Section C.10.2.5.2).

C.10.2.2.1.3 The Government will sponsor Army Knowledge Online (AKO), PEO GCS Knowledge Center, DCO, VDLS, 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 no later than the SOWM for all systems except VDLS. The list of contractor personnel requiring VDLS access shall be provided to the Government 50 days prior to the Test Readiness Review (TRR).

C.10.2.2.1.4 In order to access these systems, the contractor shall have or obtain an AKO account, External Certification Authority (ECA) Certificates and Department of Defense (DoD) Common Access Cards (CAC) for appropriate personnel. The contractor shall designate an Information Assurance (IA) Officer to work with the Product Manager (PM) AMPV and the Government IA Manager in order to obtain and implement usage of the ECA and 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.10.2.2.2 Contract Data Requirements**

Data shall be delivered in accordance with the DD1423, CDRLs, as set forth in Exhibit A and as called out in the SOW. DIDs called out

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in the CDRLs can be found in the ASSIST website at <http://quicksearch.dla.mil/>. If data deliverables require revision after original delivery, and the date for delivery cannot be determined at time of award, the contractor shall deliver the data on a date mutually agreed to by the parties. Except for those items that specifically require hard copy submission, all data specified in this contract shall be provided to the Government electronically through the IDE unless otherwise specified in the CDRL.

## C.10.2.3 Security Guidelines

## C.10.2.3.1 Security Classification Specification

The contractor shall adhere to the requirements of the DD Form 254 (Attachment 0070) (Contract Security Classification Specification) and CDRLs (Exhibit A) for the protection of the unclassified information, CUI, and classified information, data, hardware, and software generated for or provided in support of the program. To preserve national security interest, the contractor shall ensure all aspects of the contract and work performed are evaluated for conformance with security procedures and standards. The contractor shall evaluate all products for security implications and prepare appropriate security documents and plans.

## C.10.2.3.2 Classification

The highest classification associated with this contract is Secret. The contractor shall ensure all personnel meet clearance and access requirements. Refer to the DD Form 254 (Attachment 0070) for additional security and personnel requirements.

## C.10.2.3.3 Manage Security

The contractor shall manage security activities at the unclassified, CUI, and all applicable classification levels encompassing all security disciplines (Information Security, Operations Security, Anti-Terrorism and Force Protection, International Security, Physical Security, Communications Security, Information Systems Security, and Personnel Security). This requirement is to utilize the above security functions to protect the programs information and technology.

## C.10.2.3.4 Public Release Requests

The contractor shall screen all information submitted for determination of public release to ensure it is both unclassified and technically accurate. A letter of transmittal shall certify the review. PM AMPV information may not be released outside AMPV channels in accordance with Distribution Statement D until the review process is complete. PM AMPV information is any Program information on the AMPV effort. Refer to the AMPV Security Classification Guide (Attachment 0069) on public release of information for additional information. The PM AMPV Program will require 45 working days to process the request and render a decision. Requests for public release shall be sent to the PCO electronically via encrypted email using cryptographic products that are National Institute for Standards and Technology (NIST) or National Information Assurance Partnership (NIAP) approved or mail the Compact Disc (CD) or Digital Video Disc (DVD) using U.S. Postal Service Registered Mail, U.S. Postal Service Express Mail or FedEx.

## C.10.2.3.5 Controlled Unclassified Information (CUI)

CUI provided to or generated pursuant to this contract shall be protected. The procedures for the protection of CUI are outlined in the DD254 and Additional Guidelines for CUI attachment (Attachment 0070).

## C.10.2.3.6 Marketing Proposals and Export Considerations

The contractor shall coordinate with the Government program office staff and counterintelligence support staff, all proposals to market or otherwise obtain a export license to sell portions of the system being acquired or like systems to foreign countries.

## C.10.2.3.7 Information Flowdown

The contractor shall ensure security requirements and guidelines contained in Section C.10.2.3 is flowed down to U.S. subcontractors, teammates and consultants.

## C.10.2.3.8 Critical Program Information Assessment (CPIA)

The contractor shall participate in CPIA. These activities shall occur as part of an annual meeting and engineering reviews throughout the period of performance of this contract.

## C.10.2.3.9 Operations Security (OPSEC) Requirements

All U.S. contractors with access to CUI or classified information shall be required to follow the ABCT OPSEC Plan. The ABCT OPSEC plan will be provided at the SOWM. To ensure awareness of the ABCT OPSEC Plan, the contractor shall provide annual training for all AMPV personnel on the contents of the ABCT OPSEC Plan. New AMPV personnel shall receive ABCT OPSEC Plan specific training within 30 days of program assignment. OPSEC compliance records shall include names and dates of when training was completed by each individual. Compliance records will be available for Government Security Officer to review during working hours. Contractor's AMPV Security Manager shall

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submit a letter on an annual basis certifying 100% of the Contractor's AMPV staff and the staff's of subcontractors and suppliers supporting AMPV have completed annual OPSEC training (CDRL B055).

## C.10.2.4 Program Protection Working Group (PPWG)

The contractor shall host a PPWG within three months after contract award and on a quarterly basis throughout period of performance of the contract. Each PPWG will be chaired by a Government systems engineer and co-chaired by either the contractor security manager or a contractor engineer. The co-chair shall develop the agenda (CDRL A002), minutes, and action items (CDRL A001). The PPWG agenda shall include Critical Functional Analysis (CFA), CC, CPIA and Supply Chain Risk Management (SCRM). It is expected that each of the PPWGs will be a one day event.

## C.10.2.4.1 Critical Functionality Analysis (CFA)

The contractor shall conduct a CFA of any changes associated with LRIP for the purpose of identifying CCs that can lead to total mission failure (level 1) or significant or unacceptable mission degradation (level 2). The CFA shall assess CC for the following war fighting functions: movement and maneuver, intelligence, fires, protection, sustainment, command and control, casualty evacuation and treatment. The CFA shall identify all logic bearing critical components as well as the hardware and software suppliers for the logic bearing components. The contractor shall host a one day review with the PM AMPV team to discuss and review the results of the CFA. The contractor shall develop the agenda for the CFA review (CDRL A002). The CCs shall be prioritized, assessed for supply chain risk, and based on risk the contractor shall develop mitigations or countermeasures to minimize the risk posed from supply chain. The contractor shall develop meeting minutes and action items (CDRL A001) for the CFA review. The CFA, supply chain risk, and mitigation or countermeasures for risks shall be included in the meeting minutes. The CFA shall assess both Organic CC as well as the integration of Inherited CC.

## C.10.2.4.2 Subcontractors

The contractor shall comply with the requirements of FAR Subpart 44.2, Consent to Subcontracts. The Government requires prior approval to subcontract for those systems or subsystems identified by the PPWG as CCs that have logic bearing components. If the contractor issues a contract to subcontract for an item that, at the time of issuance of the contract, has not been identified as a CC by the PPWG but later the item is identified as CC, the contractor will notify the Government and adhere to following guidance. The contractor shall provide a definitive list of all known or proposed subcontractors and suppliers of critical components with logic bearing components (i.e., software, firmware, network cards, and printed circuit boards) at Program Protection Working Group (PPWG). The subcontractor supplier list will be included in the minutes of the PPWG (CDRL A001). The list will be reviewed and approved by the PCO in coordination with Defense Intelligence Agency (DIA). DIA will assess the foreign intelligence and technology exploitation threat for the supply chain associated with the CC. A threat assessment can take 3-6 months. The results of the threat assessment must be used to inform the subcontractor's risk mitigation strategy for all CC's. Mitigation could include disapproval to use a prospective subcontractor or supplier in accordance with Sec 806 of NDAA FY 2011 (authority extension in Sec 806 of NDAA FY 2013). The contractor shall take steps to ensure that commercial products purchased or obtained shall not be identified as being destined for inclusion in a Government system.

## C.10.2.4.3 Component Control

The contractor shall ensure that products purchased or obtained for LRIP contract shall not be identified as being destined for inclusion in a Government system. The contractor shall certify that the underlying software, firmware, and hardware, which in totality constitute the managed service, have been controlled, evaluated, and tested to ensure that the service delivers what it is designed to deliver and nothing more. The contractor shall not provide functionality, additions, or enhancements to CCs unless explicitly requested and approved by the Government. The contractor shall not knowingly create the capability for unauthorized access to the system or knowingly introduce such capability into the Army network. All contractor developed code shall be provided to the Government for independent system assurance testing. Contract code will be tested against the top 25 Common Weakness Enumerator <http://cwe.mitre.org>.

## C.10.2.4.4 Critical Technologies

The contractor shall conduct a crosswalk of LRIP associated changes in their system specifications with the Military Critical Technology List (MCTL) and other DoD and Army tools in conjunction with the Government at initial planning and throughout the acquisition life cycle. MCTL and information on accessing DoD and Army tools will be provided at the PPWG. The crosswalk may or may not trigger parameters which cause a technology to be designated as Critical Program Information (CPI) or Critical Technologies (CT). Should the assessment result in identification of CPI or CT then the contractor will be required to assess methods of protection and in conjunction with the Government, develop and implement an Anti Tamper (AT) Plan (see Section C.10.2.4.1.5.1).

## C.10.2.4.4.1 Anti-Tampering Plan

If Anti-Tamper is identified as a solution for hardware or software updates containing CT during the LRIP, the contractor shall design, develop and integrate an AT protection solution to deter, prevent and detect the reverse engineering of those systems using the probability of an unplanned loss or for international sales across the program's life cycle in a update to the Anti Tamper Plan (CDRL B056). The contractor shall implement AT in system engineering activities across the programs life cycle to include science and technology efforts, research, design, development, implementation, testing, maintenance, upgrade and disposal of the system. The

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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 AT Guidelines. An Anti-Tamper Plan is classified at a minimum classification level of SECRET, when plan development begins.

## C.10.2.4.4.2 AT Implementation

The USG may incorporate AT protection into weapon systems and components that contain CPI. The AT protection solution will not impact operations, maintenance, or logistics, provided that all terms delineated in the system technical documentation are followed.

C.10.2.4.5 Inherited Critical Program Information (CPI) and Critical Technology (CT) Identification of CPI and CT and implementation of AT for inherited technologies is the responsibility of the specific external program(s) that originates the CPI and CT. The contractor shall be responsible for implementing security countermeasures identified by the external program(s) in order to ensure the inherited CPI and CT is protected to the level outlined in the respective inherited technologies program protection plan.

## C.10.2.5 Meetings, Audits, Assessments and Reviews

## C.10.2.5.1 Reviews and Audits

C.10.2.5.1.1 The contractor shall prepare minutes, attendee lists, and action items resulting from reviews and audits in accordance with the contractor's standard business process (CDRL A001). Whenever practical, the contractor shall enable Government approved videocom or telecom and net-meeting connections to remote attendees. The contractor shall prepare a meeting agenda and presentation material prior to each of the review meetings (CDRL A002). The contractor shall post all meeting data (agendas, supporting documentation and minutes) to the ABCT IDE.

## C.10.2.5.2 Start of Work Meetings (SOWM)

The contractor shall participate in a SOWM, in accordance with TACOM Provision 52.204-4003 -- Start of Work Meeting, at or near the contractor facility. This meeting will introduce and align the Government and contractor teams. The SOWM will consist of a Scope of Work review and Integrated Master Schedule (IMS) Review. The agenda topics for the SOWM are identified in the SOWM Agenda (Attachment 0007). Refer to Section C.10.2.5.9 for IMS Review requirements.

## C.10.2.5.3 Program Management Reviews (PMR)

The contractor shall conduct bi-annual PMRs, beginning with the first quarter after award of each LRIP option. The PMRs shall include contractor senior-level program management personnel and shall alternately be held near the Government Product Manager site and near the contractor's facility. 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, schedule progress, risks and mitigation, and cost impact.

## C.10.2.5.4 Provisioning Guidance Conference

The contractor shall lead a Provisioning Guidance Conference at its facility no later than 45 days after exercise of LRIP Option Year 1. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

## C.10.2.5.5 Technical Manual (TM) Guidance Conference

The conference shall include the most current Maintenance Allocation Chart (MAC) and TM outline. The contractor shall lead the TM Guidance Conference in conjunction with the Provisioning Guidance Conference, which will be held no later than 45 days after contract award. The contractor shall be responsible for developing all agendas and meeting minutes (CDRLs A001 and A002) unless otherwise stated in the IPT Charter. The IPT meeting minutes shall be made available to the Government and discussed at subsequent IPT meetings.

## C.10.2.5.6 Test Readiness Reviews (TRRs)

## C.10.2.5.6.1 Contractor Attendance at Government TRRs

The contractor shall send technical personnel to attend TRRs to be held at the Government test site(s) and Operational Test locations in accordance with the IMS and Attachment 0008.

## C.10.2.5.6.2 Government Conducted TRRs for System Level Test

The Government TRRs for Developmental Test (DT) testing are anticipated to be held within seven to 21 calendar days prior to start of testing and will assess both the contractor's and the Governments test readiness. The Government pre-TRRs for Operational Test (OT) testing are anticipated to be held six months, two months and two days prior to start of Initial Operation Test (IOT) testing.

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## C.10.2.5.6.3 LRU TRR

The contractor shall conduct TRRs on the LRU tests. The LRU tests include LRU Qualification Tests, LRU First Article Tests (FATs) and LRU Highly Accelerated Life Tests (HALTs). The Government shall be informed no less than five business days prior to the start of the LRU TRR. The contractor shall have technical personnel attend LRU TRRs. The LRU TRR is to be held no more than five business days prior to start of test and will assess both the contractor's and the Government's test readiness. The contractor shall prepare and provide a LRU TRR Package in accordance with CDRL C001.

## C.10.2.5.7 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, 14 calendar days prior to the Manufacturing Cost Estimate Report submittal (CDRL A003).

## C.10.2.5.8 Cost and Software Data Reporting (CSDR) Readiness Review

The contractor and the Government shall conduct a post contract award conference (see Section C.10.2.5.12) to include a discussion of the contractor's standard CSDR process that satisfies the guidelines contained in the DoD 5000.04-M-1, CSDR Manual, the requirements in the Government-approved CSDR Contract Plan (Attachment 0009), and the Contract CSDR RDT (Attachment 0080).

## C.10.2.5.9 Integrated Master Plan (IMP) and IMS Reviews

The contractor shall attend and participate in monthly Government-contractor teleconferences that will be conducted to analyze the contractor's progress to date. Monthly schedule review dates and times shall be determined and agreed to by the Government and the contractor. The contractor shall prepare and provide minutes in accordance with CDRL A001.

## C.10.2.5.10 Integrated Baseline Review (IBR)

C.10.2.5.10.1 The contractor and the Government shall conduct a joint assessment of the Performance Measurement Baseline (CDRL A004) to verify the baselines realism, accuracy, and technical content. The IBR shall take place at the contractor's facility within 180 calendar days of contract award. Subsequent IBRs shall be conducted as agreed to by the parties throughout the life of the contract for initiation of all major changes to the baseline. The contractor shall provide access to all pertinent records and data requested by the PCO or duly authorized representative to adequately prepare for the IBR (including, the detailed, time-phased Performance Management Baseline (PMB), Responsibility Assignment Matrix, Control Account Authorizations, and Work Package Authorizations) and permit Government surveillance to ensure Earned Value Management System (EVMS) compliance. The PMB shall be detail-planned to MIL-STD-881C WBS Level III 14 days prior to the IBR. The contractor shall provide the Government Control Account Managers (CAM) with a read-ahead copy of the IBR topics to be covered at the IBR, focusing on its assigned WBS elements.

C.10.2.5.10.1.1 A 12-month rolling wave detailed IMS plan (CDRL A004) should be presented at the initial IBR. The Government shall provide acceptance or rejection of the detailed plan within 14 calendar days of the IBR closeout. After the initial IBR, the contractor shall continue to provide a detailed IMS plan at a minimum of every six months in subsequent IBRs.

## C.10.2.5.10.2 IBR Training

The contractor shall provide IBR training at the contractor's facility. After LRIP award, the training should take place at least 14 calendar days before the initial IBR for each LRIP option. The IBR training shall cover the basics of what an IBR is; how to prepare for an IBR; topics that will be covered in an IBR; examples of the contractor's reports and documentation will be provided as a read-ahead package; and instructions on how to read and understand the reports and documentation. The joint training is intended to level-set both the contractor's CAMs and the Government Leads on what to expect in an IBR. The contractor may work with the Government AMPV Earned Value Management (EVM) Lead for assistance.

## C.10.2.5.11 Selected Acquisition Report (SAR) and Milestone (MS) C Preparation Meeting and Support

The contractor shall review and clarify its methodologies utilized to produce technical and cost data (e.g., CDRLs). The Government shall require the attendance of contractor Subject Matter Experts (SME). For planning purposes, the meeting is anticipated to be a one day event in Washington, D.C. The contractor shall prepare and provide minutes in accordance with CDRL A001.

## C.10.2.5.12 Office of the Secretary of Defense (OSD) and Defense Cost and Resource Center (DCARC) Post Contract Award Meeting

After LRIP award, a post contract award conference to be held with the SOWM will include a discussion of the contractor's standard CSDR process that satisfies the guidelines contained in the DoD 5000.04-M-1, CSDR Manual, and the requirements in the Government-approved Contract CSDR plan, Government-approved Program SCDR Plan, DD Form 2794, and related program and contracts. 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,

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this meeting is anticipated to be a one day event and can be held at the contractor's facility, PM ABCT, DCARC, or via teleconference.

Defense Cost and Resource Center  
 4800 Mark Center Drive, Room 10G07  
 Alexandria, VA 22350-2400  
 Phone: (571)-372-4400  
 Fax: (571) 372-4138

C.10.2.5.13 Weekly Status Update Meetings

The contractor and the Government shall participate in weekly status update meetings, conducted via phone. Each meeting shall last no more than two hours. Open actions, late or deficient items, in addition to time sensitive deliverables shall be discussed. A separate meeting shall be held for each of the following functional groups: Engineering, Logistics, RAM, GFM, Business Management, MANPRINT, Program Management, Quality Engineering, T&E, and LFT&E. These meetings will begin at the award of contract with the exception of T&E and LFT&E which shall begin with contractor test.

C.10.2.6 Risk Identification and Management

C.10.2.6.1 Risk Management Review Board

The contractor shall conduct monthly Risk Review Boards with Government participation. The Risk Review Board shall decide which risks are accepted, approved, and tracked at the system level.

C.10.2.6.2 Risk Identification

The contractor shall update the Risk Management Plan (RMP) that outlines the processes and procedures for establishing and managing risks for the program in accordance with CDRL A005. In this plan, the contractor shall show how risk sources and categories are determined, define risk parameters (such as likelihood, consequence, etc.) and establish thresholds to trigger management activities. Supporting products to the risk management process, such as risk source lists, risk evaluation sheets, risk logs, vendor risk processes and supporting identification documentation, and watch lists shall be provided to the Government as supporting data. The contractor shall update these throughout the performance of the contract in accordance with CDRL A005 and Attachment 0002 (Risk Management Plan).

C.10.2.6.3 Risk Management

C.10.2.6.3.1 The contractor shall manage risks to the program and technical baselines through examination of each element in the CWBS. The contractor shall conduct formal risk assessments, interview SMEs, and utilize lessons learned from similar programs and products and conduct an examination of Government Furnished Information (GFI). The contractor shall produce a list of risks that shall be evaluated, categorized, and prioritized. The contractor shall establish a strategy to handle each risk, along with a strategy for the allocation of resources to support the management of the risk. The contractor shall develop and maintain a closure strategy for these risks. These closure strategies shall be reviewed and coordinated with the Government during the monthly Risk Review Boards.

C.10.2.6.3.2 The contractor shall include risks identified by its subcontractors in the risk identification, tracking, and management listing identified in Section C.10.2.6.2 above.

C.10.3 Business Management

At the SOWM (Section C.10.2.5.2), the contractor shall present and submit the contractor's fiscal accounting calendar. The contractor's fiscal accounting calendar shall encompass the duration of the contract (CDRL A006). The calendar shall identify all recurring Business Management CDRL submissions including all EVM, CSDR, and financial CDRLs. In addition, the calendar shall contain CDRL reporting as-of dates and reporting submittal dates. The contractor shall notify the Government when there are any changes to the contractor's fiscal accounting calendar (CDRL A006).

C.10.3.1 Contractor Manufacturing Cost Estimates

The contractor shall provide a Manufacturing Cost Estimate Report (CDRL A003) that demonstrates auditable estimates for expected LRIP phase contract prices based on the AMPV and the contractor's delivered designs. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.10.3.2 Contractor Cost Software Data Reporting (CSDR)

C.10.3.2.1 The contractor shall systematically collect and report to the Government actual contract costs in the following reports:

Title	CDRL
Cost Summary Data Report 1921	A007

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Functional Cost-Hour Report 1921-1	A008
Progress Curve Report 1921-2	A009
Contractor Business Data Report 1921-3	A010
Software Resources Data Report (SRDR): Initial SRDR and Data Dictionary	A011
Software Resources Data Report: Final SRDR and Data Dictionary	A012
Financial Bill of Materials	A015

C.10.3.2.1.1 The contractor reports shall be prepared in accordance with the instructions contained in the above CDRLs and the DCARC approved Contract CSDR Plan (Attachment 0009).

C.10.3.2.1.2 The contractor shall systematically collect and report actual contract costs to provide DoD cost analysts with needed data to estimate future costs. contractor reports shall be prepared in accordance with the instructions contained in the most recently approved versions of DI-FNCL-81565, DI-FNCL-81566, DI-FNCL-81567, and DI-FNCL-81765. In accordance with DoDI 5000.02 and DFARS 252.234-7003 (Notice of Cost and Software Data Reporting System) and DFARS 252.234-7004 (Cost and Software Data Reporting System):

1) The contractor shall have at the SOWM:

- (a) The Government-approved Contract CSDR plan (Attachment 0009) for the contract; and
- (b) The related RDT.

2) In the performance of this contract, the contractor shall:

- (a) Describe the process to be used to satisfy the requirements of the DoD 5000.04-M-1, CSDR Manual, and the Government- approved CSDR plan for the proposed contract;
- (b) Demonstrate how CSDR will be based, to the maximum extent possible, upon actual cost transactions and not cost allocations;
- (c) Demonstrate how the data from its accounting system will be mapped into the standard reporting categories required in the CSDR Data Item Descriptions (DIDs);
- (d) Describe how recurring and nonrecurring costs will be segregated;
- (e) Accept or propose changes to the approved Contract CSDR plan and related RDT;
  - i. The Contract CSDR plan will include level 3 of the contract WBS and any lower level WBS elements designated by the Government as being high risk, high value, or high technical interest.
  - ii. The contractor may further extend the WBS for its own reporting or management purposes.
  - iii. If proposed changes are accepted, a revised Government-approved CSDR plan will be incorporated into the contract;
- (f) Submit the DD Form 1921, Cost Data Summary Report, and summary DD Form 19211, Functional Cost-Hour Report, with its pricing proposal.
- (g) Identify any subcontractor at any tier with a subcontract that exceeds \$50 million, by providing comments on the RDT, the subcontractors, or, if the subcontractors have not been selected, the subcontracted effort in this category and provide to the Government.

3) In the performance of this contract, the contractor shall have:

- (a) A documented standard CSDR process that satisfies the guidelines contained in the DoD 5000.04M1, CSDR Manual;
- (b) Management procedures that provide for generation of timely and reliable information for the contractor CSDRs and SRDRs required by the CSDR and SRDR data items of the contract;
- (c) The Government-approved CSDR plan for this contract, DD Form 2794, and the related RDT as the basis for reporting in accordance with the required CSDR DIDs.

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(d) The contractor shall require and flow down the requirement for CSDR reporting from subcontractors at any tier with a subcontract that exceeds \$50 million or any subcontracts valued between \$20 million and \$49 million that are designated by the Government as being high risk, high value, or high technical interest. If, for subcontracts that exceed \$50 million, the contractor changes subcontractors or makes new subcontract awards, the contractor shall notify the Government.

**C.10.3.3 Contract Work Breakdown Structure (CWBS)**

C.10.3.3.1 The contractor shall maintain the CWBS and CWBS Dictionary in accordance with CDRL A013. The contractor shall use the CWBS as the primary framework for contract planning, budgeting, and reporting of the cost, schedule, and technical performance status to the Government. The CWBS shall be product-oriented. The contractor shall extend the CWBS down to the appropriate level required to provide adequate internal management, surveillance, and performance measurement. The contractor shall update both the CWBS and the dictionary during the life of the contract.

C.10.3.3.2 The contractor shall submit a CWBS Dictionary in accordance with CDRL A013 no later than 30 calendar days after award of each LRIP option. The contractor shall update the CWBS Dictionary throughout the life of the contract, but no more often than Integrated Performance Management Report (IPMR) submission per CDRL A004. The CWBS definitions provided by the contractor for each level three WBS element must be traceable to the contract SOW. Changes to the CWBS or associated definitions, at any reporting level, require approval of the Government.

**C.10.3.4 Bill of Materials (BOM)**

The contractor shall deliver a Bill of Material (BOM) for each AMPV configuration. The information used to create this CDRL shall be available to the Government and discussed at IPT meetings as well as major reviews in accordance with the Government provided IMP. (CDRL A015)

**C.10.3.5 Program Performance Management**

C.10.3.5.1 The contractor shall meet all program cost, schedule, supportability, and technical objectives set forth in the contract and its related documents. The contractor shall monitor:

(a) The attributes of the work products and tasks required under this contract (i.e., measure the actual attributes of the work products and tasks, such as size and complexity, in the context of changes to contract or schedule requirements, comparing these changes to the baseline in order to identify significant deviations);

(b) The resources used to perform the contract (resources include, but are not limited to, physical facilities, computers, peripherals, software used in design, manufacturing, testing and operation, networks, security environment, project staff, processes); and

(c) The knowledge and skills of program personnel (critical skills acquisition, actual training versus projected, and deviations from plan).

C.10.3.5.1.1 The contractor shall prepare and deliver to the Government an IPMR in accordance with CDRL A004.

C.10.3.5.1.2 The contractor shall identify, with supporting rationale, any deviations or changes to the program baseline, and review all program plans, activities, and work products for consistency with the baseline requirements and any approved changes made to them. The contractor shall document all changes, including those to be made to the plans and work products resulting from changes to the requirements baseline. The contractor shall initiate and complete corrective action for all inconsistencies reported (CDRL A004).

**C.10.3.5.2 Timely incorporation of baseline changes**

Upon PCO approval, new work must be included in the contractor's distributed budget with appropriate performance measurement techniques included in the work package.

**C.10.3.5.3 Current period and retroactive changes**

The contractor shall use ANSI 748 and the approved System Description in complying with changes. Current period or retroactive changes must be approved by the PCO.

**C.10.3.6 Integrated Program Management Report (IPMR) and Integrated Master Plan (IMP)**

C.10.3.6.1 The IPMR is a contractually required monthly report containing original baseline, performance data (earned value), and actual costs. From these three data points, cost and schedule variances can be determined and analyzed. Per the MILD-STD 881C, CDRL A013, DiD Di\_MGMT-81334D, and Table 5 (EVM Implementation Policy) in DoDI 5000.02 (Operation of the Defense Acquisition System), all

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seven formats of the IPMR are required for contracts exceeding \$50M: Format one (Work Breakdown Structure), Format two (Organizational Breakdown Structure), Format three (Baseline), Format four (Staffing), Format five (Variance Analysis), Format six (Integrated Master Schedule), and Format seven (Electronic History and Forecast File). The IPMR shall be updated and submitted at Level 3 of the CWBS, in accordance with CDRL A004. Reporting at lower levels may be specified for high-cost, high risk and high variance items at no additional cost to the Government and may be required until the problem is resolved. The Government and the contractor shall periodically review and adjust the CWBS reporting levels as necessary, to ensure the contractor continues to provide appropriate visibility without providing excessive information. Thresholds for reporting Format five shall also be periodically reviewed and adjusted as necessary by the Government. Format six shall be updated and maintained in an IMP. The IMP is an event-based plan consisting of a hierarchy of program events, with each event being supported by specific accomplishments, and each accomplishment reinforced by specific criteria that must be satisfied. The IMS shall roll up directly to the IMP and corresponding IMP event and criteria. The contractor shall update and maintain an IMS by logically networking detailed program activities. The schedule shall be consistent with the CWBS and contain the planned events and milestones, accomplishments, exit criteria, and activities from contract award to the completion of the contract. The IMS and time-phasing of the Performance Measurement Baseline shall be consistent. The IMS shall be resource loaded and clearly identify critical path activities and reflect those risks identified and documented in the contractor's risk management plan (see Section C.10.2.6). All IMS and IMP monthly submissions shall include written schedule analysis.

C.10.3.6.2 The contractor shall include issues identified by its subcontractors in the identification, tracking and management listing identified in the paragraph above.

**C.10.3.7 Earned Value Management System (EVMS)**

In the performance of this contract, the contractor shall use an EVMS that complies with Table 5 (EVM Implementation Policy) in DoDI 5000.02 (Operation of the Defense Acquisition System), the American National Standards Institute/Electronic Industries Alliance Standard 748 (ANSI/EIA-748), DI-MGMT-8161, DFARS Clauses 252.234-7001, 252.234-7002, 252.234-7003, and 252.234-7004, the Integrated Program Management Report (CDRL A004), and the contractors own documented System Description. The contractor shall use an EVMS that has been formally reviewed and determined by the Defense Contract Management Agency (DCMA) to be in compliance with the EVMS guidelines in ANSI and EIA-748.

**C.10.3.8 Contractor Funds Status Report (CFSR)**

The contractor shall submit the CFSR in accordance with CDRL A014. The contractor shall reconcile reporting elements in the CFSR with the IPMR when these documents are submitted in the same month. The contractor shall provide a reconciliation of the CFSR with the IPMR as an addendum to the IPMR.

**C.10.3.9 Over-Target Baseline (OTB) or Over-Target Schedule (OTS)**

In exceptional circumstances indicated by contract performance (per the contractor's EVMS Description), the contractor shall submit a request to the PCO for Government approval to initiate an OTB or OTS. The request shall include a top-level projection of cost or schedule growth, a recommendation of whether or not performance variances should be retained on record, and a schedule for implementing a new baseline. The contractor shall not implement the OTB or OTS restructuring prior to receiving written approval from the PCO.

**C.10.3.9.1 Application to Subcontractors**

The contractor shall flow-down EVM requirements to subcontractors meeting the applicable thresholds (per DFARS clauses 252.234-7001, 252.234-7002, 252.234-7003, and 252.234-7004). The performance information reported by the subcontractors shall be incorporated and integrated into the contractor's management system. The contractor shall conduct IBRs on any subcontractors with contracts requiring EVM. Although the Government may attend these IBRs, the actual event shall be the contractor's responsibility.

**C.10.4 SYSTEMS ENGINEERING (SE)****C.10.4.1 System Engineering Management Plan (SEMP)**

The contractor shall update and submit the SEMP detailing the systems engineering processes to be used to execute the program during LRIP and support the Governments Systems Engineering Plan, provided as Attachment 0010. The SEMP shall define the role of system architecture and system architecture modeling in the systems engineering process and its role in analyzing and establishing an allocated baseline for design. The SEMP shall be prepared in accordance with CDRL B002.

**C.10.4.1.1 Technical Performance Measures**

The contractor shall recommend to the SEIT for approval, the technical performance parameters and the plan for continuing verification of projected versus actual achievement of technical performance in accordance with the approach provided in the SEP (Attachment 0010). The contractor shall execute the plan approved by the SEIT for measuring technical performance parameters. The approved plan shall be documented in the SEMP (CDRL B002).

**C.10.4.2 System Requirements**

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## C.10.4.2.1 System Segment Specifications (SSS)

If changes during LRIP affect the SSS, the contractor shall update the SSS by conducting analysis to flow-down the AMPV Performance Specification from the DOORS file format .PAR (Attachment 0083) into the SSS. The contractor shall establish the technical feasibility of the requirement prior to creating the various physical architectures. The contractor shall present progress to the Government at the individual IPT and SEIT meetings. The contractor shall provide the unclassified SSS to the Government for review in accordance with CDRL B003.

## C.10.4.2.2 Specification Requirements Verification

If changes during LRIP affect the specification requirements verification, the contractor shall update and deliver the traceability and verification of the AMPV Performance Specification from the DOORS file format .PAR (Attachment 0083), SSSs, subsystem specifications, and component specifications. The contractor shall track verification of these specifications throughout testing. Requirements verification tracking is limited to developmental and operational testing only, and does not include functional test and evaluation. The contractor shall provide the traceability and verification to the Government for review and approval along with the SSS in accordance with CDRL B003.

## C.10.4.2.3 Requirements Non-Compliance

The contractor shall review and update (if necessary) the requirement compliance status for all requirements and details in the case of partial or non-compliance to the Government in accordance with CDRL B003. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

## C.10.4.2.4 Specification Tree

If changes during LRIP affect the specification tree, the contractor shall update and provide a ST in accordance with CDRL B004 for each AMPV variant changed that identifies the Functional, Allocated, and Product Baseline documentation. The ST shall trace to the Standard Product Classification Hierarchy (SPCH) instantiated in the Component Classification View required in the Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030). The ST shall include generic specification blocks for LRU Interface Control Documents (ICDs), Technotes, component item specifications, LRU Performance Specs, Drawing Packages, and other baseline documentation so as to fit onto one page. The ST shall contain the detailed Baseline list of LRU ICDs, Technotes, component item specifications, LRU Performance Specifications, Drawing Packages, and other baseline documentation that relate to the generic blocks on the first page. Each detailed Baseline list shall include the document or drawing title, number, revision letter, date, and previous Engineering Change Proposal (ECP) or Engineering Release Record (ERR) number. Each detailed Baseline list shall map to a generic block on the first page. The Component Classification view, ST, and Bill of Material (BOM) indentures shall correlate.

## C.10.4.2.5 System Architecture

C.10.4.2.5.1 If changes during LRIP affect the system architecture, the contractor shall update and deliver System Architecture Description Documents (SADDs) compliant to JCGV GSAF that fully support all system requirements for the AMPV variants. Proposed modifications shall be identified and reviewed during the technical review process. System architectures shall identify and depict all hardware and software subsystems and components (including hosted and integrated items identified in the Materials and Equipment Matrix (Attachment 0006)) and their respective interfaces and definitions and reflect the system design baseline. The contractor shall declare and define viewpoints prior to the generation of any views, capture all viewpoints in a conceptual framework, and ensure mapping, integration and consistency among viewpoints. The contractor shall deliver these system architectures in CDRL B005.

C.10.4.2.5.2 The System Architectures shall include the mandatory views identified in the JCGV GSAF, other views described herein, and any required Joint Capabilities Integration and Development System (JCIDS) DoDAF views (Attachments 0108-0123 and 0126). Viewpoints shall also include the following:

- (a) Vehicle Chassis, Mission Equipment, and Integrated System Architectures for each of the AMPV variants
- (b) Cable Interconnect (One-Wire) Diagrams
- (c) Cable Signal Interface (Two-Wire) Diagrams

## C.10.4.2.5.3 Software Architecture View and Viewpoint

If changes during LRIP affect the software architecture, the contractor shall update the software architecture, including the view and viewpoint into the system architecture, with a Modular Open Systems Approach (MOSA) that takes into consideration software reconfigurability, portability, maintainability, technology insertion, vendor independence, reusability, scalability, interoperability, upgradeability, and long-term supportability. The contractor shall modify or develop software architecture to meet the performance requirements of the AMPV FoV. Software components shall reflect the JCGV GSAF SPCH structure as appropriate. The software architecture shall describe software items used to implement software requirements, define internal and external interfaces of each software item, and establish consistency and traceability between software requirement and software design. All requirements for software items shall be allocated to software components and further refined to facilitate detailed software design. (CDRL B067)

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If changes during LRIP affect the final AMPV ISAM submission, the contractor shall update the AMPV ISAM using the Object Management Group (OMG) System Modeling Language (SysML) and appropriate tool(s). The ISAM shall reflect the integrated architecture and shall contain or link to the necessary data so as to be able to generate all required views of the architecture. Proposed modifications shall be identified during the technical review process. The ISAM shall be considered part of the Technical Data Package and included in the ST. The ISAM shall be developed and delivered according to CDRL B068.

**C.10.4.3 Vulnerability Analysis Data Package**

If changes during LRIP affect the vulnerability analysis data package, the contractor shall update and provide a Vulnerability Analysis Data Package that includes: the data described in Vehicle Vulnerability Data Sheet (Attachment 0016), a Structure Performance Data Sheet (Attachment 0017), and detailed performance descriptions of the AMPV structure and the unique armor recipes for each vehicle surface (e.g. sides, top, front, rear, underbody, Explosively Formed Penetrator (EFP) (Attachment 0018, Armor Recipe Data Sheet).

The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B006)

**C.10.4.4 Underbody Protection Analysis**

If changes during LRIP affect the underbody protection, the contractor shall perform underbody blast analyses against all threshold and objective underbody threats defined in the Classified Annex of the AMPV Performance Specification (Attachment 0001 and 0082), for each AMPV variant at all armor protection levels. All vehicle simulations shall include the finalized vehicle designs, including all subsystems, payloads, components (including hosted and integrated items identified in the MEM (Attachment 0006), and occupants.

**C.10.4.5 Underbody Protection Analysis Package**

If changes during LRIP affect the underbody protection, the contractor shall update and provide an Underbody Blast Analysis Package which includes the results of the Underbody Protection Analysis and fully completed Blast Protection Data Sheet (Attachment 0019). The information used to create the CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B007, CDRL B008)

**C.10.4.6 Armor Recipe Analysis**

If changes during LRIP affect the armor recipe, the contractor shall perform armor recipe analyses against all threshold and objective side and top attack threats defined in the Classified Annex of the AMPV P-Spec (Attachment 0082), for each AMPV variant at all armor protection levels. Armor recipes that are currently fielded on a US vehicle are exempt from this analysis. The armor recipe analysis shall include the finalized vehicle armor designs.

**C.10.4.6.1 Armor Recipe Analysis Data Package**

If changes during LRIP affect the armor recipe analysis data package, the contractor shall update and provide an Armor Recipe Analysis Package which includes the results of the above analysis and fully completed Armor Recipe Data Sheet (Attachment 0018). The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B006)

**C.10.4.7 Protection Kits**

If protection kits are required, the contractor shall conduct the necessary engineering and design analyses to integrate the kits onto the AMPV FoV to defeat specified threats identified in the AMPV P-Spec (Attachment 0001). The protection kits shall be integrated to meet force protection and survivability requirements for the entire vehicle region, as described in the Classified Annex to the P-Spec (Attachment 0082). Seams, gaps and any other areas of reduced coverage will be considered areas of non-compliance unless the Government has reviewed and concurred with these areas.

**C.10.4.7.1 Vehicle Variants**

The contractor shall implement the protection kits as necessary to defeat specified threats identified in the AMPV P-Spec requirements for all AMPV variants, to include the General Purpose (GP), Mission Command (MCmd), Mortar Carrier (MC), Medical Evacuation (ME) and Medical Treatment (MT) vehicles, in addition to all configurations of these variants.

**C.10.4.7.2 Contractor and Government Testing**

The contractor shall support, using on-site Field Service Representatives (FSRs), contractor and government system level testing with the armor protection kit, which may include Class V ammunition at a Government owned test site. The support shall include timely repair

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or replacement of non-repairable armor protection kit components.

## C.10.4.8 Signature Management

If changes during LRIP affect the signature management, the contractor shall update the signature management. The contractor shall use signature management capabilities to enable the AMPV FoVs to avoid detection and enhance survivability. The AMPV shall minimize signatures for visual, acoustic, thermal, and electromagnetic and they shall not be worse than the signature of the base legacy platform it is part of. Each visual, acoustic, thermal, and electromagnetic signature should be met under all assumed vehicle operating and environmental conditions, including idle, tactical idle and fully exercised vehicle running at full load. The contractor shall present its signature management capabilities at the SOWM. All developed assumptions, conducted analysis, and test data shall be available to the Government and discussed at IPT meetings as well as major reviews.

## C.10.4.9 AMPV Cold Start Kit

If changes during LRIP affect the AMPV Cold Start Kit, the contractor shall review, update, and provide the Cold Start Kit operation and troubleshooting instructions that describes the safe operation and use of the cold start kit.

## C.10.4.10 Mass Properties and Weight Control and Reporting

If changes during LRIP affect the mass properties, the contractor shall update the mass properties and weight control metrics of each AMPV variant. 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 (Attachment 0020). The contractor shall use metrics that reflect the level of confidence in mass properties and weight estimates or actual data, if available, and are applied individually to each entry in the mass properties and weight reports (CDRL B010). 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 technical reviews.

## C.10.4.10.1 Mass Properties and Weight Estimating and Reporting

If changes during LRIP affect the mass properties, the contractor shall update mass properties and weight estimates or actual data, if available, throughout design, development, fabrication, and test. The mass properties and weight information shall be comprised of component and LRU level item weight information and additionally the Center of Gravity (CG) location, weight, and mass moment of inertia for the entire vehicle. The contractor shall validate mass properties and weight estimates or actual data, if available, by using tracking and monitoring activities during the design, development and fabrication of the first deliverable vehicle for each variant that incorporates the approved change. Mass property and weight estimates or actual data, if available, shall be under configuration control consistent with design configuration management requirements (see Section C.10.7). The contractor shall update, maintain, and replace mass property and weight estimates with actual mass property and weight data when available throughout the duration of this contract. The contractor shall organize and format mass property, weight estimates, and data down to the component or LRU detail level in accordance with the IBOM and WBS (CDRL B010). Mass property and weight estimates or actual data, if available, shall provide the CG location for all awarded variants and compare it against the limits developed by the contractor for compliance to performance requirements. Mass property and weight estimates or actual data, if available, shall include the following: Curb Weight, Combat Weight, and Gross Vehicle Weight (GVW). Curb Weight is defined as the total weight of a vehicle with all kits, attachments, accessories, standard mission equipment, Basic Issue Item (BII), all necessary operating consumables (e.g., motor oil and coolant), a full tank of fuel, while not loaded with either crew, passengers, ammunition or cargo. Combat Weight is defined as the Curb Weight in addition to crew, passengers, ammunition and cargo. GVW is defined as the maximum weight including the crew, passengers, mission equipment and cargo that the vehicle is rated to operate at. Estimates shall be consistent with the Load Plan (CDRL B011), refer to Section C.10.4.27, and ensure that weights are carried in the respective locations on and in the vehicles. All mass properties and weights shall be available to the Government and discussed at IPT meetings as well as technical reviews.

## C.10.4.10.2 Weighing of Vehicles

Prior to shipment, the contractor shall measure and report the mass properties and weight of each AMPV vehicle in its defined Curb Weight configuration (CDRL B010). Each delivered AMPV vehicle is expected to meet the weight and center of gravity restrictions needed to meet the requirements in the AMPV Performance Specification (Attachments 0001 and 0082) and is expected to vary by no more than + or - 2% from the documented Curb Weight and CG as stated in the mass property and weight report. Any corrective adjustments to the documented weights and CG or vehicle operational limits shall be made in accordance with the Configuration Management procedures in Section C.10.7 This information shall be available to the Government and discussed at IPT meetings as well as technical reviews.

## C.10.4.11 Routing Diagrams Cabling, Wiring Harnesses, and Plumbing

If changes during LRIP affect any routing diagrams, the contractor shall update and submit the detailed wiring diagrams, schematics, and physical routing diagrams (harnesses, cables, and plumbing) of all electrical, fluid, and air lines in the AMPV (CDRL B012). The contractor shall update the diagrams for any changes as a result of obsolescence or new capabilities. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

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C.10.4.12 MIL Grade Connectors

Connectors shall be MIL grade and meet appropriate MIL Standard associated with the MIL grade selected by the contractor. The contractor shall submit waiver requests for non-MIL grade connectors using the format defined in MIL Grade Connector Waiver Form (Attachment 0021), and shall include technical justification and qualification standards for the use of the alternate connector. Waivers will be dispositioned (approved or rejected) by the Government prior to contract award. 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.

C.10.4.13 Environmental Survivability and Reliability

C.10.4.13.1 Common Environmental Standard

C.10.4.13.1.1 If newly developed subsystems, LRUs, and LRMs are incorporated into the AMPV design during LRIP, the contractor shall design them in compliance with ATPD 2404 (Attachment 0024).

C.10.4.13.1.2 During LRIP, the contractor shall evaluate select subsystems, LRUs, and LRMs for future compliance to ATPD 2404 (Attachment 0024) and present a cost-benefit analysis of re-design and verification to achieve compliance. Upon request, the contractor shall provide additional information that will enable the Government to conduct a cost-benefit analysis for using these select subsystems, LRUs, and LRMs on platforms beyond the AMPV; such information would include unit costs at higher production rates, production schedule at higher production rates, and cost and schedule of design coordination with other contractors. The select subsystems, LRUs, and LRMs to be evaluated shall be proposed by the contractor at IPT meetings and approved by the Government.

C.10.4.13.2 Electromagnetic Environmental Effects (E3)

C.10.4.13.2.1 If changes during LRIP affect E3, the contractor shall perform analyses, studies, inspections, and tests to verify the AMPV FoVs are designed to comply with the applicable E3 standards. The analyses, studies, inspections, and tests shall also be sufficient to characterize the E3 performance of the integrated system, including spectrum dependent subsystems.

C.10.4.13.2.2 All electrical and electronic subsystems developed, selected or revised for the AMPV program by the contractor shall comply with MIL-STD-461F. For non-developmental items (NDI), compliance to previous revisions of MIL-STD-461 is acceptable. Results of previous EMI tests of the NDI from other EMI standards may be submitted to the USG for their review and potential waiver. The contractor shall evaluate NDI that are not compliant to MIL-STD-461 and provide a cost benefit analysis for the re-test and/or redesign required to comply with MIL-STD-461F. The USG has authority to grant or deny waivers against MIL-STD-461F as necessary. The contractor shall develop and deliver the Electromagnetic Interference Test Procedures (EMITP) and Electromagnetic Interference Test Report (EMITR) for each electrical and electronic subsystem or component developed, selected, or revised in accordance with CDRLs B014 and B015.

C.10.4.13.2.3 If changes during LRIP affect E3, the contractor shall update and deliver an E3 Control Plan and an E3 Verification Plan and shall be documented in accordance with CDRL B016. The contractor shall document the design and test support analysis defined in ATPD 2407, E3 for US Army Tank and Automotive Vehicle Systems tailored from MIL-STD-464C in the E3 Verification Plan, Attachment 0023.

C.10.4.13.2.4 If changes to hosted and integrated items identified in the MEM (Attachment 0006) are made during LRIP, the contractor shall evaluate the GFI electromagnetic test procedures and test results from those items to ensure electromagnetic compatibility at the system level.

C.10.4.13.2.5 If changes during LRIP affect E3, a system level bonds and grounds inspection procedure shall be updated and documented in accordance with CDRL B016.

C.10.4.14 Nuclear Survivability

Any non-GFE equipment which affects Mission Essential Functions (MEF) of the vehicle shall be hardened to withstand the effects of air blast, thermal radiation, and initial nuclear radiation. The nuclear survivability hardening criteria for the mission essential equipment mounted on the inside and outside of the vehicle shall be as specified in the AMPV Performance Specification, Attachments 0001 and 0082 and in accordance with Section 5.3 of ATPD 2404, Interface Standard for the Environmental Conditions for the ABCT Tracked Vehicle Systems (Attachment 0024). Equipment that has already been qualified to meet the nuclear hardening criteria in either the Quadripartite Standardization Agreement (QSTAG) 1031, Addition 1, Annex D (Attachment 0081) or the United States Army Nuclear and Combating WMD Agency (USANCA) Memorandum for Project Manager HBCT; Subject: Chemical, Biological, Radiological, Nuclear (CBRN) Survivability Criteria for the Abrams; 25 July 2011 (or previous revisions of this memoranda) (Attachment 0086), and has not been revised or redesigned since the time it was proved to meet such criteria, will not need to meet the nuclear hardening criteria of ATPD 2404. The MEF pertaining to a battlefield nuclear event are outlined in Attachment 0025 (Signed Nuclear Hardness Memorandum). The Contractor shall conduct monthly dedicated E3 and Nuclear Survivability working meetings through CDR and quarterly meetings thereafter with PM ABCT. The contractor shall develop and deliver a Nuclear Survivability Program Plan (CDRL B017) that describes the contractor's system and subsystem nuclear survivability. Subsystem information shall include, for example, rationale explaining why the subsystem was

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designed to be nuclear survivable (i.e., what mission critical function it supports), the method in which the subsystem achieves nuclear survivability, and the processes and resources used to comply with the AMPV Performance Specifications nuclear survivability requirements. The contractor shall provide the Nuclear Survivability Program Plan to the Government for review and approval.

C.10.4.15 Vehicle Electronics (VETRONICS) and Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) and Electronic Warfare (EW) Subsystems

\*C.10.4.15.1 Common Vehicle Architecture Description (CVAD)

If changes during LRIP affect the CVAD checklist, the contractor shall update the CVAD checklist (Attachment 0078) using the PEO GCS CVAD 1.3, C1092-04-0010 (Attachment 0022). The Joint Center for Ground Vehicles (JCGV) Ground System Architecture Framework (GSAF) Version 1.0 (Attachment 0030) shall be followed for documenting architectures instead of the CVAD. The GSAF supersedes the CVAD in the areas that they conflict. The information used to create this document shall be available to the Government and discussed at IPT meetings as well as major reviews.

\*C.10.4.15.2 Vehicle Network Configuration Package

If changes during LRIP affect the Vehicle Network Configuration, the contractor shall update and submit the Vehicle Network Configuration package including the Internet Protocol (IP) Addressing schema, IPv6 Capable report, Controller Area Network (CAN) database, and configuration files of the vehicle networks. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.10.4.15.3 Co-site Interferences, Mounting Location Deconfliction, Mounting Location Restrictions and Antenna Optimization Model

If changes during LRIP affect placement of vehicle antennas, the contractor shall analyze potential interference patterns (co-site interferences) and optimize placement of all vehicle antennas (including EW) for each vehicle variant. The contractor shall support any additional Government Co-Site Interference Studies and antenna pattern analysis for final placement of all antennas. The final placement of antennas shall be approved by the PCO to be considered complete. The contractor shall provide the results of this analysis, including expected performance, antenna placement diagrams, Radio Frequency (RF) characteristics, and potential conflicts or obstruction with primary and secondary weapons and their trajectories. To support any LRIP Government conducted Communications-Electronics Research, Development and Engineering Center (CERDEC) RF Antenna and jamming analysis and Army Research, Development and Engineering Center (ARDEC) E3 Hazards of Electromagnetic Radiation to Ordnance (HERO), Hazards of Electromagnetic Radiation to Fuel (HERF), and Hazards of Electromagnetic Radiation to Personnel (HERP) efforts, the contractor shall also provide a Computer Aided Design (CAD) model of the outer surface of the vehicle hull updated with potential antenna placements. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B018)

C.10.4.15.4 Electrical Architecture Metrics

If changes during LRIP affect the following electrical architecture metrics, the contractor shall update a set of metrics in contractor format for the AMPV electrical architecture for the following aspects of the vehicle command and control systems (excluding hosted and integrated items identified in the MEM (Attachment 0006)).

C.10.4.15.4.1 Functionality Operation

This metric shall include start-up time for displays; time shall commence from vehicle ignition-on to when full functionality of the display is available. This metric shall be tracked at climatic categories hot, basic, and cold specified in the AMPV P-Spec (Attachments 0001 and 0082). These metrics shall initially be tracked as estimates and shall be updated with actual values as the development progresses. The contractor shall identify any unacceptable capacity and margin projections and recommend a resolution plan. The contractor shall update these metrics for any changes as a result of obsolescence or new capabilities, and ensure the resources are adequate. These metrics will be reviewed by the Government monthly through the end of contract. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.10.4.15.4.2 Power Budget Accounting Metrics

The contractor shall update on-board, external, and export power loads (steady-state, transient, peak, and duty cycle) for each AMPV variant during all modes of operation 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 electrical device and each hosted and integrated items identified in the MEM (Attachment 0006) for each AMPV. Included in the breakdown, the contractor shall list the total load draw of each configuration and mission role. The contractor shall identify any unacceptable capacity and margin projections and recommend a resolution plan. The contractor shall update the Power Budget Accounting Metric for any changes as a result of obsolescence or new capabilities, and ensure the electrical systems and power distribution is adequate. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.10.4.15.5 Common LRM Standard

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C.10.4.15.5.1 If newly developed LRUs and LRMs are incorporated into the AMPV design during LRIP, the contractor shall design them in compliance with Purchase Description LRM for the PEO GCS (Attachment 0079).

C.10.4.16 Network

The contractors network design information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.10.4.17 Diagnostics

The contractor shall maintain the method to store diagnostic data from individual electronic Line Replaceable Units (LRUs) or Line Replaceable Modules (LRMs) to be retrieved at a later date or maintain a easily accessible Diagnostic Connector Assembly (DCA) that is compatible with Simplified Test Equipment (STE) and Internal Combustion Engine (ICE) or Maintenance Support Device (MSD) based ICE equipment for retrieving diagnostics data. For any electronic Government Furnished Equipment (GFE) or Non Developmental Items (NDI) LRUs/LRMs with test points, contractor shall maintain method to store diagnostic data or shall maintain a method to retrieve diagnostics data via DCA or MSD based ICE equipment.

C.10.4.17.1 Basic Vehicle Health Management System (VHMS)

The contractor shall maintain a VHMS that diagnoses and presents the VHMS functions to the crew and maintenance personnel.

C.10.4.17.1.1 VHMS Report

If changes during LRIP affect the VHMS report, the contractor shall update and deliver a VHMS Report to include its Diagnostic Fault Data Table, Sensor Strategy, the Fault Notification Strategy, and the Data Strategy. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B053)

C.10.4.18 Cross Domain Design

If changes during LRIP affect design such that the contractor design dictates storage of unclassified data persistent over a power cycle or automated exchange of data across multiple classification enclaves, a cross-domain solution shall be required. If multiple classification enclaves have physical separation and automated exchange of data is not needed or performed by other means, then design may dictate other acceptable solutions (i.e. KVM switch or similar technology). The contractor's Cross Domain Design shall consider using validated products on the Unified Cross Domain Management Offices Baseline list or shall be required to include a Product Assessment with their Cross-Domain Implementation Plan that details why the currently validated products are not suitable for the contractor's Cross Domain Design solution and detail a path and schedule to obtain validation not later than nine months prior to the end <http://www.intelink.sgov.gov/sites/ucdmo/> (SIPRNet) or <http://www.intelink.ic.gov/sites/ucdmo/> (JWICS) (both with a secure log-in). In order to receive a copy of the Classified SECRET Baseline list, offerors must provide proof of valid Industrial Facilities Security Clearance and personnel security clearances by sending an email to (current security person) with your Company Name, address, CAGE Code, Facility CAGE Code as per the NISPOM. The response shall also include contact information for the Facility Security Officer (FSO).

C.10.4.18.1 Cross Domain Implementation

If changes during LRIP require a cross domain implementation, the contractor shall provide a Cross-Domain Implementation Plan describing their design approach for secure information sharing across security domains in accordance with the AMPV P-Spec (Attachments 0001 and 0082). The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews (CDRL B054).

C.10.4.19 Vehicular Integration for C4ISR and EW Interoperability (VICTORY)

C.10.4.19.1 In-Vehicle Network Design

On any newly designed or modified LRUs and LRMs during LRIP, the contractor shall implement the VICTORY Architecture A2 document (Attachment 0096) by including one or more unclassified and classified in-vehicle networks to ensure interoperability between C4ISR/EW mission equipment (i.e. component types). Interoperability between systems on the vehicle shall be achieved by implementing the on-the-wire interfaces in accordance with VICTORY Component Type Specifications V.1.5 (Attachment 0048). Each in-vehicle network shall include: the necessary processing and network resources (hardware) to host software implementing the VICTORY component types listed in Section C.10.4.19.3, an Ethernet data bus, and the necessary cabling to support interconnectivity between the data bus and all C4ISR-EW mission equipment and all platform systems. The processing and networking resources on each in-vehicle network shall implement the VICTORY Switch component type and Shared Processing Unit component type.

C.10.4.19.2 In-Vehicle Network VICTORY Design Report

The contractor shall update the Network Systems Design report with any changes that occur during LRIP. This report shall include a list

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of VICTORY system and component types implemented in each in-vehicle network, logical and physical designs that are both open and data bus-centric (in accordance with the VICTORY Architecture), and a mapping of the VICTORY component types to the hardware and software configuration items. The report will also document all exceptions to VICTORY Component Type Specifications and justification for the exceptions. The information used to update this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B009)

## C.10.4.19.3 VICTORY Interface Specifications

Any newly designed or modified LRUs and LRMs during LRIP shall implement the VICTORY Component Types, shown in Table C.1, in services compliant with the appropriate component type specifications (including all required interfaces) on the allocated processing and network resources. The contractor shall use the applicable VICTORY specifications throughout the system design.

Table C.1 Component Types

VICTORY Type	Spec ID	Spec Version
Time Synchronization Service	VT50000	V1.5
Position Service	VT50100	V1.5
Orientation Service	VT50200	V1.5
Direction of Travel Service	VT50300	V1.5
Switch	VT50900	V1.5
Shared Processing Unit	VT51900	V1.5
VDB Management Service	VT52200	V1.5

VICTORY specifications will include errata, which are published as VX.X.X (e.g. V1.4.1) updates. These errata are updates or clarify the specifications but do not add additional features or capabilities.

## C.10.4.19.4 VICTORY Compliance Testing and Reporting

For any newly designed or modified LRUs during LRIP, the contractor shall verify the system design via compliance testing. The contractor shall conduct compliance testing against the VICTORY Component Types implemented in accordance with applicable VICTORY Compliance Test Plans. The contractor shall develop, deliver, and update the applicable completed VICTORY Compliance Test Reports (CDRL B009) for each VICTORY Component Type Specifications implemented.

## C.10.4.19.5 VICTORY Workgroup Participation

The contractor shall participate in and actively support the VICTORY Standards Body by attending meetings and providing comments to the VICTORY Working Groups. The VICTORY Standards Body consists of three working groups Data Bus, Application Interfaces, and Information Assurance. There are bi-weekly two-hour teleconferences per working group and three two-day face-to-face meetings, per year (CDRLs A001 and A002).

## C.10.4.19.6 VICTORY Government Furnished Information (GFI)

All VICTORY Framework products included in the VICTORY GFI list can be accessed via the VICTORY Portal. Access can be gained by registering at <http://www.victory-standards.org>.

a) VICTORY Architecture: A domain specific architecture which provides a framework for integrating C4ISR and EW systems on military ground vehicles, and interfacing with the vehicle systems. The architecture identifies the conceptual entities (system and component types, interfaces) and how they are integrated (structures and patterns).

b) VICTORY Specifications: The VICTORY Standard Specifications provide the technical details of the systems, components, and interfaces identified in the architecture document. Each of these items is described by a specification. The VICTORY specifications document the technical details of interfaces from the physical (PHY) layer to the application (APP) layer of the open systems interconnection (OSI) layered network model. The goal of the specifications is to provide enough technical detail that independent implementations of systems and components will result in a high level of interoperability at all levels. The standard specifications documentation is developed and matured by a standards body, which consist of Government stakeholders, manufacturers of components, systems, vehicles, and system integrators.

c) VICTORY Reference Designs: The VICTORY Reference Designs provide samples on how to use the standard specification. They demonstrate how implementers of VICTORY standards can scale the architecture to provide various levels of capability.

d) VICTORY Initial Validation Artifacts: The VICTORY Initial Validation Artifacts are a set of results from the initial implementation of the standard specifications. Artifacts include the documentation, data, and software developed to perform the initial validation on each VICTORY component type.

e) VICTORY Reference Software Library: The VICTORY Reference Software Library contains reusable executable code which can jumpstart implementation. The library provides industry and the Government a starting point for experimenting with,

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understanding, and implementing the network-interfaces. This library includes software implementation of each component type, including service and client sides of every network interface.

f) VICTORY Compliance Test Suite (CTS):

i. Compliance Test Plan (CTP): The VICTORY CTP provides detailed test configuration and methodologies for conducting compliance verification tests;

ii. Compliance Test Tool (CTT): The VICTORY CTT provides a mix of capabilities: various automated compliance tests; guidance for non-automated tests; provisions for user input based on inspection and demonstration; and guidance on generating/viewing CTRs;

iii. Compliance Test Reports (CTR) Templates: The VICTORY CTR templates provide for a standard format to document compliance test results.

C.10.4.20 Future Growth - Network Systems Design

The contractor is not limited to implementing only the mandatory components in Table C.1. The contractor can add additional items as described in the VICTORY Component Type Specifications V.1.5 (Attachment 0048), but the additional components must meet the specifications described in Attachment 0048.

On any newly designed or modified LRUs and LRMs during LRIP, the contractor shall design or modify the system in such a way that additional components shall be integrated without a major rework of the VICTORY system, allowing for future growth. Any LRUs and LRMs added to the platform in the future shall be VICTORY compatible, as applicable.

C.10.4.21 Power Management

If changes during LRIP affect power management, the contractor shall update the Power Management Software, including a Battery Management System, as part of a power management system to manage vehicle power loads, electrical power distribution, power generation, and mechanical power generation and distribution for each AMPV variant. The power management software shall prioritize loads according to power generation modes of operations. Power management shall be active in all modes of operation, in all operating conditions called out in the AMPV OMS-MP (Attachment 0073). The Power Management System shall perform the following:

- (a) Manage loads, distribution, and generation;
- (b) Prioritize loads according to power generation and modes of operations;
- (c) Distribute power specifically for each AMPV variants mission needs.

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

C.10.4.22 Displays

Displays shall be updated, if there are any affected design changes in LRIP, to disseminate relevant information for the specific station (Commanders, Drivers, Crew) and shall consist of warning and indication devices that alert AMPV crew of conditions requiring crew action.

C.10.4.23 Human Systems Integration (HSI) and Manpower & Personnel Integration (MANPRINT)

During LRIP, the contractor shall conduct an HSI and MANPRINT program to address unresolved or new risks and issues in the areas of manpower, personnel capabilities, training, human factors engineering, health hazards, safety, and Soldier survivability in accordance with DoDI 5000.02, Operation of the Defense Acquisition System, and AR 602-2, MANPRINT in the System Acquisition Process.

C.10.4.23.1 Manpower and Personnel Integration (MANPRINT)

The contractor, in conjunction with the Government, shall conduct a MANPRINT program. MANPRINT is a comprehensive technical effort to identify and integrate all relevant information and considerations regarding the full range of manpower, personnel capabilities, training, human factors engineering, system safety, health hazards, and Soldier survivability into the system development and acquisition process. This system is to improve Soldier performance and total system performance, as well as reduce the cost of ownership to an affordable level throughout the systems entire life cycle. The main focus of the MANPRINT program is to ensure the AMPV MANPRINT performance baseline, defined during the EMD phase, is achieved or exceeded in delivered production vehicles. The AMPV MANPRINT program shall continue to quantify and minimize the human resources required for operating, maintaining, training, and sustaining the AMPV. The contractor shall use, as a guide, the design standards contained in MIL-STD-1472G, Department of Defense Design Criteria Standard, Human Engineering, and MIL-STD-1474D, Department of Defense Noise Limits. MANPRINT information shall be available to the Government and discussed at IPT meetings as well as major reviews.

C.10.4.23.2 MANPRINT Management Execution

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The contractor shall ensure that the interdependent considerations of Human Factors Engineering (HFE), Manpower, Personnel and Training (MPT), System Safety, Health Hazards and Soldier Survivability, are properly integrated into the design of the AMPV and deliverable documentation under this contract. Any time AMPV design changes are implemented, the contractor shall assess the effect of the changes on MANPRINT requirements. Similarly, the contractor shall assess whether the fluctuation in frequency of performing tasks leads to increases or decreases either in manpower requirements or in system requirements. The contractor shall update and present, at design and program reviews and MANPRINT IPT meetings, the results of MANPRINT Program efforts. The MANPRINT program effort shall include:

- (a) Quantitative and qualitative issues and criteria pertaining to all MANPRINT domains.
- (b) Critical operator and maintainer tasks.
- (c) Assemblies and subassemblies in terms of workload.
- (d) Recommendations addressing resolution of issues and risks, including the effect of issues upon MANPRINT performance baseline.
- (e) Update of quantitative and qualitative analysis based upon Government testing.
- (f) Partitioning of crew tasks among crew members.
- (g) Recommended design changes or improvements to resolve MANPRINT issues.
- (h) Review and enforcement of MANPRINT requirements in vendor specifications and solicitations.
- (i) Evaluation of design changes, test, demonstration and logistics validation and verification activities to identify and maintain an audit trail for MANPRINT issues, as well as resolution of them.
- (j) Ensure critical MANPRINT issues identified during all testing, validation activities, and User Juries are resolved. The contractor shall identify unresolved critical MANPRINT issues at the appropriate Configuration audits or Configuration Control Boards.

**C.10.4.23.3 Contractor System MANPRINT Management Plan (SMMP)**

If changes during LRIP affect the SMMP, the contractor shall deliver and update the Contractor SMMP (CDRL B019). The SMMP describes the contractors MANPRINT program, identifies the MANPRINT elements, and how the MANPRINT domains will be managed and integrated with other program elements.

**C.10.4.23.4 MANPRINT Risks and Issues**

The contractor shall manage MANPRINT risks and issues in accordance with AMPVs risk and issue management processes (see Section C.10.2.6). All risks and issues (see AR 602-2, Appendix C for a MANPRINT checklist) shall have mitigation plans, corrective actions, or trades that identify what organization and person is responsible for resolution of the issue, with the resourced schedule for resolution. All MANPRINT risks and issues shall be managed in accordance with DoDI 5000.02, Operation of the Defense Acquisition System, and AR 602-2, MANPRINT in the System Acquisition Process. Information on MANPRINT risks and issues shall be available to the Government and discussed at IPT meetings as well as major reviews.

**C.10.4.23.5 Contractor MANPRINT Events (User Juries, Demonstrations, Assessments and Testing)**

The contractor shall conduct MANPRINT events to validate the systems Soldier centric design. The contractor shall establish a schedule for the events and create the necessary documentation to conduct the event. The contractor shall allow the Government access to MANPRINT events and contractor data collection, as well as the ability to collect its own data at these events.

**C.10.4.23.6 Contractor MANPRINT Reports and Information**

The contractor shall submit MANPRINT reports and information gathered from MANPRINT events or analysis to support the Armys MANPRINT Assessments (CDRL B069). All MANPRINT domains shall be covered, including MPT, HFE (including Soldier Workspace Analysis, Soldier Performance and Workload Assessment, and Operator and Maintainer Task Analysis), System Safety and Health Hazards, and Soldier Survivability, in accordance with DoDI 5000.02, Operation of the Defense Acquisition System and AR 602-2.

**C.10.4.23.6.1 Soldier Workspace Analyses**

If changes during LRIP affect the Soldier Workspace Analysis, the Contractor shall perform and submit updated Soldier Workspace Analyses

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for all variants, including sub-configurations (mission roles) of the MCmd variant (CDRL B069). The Soldier Workspace Analyses shall include diagrams, illustrations, drawings with measurements, and files used to perform the follow-on analysis, which shall be conducted based on a surrogate crew compartment simulator, reconfigurable simulators or the actual system with the integration of Soldier Machine Interface (SMI) components C.10.4.23.6.1.1. The documentation, diagrams, illustrations, and drawings with measurements shall include the following:

- (a) Functional groupings and arrangements of controls, displays/ interface panel(s), interfaces, control panel(s) and control(s) devices (hand, foot and Remote Vehicle Device) to include purpose, hardware, software and corresponding assumptions,
- (b) Controls, display/interface panel(s), display portal(s), and control devices (e.g. hand, foot and Remote Vehicle Device) to include subsystems shown in relation to the overall crew or mission workstation/work area. Indicate where the controls/display/interface/control panel will be placed in the platform (crew and squad) to include GFX systems and subsystems,
- (c) Proposed crew decision aids, notifications, portal(s), windows, software menus and/or other GUIs showing subsystem and GFX integration with narration providing basic information about physical layout,
- (d) Crew and squad compartment design to include seating, interior views of hatches, restraints, BII, stowage of crew and squad equipment to include GFX,
- (e) Crew and squad seating with standard design dimensions (to include padding, seat slope, backrest to seat angle, head clearance, dimensions of crew seat adjustability), clearances in compartments and seating materials,
- (f) Standing platform(s) designs (if any) for crew and air guard,
- (g) Air guard station(s) design,
- (h) Ramp, ramp door, ramp opening designs in both closed and closed configurations,
- (i) Maintenance panels on the platform to include panel opening and locking mechanism and panel positions on vehicle,
- (j) Driver FOVs (to include ground intercept) thorough periscopes only, open hatch and utilizing other platform indirect vision systems,
- (k) Commander FOVs (to include ground intercept) thorough periscopes only, open hatch and utilizing other platform indirect vision systems,
- (l) Combined crew FOVs thorough periscopes only, open hatch and utilizing other platform indirect vision systems,
- (m) Air Guard FOVs, separate and combined, open hatch (if so designed),
- (n) Rear periscope FOV, to include ground intercept (if so designed),
- (o) All hatches and door(s) design on the platform to include hatch opening and locking mechanisms to include all positions of hatches (closed, open, open-protected), Internal and external stowage areas/compartments.

C.10.4.23.6.1.1 Follow-on analysis shall be conducted based on surrogate crew compartment simulator, reconfigurable simulators or the actual system with the integration of Soldier Machine Interface (SMI) components. SMI components shall consist of actual (or as near as actual subsystem as possible) controllers, displays, interfaces, hand and foot controls, seats, restraint control panels, and other crew station components. Approval of surrogates will be a joint effort between the contractor and Government. At the conclusion of the follow on analysis, the contractor shall generate a report that identifies capabilities and limitations identified as a result of the analysis. The contractor shall document the differences, if any, between the analysis and the AMPV P-Spec requirements for the vehicle design. The contractor shall provide to the Government both overall and subsystem functionality risks with a detailed risk mitigation plan, to include all necessary cost, schedule, and technical data, if the Soldier Workspace Analysis shows that the design does not meet the design requirements. (CDRL B069)

C.10.4.23.6.2 Soldier Performance and Workload Assessment

If changes during LRIP affect the Soldier Performance and Workload Assessment, the contractor shall conduct an analysis and submit a report on the design considerations for Soldier performance and workload (CDRL B069). The contractor shall conduct system level design analysis and events to verify that Soldier performance and workload requirements are within the capabilities and allocated crew size using the Operational Mode Summary/Mission Profile (OMS/MP) (Attachment 0073). The contractor shall verify that the design allows the crew to complete its mission without excessive workload. The contractor shall evaluate and document differences, if any, between the analysis and the specifications for the vehicle design. The contractor shall conduct and provide an overall and subsystem functionality risk assessment and provide a detailed risk mitigation plan to include all necessary cost, schedule, and technical data to the

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Government if the Soldier Performance and Workload Assessment show that the design does not meet the design specifications. The Soldier Performance and Workload Assessment will utilize, as a part of its analysis, the Operator and Maintainer Task Analysis (see Section C.10.6.2.1.4.2).

## C.10.4.23.6.3 System Safety and Health Hazards

The contractor shall continue to maintain an ESOH program in accordance with MIL-STD-882E (see Section C.10.4.30).

## C.10.4.23.6.4 Soldier Survivability

The contractor shall follow best system Soldier Survivability engineering practices during the design and after any modification of the system and its components including the application of established design standards. The contractor shall identify Soldier Survivability issues for the system(s). All issues shall have mitigation plans or trade studies in place that specifically identify what organization and person/s responsible for resolution of the issue, with the resourced schedule to completion.

## C.10.4.23.6.4.1 Soldier Survivability Assessment (SSvA)

If changes during LRIP affect the Soldier Survivability Assessment, the contractor shall perform and provide a Soldier Survivability assessment utilizing the Army Research Laboratory Parameter Assessment List (see Attachments 0127 and 0128) based on the results of modeling and simulations, independent assessments, and tests (CDRL B069). All six components (reduce fratricide, reduce detectability of the Soldier, reduce probability of being attacked, minimize damage, minimize injury, and reduce physical and mental fatigue) and the corresponding 21 subcomponents will be addressed in this assessment. Soldier Survivability (SSv) Severity Ratings (Issues) shall use the Army SSV Severity Rating scale. The SSvA shall document the status of the systems Soldier Survivability program and contain adequate data to support the contractors assertions the system meets the Soldier Survivability requirements.

## C.10.4.24 Information Assurance (IA)

## C.10.4.24.1 IA Strategy

For all current data and for any changes during LRIP, the contractor shall establish or continue to leverage appropriate administrative, technical, physical safeguards, and security controls to protect all Government data, to ensure the confidentiality, integrity, and availability of Government data. 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. The contractor shall support IA certification and accreditation of the system by providing the IA artifacts, analyses, test, evaluation and assessments. This information shall be available to the Government and discussed at IPT meetings as well as major reviews. Security requirements in the below documents shall be met:

(a) AR 25-2, Information Assurance

(b) NIST SP 800-37, Rev 1, Guide for applying the Risk Management Framework to Federal Information Systems: A security Life Cycle Approach

(c) NIST SP 800-53 Rev 3, Recommended Security Controls for Federal Information Systems and Organizations

(d) Department of Defense (DOD) through its DoD IA Certification and Accreditation Process (DIACAP) DODI 8510.01. Note DIACAP process will be evolving to the Risk Management Framework

(e) 6212.01E Interoperability and Supportability of Information Technology and National Security Systems

(f) DoD 5220.22-M; National Industrial Security Program Operating Manual (NISPOM)

(g) DoDI 8551.1, Ports, Protocols and Services Management (PPSM)

(h) Best Business Practices (BBPs) as listed on milWiki portal for Army Information Assurance and Best Business Practices at: [http://www.milsuite.mil/wiki/Portal%3AArmy\\_Information\\_Assurance/Best\\_Business\\_Practices](http://www.milsuite.mil/wiki/Portal%3AArmy_Information_Assurance/Best_Business_Practices)

(i) Security Technical Implementation Guides (STIGs)

(j) Department of Defense Federal Information Security Management Act (FISMA) (IA milestones through system lifecycle)

(k) DoDI 8500.2; IA Implementation

(l) DoDD 8500.01E; Information Assurance

(m) NIST SP 800-18; Guide for Developing Security Plans for Federal Information Systems

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(n) SSE-100-1; NSA IA Guidance for Systems Based on a Security Real-Time Operating System

(o) Appropriate Best Business Practices, Security Technical Implementation Guides and NSA Information Assurance Technical Framework

## Reference documentation:

(a) Risk Management Framework (RMF) for DoD Information Technology (IT)

(b) DoDD 5205.02; DoD OPSEC Program

(c) CJCSM 6510.01A; IA and Computer Network Defense (CND) Volume I (Incident Handling Program)

The contractor shall comply with IA requirements in accordance with AR 25-2, Information Assurance and support the IA documentation needed for the accreditation as outlined in DODI 8510.01. If changes during LRIP affect IA, the contractor shall update the following documents to meet or exceed the guidelines outlined in the NIST Handbook (NIST 800-12), review them as needed, and submit the following per CDRL B020, unless otherwise specified:

- 1) Systems Security Plan (SSP)
- 2) Security Test and Evaluation (ST&E) plan (testing and evaluation policies, procedures, controls and schedule)
- 3) Cross Domain Appendix (CDA) (CDRL B054 if needed)
- 4) Cross Domain Validation and Approval Request (CDVAR) (CDRL B054 if needed)
- 5) SW Development Plan (reference Software Section C.10.4.27.1, CDRL B022)
- 6) Evidence of applied Best Business Practices (BBPs) and STIGs
- 7) Data Flow Diagram
- 8) Detailed Architecture Diagram
- 9) Hardware and Software List (included vendors, versions)
- 10) Ports Protocols and Services List.
- 11) Risk assessment to identify the threats and vulnerabilities, and the impact if exploited.
- 12) Policies, procedures and controls in place to mitigate the risk throughout the developmental lifecycle.
- 13) Security awareness training program guidelines
- 14) Procedures to document remediation strategies and actions to correct vulnerabilities.
- 15) Procedures to monitor, detect, report, and respond to security incidents.
- 16) Identify a primary and alternate Information Systems Security Officer to serve as the central POC for all information security issues

The contractor shall ensure that all IA and IA enabled products be National Security Telecommunications and Information Systems Security Policy Number 11 (NSTISSP-11) compliant. The products shall also be validated by accredited labs under NSA, the NIAP Common Criteria Evaluation and Validation Scheme or NIST Federal Information Processing Standards (FIPS) Cryptographic Module Validation Program (CMVP). Encryption guidance can be found in FIPS Pub 197, Advanced Encryption Standard, FIPS; FIPS Pub 140-2, Security Requirements for Cryptographic Modules, FIPS Pub 198-1, The Keyed-Hash Message Authentication Code (HMAC); IETF RFC 2560, X.509 Internet Public Key Infrastructure; DoDI 8580.1, Information Assurance in the Defense Acquisition system.

## C.10.4.24.1.1 IA Mitigation Strategies

The contractor shall ensure that all IA mitigation strategies have been applied to the development environment prior to any Government data being loaded onto any assets or software for testing or delivery. IA mitigation strategies include security updates, service packs, and changes to operating procedures as physical and cyber vulnerabilities are detected.

## C.10.4.24.1.2 IA Training

The contractor shall update an IA awareness training program, if needed, in accordance with NIST 800-16, NIST 800-50, and AR 25-2 and ensure that IA awareness refresher training is provided annually for all contractors working on this program. Contractor personnel with IA duties shall be trained to a level commensurate with the highest level and complexity of facilities and systems. The contractor shall ensure all contractor personnel who access Government Databases have successfully passed a security investigation.

## C.10.4.24.1.3 IA Risk

The contractor shall evaluate (at a minimum) annually the security, both physical and logical, identifying exposures, and providing protective options for reducing security risk. This assessment shall be conducted and reported in accordance with the NIST 800-30 framework using the Common Vulnerabilities and Exposures (CVE) dictionary identifiers, and shall identify assets that need additional security, protection, or have vulnerabilities. The contractor shall develop a set of recommendations to eliminate or mitigate those threats within 30 days of discovery and submit it to the Government per SSP and IA Artifacts package (CDRL B020). This information shall be made available to the Government and discussed at IPT meetings as well as major reviews.

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## C.10.4.24.1.4 IA Accreditation Artifact Package

If changes during LRIP affect the AMPV IA accreditation, the contractor shall provide an updated IA Accreditation Artifact Package. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B020)

## C.10.4.24.1.5 IA and Software Scans

C.10.4.24.1.5.1 If changes for LRIP affect software and hardware interfaces, IA and software scans and an updated scan report will be required.

C.10.4.24.1.5.2 The IA Scans will be conducted on the contractor C4ISR and EW and Vetrionics architectures to determine if there are any vulnerabilities or nonconformance in the system. The contractor shall conduct and provide the Government a report (CDRL B021) of the IA scans completed on the Systems Integration Lab (SIL) for all AMPV software at TRR. An IA scan shall be performed on the final configuration managed software build that has gone thru a pre-software qualification test by the contractor. The contractor shall fix Category I (CAT I) and Category II (CAT II) risks that are found during the vulnerability scans. The report shall address root cause determination, corrective action development and implementation, process control improvement, and scan results. The report shall also include a schedule to fix the risks. This information shall be available to the Government and discussed at IPT meetings as well as major reviews. CAT I and CAT II risks shall be mitigated 30 days prior to the TRR. CAT III risks shall be mitigated, if possible.

C.10.4.24.1.5.3 Contractor shall allow Government access to AMPV software source code repositories to conduct baseline software vulnerability scans on contractor developed software and open source software for up to five business days. Contractor shall provide assistance during the Government scans. Contractor shall ensure source code repository can accept Hewlett Packard Fortify 360 Suite Static Code Analyzer scanning software tool. The software scan will be conducted within 30 days after software CDR. Contractor shall mitigate any vulnerabilities discovered in Level I or Level II critical functions as a result of the baseline software scan. Mitigation information shall be available to the Government and discussed at IPT meetings. The contractor shall conduct and provide to the Government a software scan report on the final configuration managed software source code that has gone thru pre-software qualification test by the contractor. Government representatives will witness the software scan test. SQT software shall not have any vulnerabilities in level I or II critical functions. Any changes in Level I or Level II critical function software after SQT will require rescan and mitigation of vulnerabilities.

C.10.4.24.1.5.4 The contractor shall allow an approved ACA (authorized certification authority) representative access to AMPV SIL for a period of up to five business days to conduct IA vulnerability scans. Contractor shall provide assistance during the Government scans. The contractor shall jointly determine with the Government on what platform configuration the test is to be conducted on.

## C.10.4.24.2 IA Program Management

The contractor shall maintain an IA program that provides sufficient safeguards to ensure that all sensitive information, technical CUI or 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 contractor's IA program plans, shall be available to the Government and discussed at IPT meetings as well as major reviews.

## C.10.4.25 Systems Integration Lab (SIL)

C.10.4.25.1 The contractor shall maintain and use a SIL(s) or other equivalent simulation lab to integrate and test any changes required under LRIP for the AMPV system electronics, LRUs, Lined Replaceable Modules (LRMs), and Configuration Items (CIs) prior to full vehicle integration. The SIL shall be located at the contractors facility. The SIL(s) shall contain all AMPV production-intent electrical and electronic components (modules, displays, controls, clusters, cabling and harnesses) including electronic hardware and software that are hosted or integrated items identified in the MEM (Attachment 0006) to enable the replication of fully integrated vehicles. The SIL(s) shall be able to demonstrate actual hardware for all AMPV variants.

## \*C.10.4.25.1.1 RESERVED

C.10.4.25.1.2 The SIL(s) shall be functional and the contractor shall provide a SIL demonstration prior to any IA and Software Scans. 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 contractor shall procure material to keep the SIL(s) current using the Configuration Management process defined in Section C.10.7 for configuration changes developed by the contractor in order to reflect the current state of the vehicles until the end of the contract.

## C.10.4.25.2 SIL Demonstration Procedures

The contractor shall maintain and update recommended operating procedures for the execution of the events identified:

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(a) Operations - Driver's Station Controls (vehicle start-up; display vehicle levels, current vehicle status and conditions; adjust vehicle systems; and turn vehicle subsystem(s) on and off in dynamic conditions);

(b) Operations - Commander's Station Controls (display information; launching applications; turn vehicle subsystem(s) and MEP on and off in dynamic conditions; sends and receives messages; plan a route of travel with subsystems and waypoint information from driver's station);

(c) Health and Maintenance System.

The complete list of subsystems and correct operating procedures (CDRL B033) shall be mutually agreed to by the Government and the contractor. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

## C.10.4.26 Software

C.10.4.26.1 If changes during LRIP affects AMPV software, the contractor shall update the software development plan (CDRL B022). The updated plan shall include a schedule of incremental progress to facilitate tracking of the project and subcontracting activities.

C.10.4.26.1.1 Any LRIP related AMPV software requirement changes shall specify the total product software and provide full implementation of all required functions.

C.10.4.26.1.1.1 LRIP related software requirements shall be derived directly from higher level requirements contained in or traceable to system specifications. The contractor shall review the cross reference matrix indicating where each of the high level requirements are implemented in the detailed requirements and update, if necessary. All higher level requirements shall be completely satisfied but shall not exceed those requirements unless approved by the PCO. Any new detailed requirement shall be reviewed by the Government to ensure that it can be achieved.

C.10.4.26.1.1.1.1 The contractor shall load and verify Government approved software and firmware versions on each AMPV vehicle and ancillary support equipment delivered under this contract.

## C.10.4.26.1.1.2 Testability

If changes during LRIP affect any software, the contractor shall review and ensure that the software performance requirements are expressed in quantitative terms that can be directly translated into acceptance criteria.

C.10.4.26.1.1.3 The contractor shall conduct assessments of the software design during its development to ensure that all software requirements, as approved by the PCO, are being satisfied and that the design is being documented in software design description (CDRL B023).

C.10.4.26.1.1.4 The contractor shall maintain the Software Development Files (SDF) for all software that was developed and integrated for the AMPV FoV. SDF will be available for Government review. SDF shall include following:

- (a) Complexity numbers for each Computer Software Unit (CSU)
- (b) Baseline Method test paths for each CSU
- (c) Regression test analyses (CSU, Computer Software Components (CSC), Computer Software Configuration Item (CSCI))
- (d) Regression test requirements and results (CSU, CSC, CSCI)

## C.10.4.26.2 Organizational Accreditation Requirements

The contractor shall be certified through an independent Software Engineering Institute Standard Capability Maturity Model Integration (CMMI) Appraisal Method for Process Improvement (SCAMPI) assessment external to the contractor's business unit, division, site, or program office assessment to be CMMI Maturity Level 3 or higher. The contractor shall provide proof of Level 3 or higher certification with initial proposal submission.

## C.10.4.26.3 Software Quality Assurance Program (SQAP)

The contractor shall review the SQAP and update, if necessary, to ensure that high levels of software quality and reliability are attained and all contractual requirements are fully complied with. The contractor's SQAP shall have sufficient, well-defined lines of responsibility, accountability, and authority, as well as the organizational freedom to identify and evaluate quality and reliability compliance problems and to initiate, recommend or provide solutions and shall be available for Government review. The contractor shall regularly review the status and adequacy of the program and realign the program to ensure its requirements and those provided in this scope are satisfied. Results of all software quality assurance activities shall be documented in an established format and shall be

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available for Government review. Results of software quality activities (audits, reviews, desk checks) shall be presented at IPT meetings and engineering reviews. Failure by the contractor to report discovered discrepancies will be considered a non-compliance with contractual requirements.

## C.10.4.26.4 Firmware

All software developed or updated under this contract identified as Firmware, shall be developed, updated, and managed in accordance with the contractual requirements for both software and hardware. For this contract, Firmware is defined as software that has been implemented in hardware using memory devices such as Read Only Memory (ROM), Programmable ROM (PROM), Erasable PROM (EPROM), Field Programmable Gate Array (FPGA) and Electrically Erasable PROM devices (EEPROM). Firmware source material shall be provided in accordance with CDRL B024.

## C.10.4.26.5 Internet Protocol (IP)

AMPV hardware and software components interfacing to Global Information Grid shall be able to support both IPv4 and IPv6 packets.

## C.10.4.26.6 Common Operating Environment (COE)

The contractor shall integrate the latest mission command software available (e.g., Joint Battle Command Platform (JBC-P) with KGV-72 and Blue Force Tracker 2 (BFT-2)) without impacting schedule.

## C.10.4.26.6.1 Newly Designed or Developed Software (NDS) Documentation

The contractor shall review all deliverable and non-deliverable NDS documentation in the SDP and update, if necessary. All software documentation shall reference NDS wherever necessary or appropriate.

## \*C.10.4.26.7 Software Documentation

If changes during LRIP affect any of the following software documents, the contractor shall update and deliver the revised document:

- (a) Software Development Plan (DI-IPSC-81427A) (CDRL B022)
- (b) Software Programmer Guide (DI-IPSC-81633) (CDRL B025)
- (c) Software Reliability Program Plan (SAE-JA1003) (CDRL B026)
- (d) Software Configuration Management Plan (DI-CMAN-80858B) (CDRL B027)
- (e) Software Requirements Specification (DI-IPSC-81433A) (CDRL B028)
- (f) Interface Requirements Specification (DI-IPSC-81434A) (CDRL B029)
- (g) Interface Design Document (DI-IPSC-81436A) (CDRL B030)
- (h) Software Design Description (DI-IPSC-81435A) (CDRL B023)
- (i) Software Version Description Documents (DI-IPSC-81442A) (CDRL B031)
- (j) Software Test Plan (DI-IPSC-81438A) (CDRL B032)
- (k) Software Test Description with Test Procedures (DI-IPSC-81439A) (CDRL B033)
- (l) Software Test Report (DI-IPSC-81440A) (CDRL B034)
- (m) Integration Problem Reports and Status (DI\_MISC\_80711A) (CDRL B035)
- (n) Software User Manual (DI-IPSC-81443A) (CDRL B036)
- (o) Software Product Specification (DI-IPSC-81441A) (CDRL B037)
- (p) Subcontractor Management Control Plan (DI-MISC-80711A) (CDRL B038)
- (q) Firmware Support Manual (DI-IPSC-81448A) (CDRL B024)

\*The documents shall include any test software and models developed for the system. It shall also include user manuals for the Computer System and Software Integration Lab and configuration documentation that define the test facility set up. Any documentation not listed that was used to document the software architecture or help in its understanding should also be provided. These items may include such things as Harel state charts, use case diagrams, sequence diagrams, flow charts, system block diagrams, and state diagrams. The documents may be in the contractors format.

C.10.4.26.8 If changes during LRIP affect any software, the contractor shall deliver software executables and source code, including subcontractors software executables and source code used on the AMPV FoV. Executable and source codes for any models, functional test environment (with documentation), and verification test procedures developed for system validation, build scripts and install scripts used for productions shall also be delivered to the Government (CDRL B037).

## C.10.4.26.9 Software License

If changes during LRIP affect any software, the contractor shall deliver all software, including NDI and COTS software, in each delivered vehicle with appropriate licenses and without restrictions for usage in its intended vehicle application. The contractor

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shall provide status of acquiring and delivering software licenses at IPTs and major reviews.

## C.10.4.26.10 Software Metric Program

C.10.4.26.10.1 If AMPV software changes during LRIP, the contractor shall track and present the Software Metrics identified below. The Software Metrics shall clearly portray variances between actual and planned performance, provide early detection or prediction of situations that require management attention, and support the assessment of the impact of proposed changes on the program. These indicators shall be implemented consistent with internal developer systems. The contractor shall update the Software Metrics for any changes as a result of obsolescence or new capabilities, and ensure the resources are adequate. The Software Metrics shall be presented at IPT meetings and design reviews.

- (a) Software Size
- (b) Effort
- (c) Requirements Definition and Stability
- (d) Software Progress (Design, Coding, and Testing)
- (e) Software Development Staffing
- (f) Earned Value Management (Cost and Schedule Variance)
- (g) Quality (Discrepancy Reports or Defect Density)
- (h) Development Tools and Laboratories Status
- (i) Computer Resources Utilization and Reserve Capacity (see below)

C.10.4.26.10.2 Computer Resources Utilization and Reserve Capacity metrics shall include peak processor throughput and utilization (per processor) and volatile and nonvolatile memory usage (per board level or processor application) for each workstation per each AMPV variant. The contractor shall also track data bus resource metrics for each workstation per each AMPV variant. These metrics shall measure throughput and utilization for all Vehicle Sensor Data Buses and the C4ISR and EW Data Bus. The contractor shall identify data busses and monitoring or recording provisions (hardware and software) that are designed to facilitate fault diagnosis and support VHMS.

## C.10.4.26.11 Software Problem Reports (SPR)

The contractor shall maintain a corrective action process in accordance with J-STD-016, IEEE, or EIA 12207 or DoD equivalent standard that documents all reported anomalies, errors or omissions that affect software, or associated documentation in the software problem report. The SPR document shall only be used to document software problem reports and not unrelated changes or hardware requests. The contractor shall adjust the emphasis of resolution efforts based on the SPRs severity priority ranking. All changes needed to resolve SPR anomalies, errors, or omissions shall be identified in the SPR documentation and the SPR shall not be closed until all those changes are completed. Changes not associated with SPRs shall be processed outside the SPR system. Software problem reports shall be prioritized using the priority scheme listed below:

Priority: Priority of the change

## 1) Priority 1: A software problem that does one of the following:

- (a) Prevents the accomplishment of an operational or mission essential capability specified by baselined requirements
- (b) Prevents the operator's accomplishment of an operational or mission essential capability
- (c) Jeopardizes personnel safety.

## 2) Priority 2: A software problem that does one of the following:

- (a) Adversely affects the accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which no alternative work-around solution is known
- (b) Adversely affects the operator's accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which no alternative work-around solution is known.

## 3) Priority 3: A software problem that does one of the following:

- (a) Adversely affects the accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which an alternative work-around solution is known
- (b) Adversely affects the operator's accomplishment of an operational or mission essential capability specified by baselined requirements so as to degrade performance and for which an alternative work-around solution is known.

## 4) Priority 4: A software problem that is an operator inconvenience or annoyance and which does not affect a required

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operational or mission essential capability.

5) Priority 5: All other errors

C.10.4.26.11.1 SPR Data Base

The contractor shall maintain an SPR data base to fully record and aid in the management and tracking of SPRs. The contractor shall make the data base accessible to the Government electronically via Internet access.

C.10.4.26.11.2 Software Problem Report (SPR) Status Reporting

The contractor shall provide monthly status reports of SPR resolution progress (CDRL B035). The report shall show the SPR resolution status to the engineering staff level.

C.10.4.26.12 Subcontractor Management Control Plan

The contractor shall review the Subcontractor Management Control Plan in accordance with (CDRL B038) (DI-MISC-80711A) and make updates, if necessary. The contractor shall ensure that all requirements, as defined in this SOW, are flowed down to all suppliers performing software tasking under this effort. The contractor shall be responsible for ensuring that the quality of all software, documentation, and programming materials procured from subcontractors conform to the contract requirements. The contractor is responsible for imposing the software quality requirements on any and all subcontractors employed for the development of AMPV software.

C.10.4.26.13 The contractor shall deliver a vehicle Software Version Description (SVD) for each software release (DI-IPSC-81442A) (CDRL B031). The SVD shall include version, purpose, new features, planned usage, compatibility with mission command, compatibility with support equipment, specific problems fixed, hardware compatibility, downloading instructions, logistic impacts, training impacts, and training device impacts.

C.10.4.26.14 Software Testing

If AMPV software changes during LRIP, the contractor shall perform software testing to ensure the software satisfies documented requirements. Government representatives will have the opportunity to attend and witness Software Qualification Testing and will determine which tests to witness.

C.10.4.26.14.1 If AMPV software changes during LRIP, the contractor shall present evidence of clean compiled code, which is free of patches and dead code, at Software Qualification Test Readiness Review (SQTRR). All test procedures and documentation must be placed under configuration management control prior to the start of the Software Qualification Test (SQT). The contractor shall provide a Software Test Description report that traces all software and system requirements to test procedures in accordance with CDRL B033 prior to the SQTRR. The contractor shall provide results of automated static code analysis performed prior to SQTRR, including any measures of software complexity and adherence to contractor's coding standards. A measure of software complexity of modules or CSCIs is required. The contractor shall prepare and deliver a software qualification test report to the PCO for approval or rejection after completion of SQT the test in accordance with CDRL B034.

C.10.4.26.14.2 If changes during LRIP affect software, the contractor shall conduct stress testing at both the CSCI and CSU level. Contractor shall present results of stress tests at IPT meetings and identify any components that are getting close to their design limits.

C.10.4.26.14.2.1 Functional Stress Testing (all levels)

If changes during LRIP affect any software, the contractor shall stress test the software up to and beyond its designed capabilities. The contractor shall demonstrate the AMPVs ability to perform within the limits of its design capacities, and to degrade safely while being stressed beyond the design limits.

C.10.4.26.14.2.2 Duration Stress Testing (subsystem level)

If changes during LRIP affect any software, the contractor shall define nominal load conditions and shall demonstrate that the software shall not degrade when stress tested for a period of 24 continuous hours loading conditions representing 150% of the softwares nominal load conditions.

C.10.4.26.14.3 If changes during LRIP affect any software, the contractor shall perform regression testing to validate corrective actions taken as a result of software errors. Software corrective actions rectifying these errors shall be regression tested to the CSCI level prior to a release for subsequent use. The PCO shall approve the selection of regression test cases and procedures prior to the start of retest.

C.10.4.26.15 LRIP Option Software Release

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Initial LRIP Software Release: Contractor shall plan to deliver AMPV vehicle software that incorporates government approved software changes for LRIP Logistic Vehicles and Production Qualification Test (PQT) vehicles. See Test Summary in Attachment 0008.

C.10.4.26.16 RESERVED

C.10.4.26.17 Software Reliability

If changes during LRIP affect any software and contractor makes changes to the software reliability practices for the software then the contractor shall update and deliver the Software Reliability Program Plan (CDRL B026). The Software Reliability Plan shall address software coding practices, algorithm complexity, and implementation of best practices, error handling, data integrity, component reuse, dead code, transactions, and any other software reliability features incorporated for the AMPV software."

C.10.4.26.18 Throughput Stress Testing

C.10.4.26.18.1 If LRIP requires a software change then the contractor shall determine and present the peak operational load for the LRIP software at engineering IPT

C.10.4.26.18.2 If LRIP requires a software change then the contractor shall determine and present the normal databus load for the LRIP software at engineering IPT

C.10.4.26.18.3 If LRIP requires a software change then the contractor shall determine and present the peak CPU load for the LRIP software. Contractor shall test the LRIP software for memory leaks using an automated tool. Contractor shall present the results of the memory leak test at engineering IPT. Memory leaks are not acceptable.

C.10.4.26.18.4 If LRIP requires a software change the contractor shall perform regression testing to validate corrective actions taken as a result of software errors. Software corrective actions rectifying these errors shall be regression tested to the CSCI level prior to a release for subsequent use. The PCO shall approve the selection of regression test cases and procedures prior to the start of retest.

C.10.4.26.18.5 Compatibility with Maintenance Support Devices (MSDs) fielded to Armor Brigade Combat Teams (ABCT) - If LRIP requires a software change then the contractor shall ensure compatibility with MSDs. Armored Brigade Combat Team Maintenance Support Device Common Hardware and Software Resource Analysis (Attachment 0054) identifies existing applications that are resident on an MSD in a ABCT along with hardware and software interfaces.

C.10.4.27 Load Plan

C.10.4.27.1 The contractor shall review and validate the current Load Plan (including schematics) that details optimum vehicle locations for all payload items for the AMPV, for each AMPV variant at GVW and Combat Weight against the current AMPV configuration. Each vehicle variant load plan shall also include components and systems that must be removed for transport. The contractor shall ensure that removed items are either securely stowed on or in the vehicle during transport. 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 the lethality and survivability aspects of the vehicle, as well as not to interfere with the normal operation of vehicle including ingress and egress. The Load Plan shall include the BII, Components of the End Item (COEI) and Additional Authorized List (AAL) comparable to the legacy M113 vehicle (see Attachment 0042, M113 COEI, BII and AAL). Any additional BII, COEI, and AAL identified during task analysis to support the AMPV configuration and operational tasks shall be included in the load plan. The Government intends to conduct testing with the vehicles configured in accordance with this Load Plan. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL B011)

C.10.4.27.2 For any configurations changes to the load plan, the contractor shall conduct a delta stowage demonstration at its facility on facility vehicles. The contractor shall plan to combine the delta load plan demonstration along with the delta logistic demonstration verification. The contractor shall use actual components that require stowage, or mock ups, if those items can't be obtained. The contractor shall provide a maintenance engineer and Human Factors Engineer for the duration of the verification. The contractor shall document stowage demonstration findings in minutes (CDRL A001) and update applicable drawings. The stowage plan for each variant will be approved by the Government prior to the selection of live fire shots. The stowage demonstration results will be incorporated in validated AMPV TMs.

C.10.4.28 Obsolescence

C.10.4.28.1 The contractor shall have sole responsibility for the screening and subsequent replacement or redesign of a substitute part or system because AMPV unique parts or subsystems are no longer available or are obsolete. For parts or subsystems common with other programs, the contractor shall coordinate with the design authorities for those common items to identify availability or obsolescence issues.

C.10.4.28.1.1 For both common and AMPV unique components, the contractor shall notify the Government of any availability or

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obsolescence issues that will impact the AMPV program, as well as any planned procurement activity to remedy obsolescence shortages throughout the period of performance of this contract. Any technical data generated as a result of this paragraph shall be a deliverable in accordance with CDRL B039.

## C.10.4.28.2 Obsolescence Management Plan and Report

The contractor shall develop an Obsolescence Management Plan and Report in accordance with CDRL B040. The Obsolescence Management Plan shall be ongoing and submitted monthly. The first submission of the Obsolescence Management Plan shall be reviewed and approved by the Government.

## C.10.4.29 Corrosion Requirements

## C.10.4.29.1 Contractor Corrosion Team

C.10.4.29.1.1 The contractor shall maintain a Corrosion Control Team (CCT) to manage and integrate corrosion prevention and control throughout performance of the contract.

C.10.4.29.1.2 The CCT shall be responsible for the following: ensure implementation of adequate Corrosion Prevention and Control (CPAC) requirements in accordance with the project contract, plans, and specifications; ensure implementation of CPAC documentation and submission of documents in accordance with the required schedule; coordinate and synchronize the contractor Corrosion Prevention and Control Plan (CPCP) (CDRL B042) with the Government CPCP after initial Government review of contractor CPCP; establish periodic meetings and convene impromptu meetings when a critical or major problem arises which requires action by the CCT or Government Corrosion Prevention Advisory Team (CPAT); notify the program office of each meeting date, the topics to be discussed, and any decisions resulting from the previous meeting; and maintain a continuing record of all action items and their resolutions.

## C.10.4.29.2 Corrosion Prevention Advisory Team (CPAT)

The contractor shall participate in the Governments CPAT. The contractor shall provide support to the CPAT, to include attending meetings, completing assigned action items, informing the CPAT of new corrosion issues and reviewing ECPs and their impact on the corrosion prevention and control of the system. CPAT meetings will be held on an annual basis in conjunction with the Environmental Management Team (EMT) meetings (CONUS travel required). In addition, monthly CPAT teleconferences will be held (no travel required).

## C.10.4.29.3 Corrosion Documentation

## C.10.4.29.3.1 Contractor Corrosion Prevention and Control Plan (CPCP)

The contractor shall maintain and update, if necessary, the contractor CPCP. The contractor CPCP shall be prepared in accordance with CDRL B042. The Corrosion Prevention and Control Planning Guidebook, Spiral 3, dated September 2007, may be used as a guideline for development of the CPCP.

## C.10.4.29.3.2 CPCP Item Corrosion Report

The contractor shall update and deliver the CPCP Item Corrosion Report in accordance with CDRL B043 detailing all corrosion issues and resolutions. The information shall be available to the Government and discussed at CPAT meetings.

## C.10.4.29.3.3 Corrosion Test Results Report

The contractor shall update and deliver a Corrosion Test Results Report in accordance with CDRL B044. This report shall be available to the Government and discussed at CPAT meetings

## C.10.4.30 Environmental, Safety, and Occupational Health (ESOH)

## C.10.4.30.1 ESOH Program

The contractor shall maintain an ESOH program in accordance with MIL-STD-882E. The ESOH program shall include the following: system safety, occupational health, environmental impact, and hazardous materials management.

## C.10.4.30.2 ESOH IPTs

## C.10.4.30.2.1 ESOH Working Group (WG)

The contractor shall participate in the Governments AMPV 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 provide support to the ESOH WG, to include attending meetings, completing assigned action items, and providing information related to

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the development of ESOH documentation. During ESOH WG meetings, the contractor shall present ESOH program status and updates, Hazard Tracking System (HTS) status and updates, Hazardous Materials usage status and updates, and other relevant ESOH data. ESOH WG meetings will be held on a semi-annual basis (CONUS travel required).

C.10.4.30.2.2 ESOH Hazard Review Board

The contractor shall participate in the Governments AMPV ESOH Hazard Review Board, in an advisory capacity. The contractor shall present and discuss issues affecting ESOH program implementation. The contractor shall pursue the issues through completion and close out any in-scope action items assigned. The ESOH Hazard Review Board meetings will be held on a bi-weekly basis (no travel required).

C.10.4.30.2.3 Environmental Management Team (EMT)

The contractor shall participate in the Governments EMT, which is a multi-disciplinary group chartered by PM ABCT, dedicated to addressing environmental issues and supporting the PM ABCT environmental program. This team will include subject matter experts from Government and industry. The contractor shall provide support to the EMT, to include attending meetings, completing assigned actions items, and providing information related to environmental impact reduction efforts. EMT meetings will be held on an annual basis (CONUS travel required).

C.10.4.30.3 Environmental Compliance

The contractor shall ensure that all aspects of contract execution are in compliance with applicable International, United States Federal, State, and Local environmental regulations and requirements, including activities associated with design, prototype build, test, storage, and disposal. The contractor shall immediately notify the PCO if the Government gives any direction that may result in violation of law or regulation.

C.10.4.30.3.1 The AMPV shall be designed such that the user shall have the ability to dispose of the system in full compliance with applicable United States Federal environmental quality laws and regulations.

C.10.4.30.4 Hazardous Materials Management

For the purposes of this contract, hazardous materials are defined by FED-STD-313D, Section 3.2.

C.10.4.30.4.1 Ozone Depleting Materials

The Contractor shall not use Class I and Class II Ozone-Depleting Chemicals.

C.10.4.30.4.2 Prohibited Materials

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. Mandatory hosted and integrated items identified in the MEM (Attachment 0006) are exempt from these requirements.

Prohibited Materials are as follows:

- Asbestos
- Beryllium
- Cadmium
- Hexavalent Chromium
- Lead
- Mercury
- Radioactive Materials
- Group 1 Agent classified as "carcinogenic to humans" by the International Agency for Research on Cancer (IARC) Monographs

\*C.10.4.30.4.2.1 Exceptions to the Hazardous Materials Requirements

Exceptions to the Prohibited Materials listed in Section C.10.4.30.4.2 are as set forth below:

- Beryllium used in electrical components
- Cadmium on electrical connectors and back shells used to mate with cadmium electrical connectors mandatory on items identified in the MEM (Attachment 0006)
- Lead-acid batteries
- Lead solder
- Steel containing up to 0.35% lead by weight
- Aluminum containing up to 0.4% lead by weight
- Copper and Brass alloys containing up to 4% lead by weight

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- Lead in engine bearings
- Mercury containing components compliant with European Union (EU) Directive 2002/95/EC (RoHS)
- \*- Non-Chromate chemical agent resistant coating (CARC) primers and topcoats
- Trace amounts of identified prohibited materials contained in base materials or alloys are to be reported in the Hazardous Materials Management Report (HMMR), but do not require a waiver. For the purposes of this contract, trace amounts are defined as <0.1% for carcinogens and <1% for all other materials.

C.10.4.30.4.3 Refrigerant Restriction

The AMPV cooling system shall operate using refrigerant with a global warming potential (GWP) less than or equal to 1300 over a 100 year time horizon in accordance with Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: Climate Change 2001, 'The Scientific Basis', Chapter 6.12, 'Global Warming Potentials'.

C.10.4.30.4.4 Coolant Requirement

If liquid cooled, the engine shall be serviced with a coolant conforming to A-A-52624.

C.10.4.30.4.5 Rubber Products

C.10.4.30.4.5.1 The contractor shall use rubber products that meet the requirements of ASTM D2000 for the intended purpose.

C.10.4.30.4.5.2 The contractor shall use rubber products that are ozone resistant consistent with best commercial practice.

C.10.4.30.4.6 Hazardous Materials Waivers

Waivers from the hazardous materials requirements shall not be permissible except where a suitable alternative does not exist. The Government will consider waivers in these situations on a case by case basis. The contractor shall prepare and deliver a list of anticipated waiver requests at the SOWM. The contractor shall submit formal waiver requests to the Government no later than 30 days prior to the CDR, using the Prohibited Materials Request (Attachment 0027). 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 use or deliver any prohibited hazardous materials without prior Government waiver acceptance.

C.10.4.30.5 Environmental Protection Agency (EPA) Emissions Requirements

The contractor AMPV 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 in accordance with 40 CFR, Sections 85.1703, 89.908, and 1068.225.

C.10.4.30.5.1 EPA Engine Labeling Requirements

The contractor shall comply with the national security exemptions for engine labeling requirements in EPA regulations.

C.10.4.30.6 ESOH Program Documentation

C.10.4.30.6.1 Hazard Tracking System (HTS)

The contractor shall review and update, if necessary, the HTS in accordance with MIL-STD-882E, Task 106 (Hazard Tracking System). The HTS shall include the findings from MIL-STD-882E Task 205 (System Hazard Analysis) and Task 210 (Environmental Hazard Analysis). The contractor shall document and track all hazards from identification until the hazard is eliminated or the associated risk is reduced to a level acceptable to the PCO. The HTS shall include all hazards identified through testing and other analyses in accordance with Severity Categories and Probability Levels provided in Section 4.3 of MIL-STD-882E. The HTS shall be delivered to the Government in accordance with CDRL B045.

All hazards shall receive final disposition by the Product Manager AMPV. Closed out Hazards shall remain documented in the HTS.

C.10.4.30.6.2 Safety Assessment Report (SAR)

The contractor shall maintain a SAR in accordance with MIL-STD-882E Task 301. The SAR shall be delivered to the Government in accordance with CDRL B046.

C.10.4.30.6.3 System Safety Program Plan (SSPP)

The contractor shall maintain the SSPP in accordance with MIL-STD-882E Task 102. The SSPP shall be delivered to the Government in accordance with CDRL B047.

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## C.10.4.30.6.4 Health Hazard Analysis (HHA)

The contractor shall maintain the HHA in accordance with MIL-STD-882E Task 207. The HHA shall be delivered to the Government in accordance with CDRL B048.

## C.10.4.30.6.5 Hazardous Materials Management Report (HMMR)

The contractor shall maintain the 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 final assembly. The contractor shall discuss status, changes, or issues with the HMMR as part of the ESOH WG meetings. The HMMR shall be delivered to the Government in accordance with CDRL B049.

## C.10.4.30.6.6 Lithium Battery Safety Data Package

If lithium batteries are used in the system design, the contractor shall prepare a safety data package that documents and demonstrates the stability of the design and validity of the battery selection. The Lithium Battery Safety Data Package shall be delivered to the Government in accordance with CDRL B050.

## C.10.4.30.7 Critical Safety Program

The Critical Safety Program described herein is applicable to new items designed under this contract and to non-development items.

## C.10.4.30.7.1 Critical Safety Program Definitions

## C.10.4.30.7.1.1 Critical Safety Items (CSI)

A part, assembly, installation, or production system with one or more critical characteristics that, if not conforming to the design data or quality requirements, would result in a probable occurrence of an unsafe condition. Unsafe conditions include conditions which would cause loss or damage to the end item or major component or loss of control or serious injury to personnel. Unsafe conditions relate to hazard severity categories I A-D, II A-C and III A-B of the risk acceptance level definitions in accordance with MIL-STD-882E.

## C.10.4.30.7.1.2 Critical Safety Characteristics (CSC)

Features (i.e., tolerance, finish, material composition, manufacturing, assembly, or inspection process) of product, material, or process, which, if nonconforming or missing, would cause the failure or malfunction of the critical safety item.

## C.10.4.30.7.2 Identification of Critical Safety items

The contractor shall clearly identify each CSI and assembly process for LRIP changes as such on the engineering top drawing, part drawing, or assembly drawing. The contractor shall also clearly identify the CSC(s) for each CSI as such on the engineering parts, engineering top drawings, part drawings, assembly drawings, or process documentation. The contractor shall ensure that all designated or identified CSCs have an associated control method. The control method shall be either a Statistical Process Control (SPC) with a Process Capability Index (Cpk) greater than or equal to 1.66, or 100% inspection. The contractor shall annotate the control method in the notes for all designated or identified CSCs. The specific method for marking drawings shall be as delineated in MIL-STD-31000 (Attachment 0028) and ASME Y14.100.

## C.10.4.30.7.3 Critical Safety Items Data Sources

Identification of CSIs shall be based on the following data sources:

- Use of engineering analysis and judgment
- Failure Modes and Effects, Criticality Analysis (FMECA) (CDRL C006) (MIL-STD-1629A)
- Safety Assessment and Safety Hazard Analysis (MIL-STD-882E)
- Development Testing and Operational Testing results
- RAM engineering assessments
- Previous experience using like items or designs
- Logistics support analysis (LSA) data
- Component qualification test results

The contractor shall validate the CSI requirements expressed herein to ensure that all critical safety aspects of the design are accurately depicted on deliverable drawings, and parts or materials operate well below fatigue limits or stress levels. The contractor shall ensure that the Government can verify these requirements without the use of destructive inspection equipment. The contractors validation shall be based on engineering analysis of the CSI characteristics and shall consider design changes, and deterioration through time from use, fatigue life, and operating conditions.

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C.10.4.30.7.4 Critical Safety Item, Characteristic and Critical Defect Report

A Critical Safety Item, Characteristic and Critical Defect Report shall be reviewed, updated (if necessary), and delivered to the Government in accordance with CDRL B051. The contractor shall maintain and update the Critical Safety Item, Characteristic and Critical Defect Report throughout the life of the contract. The contractor shall also reference the CSIs on the vehicle class and division drawing. This list shall be dynamic in nature with changes taking place as experience and knowledge are obtained and design changes are incorporated into the system.

C.10.4.31 Battle Damage Assessment and Repair (BDAR)

The contractor shall review the current by-variant analysis of the AMPV FoV Battle Damage Assessment and Repair (BDAR) requirements and assess contents of the Army Crew-Level BDAR Kit (NSN 5180-01-502-9504) to determine if additional contents are required for inclusion into the kit during LRIP. If additional items are required, the contractor shall complete an ECP to the kit drawings. The ECP shall include configuration management coordination across all users of the Army BDAR kit. Any additional contents shall be included in the existing kit and stowage of the BDAR kit shall be accounted for and included in the AMPV FoV load plan as well as additional supporting documentation.

C.10.5 Quality Engineering and Test

C.10.5.1 Quality Engineering

C.10.5.1.1 Quality Engineering Responsibilities

The contractor shall ensure that Quality Engineering personnel are involved in meetings, design reviews, verification and qualification planning, conducting verification and qualification testing, and technical data finalization, to ensure the objectives of its overall production quality programs are achieved and continuously improved upon. Quality Engineering personnel shall participate in determining the type and amount of verification and qualification necessary to ensure all requirements are satisfied and verified. The contractor shall notify designated Government Quality Engineering personnel 14 calendar days prior to conducting any LRU or System Level Tests, regardless of the location or facility, to allow for Government participation and witnessing of test execution. Government representatives shall have the opportunity to attend and witness any LRU or System Level Tests and will determine which tests to witness.

C.10.5.1.2 Quality Engineering Reviews

The contractor shall perform quality engineering reviews of TDP documentation on a quarterly basis or more frequently if necessary. These reviews shall decide the amount of process control(s), product control(s), and test(s) necessary to achieve a quality product. The contractor shall define the required process control(s), product control(s), and test(s) on engineering drawings. If a separate document is required for the quality requirements due to their complexity or criticality, the contractor shall prepare the separate document in the same format as any existing quality assurance provisions.

C.10.5.1.3 LRU Qualification Tests

The contractor shall conduct qualification testing on LRUs. The specific LRUs, the quantity of LRUs to be tested, as well as the specific qualification tests to be performed shall be determined jointly with the Government using LRU historical data, integration information, technology maturity and manufacturing maturity levels. Qualification testing shall include, as determined jointly with the Government using the criteria above, verification of natural and induced environments such as temperature, humidity, ice, rain, wind, altitude, fungus, sand, dust, salt fog, vibration, shock, fluids, cleaning, electrical and combinations thereof. The contractor shall continually provide and maintain a document specifying the quantities of LRUs that shall be tested along with the specific tests that are required for each LRU qualification in accordance with CDRL C002. The contractor shall re-qualify any LRUs for which there are design changes after the initial qualification.

C.10.5.1.3.1 LRU Qualification Test Plans

The contractor shall develop and implement LRU qualification test plans for all LRU qualification tests and shall provide contractor approved final versions of the aforementioned test plans for review and approval to the Government in accordance with CDRL C003.

C.10.5.1.3.2 LRU Qualification Test Responsibilities

The contractor shall plan, coordinate, and control verification and qualification testing for all LRU items, alternate source items, and new components. Acceptance tests shall not be offered as a substitute for qualification testing.

C.10.5.1.3.3 LRU Qualification Test Reports

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The contractor shall submit LRU Qualification test reports to the Government for review and approval after completion of the final LRU qualification test on each LRU in accordance with CDRL C004.

C.10.5.1.4 Acceptance Tests

The contractor shall develop, conduct, validate, and verify acceptance tests and Automated Test Equipment (ATE) for LRUs. The LRUs subject to acceptance testing shall be determined jointly with the Government (CDRL C002). The contractor shall inform the Government of any failed acceptance test(s) within three calendar days of failure.

C.10.5.1.5 LRU First Article Tests (FAT)

The contractor shall conduct a FAT on LRUs prior to production, including LRIP, and using production intent design(s), materials, and manufacturing processes. The LRUs subject to a FAT shall be determined jointly with the Government using LRU historical data, integration information, technology maturity and manufacturing maturity levels. Changes to the manufacturing process, facility, location, or manufacturer itself shall result in the need to perform a FAT as determined jointly with the Government using the criteria listed above (CDRL C002).

C.10.5.1.5.1 LRU FAT Plans

The contractor shall develop, or oversee subcontractor development of, LRU FAT Plans for all LRU FATs and shall provide contractor approved final versions of the aforementioned FAT plans for review and approval to the Government in accordance with CDRL C003.

C.10.5.1.5.2 LRU FAT Responsibilities

The contractor shall develop and implement, or oversee subcontractor development and implementation of FAT planning, coordination, and control of FAT testing.

C.10.5.1.5.3 LRU FAT Reports

The contractor shall submit FAT reports to the Government for review and approval after completion of the FAT on each LRU. These FAT test reports shall be submitted in accordance with CDRL C004.

C.10.5.1.6 Environmental Stress Screening (ESS)

The contractor shall establish and implement an ESS program for LRUs. The LRUs subject to ESS shall be determined jointly with the Government (CDRL C002). The contractor shall develop ESS profiles to determine optimum screens. The objective of the ESS effort shall be to improve design, product quality, product reliability, increase production yields, and reduce ownership costs.

C.10.5.1.6.1 ESS Proof of Screen

The contractor shall continue to develop and utilize a Proof of Screen (POS) to establish the ESS program for the LRUs. The LRUs subject to the ESS POS shall be determined jointly with the Government. The objective of the POS is to determine that the best ESS profile is being used to successfully screen hardware while not overstressing hardware and inducing unnecessary failures.

C.10.5.1.6.2 ESS Program Feedback

The contractor shall document, analyze, and report on all available data to determine the ESS programs effectiveness. The contractor shall provide the effectiveness results of ESS to the Government, with all issues noted and resolved in accordance with CDRL C005.

C.10.5.1.7 LRU Highly Accelerated Life Tests (HALT)

The contractor shall conduct a HALT on the LRUs prior to production, including LRIP, using production-intent design(s), materials, and manufacturing processes. The LRUs subject to a HALT shall be determined jointly with the Government (CDRL C002).

C.10.5.1.7.1 LRU HALT Plans

The contractor shall develop LRU HALT plans for all LRU HALTs and shall provide contractor approved final versions of the aforementioned HALT plans for review and approval to the Government in accordance with CDRL C003.

C.10.5.1.7.2 LRU HALT Responsibilities

The contractor shall develop and implement HALT planning, coordination, and control of HALT testing.

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C.10.5.1.7.3 LRU HALT Test Reports

The contractor shall submit LRU HALT reports to the Government for review and approval after completion of the final HALT on each LRU in accordance with CDRL C004.

C.10.5.1.8 Design For Six Sigma (DFSS) and Lean Manufacturing Techniques

The contractor shall utilize DFSS and Lean Manufacturing tools and processes for work conducted under this contract. DFSS and Lean Manufacturing shall be an institutionalized documented process and the tools selected for each project shall be documented.

C.10.5.2 Reliability, Availability and Maintainability (RAM) System Assessments

C.10.5.2.1 Reliability Growth Curve (RGC)

The contractor shall continuously monitor and control all aspects of system and subsystem reliability performance throughout the period of performance of this contract to ensure the programs approved RGC (Attachment 0098, AMPV Reliability Growth Models) provided by the AMPV program is met.

C.10.5.2.2 RAM Program

C.10.5.2.2.1 The contractor shall maintain a RAM program to assure required vehicle reliability and maintainability performance is being monitored, evaluated and achieved throughout the vehicle's life cycle.

C.10.5.2.2.2 RAM Program Plan

The contractor shall implement and maintain a comprehensive RAM Program Plan. The contractor shall develop engineering processes to ensure a reliable design reflected in a corresponding reliability model. The contractor shall use American National Standards Institute document GEIA-STD-0009-2008, including the Checklist for Evaluating Reliability Program Plans as a guide for reliability program development. The contractor shall monitor the system design throughout the entire period of performance to identify, assess, and implement failure analysis and corrective actions and to correct any incidents which would adversely affect RAM. The contractor shall develop a RAM analysis and predictions to ensure compliance with the Performance Specifications. The plan shall encompass all aspects of reliability and maintainability with respect to design selection of components, predictions, and testing. The contractor shall maintain and make available to the Government all RAM data on any vendor or subcontractor supplied item and shall inform the Government of any part or component that will degrade system RAM requirements. The RAM program plan shall include the following tasks as outlined in Sections C.10.5.2.2.3 - C.10.5.2.2.8. The contractor shall submit its RAM program plan in accordance with CDRL C008.

C.10.5.2.2.3 RAM Reports

The contractor shall develop and maintain a RAM Report. The report shall provide data to support the contractor's claim that it meets or exceeds the RAM requirements. The contractor shall also identify how best commercial engineering and DFSS approaches are being incorporated early in the system design process to achieve the requirements. The contractor shall submit RAM reports in accordance with CDRL C008.

C.10.5.2.2.4 Procedures and Controls

The contractor shall establish and maintain procedures and controls, which ensure products obtained from vendors and subcontractors meet RAM requirements. The contractor shall establish, implement, and maintain documented procedures, which detect and preclude the use of substandard or counterfeit parts in the production process and impose similar requirements on subcontractors. In addition, the contractor shall provide the Government notice of any special RAM review meetings scheduled with subcontractors so that Government representatives can attend at their discretion. (CDRL C008)

C.10.5.2.2.5 RAM Program Review

The contractor shall conduct RAM program reviews with the Government. The RAM program reviews may be held in conjunction with corrective action reviews and program management reviews or stand-alone.

C.10.5.2.2.6 Reliability Predictions

The contractor shall maintain a reliability prediction report in accordance with CDRL C008. The report shall provide detailed reliability predictions based on a defined configuration and associated models. The predictions shall be allocated from the system level to one level below installation level. The contractor shall update the predictions each time significant design or mission profile changes significantly impact the vehicle or any of its subsystems.

C.10.5.2.2.7 RAM Modeling and Analysis

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The contractor shall utilize and maintain a reliability model for each variant. 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; and
- (e) Enable the application of proactive tools such as 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.

**C.10.5.2.2.8 RAM Predictions**

C.10.5.2.2.8.1 The contractor shall provide and maintain RAM predictions that correlate with the contractor Reliability Model. RAM predictions shall include reliability design predictions for Mean Miles Between System Abort (MMBSA) 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). RAM 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). RAM predictions shall be rolled up to the system level. The contractor shall analyze and update the RAM predictions whenever a design change or manufacturing change occurs. The contractor shall include RAM predictions in the reliability model. The contractor shall document any assumptions, boundary conditions and any test or modeling inputs used in developing RAM predictions.

C.10.5.2.2.8.2 If possible, the contractor shall generate the RAM predictions by utilizing actual component and subsystem test-generated data with test inputs at least as demanding as the Operational Terrain (Performance Specification). The contractor may also use previously generated data for COTS items to generate RAM predictions, provided that the testing represents the Operational Terrain environment. The contractor shall not base its RAM predictions solely on models, on Non-Electronic Parts Reliability Data (NPRD), or on MIL-HDBK-217 data. If inputs used to generate RAM 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 deliverable for any adjustment factors. The information used to create this CDRL deliverable shall be available to the Government and discussed at IPT meetings as well as major reviews (CDRL C008).

**C.10.5.2.2.9 Contractor Reliability Growth Plan**

The contractor shall deliver and maintain a reliability growth plan in accordance with the AMSAA Planning Model Based on Projection Methodology (PM2)(Attachment 0029) Reliability Growth Planning Curve Spreadsheet that describes planned reliability growth throughout system design and testing (to include contractor performed and Government performed). The reliability growth plan shall describe how the contractor will achieve the reliability requirements in the Performance Specification (Attachments 0001 and 0082) and show continued growth beyond the reliability threshold throughout LRIP and into Full Rate Production (FRP). The reliability growth plan shall include a growth curve which shows achievement of at least 713 MMBSA (point estimate) prior to start of the LUT (CDRL C008).

**C.10.5.2.2.10 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 in accordance with the AMSAA Planning Model Based on Projection Methodology (PM2) Technical Report No. TR-2006-9 (Attachment 0029). The information used to create this growth curve shall be available to the Government and discussed at IPT meetings as well as major reviews. (CDRL C009)

**C.10.5.2.3 Test Incident Reports (TIRs)**

C.10.5.2.3.1 The contractor shall establish and maintain a system for analysis of TIRs generated during Government tests. The contractor

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shall access all TIRs directly through VDLS. The system shall be capable of tracking the status of TIRs to include necessary distribution, failure analysis, corrective action, and management reports. The contractor shall also be responsible to distribute TIRs down to suppliers and subcontractors to ensure failure analysis and corrective action reports include their input.

## C.10.5.2.3.2 TIR Scoring Conferences and Assessment Conferences

Formal scoring and assessment conferences will be conducted at the discretion of the Government. Scoring conferences will be conducted during and immediately after Government testing to assure that a proper and consistent determination is made for categorizing test incidents against RAM requirements in accordance with the Failure Definition (FD) and Scoring Criteria (SC) in Attachment 0100. Conferences may alternate between test sites. The contractor shall support all scoring and assessment conferences as part of the RAM program. During the scoring conference, each TIR revision shall be scored, to include revising the incident classification (Critical, Major, Minor, Information). At least 72 hours prior to the conference, the contractor may present TIR scoring recommendation(s) to the Government. Further discussions with the contractor may be required to ensure full technical understanding of test incidents. All discussions with the contractor will be held separately from scoring and assessment activities. The contractor shall not witness the actual scoring of the TIRs. The Government will notify the contractor of the scoring conference results within 10 calendar days of the meeting.

## C.10.5.2.4 Failure Analysis and Corrective Action Report (FACAR)

C.10.5.2.4.1 The contractor shall submit FACARs in response to TIRs. The contractor shall prepare and submit FACARs in accordance with CDRL C009.

## C.10.5.2.4.2 Corrective Action Review Board (CARB)

During and after Government testing, CARB meetings will be held at the discretion of the Government to review the contractor's FACARs (CDRL C009) for acceptance or rejection. CARB reviews shall be hosted by the contractor at locations specified by the Government. The contractor shall prepare CARB packages, including copies of all applicable FACARs, for meetings and provide minutes of CARB results for Government review in accordance with CDRL C009. Upon completion of the TIR evaluation, failure analysis, and corrective action coordination, the contractor shall prepare an incident close out sheet, using contractor format. The contractor shall coordinate TIR responses from subcontractors for submission to the Government. The contractor shall submit closeout information including finalized FACARs and supporting test data in accordance with CDRL C009.

C.10.5.2.4.3 If the contractor's FACAR response is rejected, the Government will notify the contractor within 30 calendar days of submission of the FACAR to AMS. The contractor shall be required to resubmit a response within 30 calendar days of that notification.

## C.10.5.2.5 Identification of Failed Parts

The contractor shall handle each failed part supporting the FACAR in a manner that does not damage the failed test exhibit. The contractor shall mark, tag, and control each of these failed parts found during Government and contractor testing with the contractor's part number, and its respective TIR number. The contractor shall ensure that all identification markings and tagging placed on a failed test exhibit are legible. Failed items are to be segregated so that they cannot be commingled with new LRUs or parts provided for testing System Support Package. The contractor shall be fully responsible for the storage and care of each failed part(s). The item(s) shall remain stored pending disposition of the failure analysis and Government notification and approval.

## C.10.5.3 Production Phase (LRIP) Test and Evaluation

## C.10.5.3.1 Testing Overview

The system test strategy and key decisions will be captured in the Test and Evaluation Master Plan (TEMP) as they pertain to the unique phases of contractor and Government testing. The AMPV T&E WIPT will be the mechanism for refining the TEMP in support of the contractor testing, Production Qualification Test (PQT), Initial Operational Test (IOT), and Live Fire Test (LFT). Data from all testing will support AMPV variant independent assessments, and the FRP decision. The contractor shall deliver vehicles to conduct all testing in accordance with Attachment 0008.

## C.10.5.3.1.1 Contractor Maintenance &amp; Upkeep of Facility and Log Vehicles

The contractor shall:

- (a) Provide ongoing maintenance and repair of facility and Log vehicles and to ensure they are in functional working order and kept up to the latest approved hardware and software configuration.
- (b) Provide planning, coordination and management of the scheduled vehicle usage and configuration changes.
- (c) Provide accurate identification and record of expenditures for labor, troubleshooting, and failure analysis as well as component replacement and repair.

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(d) Provide labor for the removal and installation of failed components and the transfer of components between vehicles to meet test configuration requirements.

(e) Remove, package and ship defective LRUs to vendors for repair.

(f) Obtain, ship and return replacement components to and from supply points.

(g) Track the status and cost of defective parts being repaired and ensure that they are returned back to the appropriate vehicles.

(h) Track the status of vehicle components, serial numbers and locations in a database.

(i) Prepare, inspect and ship vehicles and components.

**C.10.5.3.2 Contractor T&E Authority**

C.10.5.3.2.1 The contractor effort, in support of T&E, shall be continuous from the contract award to the contract close out. The contractor shall appoint or designate a single T&E authority responsible for the T&E teams roles, assignments, practices, processes, and a seamless unity of effort across all the programs functional groups (e.g., Engineering, Logistics, Safety, Quality, HFE). The contractor T&E authority shall plan and execute contractor testing, support for Government testing and perform risk and configuration management.

C.10.5.3.2.2 The contractor T&E Authority shall review program related documents (including the TEMP) that may have an impact on the test program. The contractor shall advise the Government on recommended changes to the TEMP. The contractor shall notify designated Government Quality Engineering personnel 14 calendar days prior to conducting any LRU or System Level Tests, regardless of the location or facility, to allow for Government participation and witnessing of test execution. Government representatives shall have the opportunity to attend and witness any LRU or System Level Tests and will determine which tests to witness.

**C.10.5.3.3 Contractor Testing**

The contractor shall perform vehicle system level testing for each variant in accordance with a Government approved contractor test plan (CDRL C003) prior to the start of Government testing as outlined in Attachment 0008. The contractor shall conduct vehicle system level testing at Government test facilities in accordance with Attachment 0008 to verify that the vehicle systems and subsystems meet critical performance specification technical parameters and to reduce overall program risk. Contractor testing will be conducted to verify and validate vehicle configuration changes, and to determine readiness to enter Government Test. The contractor shall use applicable Test Operating Procedures (TOPs) or International Test Operating Procedures (ITOPs) as guidance for the preparation of test plans. A listing of TOPs/ITOPs can be found at <http://www.atec.army.mil/publications/topsindex.aspx>.

**C.10.5.3.3.1 Contractor Shakedown Testing**

Prior to the start of Government RAM Testing during PQT, the contractor shall conduct a system level shakedown test of each of the Government RAM test vehicles to ensure workmanship and infant-mortality issues are surfaced and addressed in accordance with a Government approved contractor test plan (CDRL C003). Within two business days of completion of the shakedown test for the specific vehicle under test, the contractor shall conduct a teleconference with the test site personnel, as well as PM ABCT Test and RAM personnel to advise them of the suitability for the vehicle to begin RAM missions. At a minimum, shakedown testing shall consist of 250 miles of testing over the terrain profile mix found in the OMS and MP.

**C.10.5.3.4 Government Testing**

The Government will conduct DT and OT as part of the AMPV program. DT is planned to be conducted at APG, YPG, EPG, White Sands Missile Range (WSMR), Dugway Proving Ground (DPG), Cold Regions Test Center, and Tropic Regions Test Center. The OT test site is yet to be determined. Government safety testing will be performed as soon as practical after test site initial inspection to obtain a safety release in support of any user events or logistic demonstrations.

**C.10.5.3.4.1 Production Qualification Testing (PQT)**

PQT will consist of Automotive Performance tests, RAM testing, ballistic testing, firing performance and accuracy testing, environmental testing, Electromagnetic Interference (EMI), and Electromagnetic Compatibility (EMC) safety. APG and YPG personnel will conduct the majority of the effort for this test phase. Additional test activities include: safety assessment, human factors assessment, and performance characteristics. A full list of sub-tests performed during the PQT is defined in Attachment 0008.

**C.10.5.3.4.2 Initial Operational Test (IOT)**

IOT will be conducted at a location to be determined, and performed within the constraints specified by ATEC and safety release

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processes. The duration of the IOT is defined in Attachment 0008.

C.10.5.3.4.3 Follow-on Production Testing (FPT)

The contractor shall support a Follow-on Production Test (FPT) of one to two vehicles per LRIP production year, starting in LRIP production year two. The FPT will consist of a subset of performance subtests conducted during PQT (as described in Attachment 008), and 1,000 to 1,500 miles of durability testing. The contractor shall provide materiel to support FPT, which shall be built to current production configuration using standard manufacturing methods and tooling. The contractor shall provide System Support Packages in accordance with Section C.10.6.8 and technical support in accordance with Section C.10.6.10 for FPT. The Government will notify the contractor in writing which vehicle is to be provided for FPT. Following FPT, the test vehicle shall be brought to fully serviceable (-10/-20) operating condition prior to fielding.

C.10.5.3.5 Contractor Support for Government Testing

The contractor shall provide the personnel and level of work as described in the following sub-sections.

C.10.5.3.5.1 Test Site Field Service Representatives (FSRs)

FSRs are as specified in Section C.10.6.10. For testing at all Government Test Sites, the FSRs shall be available during the entire test schedule. The FSRs shall coordinate with test site personnel to assist and conduct repairs. The FSRs shall possess sufficient knowledge to assist and direct test site personnel in maintenance tasks should TMs be unavailable to conduct testing. The contractor shall provide sufficient FSRs to support two, daily 10-hour shifts at YPG and APG.

C.10.5.3.5.2 Subject Matter Experts (SMEs)

The contractor shall have SMEs available to travel to any of the test sites to support troubleshooting or failure analysis of critical or major incidents (as defined by the TIR) for any of the vehicles under Government testing. The contractor SMEs shall arrive onsite at the test site within two business days after the PCO requests their assistance.

C.10.5.3.5.3 Operational Test Support

The contractor shall support the IOT by having FSRs and Test Engineers (TEs) available on site, and design engineers on call, to assist Government test personnel at Government sites, as specified in Attachment 0008, in diagnosing and fixing vehicle incidents. These contractor FSRs and TEs shall also ensure that the System Support Package (SSP) (reference Section C.10.6.8.1) is maintained with the proper quantity of repair and replacement parts for the vehicles under test at the IOT test site.

C.10.5.3.5.4 Ballistic Testing and System Level (SL) Live Fire Test and Evaluation (LFTE)

The Government ballistic and LFTE testing will be conducted at APG. The contractor shall provide FSRs and SMEs to assist Government test personnel in preparation for LFTE events, as well as post-test vehicle analysis.

C.10.5.3.5.5 Contractor Corrective Actions and Refurbishment of LRIP Test Assets for use in IOT

The contractor shall be responsible for conducting hardware replacements, software updates and vehicle upgrades required to meet vehicle requirements. The 12 test vehicles (three GP, three ME, two MC and four MCcmd) that are required to be used in more than one test (e.g. Performance to IOT) shall be brought to fully serviceable (-10/-20) operating condition prior to the start of IOT activities (see Attachment 0008). All repairs, replacements and upgrades to all vehicles shall be completed prior to the start of IOT training.

C.10.5.4 Verification Data

The contractor shall make available verification data such as test data, results, demonstration documents, videos or pictures, analyses, reports and inspection results to the Government (CDRL C010).

C.10.5.5 FUSL LFTE Vehicles

Ten vehicles (two per variant), will be utilized to conduct full up system level LFT in accordance with Attachment 0008.

C.10.5.6 Quality Assurance and Manufacturing

C.10.5.6.1 Quality Management System (QMS) Requirements

The contractor shall implement, modify, and maintain a quality management system acceptable to the Government for all supplies and services to be provided under this contract. The quality system shall meet the requirements of ANSI, ISO, or ASQ Q9001-2008 or an equivalent standard. Government approval of the Quality System is not required, if at the time of contract award, the contractor is a Registrar Accreditation Board (RAB) certified or registered ANSI, ISO, ASQ Q9001-2008, QS 9000, TS 16949, or AS 9100 supplier. The

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contractor shall make all QMS documents and procedures available for review upon request.

C.10.5.6.2 Final Inspection Record (FIR)

C.10.5.6.2.1 The contractor shall continue to develop and provide for Government approval, a validated vehicle end item FIR for each vehicle variant. The FIR shall be organized to be compatible with assemblies and installation and reflect all inspections and tests performed to verify conformance to requirements.

C.10.5.6.2.2 The contractor shall update and deliver the FIR throughout the contract period, as requirements or vehicle configuration changes, in accordance with CDRL C011. The contractor shall execute a FIR inspection or test prior to vehicle presentation for Government acceptance.

C.10.5.6.2.3 The contractor shall notify designated Government personnel (PM-ABCT-Q, DCMA) 14 calendar days prior to conducting any FIR activities, regardless of the location or facility, to allow for Government participation and witnessing of FIR execution.

C.10.5.6.2.4 The contractor shall execute a FIR and correct all noted deficiencies prior to presentation for final vehicle delivery to the Government.

C.10.5.6.3 Supplier Quality Assurance (SQA) Program

The contractor shall develop and maintain a SQA Program that shall be used to guide all contractor supplier interaction. The contractor's SQA Program shall be compliant with ISO/TS 16949:2009 or equivalent 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 information used to develop the SQA Program shall be available to the Government and discussed at IPT meetings as well as major reviews. The contractor shall make information used to develop the SQA Program, as well as all documents and procedures associated with the SQA Program, available for review upon request.

C.10.5.6.3.1 The contractor shall develop a SQA Plan as part of the SQA Program. The contractor shall make information used to develop the SQA Plan, as well as all documents and procedures associated with the SQA Plan, available for review upon request.

The SQA Plan shall include, at a minimum, the following:

- (a) Requirements for becoming an approved supplier
- (b) Part approval process
- (c) Quality Management System requirements, including third party quality registration requirements
- (d) Preventive and Corrective action requirements
- (e) Quality Problem Reporting requirements
- (f) Critical and Safety Parts Control
- (g) Lot Control and Traceability
- (h) Delivery and shipping information
- (i) Provisions for periodic audits

C.10.5.6.4 Government Quality Audits

The Government shall monitor the contractor's performance using the Quality Assurance procedures established for this contract. This shall involve quality audits (process audits, manufacturing audits, product audits). 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, shall be conducted with the contractor.

C.10.5.7 Refurbishment of Cold Start Kits

The four cold start kits provided in EMD (see Section C.5.9, AMPV Cold Start Kits), shall be removed from the test vehicles after completion of all EMD testing. The kits shall then be refurbished to like-new condition and the latest configuration, or if not economically feasible (the cost exceed the Maintenance Expenditure Limits (MEL)), the contractor shall provide an estimate of required expenditures and obtain Government approval for procurement of up to four new Cold Start Kits in the latest configuration, for evaluation on LRIP vehicles. If applicable, an updated Cold Start Kit operation and troubleshooting instruction shall be provided in accordance with CDRL D036.

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C.10.5.8.1 The contractor shall provide all personnel, equipment, tools, materials, repair parts, transportation, supervision and other items and services to inspect and rebuild the following ten AMPV LRIP test vehicles to the current variant configuration and Bill of Material (BOM), CDRL B001; the two GP, three ME, one MC, one MT and three MCmd vehicles used for RAM, Corrosion, Natural Environmental Extremes, and Nuclear Weapons Effects, and Thorough Decontamination. Rebuild is a near zero time or zero mile maintenance process defined as an end item total tear down and replacement of all expendable components, all aged components, reconditioning of structural components, and the procedures identified for overhaul of the end item. Rebuild results in a system with the same model and a new life. The vehicles shall be rebuilt to meet rebuild quality standards and current AMPV performance specifications. Assemblies, components and Line Replaceable Units (LRU's) shall follow applicable rebuild requirements within National Maintenance Work Requirements (NMWR) and Depot Maintenance Work Requirements (DMWR), if they exist. Otherwise, they shall be rebuilt to the -10/-20 Preventative Maintenance Checks and Services standards identified in the validated system TMs and the engineering drawings.

C.10.5.8.1.1 The Government will provide in a timely manner the Government Furnished Items identified in the BOM as configuration required to complete the rebuild. GFM shall be provided to the contractor on or before the agreed upon rebuild schedule. After rebuild, the contractor shall thoroughly inspect and test the vehicles and submit a Final Inspection Report (FIR), per CDRL C011. The completed vehicles shall be delivered to the Government within 180 days after the completion of LRIP testing.

**C.10.5.8.2 Repairing LRIP Test Vehicles to -10/-20 Standards**

The contractor shall return all LRIP test vehicles, except the ten used in LFT events and the ten vehicles that are being rebuild (see Section C.10.5.8), to -10/-20 standards.

**C.10.5.8.3 Shipping of Test Assets**

The contractor shall ship the test vehicles from the test facilities to the contractors refurbishment location.

**C.10.5.9 Non-vehicle Hardware Deliverable Requirements**

The contractor shall meet all non-vehicle hardware deliverable requirements identified in Section E prior to Government acceptance of hardware for LRIP. The contractor shall ensure all non-vehicle hardware deliverables (Section C.10.5.9.1) correspond with the design of the delivered AMPVs.

**C.10.5.9.1 Non-vehicle Hardware Deliverables**

C.10.5.9.1.1 The contractor shall provide all of the BII and COEI identified within Section C.10.6.2.2.3.2 with each vehicle delivery in accordance with Exhibit B.

C.10.5.9.1.2 The contractor shall provide the SSP identified within Sections C.10.6.2.2.4 and C.10.6.8.1, to each of the supporting USG test sites, in accordance with Exhibit B. The SSPCL (CDRL D013), including LCN breakdown, shall accompany the SSP.

C.10.5.9.1.3 Contractor shall provide all Special Tools and Test Equipment identified within Sections C.10.6.6.1 and C.10.6.6.2.1 in accordance with Exhibit B.

**C.10.5.9.1.4 Protection and Installation Kits**

If the contractor chooses to use a vehicle protection kit solution that is required for the defeat of specified threats in the Performance Specification, instead of an armor solution that stays on the vehicle, the Contractor shall provide 52 full protection and installation kits with each LRIP Option 1 vehicle. If the protection kit solution contains Class V materials, the contractor shall provide 52 inert protection and installation kits with each LRIP Option 1 vehicle. The inert kits shall be representative of the Class V kits in terms of size, weight, integration and installation. The inert kits will maintain the same vehicle center of gravity when installed as the Class V kits.

**C.10.5.9.1.5 Class V Protection and Installation Kits**

If the protection kit solution that the contractor chooses contains Class V materials, the contractor shall provide the Government 10 (two per variant) live protection and installation kit solutions containing the Class V materials. If Class V protection kits are used, they must enable the vehicle to meet the protection levels defined in the AMPV Performance Specification (Attachments 0001 and 0082).

**C.10.6 Integrated Logistics Support in LRIP****C.10.6.1. ILS Program**

The contractor shall plan, manage and execute an ILS Program for the AMPV program.

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C.10.6.1.1 ILS Program Objectives

1) The contractor shall conduct an effective LSA program that:

(a) Ensures that the supportability characteristics for the AMPV identified in the AMPV Performance Specification (Attachments 0001 and 0082) are satisfied and demonstrated via testing and delta Logistics Demonstration (Log Demo) activities, and

(b) The contractor shall effectively translate the design of the AMPV into verified logistics support package products to support production vehicle testing and initial fielding.

2) The ILS program shall focus on the development of a verified logistics support package that maintains currency with the AMPV product configuration.

3) The contractor shall provide effective test support by developing and managing system support packages for contractor and Government tests and logistics events under this contract.

4) The contractor shall maintain facility vehicles to ensure they are available and in the latest approved configuration to support the logistics activities required for their use under this contract. In the event that test vehicles become available to support logistics activities, these vehicles will be kept at configuration levels mutually agreed upon by the Government and contractor. Facility vehicles shall be maintained in a TM -10/-20 standard condition and be able to obtain a safety release for logistics events. For each variant, the Contractor shall maintain a full set of current BII, COEI, and AAL.

C.10.6.1.2 ILS Program Management

The contractor shall establish and maintain the management processes and controls for the AMPV ILS program. A joint Government and contractor Product Support Integrated Product Team (PSM-IPT) shall be established to oversee the AMPV ILS program.

C.10.6.1.2.1 ILS Management Planning

The contractor shall present its plan for managing and executing the ILS program at a PSM-IPT meeting 30 calendar days after the exercise of LRIP Option Year 1 (CDRL D001). The plan shall describe the contractors organization, lines of communication, and schedule of activities, with associated resources and management controls. This planning information shall be presented for PSM-IPT approval. Required adjustments shall be documented in the PSM-IPT Meeting Minutes (CDRLS A001 and A002).

C.10.6.1.2.2 ILS Master Schedule

The contractor shall update and maintain an ILS Master Schedule to manage the AMPV ILS program through completion of the LRIP contract. The ILS master schedule shall reflect the details of the ILS work content requirements of this contract and incorporate the ILS Master Schedule into the AMPV IPMR and IMP (CDRL A004). The contractor shall present the ILS Master Schedule at each PSM-IPT meeting and incorporate any PSM-IPT approved changes to the schedule into the AMPV IMS.

C.10.6.1.3 Life Cycle Sustainment Strategy

The contractor shall execute the AMPV ILS program in accordance with the Government approved AMPV LCSP.

C.10.6.1.3.1 LSCP Support

The contractor shall develop content and provide input for the LCSP and all associated annexes in support of the Governments LCSP updating effort.

C.10.6.1.3.2 Depot Maintenance Strategy

The contractor shall participate in the formulation of the AMPV Depot Maintenance Strategy via a Joint contractor and Government Depot Maintenance team. The contractor shall assist the Government in documenting the Depot Maintenance Strategy through an update to the AMPV LCSP following the timeline established in the AMPV ILS Master schedule. This update includes providing data required to develop or update the Core Logistics Analysis (CLA), Core Depot Assessment (CDA) and Source of Repair Analysis (SORA) in accordance with AR 700-127, Chapter 5, Section III.

C.10.6.2 Logistic Support Analysis (LSA) and Logistics Management Information (LMI) Objectives

1) The contractor shall perform LSA of the design of the AMPV variants to ensure they are meeting or exceeding

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the supportability requirements contained in Performance Specifications.

2) The contractor shall make maximum use of LSA and LMI data developed under previous Government contracts and maintain an ILS design change tracking system which provides logistics tracking data, to include the estimated cost to implement proposed design changes and the authority directing the change, from contract award through Government approval.

3) The contractor shall ensure LSA and LMI data is available to develop, validate and provide a logistics support package for LRIP vehicles at the time of their scheduled use for testing, or other demonstrations, evaluations or fielding.

4) The contractor shall analyze the data resulting from testing, manufacturing, quality, and other evaluations of the AMPV systems, including the Log Demo, in order to ensure that LMI reflects the results of these activities. The result should ensure that AMPV logistic support planning and the AMPV logistics support package properly represent the best information available to support the AMPV.

C.10.6.2.1 LSA Tasks

The contractor shall perform the following Logistics Support Analysis efforts, tailored as stated in Sections C.10.6.2.1.1 through C.10.6.2.1.9.1.

C.10.6.2.1.1 Supportability Design Factors

The contractor shall demonstrate and maintain the following design related supportability parameter functions for the AMPV.

C.10.6.2.1.1.1 System Specification Parameters

The contractor shall demonstrate that, during testing or Log Demo, supportability requirements of the system specifications were designed into the AMPV vehicles.

C.10.6.2.1.1.2 RAM Input

The contractor shall leverage the results of the RAM Analysis (Section C.10.5.2), including the FMECA (Section C.6.1.9), to update LMI maintenance task frequencies, parts replacement rates, troubleshooting and diagnostic symptoms and procedures, maintenance times, reliability centered maintenance based scheduled and unscheduled maintenance task determination, and essentiality determinations.

C.10.6.2.1.1.2.1 Allocations and Predictions

The contractor shall utilize the final RAM allocations and predictions (Sections C.10.5.2.2.6 and 10.5.2.2.8) to update the quantitative elements of the LMI data. The contractor shall update allocations to primary systems and subsystems for meeting system level diagnostics requirements.

C.10.6.2.1.2 Functional Requirements Identification

The contractor shall update the existing Operator and Maintenance Task Lists to reflect the AMPV product baseline and maintain these lists in the AMPV LMI. The contractor shall also perform the following Functional Requirements Identification efforts in accordance with the approved ILS Master Schedule.

C.10.6.2.1.2.1 Supportability Analysis

The contractor shall update the assessment of supportability for the AMPV design. Supportability considerations shall be based on the current product configuration. The contractor shall assess the adequacy of the AMPV design from the repairable item level through the system level. The contractor shall provide its assessments at PSM-IPT meetings and LMI reviews. The contractor shall identify any shortcomings in the design in the LMI data base and present them at LMI reviews, PSM-IPT meetings, configuration audits, engineering reviews and program reviews. The contractor shall provide recommendations and corrective action plans based on its assessment and system specification requirements.

C.10.6.2.1.3 Support System Alternatives

The contractor shall perform analysis of support system alternatives. Results shall be presented by the contractor at PSM-IPT meetings, program and design reviews. Results of Support System Alternative analysis shall be documented in PSM-IPT and program and design review meeting minutes in accordance with CDRL A001.

C.10.6.2.1.3.1 Testability

The contractor shall use MIL-HDBK-2165 to implement or update the necessary testability tasks and activities to achieve Fault Detection and Isolation, Built in Test (BIT), and Built in Test Equipment (BITE) requirements. The contractor shall also request current Test

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Program Set (TPS) guidance from the Program Management Office prior to the development or update of TPSs.

## C.10.6.2.1.3.1.1 Testability tasks

The contractor shall develop, or update, and implement the necessary testability tasks and activities to meet the AMPV Performance Specifications. The contractor shall do so in order to minimize the system downtime required for diagnostics and troubleshooting. The contractor shall do so by ensuring adequate test points are integrated into the system, thereby minimizing TPS test and fault detection time, and overall fault isolation performance. The contractor shall develop AMPV Embedded Diagnostics, Software Downloader, and TPS diagnostic products. The contractor shall submit an updated Testability Analysis Report, in accordance with MIL-HDBK-2165 and DI-ATTS-81271 (CDRL D003). The contractor shall execute the testability program in accordance with direction from the PSM-IPT.

## C.10.6.2.1.3.2 Product Support (PS) Business Case Analysis (BCA)

The contractor shall provide data and input to the Government in the development of a PBL BCA. In developing the PS BCA, the assumption shall be full organic support for the AMPV systems as a base case; however, the Government will formulate a PS strategy that provides optimal support for AMPV. The contractor shall provide access to all pertinent records and data as necessary to adequately prepare the PS BCA.

## C.10.6.2.1.3.3 Spares Acquisition Integrated with Production (SAIP) Planning

The contractor shall update and deliver the AMPV SAIP Plan to address the contractor's approach to managing the AMPV SAIP program. The contractor shall brief its SAIP plan at a PSM-IPT meeting at least 14 months prior to fielding and annex the Plan to the AMPV LCSP in the minutes of the PSM-IPT meeting at which it is briefed, in accordance with CDRL A001.

## C.10.6.2.1.3.4. Total Package Fielding (TPF) Planning

The contractor shall update the AMPV TPF Plan(s) to address the contractor's approach to managing the AMPV TPF effort. The plan shall address such matters as the process for identifying TPF elements, and managing, procuring, storing, transporting, and distributing TPF materials. The plan also shall address manpower, equipment, time lines and funding requirements. The contractor shall brief the plan at a PSM-IPT meeting at least 12 months prior to fielding and annex the plan to the AMPV LCSP in the minutes of the PSM-IPT meeting at which the plan is briefed, in accordance with CDRL A001.

## C.10.6.2.1.4 Task Analysis Performance Objective

The contractor shall update the task analysis for AMPV. The analysis shall mirror the AMPV product configuration baseline in LMI in order to facilitate development of the AMPV logistics support package. The contractor shall tailor the analysis so that each logistics product is based upon the appropriate LMI baseline. The contractor shall deliver the Task analysis documentation to the Government as a part of the overall LMI submissions in accordance with CDRL D004 (AR 700-127, Chapter 5, Section 3).

## C.10.6.2.1.4.1 Maintenance Task Analysis

The contractor shall update the Maintenance Planning and Supportability Analyses in order to develop logistics products based on the Army's two-level maintenance policies in accordance with AR 750-1 (Chapter 3, Section 2) and AR 700-127 (Chapter 5, Section 3). The contractor shall use GEIA-STD-0007 (latest version), and shall also use GEIA-HB-0007 and TA-HB-0007 (latest versions) if applicable, to identify content, format, delivery and related guidance for logistics data. The contractor shall provide logistics data to the Government in a format compatible with current and future (approved) automated logistics operating systems and shall be readily acceptable to Army system and processes without adjustments, refinements, or conversion processes.

## C.10.6.2.1.4.1.1 Maintenance Task Analysis Baselines

The contractor shall update the complete LMI baseline for each AMPV configuration based upon a maintenance task analysis. The maintenance task analysis shall reflect the design (as-built) baseline of AMPV that will enter Government Testing. The AMPV baseline shall reflect the results of the latest RAM, safety, health hazards, and human factors engineering analyses. The contractor shall tailor the task analysis to meet the requirements of LMI and the resulting logistics support package during this program phase. The contractor shall update the maintenance task analysis to reflect the results of testing, training, quality, manufacturing, the Log Demo, and other AMPV events and evaluations. In performance of maintenance task analysis, the contractor shall:

- (a) Provide sequential narrative instructions or procedures for all tasks below depot level maintenance including: (1) maintenance source data for Technical Manuals (TM) and (2) Interactive Electronic Technical Manuals (IETM).
- (b) Identify all support requirements for performing each task. These shall include Military Occupational Specialty (MOS), skill levels, tools, support equipment, ATE, TPS's, and repair parts. As a result of the maintenance analysis, recommend repair parts and special tool requirements, technical manuals, kits, tools or other equipment.
- (c) Update the quantitative assessment of each maintenance task, RAM analysis and test, to update task frequencies,

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quantities of support items required for each task, and maintenance times for each duty position and the overall task. Based upon the examination of each repairable assembly, use maintainability Design Criteria information in MIL-HDBK-470 to assess the supportability of the design.

C.10.6.2.1.4.1.2 Level of Repair Analysis (LORA)

The contractor shall perform LORA for new items only based on Army two-level maintenance policies using an Army approved model. The contractor shall leverage the LORA analyses for other items or systems managed by the Government to perform the LORA for the AMPV. The updated Maintenance task list that is based upon this LORA shall be presented at LMI reviews. The contractor shall prepare and deliver a current LORA report (CDRL D005) that addresses both new and existing items at the reviews. The LORA will be used to support final decisions on the maintenance plan for the AMPV systems.

C.10.6.2.1.4.1.3 Software Downloading and Verifying Capability Maintenance

The contractor shall update and maintain an embedded software downloading and verifying capability for the AMPV. The contractor shall also demonstrate the capability to update vehicle software using the latest version of the Maintenance Support Device (MSD). The procedures for updating software shall be documented in LMI and serve as the basis for the published procedures in the appropriate TM or IETM.

C.10.6.2.1.4.2 Operator and Maintainer Task Analysis

The contractor shall use the Human Factors Engineering (HFE) data already compiled on any portion of the system to the Human Engineering Design Approach Document - Operator (HEDAD-O) (CDRL D006) and Maintainer (HEDAD-M) (CDRL D007) for AMPV. The contractor shall update the operator and maintenance task lists for each AMPV variant in sufficient detail to develop updated outlines for operator technical manual information, both embedded and standalone. The task inventory for each crew position will include the identification of which tasks and predecessor skills are required to be trained.

C.10.6.2.1.5 Provisioning Plan and Analysis

The contractor shall identify as a part of maintenance task analysis all support items required to support the system. The contractor shall update the provisioning plan in accordance with CDRL D008 for those items that are not currently available through the DoD supply system. For those support items that are currently available through the DoD supply system, the contractor shall update and deliver to the Government information that identifies the application and anticipated usage of the item with CDRL D008.

C.10.6.2.1.6 Support Item Sourcing Analysis

The contractor shall identify to the Government any new AMPV unique support items recommended for stockage or initial issue (items with a source code of "P") that are a part of the product baseline. The contractor shall document whether these items are available as repair parts from the Government supply system or from the Prime contractor. This includes parts that are bought in production as complete assemblies but that will be purchased by the Government as repair (down) parts. The documentation shall be made available at PSM-IPT meetings. If support items are not available, the contractor shall provide to the Government a proposed alternative support strategy.

C.10.6.2.1.7 Packaging Item Classification

For each AMPV support item, the contractor shall classify the items packaging requirements and document these requirements in the LMI.

C.10.6.2.1.8 Facilities Analysis

As a part of the operator and maintenance task analysis, the contractor shall identify any new or unique facilities essential to the maintenance or training of the AMPV system.

C.10.6.2.1.8.1 Facilities Annex

The contractor shall update and deliver to the Government an updated facilities analysis at a PSM-IPT meeting no later than 90 calendar days after contract award. The facilities analysis shall become part of the meeting minutes for that PSM-IPT review (CDRL A001).

C.10.6.2.1.9 Transportability Analysis

The contractor shall update transportability design data to reflect the AMPV product baseline. The contractor shall provide the data as part of the Transportability Report (CDRL D009) used to update vehicle loading plans for all modes of transportation required to transport vehicles, and to conduct transportability-related Government test events. The AMPV transportability design data shall be updated whenever design changes affect the AMPV systems envelope, weight, center of gravity or any other transportability characteristics. The contractor shall validate changes to the AMPV's transportability data in conjunction with validation of the AMPV

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TM source materiel. The contractor shall update TM source materiel with approved changes resulting from the Government verification. The contractor shall provide transportability design data and other transportability information in the vehicle -10 level TMs.

## C.10.6.2.1.9.1 Transportability Report

The contractor shall update Transportability Reports for the AMPV in accordance with DI-PACK-80880D, and deliver the Transportability Reports in accordance with CDRL D009. The contractor shall review the plans and outputs for these transportability related activities with the PSM-IPT.

## C.10.6.2.1.9.2 Air Transportability

The contractor shall provide updates to information in the Air Transportability Reports in accordance with CDRL D030.

## C.10.6.2.1.10 Supportability, Test and Evaluation

The contractor shall update the LMI to reflect the results of testing, evaluations, and demonstrations.

## C.10.6.2.2 Logistics Management Information (LMI)

Data and information generated by the LSA process shall be documented in the LMI in accordance with GEIA-STD-0007 (latest version), and shall also use GEIA-HB-0007 and TA-HB-0007 (latest versions) if applicable. The LMI shall be delivered in accordance with CDRL D010. The LMI milestones and activities shall be key information provided by the AMPV ILS Master schedule. The contractor shall maintain the automated LMI data processing system which is compatible with the Logistics Modernization Program (LMP). The data processing system shall be capable of producing the LMI output summaries specified in GEIA-STD-0007 (latest version). The LMI shall include:

## C.10.6.2.2.1 Manpower, Personnel and Training Requirements

Task lists by MOS shall include the identification of those tasks that need to be trained at the institution, for transition, and sustainment. Task lists shall include frequency, times, skills and other key information to support:

## C.10.6.2.2.1.1 Quantitative and Qualitative Personnel Requirements Information (QQPRI), Manpower Allocation Requirements Criteria (MARC) and Manpower Estimate Report (MER) Input

The contractor shall utilize AR 611-1, and current Modification Table of Organization and Equipment (MTOE) provided as GFI to support an updated assessment of skills for each operator and maintenance task. Any new MOSs or new skills required to operate, or maintain the AMPV shall be identified to the PSM-IPT as soon as the assessment is completed.

## C.10.6.2.2.2 Basis of Issue Plan Feeder Data (BOIPFD)

The contractor shall document and identify, in LMI, TOE and TDA personnel and equipment requirements to operate, maintain, and transport the AMPV variants. Changes (additions or deletions) in requirements of this kind from existing Army systems (i.e., M113 variants) to AMPV shall be presented to the PSM-IPT at least six months prior to the delta Log Demo.

## C.10.6.2.2.3 Supply Support Lists

The contractor shall update and maintain support item lists that identify the specific support item, at what level it is utilized or authorized for use. The contractor shall maintain the statistics from these lists (e.g. number of repair parts, number of repairables, number of special tools, number of repair parts without NSNs), and present the statistics at PSM-IPT meetings. These lists and statistics shall include:

## C.10.6.2.2.3.1 Authorized Stockage List (ASL)

The contractor shall provide a final recommended ASL for the AMPV at least fourteen (14) months prior to fielding, in conjunction with presentation of the proposed Spares Acquisition Integrated with Production (SAIP) List. (See Section C.10.6.2.1.3.3)

## C.10.6.2.2.3.2 Basic Issue items (BII), Components of the End Item (COEI) and Additional Authorized List (AAL)

The contractor shall update the BII, AAL and COEI required for AMPV for fielding and maintain the lists through the contract period. The contractor shall provide all of the BII and COEI identified within these lists with each vehicle delivery in accordance with Section F.2.2.

## C.10.6.2.2.3.3 Repair Parts Special Tools List (RPSTL)

The contractor shall update and deliver the most up to date version of the RPSTL required for the delta Log Demo in accordance with CDRL

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C.10.6.2.2.3.4 Spares Acquisition Integrated with Production (SAIP) List

The contractor shall update the recommended list of AMPV support items that should be considered for concurrent procurement with the LRIP AMPVs. The final approved list shall be delivered to the Government at least 14 months prior to fielding in accordance with CDRL D012.

The list shall include:

- 1) 100% of the Authorized Stockage List (ASL) for two brigades;
- 2) Fly Away Package for two brigades, defined as all parts a Brigade requires to support a 96 hour operation;
- 3) All Essentiality Coded "1" items that are not ASL items (30 each or economic order quantity);
- 4) Items with a lead-time of 12 months or more, that are not Essentiality Coded "1" or ASL (30 each or economic order quantity).

The contractor shall maintain the list of items approved by the Government. This list shall include prices and quantities for the support items that the Government intends to acquire with LRIP vehicles.

C.10.6.2.2.4 System Support Package Components Lists (SSPCL)

The contractor shall prepare and submit for approval an SSPCL (CDRL D013) no later than 90 calendar days prior to test, based upon the results of LSA documented in LMI (CDRL D010).

C.10.6.2.2.5 Maintenance Allocation Chart (MAC)

The contractor shall maintain a maintenance task list and the resulting MAC and Maintenance technical manual outlines based upon the Maintenance Task Analysis (CDRL D004) documented in LMI. The contractor shall deliver the draft MAC at CDR, in accordance with CDRL D004. This shall support the contractors delivery of the outlines and MAC in the verified TM or IETM deliveries.

C.10.6.2.2.6 System Software Configuration

The contractor shall document the draft and official release of AMPV software within the LMI (CDRL D010).

C.10.6.3 Technical Manuals (TMs)

C.10.6.3.1 TM Program Objectives

The objectives of the AMPV technical publications program are to update AMPV variant publications, support Government verification efforts and deliver Final Reproducible Copies (FRC). The contractor shall ensure that all TMs delivered match the configuration of the vehicles they are provided to support. The contractor shall develop and deliver under this contract the following TMs:

- (a) TM X-XXXX-XXX-10 Operator Manuals in accordance with the latest version of MIL-STD-40051-2, CDRL D036 and TM Requirements Matrix for AMPV Operators - Table A-II (Attachment 0031).
- (b) TM X-XXXX-XXX-10-HR in accordance with MIL-PRF-32436 and CDRL D037.
- (c) TM X-XXXX-XXX-13&P Operator and Field Maintenance Manual, including RPSTL, IETM in accordance with the latest version of MIL-STD-40051-1, CDRL D039, IETM Requirements Matrix Table A-XX (Attachment 0032) and TM Functionality Matrix Table A-XVII (Attachment 0033).
- (d) TM X-XXXX-XXX-BD BDAR Manuals in accordance with the latest version of MIL-STD-40051-2 and MIL-PRF-63003, CDRL D038 and BDAR Requirements Matrix Table A-XVI (Attachment 0034).
- (e) TM X-XXXX-XXX-13 Users Security Manual in accordance with the latest version of MIL-STD-40051-2 and CDRL D045.
- (f) Safety related TM changes required to allow the Government to proceed with AMPV tests, demonstrations, and evaluation activities in a safe manner.
- (g) NMWR X-XXXX-XXX shall be prepared and delivered in accordance with the latest version of MIL-STD-40051-2, CDRLs D040-D041, and NMWR Requirements Matrix Table A-VII (Attachment 0046).

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(h) Any MWOs (MWO X-XXXX-XXX-XX-XX) shall be prepared and delivered in accordance with MIL-PRF-63002, the latest version of MIL-STD-40051-2, and CDRL D042.

C.10.6.3.1.1 The contractor will provide TMs validated under the EMD contract as part of the SSP delivered for each test and delta LD.

C.10.6.3.2 Meetings

C.10.6.3.2.1 The contractor shall host a TM Guidance Conference in accordance with Section C.10.2.5.5.

C.10.6.3.2.2 IPRs will be held at the discretion of the Government. These IPRs will usually occur before or directly after PMRs. The IPRs can be used to clarify requirements, provide guidance to the contractor and to ensure the publications are written to conform to the SOW and other Government requirements that may arise.

C.10.6.3.2.3 The Government shall notify the contractor 30 calendar days in advance of each IPR. IPR locations shall be specified by the Government. If scheduled at a contractor's site, the contractor shall make available adequate space, facilities and personnel for Government scheduled IPRs at no additional cost to the Government.

C.10.6.3.3 Publications Development and Delivery

C.10.6.3.3.1 The contractor shall develop and deliver technical manuals developed under the TLM philosophy based on the LSA and resulting LMI. The contractor shall develop procedures in the same sequential order as the Government approved two-level MAC (Section C.10.6.2.2.5). The contractor shall comply with the specifications, standards, and guidelines for the development of the AMPV Publication Series found within the DSL (Attachment 0035). Technical Bulletin (TB) 750-93-1, found in Attachment 0035, requires that technical manuals be organized in Functional Group Code Order. However, LCN sequence is acceptable, if the contractor is reutilizing work packages or data to build the AMPV TMs, which use the LCN sequence and reutilization results in a cost savings to the program.

C.10.6.3.3.2 The contractor shall provide all personnel, equipment, tools, materials, supervision, other items, and non-personnel services necessary to develop the publications as defined in this SOW.

C.10.6.3.3.3 The contractor shall provide the Government with a TM Development Schedule and Status Report showing critical tasks involved with TM development in accordance with CDRL D017. All key TM milestones, such as validations, IPRs, and deliveries shall be identified on the AMPV ILS Master schedule (Section C.10.6.1.2.2).

C.10.6.3.3.4 The contractor shall develop IETMs using EMS-NG software and deliver the IETMs on CD ROM or DVD. During the development process, the contractor shall be responsible for obtaining and utilizing updated releases of the EMS-NG suite to ensure they are providing the best product to the Field.

C.10.6.3.4 Technical Publications Verification

C.10.6.3.4.1 Verification is a Government responsibility. The contractor shall make available the necessary personnel, facilities, equipment and test equipment, tools and special tools, supplies, and pertinent documents required for Government Verification. Verification will take place at a location as specified by the Government. The contractor shall take corrective action resulting from the Verification and furnish the FRC, digitized and PDF submissions of the technical manual(s).

C.10.6.3.4.2 The Government shall verify the technical manuals through a Verification using complete draft technical manuals that have been 100% contractor validated. The Verification effort shall test each publication for usability, technical accuracy and adequacy as required by this contract, attachment(s) and applicable military specifications and standards.

C.10.6.3.4.3 The Verification may consist of actual performance of all operator and maintenance procedures. The Government has the right to choose and verify manuals by desk-top review, review on equipment, actual performance, or any combination of these methods. All errors or deficiencies discovered by Government or contractor personnel during Verification and reviews shall be corrected by the contractor at no additional cost to the Government.

C.10.6.3.4.4 The contractor shall comply with the Government's Verification Plan. The Verification Plan will ensure technical accuracy and adequacy of all TM deliverables and the contractor shall ensure an acceptable level of quality assurance for all deliveries based upon plan.

C.10.6.3.4.5 Verification tasks to be performed by CASCOT Target Audience shall include, but not be limited to, 100% hands-on verification of Preventative Maintenance Checks and Services (PMCS) and Troubleshooting, proper loading of IETM disk set (IETM content disk and EMS NG Viewer disk), IETM navigation and usability, verification of IETM functionalities, approved DA Form 2028s and all newly written or modified procedures and work packages.

C.10.6.3.4.6 The PCO has final dispute resolution authority on the publications format and TM structure and will chair the Verification. The PCO has final dispute resolution authority over Maintenance, Parts, PMCS, Level of Maintenance, MOS selection, Troubleshooting and other technical non-contractual matters. TRADOC will concur on MOS, operator and maintenance performance requirements.

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C.10.6.3.4.7 The contractor shall support all Verifications by the Government and shall provide, at a minimum, the following:

- (a) Equipment [i.e., Maintenance Support Device (MSD) and Portable Maintenance Aid] for displaying IETMs during the Verification
- (b) Maintain records during the Verification.
- (c) Provide assistance to the Government Publications Manager during the Verification
- (d) Provide the Government with a copy of the discrepancies revealed during Verification.
- (e) Corrections to discrepancies revealed during the Verification per the Government's direction.
- (f) Provide the Government Publications Manager with a report of the corrective actions taken.
- (g) Administrative support throughout the Verification
- (h) Validation records on-hand at the Verification site for Government review at all times.

C.10.6.3.5 Warranty Information

C.10.6.3.5.1 If any commercial components have a warranty, the contractor shall include warranty information in the -10 and -13&P manuals. This information shall include a listing of items under warranty, the term of the warranty and procedures for pursuing a warranty.

C.10.6.3.6 Verified TM Review, Delivery and Final Acceptance

C.10.6.3.6.1 The contractor shall deliver MIL-STD compliant IETMs and paginated PDF Preliminary Technical Manuals (PTMs) to the Government for review in accordance with CDRLs D036-D042. The Government may conduct up to three reviews. Each successive review will encompass only those errors that were captured from the previous review. If the Government finds any review comments not incorporated into the resubmitted TM(s), the contractor shall incorporate comments into the TM(s) at no additional cost to the Government, unless a mutual agreement is made between contractor and Government not to incorporate the comments.

C.10.6.3.6.2 The contractor shall incorporate all Government review comments into the FRC delivery. The contractor shall submit to Government each TM, PDF file, document, running sheet and final delivery in accordance with CDRLs D036-D042 for Government review.

C.10.6.3.6.3 The Government will perform a review of final material at TACOM Warren, MI, or other official Government Activity to ensure that the material meets the requirements of the contract and related standards. The Government will notify the contractor of the location of the final copy review. The final acceptance of material shipped under this SOW will be made by the PCO or Contracting Officer's Representative by returning a signed copy of the DD Form 250 (Material Inspection and Receiving Report) to the contractor. This review will be completed within 10 business days after receipt of final material by the technical representative, unless any material is rejected.

C.10.6.3.6.4 In the event that the material is rejected as a result of final copy review by the technical representative, the rejection will be made by official letter, including specific rejection comments, from the PCO to the contractor. The contractor shall correct all deficiencies and furnish the corrected material within 10 business days after notification of corrections required.

C.10.6.3.6.5 In the event that the rejected material cannot be reworked within the required period, the contractor shall notify the PCO, with an information copy to the technical representative, within five business days after receipt of the returned material. Submission of the reworked material shall be made by DD Form 250 with a note of the DD Form 250 stating that the shipment involves reworked material.

C.10.6.3.6.6 The contractor shall provide accurate running sheets for the -10 Operator Manuals, NMWRs, BDAR manuals and any MWO equipment publications with the Final FRC delivery in accordance with CDRLs D036-D042.

C.10.6.3.6.7 The contractor shall package and deliver FRC TMs on CD ROMs/DVDs in a jewel case, or CD box containing all XML-tagged source code files to include artwork in accordance with AR 25-30, DTD, publisher file, style sheets, presentation applications, hard copy instructions and any output coming out of publisher file or program to fulfill the requirements of final delivery under this contract.

C.10.6.3.7 Copyrights

C.10.6.3.7.1 All publications prepared under this contract become the property of the Government and are not subject to copyright by the contractor. The contractor shall provide a copyright release letter in accordance with sample letter (Attachment 0036) which shall be

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on Company letterhead, dated and signed by an authorized Company Officer. The copyright release letter submitted by the contractor shall certify that the Government has full copyrights from the contractor and any subcontractors. The copyright release letter submitted by the contractor shall further state all technical manuals developed are free from copyright restrictions and the Government can edit, reprint and distribute information in the manual, as required. The contractor shall grant the Government unlimited rights to use and distribute the technical manuals and electronic data files delivered under this contract including intellectual property and technical data rights in hardcopy and by means of electronic media.

## C.10.6.3.8 Training

The contractor shall provide an AMPV training program and shall brief status of the training program at PSM-IPT meetings. Any training performed shall be conducted in a manner that ensures: 1) training materials reflect the appropriate vehicle configurations used in training; and, 2) the training will meet the needs of the individuals who will operate, maintain, train or provide technical support to the system. The primary objectives shall be to ensure the training conducted reflects the vehicle configuration used at Production Qualification Testing (PQT), Instructor and Key Personnel (I&KP) training, IOT&E and fielding. The contractor shall support the development, update and documentation of training and training materials in accordance with AR 350-1 and TRADOC Reg 350-70. The Training products shall be developed and delivered using the Army Systems Approach to Training (ASAT) format. The contractor shall conduct OPNET and FMNET for all test events of the AMPV program and for each fielding. The contractor shall provide all necessary equipment and materials to conduct training. For each class conducted, the contractor shall provide a completion report in accordance with the applicable CDRL D020.

## C.10.6.3.8.1 Training Management

## C.10.6.3.8.1.1 NET Plan

The contractor shall update training courses and curriculum outlines, student training course guides, instruction and lesson guides, audio visual aids, master reproducible training courses, and classroom spares (hereinafter, "Training Materials") in accordance with CDRL D021. The contractor shall brief the NET Plan at the first PSM-IPT after LRIP contract award and shall include the NET Plan in the PSM-IPT meeting minutes in accordance with CDRL A001. The NET Plan shall include the recommended tasks for training. The Government will select specific tasks to use for the training course.

## C.10.6.3.8.1.2 Training Evaluation

The contractor shall host training evaluation events at its facility to allow the Government to review the contents of the training material, as written, and to conduct a simulated training session. AMPV vehicles, which match the latest approved configuration in the training materials, shall be available for this evaluation. The contractor shall document Government recommendation regarding the training via meeting minutes (CDRL A001) and update training materials based on Government recommendations. The contractor should plan to conduct two of these events. The first event will be conducted 90 calendar days after contract award and the second event will be conducted 90 calendar days prior to IOT&E.

## C.10.6.3.8.1.3 Operator Transition Training

## C.10.6.3.8.1.3.1 Program of Instruction (POI) Outlines for Operational Test (OT)

## C.10.6.3.8.1.3.1.1 OT Training Package

The contractor shall conduct training at the IOT&E test site for IOT&E personnel using LRIP vehicles. The training shall ensure IOT&E personnel have been trained to perform their respective roles as data collectors, test directors, operators, and crew maintainers of the AMPV for IOT&E.

## C.10.6.3.8.1.3.2 POI Outlines for Initial Operation Test and Evaluation (IOT&amp;E)

## C.10.6.3.8.1.3.2.1 IOT&amp;E Training Package

The contractor shall deliver Training Materials in accordance with CDRL D021. Students for the IOT&E (Section C.10.6.3.8.1.3.3) shall receive student guides. The contractor shall provide I&KP instructor and student materials for the Staff Planners Course, and the IOT&E Course.

## C.10.6.3.8.1.3.3 Conduct IOT&amp;E Training

The contractor shall conduct operator and data collector and evaluator training for IOT&E test personnel using the AMPV. The training shall ensure IOT&E personnel have been trained to perform their respective roles as data collectors, test directors, operators and crew maintainers of each AMPV system.

## C.10.6.3.8.1.3.4 OPNET and FMNET

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The contractor shall provide NET trainers to instruct soldiers on the operation and maintenance of the AMPV family of vehicles as they are fielded to each unit. Effort includes trainers and management personnel to conduct and deliver delta Operator and Maintenance training at each fielding location. The contractor shall provide training materials, training update materials, reproduction of training materials, and materials such as binders, viewgraph transparencies, dividers, slip sheet holders, storage disks, and training aids. Further, the contractor shall provide hydration systems, stop watches, tools required to conduct training, rain and safety gear for trainers, helmets, cell phone and communication expenses, as well as minimal office material expenses that shall be incurred to conduct and deliver training and training materials. The contractor shall cover travel expenses for NET personnel and needed equipment, such as equipment trailers and rental and lease vehicles.

**C.10.6.3.9 Provisioning Technical Documentation Objectives**

1) The contractor shall develop, maintain and update AMPV Provisioning Technical Documentation (PTD) and required supply support summaries in accordance with GEIA-STD-0007 (latest version) (and GEIA-HB-0007 and TA-HB-0007 [latest versions] if applicable). The contractor shall update the PTD based on LMI changes, engineering changes, screening results, and Provisioning Bill of Material (PBOM) feedback.

2) The contractor shall maintain the PTD so as to ensure that the PBOM is updated with NSN assignments for SAIP parts prior to fielding. As a result of developing and maintaining the PTD, the contractor shall prepare and deliver to the Government:

(a) Provisioning Parts List (PPL) in accordance with CDRL D022 (DI-SESS-81715) and DD Form 1949-2 (Provisioning Requirements statement). The PPL shall contain the elements identified on DD Form 1949-1.

(b) Engineering Data For Provisioning (EDFP). The contractor shall prepare and deliver drawings to enable updates to the PPL. The drawings shall be in accordance with CDRL B058 and CDRL D023 (DI-SESS-81874). Drawings for components with other than unlimited rights to the Government can be envelope drawings or list drawings. Submission of TACOM-controlled common drawings is not required. The contractor shall complete all updates to PTD, and deliver all EDFP in time to allow completion of requirements computation, assignment of NSNs, and delivery of SAIP items. This shall be accomplished prior to delivery of the AMPV vehicles containing updated configuration changes.

**C.10.6.3.9.1 Logistics Modernization Program (LMP) Input****C.10.6.3.9.1.1 Provisioning Parts List (PPL)**

The contractor shall maintain and continuously update its provisioning file with the PBOM feedback data provided by the Government (i.e., changes; additions or deletions to part numbers; Source, Maintenance and Recoverability (SMR) codes; and failure factors) (CDRL D022). The contractor shall make the quantity per assembly and the quantity per end item the same to ensure compatibility with Logistics Modernization Program (LMP). The contractor shall correct verification rejects within 30 calendar days of receipt. The contractor shall ensure that all submitted LMI Data Products are compatible with LMP and can be transferred electronically to the Government for successful updating of the PBOM. The contractor shall host the first Provisioning Conference/Logistics Support Analysis Records (LSAR) review 90 calendar days after the Provisioning Guidance Conference to verify the provisioning files. The contractor shall host subsequent Provisioning Conferences/LSAR Reviews once per quarter, or on dates mutually agreed to by the parties.

**C.10.6.3.9.2 Supplementary Provisioning Technical Documentation (SPTD)**

The contractor shall maintain electronic access to Military and Federal Specifications and Standards. SPTD, to include the top assembly drawing, shall be submitted in accordance with Section C.10.7 and CDRL D023. All drawings shall be submitted in the English language. Provisioning Technical Documentation not translated into the English language will not be accepted by the Government. The contractor shall cite all approved vendors Commercial and Government Entity (CAGE) codes. The CAGE codes shall be typed, stamped, or legibly written with an authorized signature and date on drawings, when furnished concurrently with each submitted increment of provisioning documentation for each "P" coded item.

**C.10.6.3.9.2.1 Cataloging Input**

The contractor shall update the LMI to reflect the results of cataloging actions, including changes to item nomenclature. Inconsistencies in nomenclature between the drawings and TMs must be resolved in LMI and the TMs before final TMs are delivered to the Government.

**C.10.6.3.9.3 Provisioning and Other Pre-procurement Screening Data**

The contractor shall conduct pre-procurement screening for all items selected as repair parts. Standardization of commercial items selected as repair parts is required. The contractor shall use Government or industry association, specifications, drawings, or standards numbers as the preferred reference number (e.g., Federal (FED), Military (MIL), Joint Army and Navy (JAN), Air Force and Navy (AN), National Electrical Manufacturers Association (NEMA), Society of Automotive Engineers (SAE)). The contractor shall conduct pre-procurement screening for standardization of all commercial items selected as repair parts. The contractor shall perform this screening to select valid part numbers for the PBOM. All vendor source information identified on the drawing will be screened. Results of pre-

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procurement screening for standardization and component selection will be used to update the contractor's provisioning file. The screening results must accompany the provisioning documentation for each new or revised commercial item selected as a repair part. The contractor shall deliver this documentation in accordance with CDRL D024. The contractor's submittals shall be updated to reflect the current part numbers that have a National Stock Number (NSN) resulting from the screening process.

## C.10.6.3.9.4 Provisioning Bill of Material Feedback

The contractor shall maintain and continuously update the AMPV LMI data base using the PTD Report provided by the Government.

## C.10.6.3.9.5 Provisioning Quality Acceptance Standards

The quality standards outlined in GEIA-STD-0007, GEIA-HB-0007, and TA-HB-0007 (latest versions) apply to all phases of the provisioning effort. During the term of the contract, changes may occur that are due to formal program or process requirements. The Government will notify the contractor of these provisioning changes.

## C.10.6.3.9.6 PTD Guidance

## C.10.6.3.9.6.1 Maintenance Replacement Rates

Results from the RAM program shall be used to determine the Maintenance Replacement Rates I and II (or Failure Factors). These rates may vary by model and configuration of the end item. The Maintenance Replacement Rate (MRR) will be a consolidation of all known RAM information. The contractor shall develop rationale and methodology for determining MRRs, in accordance with GEIA-STD-0007 (latest version) (and GEIA-HB-0007 and TA-HB-0007 [latest versions] if applicable) using the following data:

- a) Engineering Data
- b) Warranty Data
- c) Testing and Developmental Documentation
- d) Historical Data on an analogous piece of equipment. When using historical data, the MRR II will be, at a minimum, 2.5 times greater than that of MRR I.

## C.10.6.3.9.6.2 Documentation of Parts Pricing

The contractor shall screen the Government databases for data on all parts of the Contract Item and shall document the price(s) cited there whenever available. In the event the price is not contained in the Government databases, the contractor shall develop and provide a suggested retail price considering the Unit of Measure. The contractor shall enter the suggested retail price in the LMI data base as the unit of measure price.

## C.10.6.3.9.6.3 Next Higher Assembly (NHA) Provisioning List Item Sequence Numbers (PLISNs) and Overhaul Quantities (OVHL QTY)

NHA PLISNs and OVHL QTYs are used to identify and forecast repair parts requirements for all assemblies or subassemblies or components. The contractor shall enter OVHL QTYs for each item, in accordance with GEIA-STD-0007 (latest version):

- (a) Identify the immediate NHA PLISN. Enter an OVHL QTY.
- (b) Using the top down break down structure, identify all subsequent assemblies preceding the down part. Enter NHA PLISN and OVHL QTY.
- (c) Identify the model record PLISN(s) as a NHA PLISN and enter an OVHL QTY, if called for by the Government.

## C.10.6.4 Packaging Data Development

The contractor shall develop, update and provide packaging data for all new items identified during the provisioning process with a Source, Maintenance & Recoverability (SMR) code beginning with P excluding PR and PZ. Items previously provisioned by the Government do not require new or updated packaging instructions. Packaging data development priority shall be given to repairable items, LRUs, NMWR and DMWR candidate items, and any large, high cost item classified as a Special Group Item. Packaging shall be developed in accordance with MIL-STD-2073-1D and all items shall be classified as a selective group item or special group item. The contractor shall provide facilities, equipment, materials, and access to the provisioned items for packaging development. The contractor shall complete verification and provide support data with each data submittal. Verification support data shall include item drawings and copies of any applicable Material Safety Data Sheets for Hazardous Material items. Items with assigned contractor and Government Entity (CAGE) Codes of: 1T416, 21450, 80204, 96906, 10060, 24617, 80205, 99237, 80244, 81343, 81346, 81348, 81349, 81352, 88044, 05047 are excluded from packaging data development.

## C.10.6.4.1 Selective group

Items classified as Selective group shall not have a unit pack weight exceeding 40 pounds and shall not have a dimension greater than 40 inches. In addition, the unit pack length and girth combined will not exceed 84 inches. A Select group item must not require

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disassembly for packaging. Reconfiguration for packaging of Select items is limited to folding or coiling. Items will not be classified as Select if they are repairable, recoverable, contain hazardous material, or if assigned a shelf life.

C.10.6.4.2 Special group

Special group items often require sketches, figures, or narrative instructions to describe packaging requirements. Items excluded from the Selective group will be classified as Special group items. This includes kits, sets and items of separate parts, items requiring disassembly, repairable items, items requiring special handling or condemnation procedures, items classified as hazardous material or hazardous goods in transport, items assigned a shelf life, electrostatic discharge sensitive items, fragile, sensitive, and critical items.

C.10.6.4.3 Logistic Management Information (LMI) Data Products Packaging

The contractor shall develop and update LMI packaging data and provide for the entry of information to the Governments data repository. At the contractor's request, the Government may provide a MS ACCESS application that provides data formatting and edit features for coding of packaging LMI data products. The contractor shall develop, maintain and update packaging data in accordance with MIL-STD-2073- 1D and CDRL D025 including Attachment 0037 and Attachment 0038 (DI-SESS-81758 Logistics Management Information Packaging Data Products and DI-SESS-81758 Incoming Transaction Format).

C.10.6.4.4 Special Packaging Instructions (SPI)

The contractor shall develop a SPI for each item classified as a Special group item. Figures and narrative data shall be developed to describe the form, fit, and function of packaging in sufficient detail for production. SPI format shall be in accordance with MIL-STD-2073-1D and CDRL D026.

C.10.6.4.4.1 Verification Testing of Packaging

Verification testing of Special group items shall be in accordance with ASTM D 4169 (Standard Practice for Performance Testing of Shipping Containers and Systems) Distribution Cycle 18, Assurance Level I, with Acceptance Criterion 3 (product is damage free and packaging is intact). Verification testing may be limited to Test Schedule A and Test Schedule F. Replicate testing and climatic conditioning are not required. Each SPI submitted shall have a verification report including photographs. Photographs shall show the product is undamaged. Verification report shall be submitted concurrently with SPI submittal and in accordance with CDRL D027.

C.10.6.4.5 Development and Preparation of Shipment and Storage Instruction (SSI)

The contractor shall update Shipping and Storage Instructions (SSI) for the system that was developed in the EMD phase. The contractor shall include requirements for disassembly procedures to meet clearance requirements for land, air, and sea shipments. Procedures shall ensure an option for drive-on and drive-off capability. Packaging requirements for BII and COEI shall be developed by the contractor. BII shall be packed separate from COEI. HAZMAT (if applicable) will be packaged and shipped separately in accordance with CFR Title 49. The contractor shall ensure the stowage locations shall deter pilferage and shall not interfere with lifting, tie down or other transportation handling. The contractor shall revise the SSI to reflect design changes that affect the system's shipment configuration, weight, or transportability. The contractor shall also provide revisions to the SSI for each provisioning change affecting packaging of BII or COEI. Report shall be formatted and delivered in accordance with CDRL D026, Special Packaging Instructions (SPI).

C.10.6.4.5.1 Short term transport and storage instructions

Short term transport and storage instructions, 180 calendar days maximum in warehouse, shall be used when items are in transport. Short term Shipping and Storage (S&S) processing instructions shall be sufficient to protect the items when they are intended for immediate use.

C.10.6.4.5.2 Long term storage instructions

The Government will use these instructions to prepare a system for open storage for a period of up to two years. The contractor shall ensure these instructions include any cyclic maintenance and exercising requirements necessary to prevent the system from deteriorating due to inactivity.

C.10.6.4.5.3 Validation of Shipping and Storage Instructions (SSI)

The Government will determine if all or selected portions of the SSI shall be validated to determine the adequacy of the vehicle preservation procedures. Primary considerations will be given to the complexity and uniqueness of the process and materials involved. Government representative may attend and witness contractors validation. Validation report shall be in accordance with CDRL D027.

C.10.6.4.6 Reusable Containers

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C.10.6.4.6.1 Container Design Retrieval System (CDRS)

This is a management system program to provide a DoD centralized automated data base system for storing, retrieving, and analyzing existing container designs and test information concerning specialized containers. The contractor shall use this system when making search requests for DoD Long Life Reusable Container (LLRC) designs.

C.10.6.4.6.2 Reusable Container Searches

The contractor shall identify engines, transmissions and other major repairable items, including Line Replaceable Units (LRUs), and items requiring special handling or condemnation procedures as possible LLRC candidates. The contractor shall make a CDRS search request for any item that TACOM approves as an LLRC candidate. The contractor shall search for new or existing commercially available reusable container designs that are suitable for LLRC candidates. The format of CDRS search requests shall be in accordance with CDRL D028.

C.10.6.4.6.3 Reusable Container Assessment

The contractor shall perform assessments to determine if existing container designs are suitable. The contractor shall assess the fit and function of existing containers and compare costs of modifications with the cost of new designs. Assessment data shall include analysis of the need for a new or modified LLRC. Assessment data shall compare costs for conventional packaging and LLRC packaging.

C.10.6.4.6.4 Reusable Container Proposal

The contractor shall propose reusable container development for TACOM approved LLRC candidates. Each proposal shall include assessment data, cost of development, design, LLRC prototype manufacture, verification, and completion of the technical data package for competitive procurement. Container proposals, testing and verification, and TDP development shall be in accordance with CDRL D029 and Attachment 0039 (LLRC Design Proposal Format).

C.10.6.4.6.5 Development and Validation

Upon approval of a LLRC design proposal or container modification proposal, the contractor shall build a prototype and validate the design. A Government representative will witness validation. Validation report and technical data shall be in accordance with the approved design proposal and CDRL D027.

C.10.6.4.7 Material Safety Data Sheet (MSDS)

The contractor shall over pack a MSDS with each hazardous material item.

C.10.6.5 Item Unique Identification (IUID) Markings

The contractor shall implement IUID markings on the AMPV variants and unique components.

C.10.6.5.1 IUID Marking Plan

The contractor shall deliver an updated IUID Marking Plan in accordance with CDRL D031, DI-MGMT-81803. The Plan shall include a list of all AMPV components or spares for which an IUID is required as defined by the latest version of the DOD Guide to Uniquely Identifying Items, Assuring Valuation, Accountability and Control of Government Property and the latest version of MIL-STD-130. The Plan shall include a recommended prioritization of IUID marking on components or spares, based on Government input, and a recommended list of components on which to affix an IUID marking.

C.10.6.5.1.1 The contractor shall perform a validation and verification of IUID markings for items identified in the IUID Marking Plan. The contractor shall document the results in the IUID Marking Activity, Validation, and Verification Report in accordance with CDRL D046, DI-MGMT-81804A.

C.10.6.5.2 IUID Review Session

The contractor shall conduct an IUID review session with the Government no later than 30 calendar days after submission of the proposed Marking Plan. The purpose of the review session is to finalize the plan, and for the Government to approve the list of components that must include IUID markings.

C.10.6.5.3 Component Assessment

The contractor shall assess approved IUID Marking Plan components to determine:

- (a) The location for the marking on the component or part to ensure it does not interfere with component operation.

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(b) The means for marking the component or part.

C.10.6.5.4 Technical Data

The contractor shall identify technical data revisions, such as drawings, technical manuals, etc., that must be reviewed to enable the application of the IUID markings on approved components. The contractor shall revise technical data for the approved components.

C.10.6.6 Support Equipment

C.10.6.6.1 Special Tools and Test Equipment Development, Verification and Documentation

The contractor shall update and maintain Special Tool and Test Equipment technical documentation for the AMPV. The contractor shall ensure sufficient quantities of validated peculiar tools and support equipment are available for conducting IOT&E, PQT, delta Log Demo, TM verifications and I&KP Training.

C.10.6.6.2 Common Support Equipment

The contractor shall identify all equipment required to support the AMPV to include common support equipment. The contractor shall verify common support equipment through Log Demos and TM verifications.

C.10.6.6.2.1 Special Tools and Test Equipment

The contractor shall provide and deliver Special Tools and Test Equipment for the AMPV systems for testing, training and other events per the approved System Support Package Component List (SSPCL). The source data for this list will be the Maintenance Task Analysis. The list shall be in tabular form and shall identify tools and test equipment that is not available through U.S. Army Supply Catalogs for Set Kits and Outfits. Maximum use of common tools, support equipment, and TMDE organic to the user is preferred (Attachment 0040, M113 Special Tools list). Any specific part of the AMPV design that is driving the need for special tools shall be a candidate for re-design for use of common tools and equipment.

C.10.6.6.2.2 Automated Test Equipment (ATE)

The contractor shall maximize the use of embedded diagnostics for on-system AMPV troubleshooting. To perform troubleshooting that cannot be addressed through embedded diagnostics, the contractor shall maximize the use of embedded IETMs (e.g., no power for displays for Built-in Test (BIT), Fault Isolation and Test (FIT) or embedded diagnostic routines).

C.10.6.6.2.3 Sets, Kits, Outfits and Tools

The contractor shall identify the specific tools within the sets, kits and outfits as a part of the maintenance task analysis.

C.10.6.7 Delta Logistics Demonstration (LD) Objectives

The objective of the delta LD is to evaluate the following for any changes since the EMD contract LD: 1) The supportability engineered and established for the system; 2) Human factors engineering aspects and MANPRINT related to operator and maintainer tasks; 3) The adequacy of maintenance planning for the system (such as maintenance concept, task allocation, maintenance procedures [to include repair procedures], troubleshooting procedures, Training Support Package [TSP], and peculiar support equipment); 4) Training and training devices; 5) Technical publications; 6) Common tools and special tools; 7) Spares and repair parts lists; 8) The TMDE, including the embedded diagnostics, test program set, and diagnostic procedures in the technical manual; 9) The Logistics Management Information (LMI) data, including updates. The contractor shall validate the AMPV logistics support package prior to the delta Log Demo.

C.10.6.7.1 Delta Log Demo

The contractor shall provide all necessary facilities, parts, tools and other support items necessary to conduct a delta Log Demo. The contractor shall submit a Log Demo Plan six months prior to the delta Log Demo. (CDRL D032) The delta Log Demo shall be performed in accordance with the Government approved Log Demo Plan. The delta Log Demo will commence per the ILS Master Schedule.

C.10.6.7.2 Log Demo Results

The contractor shall prepare and deliver a report that records the results of each Log Demo (to include evaluation of operations and maintenance procedures, support items, manpower and skill requirements, maintenance allocation, and maintenance times). The contractor shall update all logistics products deliverable under this contract (LMI, provisioning documentation, technical manuals, training documentation), based on the results of the delta Log Demo. Delta Log Demo updates shall be incorporated into the respective deliverables prior to each next scheduled delivery, all in accordance with CDRL D033.

C.10.6.8 Test Support Objectives

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The following objectives are applicable for test support: (1) The contractor shall deliver and manage an SSP at the site of each Government test and training activity; (2) The SSP shall be sufficient in quantity and anticipated components to maintain test or demonstration schedules; (3) The contractor shall maintain a contractor format report which details all parts consumed during test events.

C.10.6.8.1 System Support Package (SSP)

The contractor shall deliver a SSP (CDRL D013) to each site no later than 30 calendar days prior to the start of any testing event. Each package shall consist of the items listed on the contractor-developed and Government-approved SSPCL (CDRL D013). The contractor shall be responsible for performing all maintenance and controlling the on-site SSP during all testing events conducted under this contract. Should any testing event be interrupted because a particular support item is unavailable, to the extent the part is available within the SSP, the contractor shall provide that item to the Government within 24 hours of being notified. In the event the SSP is deficient, the contractor shall remedy the deficiency within 48 hours. The contractor shall replenish the SSP, as needed, throughout the duration of the contract.

C.10.6.9 Training Devices and Trainers

The contractor shall provide technical services for Training Device programs. The contractor shall maintain interface for existing appended devices. The contractor shall provide an updated assessment of existing ABCT training devices and their compatibility with AMPV variants 90 calendar days after contract award, including a plan to address any incompatibility or gaps. To ensure compatibility between training devices, the contractor shall coordinate design changes with appropriate Training Device contractors and Government agencies prior to finalization of those changes. The contractor shall submit an impact statement in conjunction with ECPs when there is an effect on Training Device programs.

C.10.6.10 Technical Support

The contractor shall provide technical support during all Government tests and fielding. Technical support includes technical assistance and advice, operating Government vehicles, user training, technical data collection and reporting, troubleshooting, repairing, application of Modification Work Orders (MWO), deprocessing, storing and assisting in shipping vehicles and their respective components during transition, and training. User training consists of assembly and subassembly troubleshooting, component and system fault isolation and repair. This training may be informal in nature and done principally by demonstrating the function. The Field Service Representative (FSR) shall be experienced and qualified to advise, make recommendations, and to orient, and instruct key Government personnel with respect to operation, maintenance, and repair of the AMPV variants and their components. The effort consists of investigation and diagnosis of problems or issues in the field related to vehicle performance, maintenance, and training.

C.10.6.10.1 Government Provisions

The Government shall provide the following for the support of technical support personnel, when available:

- (a) Existing TMDE and field authorized common, common and special support equipment to include tools.
- (b) Appropriate office space and furnishings.

C.10.6.10.2 Contractor Provisions

The contractor shall provide all support for FSR not provided by the Government.

C.10.6.10.2.1 Field Service Representative Reporting

Each FSR shall prepare and submit, via e-mail, Field Service Reports in accordance with CDRL D034 and DI-MGMT-81238, covering their activities.

C.10.6.10.2.2 Field Service Representative Personal Data

The contractor shall make available personal data related to field service representatives, including documentary evidence such as birth certification and other evidence requested by the local Government installation or area in which services are to be performed.

C.10.6.10.2.3 Security Background Check

The contractor shall maintain a completed background check and obtain and maintain Secret clearance for each Field Service Representative.

C.10.6.11 Deprocessing

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C.10.6.11.1 Deprocessing is the checkout of vehicles at the test or deprocessing site upon arrival from production facilities. The contractor shall deprocess all equipment after delivery to the deprocessing site and assure it is ready to operate prior to issue to the receiving deprocessing site or unit. Deprocessing consists of:

- (a) Removing all preservative coatings, grease, tape, and packing materials.
- (b) Inspecting for any damage from shipment.
- (c) Installation of all hosted items and checkout shall be performed in accordance with the contractor-developed procedures. Checkouts shall include the following: review of vehicle operations, oil analysis, road testing (if applicable), replacement of failed or discrepant components and a power-up check to verify that the vehicle provides power to all hosted items.
- (d) All aspects of vehicle operation are checked and verified, and all known deficiencies are corrected to ensure vehicle is fully operational for test or fielding.

C.10.6.11.1.1 The contractor shall ensure all work activities are properly resourced and controls established to monitor activity and cost to ensure the project is completed within time and budget constraints.

C.10.6.11.1.1.1 The contractor shall plan, coordinate, attend, and conduct meetings, reviews, and conference calls.

C.10.6.11.1.1.2 The contractor shall prepare both reports and track action items to make available to the Government upon request.

C.10.6.11.1.2 Per approved PCO or Designated COR direction, the deprocessing activities shall be performed with a final inspection at the vehicle deprocessing site.

C.10.6.11.1.3 The contractor shall have appropriate personnel present at the deprocessing site per approved PCO or Designated COR schedule.

C.10.6.11.1.4 Per approved PCO or Designated COR direction, the contractor shall assist with loading or off-loading vehicles onto trucks or rail transport, and movement of vehicles to or from designated rail hub.

C.10.6.11.1.5 The contractor shall adjust, repair, clean, or replace any items found discrepant or missing during the joint -10 PMCS inspection of vehicles with the deprocessing site.

C.10.6.11.1.6 The contractor shall prepare and provide Supply Discrepancy Reports for material found to be damaged, non-conforming, or missing during deprocessing in accordance with CDRL D035 and DI-MGMT-80503.

C.10.6.12 Spares and Repair Parts Repair and Return Program

The contractor shall provide labor and repair associated with the handling, inventory control, shipment, and repair and return of failed components for AMPV platforms. Upon receipt of failed AMPV LRU, LRM or Shop Replaceable Unit (SRU), the contractor shall return them to the appropriate vendor for failure diagnosis and repair. If any upgrades have been applied to these LRU, LRM or SRU components, the contractor shall upgrade them as a part of the repair process. Upon completion of repair or upgrade activity, the contractor shall return the part to a PM-ABCT designated location.

C.10.6.13 Technical Services

C.10.6.13.1 Maintenance of Field Maintenance New Equipment Training (FMNET) Vehicles  
 The contractor shall provide services and maintenance for vehicles that were provided to FMNET training teams after completion of training activities in order to issue vehicles to fielded units. Parts shall be provided by the US Government.

C.10.6.14 Vehicle Serial Numbers

The contractor shall include the appropriate serial number on the vehicle data plate, starting with the next sequential number after the last serial number assigned to facility and test vehicles built under the EMD contract. The contractor shall ensure that all facility and test and production vehicle data plates reflect an AMPV serial number.

Mission Command Vehicle	5AMCXXXX
General Purpose Vehicle	5AMGXXXX
Medical Treatment Vehicle	5AMTXXXX
Medical Evacuation Vehicle	5AMEXXXX
Mortar Carrier Vehicle	5AMMXXXX

C.10.6.14.1 To ensure that the official Government LOGSA database for recording vehicle NSN and serial number information is complete and accurate, an Equipment Change Report (ECR) must be generated on a DA Form 2408-9 to track any washed out hulls. NOTE:

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The USA Registration Number for the vehicle shall never be changed, only the Serial Number.

C.10.6.14.2 To record these changes, the contractor shall access the Logistics Information Warehouse (formerly WEBLOG and WEBLIDB). ECRs are available in the system, as follows: Select "Maintenance Management", then select "TAMMS Equipment DB," and then select "DA2408-9 (ECR).

C.10.6.14.2.1 This is a two-step action: The contractor shall prepare one ECR to drop the old serial number from LOGSA's records, and the second ECR to show the gain with the new vehicle and serial number.

C.10.6.14.3 The contractor shall provide a Vehicle Serial Number Report to the Government for all prototype vehicles shipped to a government agency in accordance with CDRL D047.

**C.10.6.15 Materiel Fielding Plan**

The contractor shall provide data and input to support the development of the Materiel Fielding Plan.

**C.10.6.16 Logistics Statements submitted in conjunction with ECPs**

The contractor shall provide a logistics impact statement with every ECP. The contractor shall assess impacts against all 12 ILS elements as described in AR 700-127. The contractor shall address each element on every ECP and, if there is no impact for a particular element, annotate N/A against it. If there is an impact, the contractor shall fully describe the impact and the corresponding actions.

**C.10.6.17 National Maintenance Work Requirement (NMWR)****C.10.6.17.1 Candidate NMWR List**

As a product of the Task Analysis (Sections C.10.6.2.1.4 - C.10.6.2.1.4.1.2), the contractor shall develop and deliver a NMWR candidate list by vehicle, which includes the vehicle. Any component coded for repair at the sustainment level of maintenance with a unit price in excess of \$1000 will be a NMWR candidate. The contractor shall annotate these components on the Maintenance Analysis and provide them as a separate list at the first TM conference or IPR where the Maintenance Analysis is reviewed. The Government will review and approve the final list of NMWR candidates at the final TM IPR under this contract.

**C.10.6.17.2 NMWR Data Summary**

The contractor shall perform a supportability analysis called a NMWR data summary for each component and vehicle on the Government approved NMWR candidate list. The LMI summary may be in the contractor's format, and shall be documented in accordance with Attachment 0047 (LMI NMWR Data Summary). The contractor shall also indicate for each NMWR candidate whether the item is currently available as a remanufactured, rebuilt or otherwise refurbished component. The NMWR Data Summary shall be delivered in accordance with CDRL D043.

**C.10.6.17.3 NMWR development**

The contractor shall develop component and vehicle level NMWRs that prescribe National Repair Standards to Condition Code "A" Rebuild and Overhaul, so the vehicle, equipment, or component is returned to zero hours or miles. The contractor shall ensure the NMWR includes Mandatory Replacement Parts and packaging data for each item repaired. The NMWR shall conform to the requirements found in Section C.10.6.3 for Publication Development and Delivery, the Quality Control, Verification, TM Deliverables, Final Acceptance, Meetings, and Copyright Release. The contractor developed NMWRs shall conform to the Army Materiel Maintenance Policy outlined in AR 750-1, Army Materiel Maintenance Policy and MIL-STD-40051. The contractor shall validate each NMWR in accordance with CDRL D041. The contractor shall also participate in the Government verification of each NMWR, providing a dedicated Logistics Maintenance Engineer, in accordance with CDRL D040.

**C.10.6.18 Modification Work Orders(s)**

The contractor shall prepare MWOs as required by the ECP process. The contractor developed MWO shall provide instruction for mandatory modification of all fielded equipment and be classified as Emergency, Urgent or Routine. The MWO may be used to develop, apply and document changes in both hardware and software made to end items, components, weapons, and information systems. The contractor shall develop MWOs in accordance with MIL-PRF-63002 and MIL-STD-40051 and comply with AR 750-10. The MWOs shall be delivered in accordance with CDRL D042. The contractor shall install approved MWO kits onto AMPV vehicles at various locations CONUS and OCONUS, prepare and submit weekly status reports (in accordance with CDRL D034) detailing MWO installation activities, and prepare an MWO signoff sheet for each modification installed. The contractor shall submit an MWO signoff sheet to the contractors Configuration Manager for input into the Modification Management Information System (MMIS) and notification to the Government. The Government shall coordinate and conduct appropriate unit briefings prior to the application of MWOs.

**C.10.7 Configuration Management (CM) and Technical Data Package (TDP)**

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## C.10.7.1 CM Program

The contractor shall establish a CM program for configuration identification, control, status accounting, verification, audit, and data management of the AMPV. To maximize return on investment and reduce life cycle costs, the contractor is encouraged to use the latest versions of ANSI/EIA-649, Configuration Management Standard with GEIA-HB-649, Implementation Guide for CM; GEIA-859, Data Management; MIL-STD-973, Configuration Management; and DoD MIL-HDBK-61 (SE), Configuration Management Guidance, as references to implement the technical and program management principles fundamental to CM. The contractor is responsible for all original data in its possession, including drawings, models, and associated documents. The contractor shall flow down CM and DM requirements to subcontractors and suppliers to provide an appropriate application of CM and DM functions and principles to the entire supply chain. The Contractor shall submit updates to the Configuration Management Plan (CDRL B027).

## C.10.7.2 Configuration Identification

## C.10.7.2.1 Configuration Baselines

The verified initial production configuration baseline, defined at the end of testing, shall be updated to reflect any changes that were approved between end of test and start of LRIP. The contractor shall continue to update this baseline as changes are approved. Upon incorporation of approved changes resulting from the Physical Configuration Audit (PCA), the design release configuration shall be updated again and shall become the Final Product Baseline (CDRLs B001, B058, and B061).

## C.10.7.2.2 LRIP IBOMs

The contractor shall deliver an IBOM for each individual end item (e.g., AMPV variant, kit) at the start of LRIP and for each unit delivered during LRIP. The Government will review and advise the contractor which items they intend to audit during the PCA (CDRL B001).

C.10.7.2.2.1 The contractor shall identify approved, incorporated engineering changes at all affected levels of the IBOM (CDRL B001).

## C.10.7.2.3 Engineering Release Record (ERR)

The contractor shall prepare an Engineering Release Record (ERR) Package for the initial release of each set of Product Baseline data and after each subsequent Government-approved ECP, initial release, or direct release of a product. Data submitted shall comply with the requirements contained within Sections C.10.7.7 through C.10.7.8. The ERR Package is defined as the ERR form submitted concurrently with the new and revised product data for Product Baseline initial release or change release. The contractor shall prevent premature release of product data related to an ECP until the Government has approved the ECP and subsequent ERR. Multiple ECPs on one ERR are not allowed (CDRL B061, CDRL B058).

## C.10.7.2.3.1 ERR Number

ERR numbers are the same as ECP numbers and can be obtained from the Government CM representative. The contractor shall assign the ERR number to drawings, models and associated lists prior to completion and submission of any new or revised product data. The contractor shall add their Government assigned three-character prefix to the five-character alpha-numeric ERR number furnished by the Government. The resulting eight-character ERR number shall be the engineering initial release or change release authority reflected on models and in the revision block of drawings, documents, and associated lists. The ERR number used for change release shall be the same as the approved ECP number (CDRL B061, CDRL B058).

## C.10.7.2.3.2 ERR Submittal

The contractor shall create and submit ERR packages containing data required by Sections C.10.7.7 through 10.7.8, to reflect the current, Government-approved, Product Baseline configuration for the AMPV TDP for the entire contract performance period. There shall be no missing down parts, interface data, or other deficiencies. When the contractor's ERR package is found to have errors, the contractor shall correct and resubmit the ERR package(s). The contractor shall submit ERR packages as digital files in accordance with CDRL B061 using the Governments Windchill PDMLink database, except for classified SECRET ERR submittals which the contractor shall submit via registered mail to the AMPV classified mailing address. For any deliverable that is classified SECRET, the contractor shall only submit an Unclassified/FOUO cover sheet report to PDMLink that contains the date the SECRET deliverable was submitted. (CDRLs B061, CDRL B058).

## C.10.7.2.3.3 ERR Approval

Approval of drawings, models and associated lists for the AMPV TDP (CDRL B058) does not imply nor constitute ERR approval. The ERR will be approved only after all required product data has been delivered as part of the ERR package and the data is accurate, complete, and approved for release by the Government (CDRL B061).

## C.10.7.3 Configuration Control (Change Management).

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The product baseline for the entire vehicle is established upon successful completion of the PCA. Proposed changes to the TDP after Product Baseline shall follow the formal ECP process for Government approval. The Government is the only entity with change approval authority over Class 1 (i.e., major) changes. Class 2 (minor) changes shall be submitted to the PCO for concurrence in classification. Class 1 and 2 Criteria and preparation instructions are defined in the DDD for ECPs and VECPs, Attachment 0044. The contractor shall submit Engineering Change Proposals (ECPs), Value Engineering Change Proposals (VECPs), or Requests for Deviations (RFDs) in accordance with the below requirements (CDRL B057, B059, B064).

C.10.7.3.1 Engineering Change Proposal (ECP) - Government Directed.

In the event the Government desires a change to the AMPV, the PCO will request, in writing, a technical and price proposal from the contractor. The contractor shall prepare and submit all Class I and Class 2 ECPs in accordance with CDRL B057 and the DDD for ECPs and VECPs in Attachment 0044. Proposed changes to non-CAD data (e.g., specifications and engineering documents) shall be described using Notices of Revision (NORs) in accordance with CDRL B059 and the DDD for NORs in Attachment 0045. NORs are not required if data is electronically marked-up to clearly show proposed changes or if CAD files are furnished as CAD mark-ups or preliminary data showing the revisions incorporated.

C.10.7.3.1.1 All Class I ECPs shall include impact statements for all products affected, including those listed below. All related documentation changes required to support impacted products shall be included as part of the ECP (CDRL B057):

- (a) Integration technical data for any item, material, or equipment identified within or attached to the vehicle;
- (b) Replacement of any support item with another item (repair parts, spare parts, repair kits, tools, support equipment, and training devices);
- (c) Interfaces and Interface Control Document (ICDs);
- (d) Changes that impact MANPRINT (Safety, Health Hazards, Soldier Survivability, Human Factors, Personnel, Manpower, Training);
- (e) Changes that impact Testability; inspection, or acceptance criteria;
- (f) Changes in the manufacture process such that a remanufactured part is used in place of a new part;
- (g) Transportability;
- (h) Technical Manuals;
- (i) Integrated Logistics Support, including Packaging.

C.10.7.3.2 ECP - contractor Requested

The contractor shall submit unsolicited Engineering Change Proposals (ECPs) of routine priority, upon determination of a need for such changes. The ECP type designation shall be preliminary (CDRL B057).

C.10.7.3.2.1 The contractor shall notify the PCO immediately, prior to submittal of a preliminary ECP, when the priority of an engineering change, as defined in the DDD for ECPs, is deemed emergency or urgent. The Government will determine which follow-up ECP action (preliminary or formal) is required from the contractor.

C.10.7.3.2.2 For contractor-requested changes, the Government may require the contractor to perform additional tests to verify acceptability of any proposed change. The Government will determine the extent of testing for that change. The contractor shall perform testing at no additional cost to the Government.

C.10.7.3.3 ECP Submittal

The contractor shall create and submit all unclassified Class I and Class 2 ECPs for review and approval to the PDMLink Workflow in accordance with the PDMLink training guidance received from the Government. For any ECP that is classified SECRET, the contractor shall only submit to PDMLink an Unclassified-FOUO cover sheet report that contains the date the SECRET deliverable was submitted via registered mail to the AMPV classified mailing address. The contractor shall deliver the resulting ERR as changes are approved. All change activity shall be reported on the Configuration Status Accounting (CSA) reports (CDRLs B057, B058, B060, and B061).

C.10.7.3.3.1 The contractor is responsible for ensuring that ECP files are correctly tagged and digital 2D and 3D CAD and graphic image files are properly represented prior to delivering the electronic ECP package to the Government. The Government reserves the right to reject electronic ECP files containing errors or files that are not compatible with the PDMLink (CDRL B057).

C.10.7.3.3.2 ECP Block Numbers

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The contractor shall request blocks of ECP numbers via e-mail to the AMPV CDM representative. The contractor shall utilize these numbers on an individual basis as a control identifier for ECPs and related Engineering Release Records (ERRs). Once an ECP number is assigned to the first submission of a change proposal, that number shall be retained for all subsequent submissions of that change proposal. The contractor shall maintain records of where and when each ECP number was used. The ECP and ERR number shall consist of the Government-assigned contractor three character alpha prefix, followed by the Government-assigned five-digit alpha and numeric number (CDRLs B057, B061).

C.10.7.3.3.3 ECP Approval-Implementation

The contractor shall not implement any ECP changes prior to Government ECP approval. The contractor shall not incorporate any ECP into the end item hardware without prior written approval of the PCO. The contractor shall prepare and submit an ERR package, updating the AMPV product baseline for each approved AMPV ECP (CDRL B061).

C.10.7.3.4 Requests for Deviation (RFD)

The contractor desire to temporarily deviate from or waive requirements of the AMPV during LRIP shall be submitted as RFDs, properly classified and prepared in accordance with the DDD-RFD, Attachment 0043. The Government will not approve Critical RFDs, as they have a profound impact on safety. Deviations shall contain marked up copies of affected drawings as well as any other supporting data necessary to fully understand the proposal and make an approval. RFDs shall also contain cost proposal data to support cost evaluation, negotiation, and an equitable adjustment to the contract. Recurring deviations or deviations affecting a change to the functional, allocated, or product configuration documentation (FCD, ACD, PCD) may be rejected by the Government and returned for resubmission as a formal Class 1 ECP (CDRL B064).

C.10.7.3.5 Effectivity Certification

Changes resulting from approved RFDs, ECPs, and VECPs will be incorporated into LRIP through contract modification. The RFD shall be annotated by the contractor to reflect the anticipated production effectivity point by vehicle serial and registration number and date. Each RFD, ECP, and VECP shall be applied to the LRIP line at a single end item cut-in point (single vehicle), in their entirety. The contractor shall maintain the original effectivity point certification on file. This information shall be available to the Government, reported on CSAI reports, and discussed at IPT meetings as well as major reviews (CDRL B060).

C.10.7.4 Configuration Status Accounting Information

The contractor shall submit a Configuration Status Accounting Information report that details the changes affecting the AMPV and provides a detailed description of product design data maturity, baseline updates, ECP, RFD, and ERR status (CDRL B060).

C.10.7.5 Product Data Management (PDM) System Windchill PDMLink

Windchill PDMLink is the Governments Product Data Management (PDM) System for Configuration Management, Product Data and Technical Data Packages (TDPs).

C.10.7.5.1 PDMLink Workflow

The PDMLink workflow is the automation of a business process in whole or in part, during which documents, information, or tasks are passed from one participant to another for action, according to a set of procedural rules. A workflow instance coordinates user and system participants, together with appropriate data resources, to achieve defined objectives by set deadlines.

C.10.7.5.1.1 The contractor shall create, revise, and deliver product data on-line using the PDMLink in accordance with the requirements of this contract. The contractor shall notify the AMPV Configuration Data Management (CDM) representative by e-mail that the ECP, VECP (with applicable NORs), RFD, or ERR has been submitted to the PDMLink workflow. For any deliverable that is classified SECRET, the contractor shall only submit an Unclassified-FOUO cover sheet report that contains the date the SECRET deliverable was submitted via registered mail to the AMPV classified mailing address. The contractor shall obtain a login and password to PDMLink for all contractor personnel responsible for either preparing ECPs, VECPs, RFDs and ERRs or submitting them to the Government using the automated workflow. The contractor personnel who may have a need to search, view, and print in PDMLink, should also obtain a login and password for read- only permissions (CDRLs B001, B057, B058, B059, B061, and B064).

C.10.7.5.2 PDMLink Access

Contractor personnel who require access to PDMLink to use the workflows (i.e., anyone submitting CM-related contract deliverables to the Government, etc.) shall first coordinate with the AMPV CDM representative, who will determine the applicable access permission level based on the role(s) of each individual. The ACE Support Team Representative will assist you in completing the forms to access the PDMLink System. Forms can be found at <https://ace2.tacom.army.mil/newuser/>. Complete the ACE Access Request Form. A copy of Section C of the current awarded contract shall accompany each PDMLink request form.

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## C.10.7.5.3 PDMLink Training

The contractor shall attend PDMLink training as deemed necessary by the Government and comply with requirements of Windchill PDMLink. The contractor shall also request training via a formal e-mail request to the primary or alternate AMPV CDM representative. The type and location of training will be at the Governments discretion. Training may be either formal classroom session(s) at the contractor, Government, or off-site location, or informal desktop instructions at the individual contractors workstation.

## C.10.7.5.4 PDMLink Software Issues

The contractor shall notify the Helpdesk via e-mail message to: [mailto: ace.support@conus.army.mil](mailto:ace.support@conus.army.mil) when changes or corrections to product data cannot be accomplished by the contractor due to software deficiencies or bugs. The contractor shall courtesy copy the AMPV CDM representative on all software-related helpdesk requests. The contractor shall notify the Helpdesk and AMPV CDM representative by e-mail when PDMLink or the data in PDMLink is not accessible.

## C.10.7.5.5 PDMLink Problem Reports

The contractor shall utilize the Problem Report feature in PDMLink as instructed during training.

## C.10.7.6 Physical Configuration Audit (PCA)

PCAs will be conducted to establish the vehicle configuration as soon as possible after award of the LRIP option. The contractor shall deliver a Configuration Audit Plan for the PCA. Any findings that require corrective actions resulting from the PCA, shall be the responsibility of the contractor. The selected vehicle shall be compared against the design documentation (ABCL, IBOM and TDP) to assure the vehicle conforms to the documentation. At any time, the proper storage and configuration control processes shall be subject to a Government audit, including contractor design and engineering locations, parts storage locations, manufacturing locations and processes that are affected with contractor change control and CM activities or at any other location where data is generated or used under this contract is stored (CDRL B062).

## C.10.7.6.1 Configuration Audit Summary Report

The contractor shall submit a Configuration Audit Summary Report after the PCA to identify discrepancies found between hardware, software, and contract requirements. The contractor shall identify action items and address each issue to include resulting close-out action (CDRL B063).

## C.10.7.7 Technical Data Package (TDP) Requirements and Delivery

The contractor shall maintain and submit the AMPV Technical Data Packages (TDPs) keeping them current, and legible for intended uses. These intended uses include: follow-on vehicle production, spare parts procurements, vehicle modification, system design and integration. The contractor shall maintain a record of past and ongoing engineering changes and drawing revisions (CDRL B058 and Attachment 0049, Production Technical Data Requirements).

## C.10.7.7.1 Product Data Structure

The contractor shall employ an authoritative product data, engineering or configuration management system and the processes to effectively manage, securely store, release, validate, and track multiple versions and iterations of the as-designed, as-integrated, as-built, and as-delivered configuration baselines; this includes management of product structures, product definition data, contractor test and analysis data, Government-Furnished Information (GFI) and other related technical data.

## C.10.7.7.2 Version Control and Item Identification Traceability

The contractor shall assign a unique identifier to product data and utilize disciplined version control in managing digital data. Each revision shall be a new master, and the contractor shall retain all approved revisions (versions) of each document and model representation to provide a traceable history in order to access the correct revision when needed. The content of a document and model revision is fixed once approved. The contractor shall prepare the technical data so all applicable product definition documents and part identifying numbers (PIN) (i.e. associated lists, test criteria, program-unique and process specifications, standard parts, etc.) are referenced (top to lowest part item level) within the TDP for traceability. The design data shall include a Parts List with a complete product structure.

## C.10.7.7.3 Product Data Standards and Best Practices

The contractor shall develop the technical data package in accordance with DoD adopted ASME industry standards Y14.1, Y14.5, Y14.24, Y14.34, Y14.35, Y14.38, Y14.100, and MIL-STD-31000. The product data shall contain complete product definition, per Attachment 0049.

## C.10.7.7.4 Government vs. Company Standards

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In accordance with MIL-STD-31000, the contractor shall not reference company standards in the TDP. Company standards are company documents that establish engineering and technical limitations for materials and engineering practices unique to that company. The contractor shall extract essential information contained in company standards and directly cite the essential information in the product data or TDP.

**C.10.7.7.5 Product Data Deliverable File Formats**

Models and associated drawings shall be delivered in Pro-Engineer CAD Software format. Pro-Engineer version will be agreed upon at the Start Of Work Meeting. All parts and assemblies in CAD formats shall include appropriate Government metadata attributes, per Attachment 0049.

Parts and assemblies shall be named using the following convention:

(a) CAGE Part Number.prt i.e. 19207\_12345678.prt

(b) Associated PDF files shall have the same filename with extension .pdf., respectively.

Product data shall be delivered in these file formats:

**C.10.7.7.5.1 Parametric 3D and 2D Native CAD Models and Drawings**

All parts and assemblies developed under this contract or Non developmental Items (NDIs) that were previously developed items of supply used exclusively for governmental purposes shall be parametric, feature-based, fully dimensioned and include appropriate tolerances, notes, and metadata attributes. The 3D solid models and 2D CAD drawings of parts and assemblies shall be associative. Any change in either the 3D or 2D will be automatically updated in the associated files.

**C.10.7.7.5.2 Form, Fit and Function Technical Data**

All Form, Fit, and Function solid models shall include metadata attributes per Appendix B of Attachment 0049. Key Metadata attributes shall be populated as agreed upon at the SOWM.

(a) COTS and Standard Parts. The contractor shall model all Military and Industry Standard parts, and COTS items for form, fit and function with sufficient envelope, mounting, and mating features to provide adequate visualization and interface characteristics. Associated drawings are not required to be generated for commercial and standard parts.

(b) IR&D Technical Data. The contractor shall provide interface shrink-wrap solid models for Independent Research & Development (IR&D) items approved by the Government from the assertion list. These approved IR&D models shall be parts and assemblies complete with sufficient envelope, mounting and mating features to provide adequate visualization and interface characteristics. Associated drawings are not required to be generated for proprietary parts.

(c) Source and Vendor Control Items. The contractor shall model all Source Control and Vendor Item Control parts with sufficient information for identification and procurement for form, fit, and function with sufficient envelope, mounting interface and mating features to provide adequate visualization and interface characteristics. The models and drawings shall include as applicable: configuration, defined pictorially or by description; dimensions of item envelope and their limits; mounting and mating dimensions and their limits; interface characteristics and their limits; acceptance criteria; performance, maintainability, reliability, environmental, and other functional characteristics; schematic, interconnection, or other appropriate diagrams to define item function or provide interconnection information; a manufacturer and item identification listed as a source of supply. The contractor shall provide associated drawings for source control and vendor item control parts in accordance with Government standards. (CDRL B058)

**C.10.7.7.5.3 2D PDF**

The contractor shall export all 2D CAD drawings to PDF with at least 300 dpi resolution.

**C.10.7.7.6 Security Markings**

The contractor shall apply the applicable DoD Technical Distribution Statement and Export Control Warning to all technical data produced or delivered and in accordance with AMPV Security Classification Guide (SCG) (Attachment 0069). Preliminary determination for survivability data is Export Controlled, with Distribution Statement C or D, subject to confirmation from the Government at the SOWM.

**C.10.7.7.7 Proprietary Items**

The contractor shall identify all deliverables that will be provided to the Government with other than unlimited license rights by asserting restrictions (includes flow down to subcontractors and suppliers) in the rights the Government will get. The contractor shall

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justify those assertions in the Assertions List, per the DFARS, and submit as part of his proposal for evaluation and approval by the Contracting Officer (CO) prior to contract award.

## C.10.7.7.8 Data Rights Markings on Tech Data Deliverables

The contractor shall mark, appropriately, all deliverables in accordance with DFARS clauses 252.227-7013 and 252.227-7014.

## C.10.7.7.9 Item Unique Identification (IUID) Marking Requirement

The contractor shall incorporate labeling or marking information as part of the AMPV TDP in accordance with MIL-STD-130 on all items requiring IUID markings, in accordance with DFARS 252.211-7003 (c).

## C.10.7.8 Part Number Assignment

## C.10.7.8.1 Army Ordnance Part Numbers (AOPNs)

The contractor shall assign Government-issued AOPNs to all product data, items, components, or processes (ICPs) created or developed, under this contract. Product data shall use the AOPN as both the drawing number and base Part or Identifying Number (PIN), along with CAGE code 19207 as the original design activity to establish unique item identification. Items described on a vendor item drawing or source control drawing shall be assigned an AOPN and that AOPN shall be called out on all up assemblies. The contractor shall request AOPNs from the designated AMPV CDM Representative. The contractor shall request additional blocks of numbers on an as needed basis via e-mail to the AMPV CDM representative.

## C.10.7.8.2 True Manufacturer Part Numbers

C.10.7.8.2.1 The contractor shall utilize the true manufacturer's part number and CAGE code to identify parts that the contractor does not manufacture. The contractor shall not re-identify or re-mark supplier or purchased parts or related product data with his own part number and CAGE code. The contractor shall not use supplier part numbers for items that can be defined by Government or industry standards or specifications. With the exception below, the only parts reflecting the prime contractor's part number and CAGE code shall be those items for which the prime contractor is the true manufacturer of the item. The contractor's product data, including BoMs, Drawings, Models, Parts Lists, and reports, shall be consistent in calling out the true manufacturer part number and CAGE code as the primary part.

Exception: The contractor is only allowed to include re-identified parts in product and associated data and reports as reference, alternate, or substitute parts, providing the true manufacturer part number and CAGE code is identified as the primary, preferred part.

C.10.7.8.2.1.1 The contractor shall maintain and deliver configuration records to cross-reference any re-identified or re-marked part number and CAGE code to its original, true manufacturer part number and CAGE code, or specification-identified part number and CAGE code, and vice versa for the Exceptions allowed above. These items shall be reported in the Configuration Status and Accounting Reports (CSAR) or Technical Reports or other reports with updates as changes occur (CDRL B063). Reports shall include an additional, separate annotation, column, etc., to reflect the actual part number and CAGE code on the as-built configuration if different from the as-designed configuration reflecting either the re-identified part number or true manufacturer part number, or both.

C.10.7.8.2.1.2 Army items having an AOPN and Government CAGE code that are modified for the AMPV shall not be re-identified with the contractor's or other vendor part number. The item and its product data shall reflect a new AOPN with TACOM CAGE code 19207. The contractor shall maintain configuration records that links or otherwise retains history of the original Government part number and CAGE code to the new Government part number and CAGE code and include this information in Configuration Status Accounting Information reports. (CDRL B060)

## C.10.7.8.3 Military and Industry Standard Parts

In lieu of contractor, OEM, supplier, or other commercial and vendor part numbers, the contractor shall use the military, industry, or specification-identified part numbers in the product data. This shall be done for all fasteners, standard hardware, bulk material, and other items that can be defined by Government and non-Government standardization documents, as well as international or foreign standardization documents, adopted by the ANSI for use in the U.S., in accordance with 5.3.1 and 5.3.1.1 of MIL-STD-31000.

C.10.7.8.3.1 The contractor shall use the part-numbering convention defined by these Government, non-Government, or adopted international or foreign standardization documents in all product data prepared under this contract. In accordance with ASME Y14.100, the product data shall cite the PIN established by the standardization document as the part call out, in the parts list, etc. The standardization document number shall also be shown on the product data (in the parts list, notes, etc.) if it is not discernible from the PIN.

C.10.7.8.3.2 The contractor shall investigate and convert all vendor, supplier, or commercial part numbers to the standardization document PINs prior to submitting product data to the Government for approval. The contractor may utilize the on-line tool called

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WEBFLIS (<http://www.dlis.dla.mil/webflis/>) for researching part numbers, or contact the Defense Logistics Agency (DLA) customer service at: <http://www.dlis.dla.mil/cust.asp> for assistance with web access, accounts, or assistance in finding part numbers for standard items. The contractor may be required to model certain standard parts or include existing models in 3D model assemblies, but shall not create 2D drawings for parts that are defined by existing Government or non-Government standardization documents. (CDRL B058)

C.10.7.8.3.3 Commercial, vendor, OEM, manufacturer, etc., parts, Government-approved for use in the TDP, and NOT defined by a Government or Non-Government Standard, shall be called out on all up assemblies using the unique identifier consisting of the complete PIN and CAGE code.

C.10.7.8.4 National Stock Numbers (NSNs) and Part or Identifying Numbers (PINs)

The PIN, in combination with the CAGE code, establishes unique item identification of items in the product data. The NSN for items may be cited in the product data in addition to the PIN-CAGE code; however, NSNs do not establish unique item identification and shall not be cited within the product data in lieu of the PIN-CAGE code.

C.10.7.8.4.1 NSNs placed within the product data either in lieu of a PIN-CAGE code or that conflict with the PIN or CAGE code provisioning data found in WebFLIS will be reason for Government rejection of the product data containing the conflicting data, and will be returned to the contractor for correction and re-submittal. (CDRL B058)

C.10.7.9 End of Contract (EOC) Submittals

The contractor shall transfer the latest version for all Unlimited Rights and Government Purpose Rights master product data not already in the Governments possession to the AMPV CDM Representative by the end of contract. The contractor shall transfer the master data, 2D digital, native and neutral 3D CAD solid models, engineering changes, deviations, IBOMs, and other digitally generated master files as one or more closeout ERRs (CDRLs B001, B057, B058, B059, B061, B064).

C.10.8 Government Furnished Property (GFP), Government Furnished Information (GFI), and Optional Exchange Vehicles (OEVs) in the LRIP Phase

C.10.8.1 Government Furnished Equipment (GFE)

C.10.8.1.1 Golden Sets

The contractor will retain the golden sets provided for the EMD phase (see Section C.9.2.1.1) for the duration of LRIP. The contractor shall return the golden sets to the Government at the end of the performance period of this contract.

C.10.8.2 Government Furnished Material (GFM)

C.10.8.2.1 GFM Quantity, Condition, and Reports

C.10.8.2.1.1 GFM Delivery

The contractor and Government will determine GFM for LRIP throughout the IPT process. The final GFM list for LRIP will be determined at PRR. The property will be provided in a condition that is suitable for its intended use, and will be delivered in accordance with a schedule to be determined through the IPT process. In the event that unsuitable material is provided, the contractor shall prepare and submit a PQDR in accordance with Section E.2.5.

C.10.8.2.1.2 GFM Monthly Updates

The contractor shall prepare and submit a GFM monthly update as required by CDRL B065.

C.10.8.4 Government Furnished Information (GFI)

The contractor will retain the GFI sets provided for the EMD phase (see Section C.9.2.4) for the duration of LRIP.

C.10.8.5 External Agreements

The contractor shall establish Non-Disclosure Agreements (NDAs) and Memorandums of Agreement (MOAs) with required Government and commercial organizations as required to receive GFP and GFI that were not established in the EMD phase. GFP and GFI requiring external agreements are identified in Attachment 0006, and different items require a different process to pursue the external agreement. The Government will broker all agreements for GFP and GFI listed in Attachment 0006. The contractors failure to obtain the required external agreement may require the Government to deviate from the delivery schedule of GFE, GFM, or GFI.

C.10.8.6 Optional Exchange Vehicles (OEVs)

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If the contractor enters into an exchange agreement with the Government for OEVs, the contractor shall prepare and transport, at its own expense, the selected OEVs to the contractor's facility within 30 days of the exercise of the applicable LRIP option. Transfer of title of the OEVs will occur prior to shipment.

**C.10.9 LRIP Production Plan**

C.10.9.1 As part of the Manufacturing Plan (CDRL B041), the contractor shall create a Production Plan that incorporates all production facilities (USG and contractor owned) and identifies processes that are to be utilized during the LRIP build phase, from induction of the base platform until DD-250 final system delivery to the Government.

C.10.9.2 The contractor shall assemble and manufacture the AMPV variants for the LRIP phase of the AMPV program. Vehicles may be new builds or may be an existing platform with modifications (e.g., OEVS as provided via an exchange agreement (Sections C.10.8.6 and L.4.3.5.3)). Vehicle manufacturing details are as follows:

- 1) The contractor shall procure all of the necessary materials for fabrication of AMPV vehicles in order to meet the required LRIP Production quantities and delivery dates per Attachment 0041 (LRIP Production Schedule). The Government will provide to the contractor's manufacturing facility the GFM defined in the final GFM list determined at PRR, as described in Section C.10.8.2.1.1.
- 2) If using OEVs for the fabrication of the AMPV vehicle, the chassis and hull shall be inspected, disassembled, remanufactured and shall have any required AMPV specific configuration changes as specified in the AMPV Technical Data Package (TDP). If using new hulls for the fabrication of the AMPV vehicle, they shall be built as specified in the AMPV Technical Data Package (TDP).
- 3) Any MEP components or other materials from OEVs that are utilized for the fabrication of the AMPV vehicles, shall be inspected, disassembled and remanufactured to Condition Code A (in accordance with the Defense Logistics Agency's Customer Assistance Handbook, Code A parts are new, used, repaired, or reconditioned material that is serviceable and issuable without limitation or restrictions, i.e. these parts are in a like-new condition, either through new manufacturing of the item, or through refurbishment).
- 4) The AMPV Chassis Assembly and MEP Assembly shall be modified, fabricated, assembled and integrated to make the AMPV Vehicle variants. The AMPV vehicle variants shall meet all standards expressed in the delivered Final Inspection Record (FIR) and the respective AMPV Variant Performance Specification (Attachment 0001).

**C.10.9.3 In-Process Inspections**

During vehicle and component fabrication and assembly, in-process inspections to evaluate assembly, conformance of materials, workmanship, material certifications and quality control shall be conducted by Government representatives. The inspections shall take place at the contractor's or subcontractor's facilities at various stages of fabrication and assembly. The contractor shall make reasonable accommodations to facilitate these inspections.

**C.10.9.4 Manufacturing Readiness Level (MRL)**

The contractor shall be assessed, with Government concurrence, at a minimum of MRL-8 per the DoD MRL Chart provided in Attachment 0076 (Industrial Capabilities and Manufacturing Readiness), prior to contract award. AMPV vehicles fabricated for the start of LRIP build shall be at a minimum of MRL-8.

**C.10.9.5 Paint Color**

AMPV vehicle variant paint colors shall be agreed upon at the SOWM (see Section C.10.2.5.2, Start of Work Meetings).

**C.10.9.6 Production Facilities:**

C.10.9.6.1 The contractor shall facilitate all production locations that will be required for LRIP Production. The facilitation of all production locations shall be completed in time to meet the required LRIP Production Schedule per Attachment 0041. Facilitation, at a minimum, shall include procuring all necessary tooling, equipment and information technology needed to support LRIP production at each critical facility. Any facilitation activities shall be scheduled into the Integrated Master Schedule (IMS). Facilitation shall also include finalization, release and implementation of the following documents and plans required for LRIP production: Material Flow Plans, Process Control Plans, Quality Documents and Plans, Production Lay Outs, Production Flow Charts, and Manufacturing Plans.

C.10.9.6.2 The contractor shall implement the staffing plan for each production facility and location as developed in the Manufacturing Plan deliverable in the EMD section. The staffing plan shall take into account the proper diagnostic and trouble shooting skills required for assembly personnel per contractor Lessons Learned from the AMPV variants Prototype Build, Refurbishment Effort and Final Inspection Reports (FIR).

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C.10.9.6.3 The contractor shall provide accommodations for storage and maintenance of vehicles when they are in process or assembly complete or awaiting delivery. The accommodations shall be of a level that prevents damage, vandalism or excessive exposure to the elements to the vehicles.

C.10.9.6.4 The contractor shall prepare and deliver to the Government a Packaging, Handling, Storage and Transportation (PHS&T) plan at all Production related facilities. The PHS&T plan shall be part of the overall Manufacturing Plan (CDRL B041).

C.10.9.6.5 The contractor shall make accommodations at the final assembly and integration location(s) for all necessary post-assembly testing, which consists of Break-In and Acceptance Tests, Vehicle Navigation Course and Test Track and FIR compliance by variant.

**C.10.9.7 Preservation and Storage of Tooling**

The contractor shall prepare and deliver to the Government a plan for preservation and storage of production tooling. This plan shall be part of the overall Manufacturing Plan (CDRL B041).

**C.10.9.8 Permits**

As part of the Manufacturing Plan (CDRL B041), the contractor shall identify all efforts to obtain the Federal and State permits and certifications required for use at all assembly, production and vehicle holding facilities. This shall include making accommodations for handling, disposal, and transporting of hazardous materials.

**C.10.9.9 Calibration**

The contractor shall prepare and deliver to the Government a Calibration Plan that ensures all measuring, testing, fixturing, manufacturing, Special Tools (ST), Special Test Equipment (STE) and assembly equipment are calibrated prior to use or re-called for re-calibration prior to expiration of the current calibration period. The Calibration Plan shall be part of the overall Manufacturing Plan (CDRL B041).

**C.10.9.10 Materials**

The contractor shall notify the Government within five business days of notice by one of its subcontractors or internal organizations of the inability to obtain any materials required for the LRIP build. The contractor shall provide a recommendation for the replacement of the item or information on the quantity, timing and cost needed to provide this item for the current LRIP year contract and remaining option years.

**C.10.9.10.1 Material Storage**

The contractor shall prepare and deliver to the Government a plan to define all material storage locations and facility requirements needed for LRIP. This shall be included as part of the Manufacturing Plan (CDRL B041). Material storage plans shall discuss hazardous material storage.

**C.10.9.11 Material Accountability and Inventory**

C.10.9.11.1 The contractor shall prepare and deliver to the Government a Material Accountability and Inventory Control Plan and process that accounts for both GFM and CFM, as part of the Manufacturing Plan (CDRL B041). The plan shall provide for monthly cycle counts at all locations (storage and consumption points) to prevent loss or misplacement of material. The contractor shall include the results of these counts as part of the plan. The contractor-provided cycle count information shall list materials that have been used, materials on hand, materials on order, and any material shortages.

C.10.9.11.2 The contractor's Material Accountability and Inventory Control Plan shall include provisions to properly identify inventory. This plan shall also include details for implementing the requirements of the IUID process (see C.10.6.5 Item Unique Identification (IUID) Markings) for LRU level parts and parts with a dollar value equal to or greater than \$5,000.00 (USD). The plan shall include a methodology to minimize required inventory quantities and storage costs.

**C.10.9.12 Meetings**

Progress of the LRIP build by variant shall be tracked by the contractor in a weekly Production IPT meeting. The contractor shall make reasonable accommodations to run the weekly meetings including providing meeting agendas, call in number and telecommunication capabilities. The contractor shall prepare and furnish meeting minutes and action items after each weekly meeting (CDRL A001).

The contractor shall host a Post Award Conference (PAC) no later than 30 days after each option year contract award. The PAC will be chaired by the Government and will be conducted at the contractors facility. The purpose of the PAC is to review all contract requirements by variant in-depth (i.e. Statement of Work, CDRLs, etc.) with the contractor, TACOM, PM AMPV, and DCMA personnel. The contractor shall provide minutes of the PAC (CDRL A001).

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## SECTION F - DELIVERIES OR PERFORMANCE

<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
F-1 CHANGED	252.211-7003	ITEM UNIQUE IDENTIFICATION AND VALUATION	DEC/2013

(a) Definitions. As used in this clause

"Automatic identification device" means a device, such as a reader or interrogator, used to retrieve data encoded on machine-readable media.

"Concatenated unique item identifier" means

(1) For items that are serialized within the enterprise identifier, the linking together of the unique identifier data elements in order of the issuing agency code, enterprise identifier, and unique serial number within the enterprise identifier; or

(2) For items that are serialized within the original part, lot, or batch number, the linking together of the unique identifier data elements in order of the issuing agency code; enterprise identifier; original part, lot, or batch number; and serial number within the original part, lot, or batch number.

"Data matrix" means a two-dimensional matrix symbology, which is made up of square or, in some cases, round modules arranged within a perimeter finder pattern and uses the Error Checking and Correction 200 (ECC200) specification found within International Standards Organization (ISO)/International Electrotechnical Commission (IEC) 16022.

"Data qualifier" means a specified character (or string of characters) that immediately precedes a data field that defines the general category or intended use of the data that follows.

"DoD recognized unique identification equivalent" means a unique identification method that is in commercial use and has been recognized by DoD. All DoD recognized unique identification equivalents are listed at [http://www.acq.osd.mil/dpap/pdi/uid/iuid\\_equivalents.html](http://www.acq.osd.mil/dpap/pdi/uid/iuid_equivalents.html).

"DoD item unique identification" means a system of marking items delivered to DoD with unique item identifiers that have machine-readable data elements to distinguish an item from all other like and unlike items. For items that are serialized within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier and a unique serial number. For items that are serialized within the part, lot, or batch number within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier; the original part, lot, or batch number; and the serial number.

"Enterprise" means the entity (e.g., a manufacturer or vendor) responsible for assigning unique item identifiers to items.

"Enterprise identifier" means a code that is uniquely assigned to an enterprise by an issuing agency.

"Government's unit acquisition cost" means

(1) For fixed-price type line, subline, or exhibit line items, the unit price identified in the contract at the time of delivery;

(2) For cost-type or undefinitized line, subline, or exhibit line items, the Contractors estimated fully burdened unit cost to the Government at the time of delivery; and

(3) For items produced under a time-and-materials contract, the Contractors estimated fully burdened unit cost to the Government at the time of delivery.

"Issuing agency" means an organization responsible for assigning a globally unique identifier to an enterprise (e.g., Dun & Bradstreet's Data Universal Numbering System (DUNS) Number, GS1 Company Prefix, Allied Committee 135 NATO Commercial and Government Entity (NCAGE)/Commercial and Government Entity (CAGE) Code, or the Coded Representation of the North American Telecommunications Industry Manufacturers, Suppliers, and Related Service Companies (ATIS-0322000) Number), European Health Industry Business Communication Council (EHIBCC) and Health Industry Business Communication Council (HIBCC)), as indicated in the Register of Issuing Agency Codes for ISO/IEC 15459, located at <http://www.nen.nl/web/Normen-ontwikkelen/ISOIEC-15459-Issuing-Agency-Codes.htm>.

"Issuing agency code" means a code that designates the registration (or controlling) authority for the enterprise identifier.

"Item" means a single hardware article or a single unit formed by a grouping of subassemblies, components, or constituent parts.

"Lot or batch number" means an identifying number assigned by the enterprise to a designated group of items, usually referred to as either a lot or a batch, all of which were manufactured under identical conditions.

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"Machine-readable" means an automatic identification technology media, such as bar codes, contact memory buttons, radio frequency identification, or optical memory cards.

"Original part number" means a combination of numbers or letters assigned by the enterprise at item creation to a class of items with the same form, fit, function, and interface.

"Parent item" means the item assembly, intermediate component, or subassembly that has an embedded item with a unique item identifier or DoD recognized unique identification equivalent.

"Serial number within the enterprise identifier" means a combination of numbers, letters, or symbols assigned by the enterprise to an item that provides for the differentiation of that item from any other like and unlike item and is never used again within the enterprise.

"Serial number within the part, lot, or batch number" means a combination of numbers or letters assigned by the enterprise to an item that provides for the differentiation of that item from any other like item within a part, lot, or batch number assignment.

"Serialization within the enterprise identifier" means each item produced is assigned a serial number that is unique among all the tangible items produced by the enterprise and is never used again. The enterprise is responsible for ensuring unique serialization within the enterprise identifier.

"Serialization within the part, lot, or batch number" means each item of a particular part, lot, or batch number is assigned a unique serial number within that part, lot, or batch number assignment. The enterprise is responsible for ensuring unique serialization within the part, lot, or batch number within the enterprise identifier.

"Type designation" means a combination of letters and numerals assigned by the Government to a major end item, assembly or subassembly, as appropriate, to provide a convenient means of differentiating between items having the same basic name and to indicate modifications and changes thereto.

"Unique item identifier" means a set of data elements marked on items that is globally unique and unambiguous. The term includes a concatenated unique item identifier or a DoD recognized unique identification equivalent.

"Unique item identifier type" means a designator to indicate which method of uniquely identifying a part has been used. The current list of accepted unique item identifier types is maintained at [http://www.acq.osd.mil/dpap/pdi/uid/uii\\_types.html](http://www.acq.osd.mil/dpap/pdi/uid/uii_types.html).

(b) The Contractor shall deliver all items under a contract line, subline, or exhibit line item.

(c) Unique item identifier.

(1) The Contractor shall provide a unique item identifier for the following:

(i) Delivered items for which the Government's unit acquisition cost is \$5,000 or more, except for the following line items:

Contract Line,	
Subline, or	
Exhibit Line Item Number	Item Description
*See Sections C.7.10 and C.10.6.5 (Item Unique Identification (IUID) Markings for specific details.*	
_____ TBD _____	_____

(ii) Items for which the Government's unit acquisition cost is less than \$5,000 that are identified in the Schedule or the following table:

Contract Line,	
Subline, or	
Exhibit Line Item Number	Item Description
*See Sections C.7.10 and C.10.6.5 (Item Unique Identification (IUID) Markings for specific details.*	
_____ TBD _____	_____

(iii) Subassemblies, components, and parts embedded within delivered items, items with warranty requirements, DoD serially managed reparable and DoD serially managed nonreparable as specified: Refer to Section C.7.10 & C.10.6.5 (Item Unique Identification (IUID))

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Markings) for details.

(iv) Any item of special tooling or special test equipment as defined in FAR 2.101 that have been designated for preservation and storage for a Major Defense Acquisition Program as specified: Refer to Section C.10.9.7 (Preservation and Storage of Tooling) for details.

(v) Any item not included in paragraphs (c)(1)(i), (ii), (iii), or (iv) of this clause for which the contractor creates and marks a unique item identifier for traceability.

(2) The unique item identifier assignment and its component data element combination shall not be duplicated on any other item marked or registered in the DoD Item Unique Identification Registry by the contractor.

(3) The unique item identifier component data elements shall be marked on an item using two dimensional data matrix symbology that complies with ISO/IEC International Standard 16022, Information technology--International symbology specification--Data matrix; ECC200 data matrix specification.

(4) Data syntax and semantics of unique item identifiers. The Contractor shall ensure that--

(i) The data elements (except issuing agency code) of the unique item identifier are encoded within the data matrix symbol that is marked on the item using one of the following three types of data qualifiers, as determined by the Contractor:

(A) Application Identifiers (AIs) (Format Indicator 05 of ISO/IEC International Standard 15434), in accordance with ISO/IEC International Standard 15418, Information Technology--EAN/UCC Application Identifiers and Fact Data Identifiers and Maintenance and ANSI MH 10.8.2 Data Identifier and Application Identifier Standard.

(B) Data Identifiers (DIs) (Format Indicator 06 of ISO/IEC International Standard 15434), in accordance with ISO/IEC International Standard 15418, Information Technology--EAN/UCC Application Identifiers and Fact Data Identifiers and Maintenance and ANSI MH 10.8.2 Data Identifier and Application Identifier Standard.

(C) Text Element Identifiers (TEIs) (Format Indicator 12 of ISO/IEC International Standard 15434), in accordance with the Air Transport Association Common Support Data Dictionary; and

(ii) The encoded data elements of the unique item identifier conform to the transfer structure, syntax, and coding of messages and data formats specified for Format Indicators 05, 06, and 12 in ISO/IEC International Standard 15434, Information Technology-Transfer Syntax for High Capacity Automatic Data Capture Media.

(5) Unique item identifier.

(i) The Contractor shall--

(A) Determine whether to--

(1) Serialize within the enterprise identifier;

(2) Serialize within the part, lot, or batch number; or

(3) Use a DoD recognized unique identification equivalent (e.g. Vehicle Identification Number); and

(B) Place the data elements of the unique item identifier (enterprise identifier; serial number; DoD recognized unique identification equivalent; and for serialization within the part, lot, or batch number only: Original part, lot, or batch number) on items requiring marking by paragraph (c)(1) of this clause, based on the criteria provided in MIL-STD-130, Identification Marking of U.S. Military Property, latest version;

(C) Label shipments, storage containers and packages that contain uniquely identified items in accordance with the requirements of MIL-STD-129, Military Marking for Shipment and Storage, latest version; and

(D) Verify that the marks on items and labels on shipments, storage containers, and packages are machine readable and conform to the applicable standards. The contractor shall use an automatic identification technology device for this verification that has been programmed to the requirements of Appendix A, MIL-STD-130, latest version.

(ii) The issuing agency code--

(A) Shall not be placed on the item; and

(B) Shall be derived from the data qualifier for the enterprise identifier.

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(d) For each item that requires item unique identification under paragraph (c)(1)(i), (ii), or (iv) of this clause or when item unique identification is provided under paragraph (c)(1)(v), in addition to the information provided as part of the Material Inspection and Receiving Report specified elsewhere in this contract, the Contractor shall report at the time of delivery, as part of the Material Inspection and Receiving Report, the following information:

- (1) Unique item identifier.
- (2) Unique item identifier type.
- (3) Issuing agency code (if concatenated unique item identifier is used).
- (4) Enterprise identifier (if concatenated unique item identifier is used).
- (5) Original part number (if there is serialization within the original part number).
- (6) Lot or batch number (if there is serialization within the lot or batch number).
- (7) Current part number (optional and only if not the same as the original part number).
- (8) Current part number effective date (optional and only if current part number is used).
- (9) Serial number (if concatenated unique item identifier is used).
- (10) Governments unit acquisition cost.
- (11) Unit of measure.
- (12) Type designation of the item as specified in the contract schedule, if any.
- (13) Whether the item is an item of Special Tooling or Special Test Equipment.
- (14) Whether the item is covered by a warranty.

(e) For embedded subassemblies, components, and parts that require DoD item unique identification under paragraph (c)(1)(iii) of this clause or when item unique identification is provided under paragraph (c)(1)(v), the Contractor shall report as part of the Material Inspection and Receiving Report specified elsewhere in this contract, the following information:

- (1) Unique item identifier of the parent item under paragraph (c)(1) of this clause that contains the embedded subassembly, component, or part.
- (2) Unique item identifier of the embedded subassembly, component, or part.
- (3) Unique item identifier type.\*\*
- (4) Issuing agency code (if concatenated unique item identifier is used).\*\*
- (5) Enterprise identifier (if concatenated unique item identifier is used).\*\*
- (6) Original part number (if there is serialization within the original part number).\*\*
- (7) Lot or batch number (if there is serialization within the lot or batch number).\*\*
- (8) Current part number (optional and only if not the same as the original part number).\*\*
- (9) Current part number effective date (optional and only if current part number is used).\*\*
- (10) Serial number (if concatenated unique item identifier is used).\*\*
- (11) Description.

\*\* Once per item.

(f) The Contractor shall submit the information required by paragraphs (d) and (e) of this clause as follows:

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(1) End items shall be reported using the receiving report capability in Wide Area WorkFlow (WAWF) in accordance with the clause at 252.232-7003. If WAWF is not required by this contract, and the contractor is not using WAWF, follow the procedures at <http://dodprocurementtoolbox.com/site/uidregistry/>.

(2) Embedded items shall be reported by one of the following methods--

(i) Use of the embedded items capability in WAWF;

(ii) Direct data submission to the IUID Registry following the procedures and formats at <http://dodprocurementtoolbox.com/site/uidregistry/>; or

(iii) Via WAWF as a deliverable attachment for exhibit line item number TBD, Unique Item Identifier Report for Embedded Items, Contract Data Requirements List, DD Form 1423.

(g) Subcontracts. If the Contractor acquires by contract any items for which item unique identification is required in accordance with paragraph (c)(1) of this clause, the Contractor shall include this clause, including this paragraph (g), in the applicable subcontract(s), including subcontracts for commercial items.

(End of clause)

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## SECTION H - SPECIAL CONTRACT REQUIREMENTS

## H.1 ORGANIZATIONAL CONFLICTS OF INTEREST

H.1.1 The contractor and its subcontractors, consultants, parent companies, subsidiaries, joint ventures, or other business affiliates at any tier may be excluded from performing under this AMPV contract if the Procuring Contracting Officer (PCO) determines that an Organizational Conflict of Interest (OCI) exists due to bias or unfair competitive advantage. A similar provision is expected to apply to follow-on AMPV solicitations and contracts.

H.1.2 The contractor shall flow down this provision in any subcontracts or other related instruments (at all tiers). The contractor shall monitor its activities and the activities of its subcontractors and related entities, and promptly disclose any actual or potential OCIs and any actions taken or proposed to negate or mitigate such conflicts.

## H.1.3 Remedies

For breach of any of the above restrictions or for nondisclosure or misrepresentation of any relevant facts required to be disclosed concerning this contract, the Government may terminate the contract for default, disqualify the contractor for subsequent related contractual efforts, and pursue such other remedies as may be permitted by law or this contract.

## H.2 WIDE AREA WORK FLOW (WAWF) RECEIVING REPORTS

The Government may require copies of the WAWF Receiving Report, Bills of Lading, or other documentation to resolve delinquencies, payment issues, or other administrative issues. No copies of the WAWF Receiving Report are required unless specifically requested by the PCO.

## H.3 PROGRAM SECURITY AND PUBLIC RELEASE

## H.3.1 Program Security

During performance of this contract, the contractor shall provide protection as required by the DD Form 254, Contract Security Classification Specification, (Attachment 0070), AMPV Security Classification Guide (Attachment 0069), and shall require appropriate levels of program security in subcontracts issued hereunder for performance of AMPV work.

## H.3.2 Protection and Disclosure of Information - Public Release

H.3.2.1 Except for AMPV Program information previously approved for public release by the Government under the AMPV Program, the contractor shall not release any AMPV Program information regarding the work performed under this contract, without first obtaining approval for Public Release as identified in the DD254 and per this clause, outside of (i) the United States Government, (ii) its own facility, (iii) its subcontractors performing AMPV work at any tier, (iv) its associate contractors at any tier, and (v) any other individual or entity that is contractually bound to protect AMPV Program Information from public release.

H.3.2.2 The contractor shall send all requests for public release approval to the PCO, in accordance with DFARS Clause 252.204-7000. Requests will reviewed for public release approval and the PCO, or authorized representative, will, after appropriate review, either authorize or reject the request to disseminate AMPV Program information publicly. Authorization may be given contingent on specified changes being made to the material for which public release has been requested. Subcontractors and associate contractors shall submit such public release requests through the prime contractor.

H.3.3 In performing this contract, contractors shall use computer and communications equipment that meets the requirements identified in the DD254 (if applicable).

H.3.4 Lower Tier Subcontracts. Contractors shall include the provision in Section H.3.2 above, appropriately modified to identify the contractual parties, in all subcontracts for the performance of AMPV work, and shall require such inclusion in all subsequent subcontracts, regardless of tier.

## H.3.5 Shipment of Controlled Materials

Unless otherwise instructed by the PCO, contractors shall coordinate and send advance notice of shipment to the consignee transportation officer when all of the following shipments are given to any carrier for transportation to a domestic destination (other than a port of export): classified material, protected sensitive material, protected controlled material, explosives and poisons in classes A and B, and radioactive materials requiring the use of a III bar label. In addition, unless otherwise instructed by the PCO, contractors shall coordinate and send advance notice of shipment to the consignee transportation officer when a truckload/carload shipment of supplies weighs 20,000 pounds

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or more, or when a shipment of less weight does not occupy the full visible capacity of a railway car or motor vehicle.

## H.4 RESERVED

## H.5 EXPORT COMPLIANCE

(a) Contractors shall comply with all U.S. export control laws and regulations, which are applicable to this RFP, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 774, in the performance of this Contract.

(b) All technical data that is exported under ITAR Sections 125.4(b)(1) or 125.4(b)(3) must be reviewed and approved by the US Army in accordance with approved disclosure guidelines for AMPV.

## H.5.1 Lower Tier Contracts/Subcontracts

The contractor shall include the above provision, suitably modified to identify the parties, in all subcontracts hereunder.

## H.6 CALENDAR DAYS

As referenced in this contract, the number of days refers to calendar days unless stated otherwise.

## H.7 VEHICLE EXCHANGE AGREEMENT (OPTIONAL)

H.7.1 As part of its proposal submission, offerors may propose entering into an exchange agreement with the Government for Bradley and M113 vehicles. These vehicles are referred to as Optional Exchange Vehicles (OEV) and are listed in Attachment 0006. Subject to any noted restrictions, offerors' proposed exchange may be based on any mix of OEV configurations and quantities, but may not exceed the total number of OEVs being offered or the OEV configurations available, as outlined below. The total number of OEVs for EMD and the maximum quantity of OEVs in the LRIP options shall not exceed the total number of OEVs available, per configuration, as outlined in Attachment 0006. An offeror may propose an exchange for any combination of years. All OEVs are being offered in as-is condition. In exchange for OEVs, offerors shall propose an exchange credit, which will be applied at the onset of the contractual action that triggers the exchange. Offerors shall propose exchange quantities and the associated credits in the sections designated below for EMD and LRIP Option 1. Offerors shall propose an exchange credit for each OEV variant for LRIP Option 2 and LRIP Option 3. Specific details outlining the transfer of title of the OEVs will be provided in a bi-lateral vehicle exchange agreement, which will be incorporated into the contract.

## H.7.2 EMD Exchange of OEVs

H.7.2.1 The maximum number of OEVs available for exchange for the EMD portion of the contract is 78 vehicles. If participating in the exchange program, offerors shall propose an exchange quantity in Section H.7.2.3 below. The following is a breakdown of the OEVs available:

(a) A total quantity of 39 Bradley OEVs may be exchanged. Offerors may propose any mix of Bradley OEVs, subject to the provision in Section H.7.2.2, consisting of the following models:

- Infantry Fighting Vehicle, M2 (NSN 2350-01-048-5920)
- Cavalry Fighting Vehicle, M3 (NSN 2350-01-049-2695)
- Infantry Fighting Vehicle, M2A2 (NSN 2350-01-248-7619)
- Cavalry Fighting Vehicle, M3A2 (NSN 2350-01-248-7620)
- Operation Desert Storm Infantry Fighting Vehicle, M2A2 ODS (NSN 2350-01-405-9886)
- Operation Desert Storm Cavalry Fighting Vehicle, M3A2 ODS (NSN 2350-01-405-9887)
- Bradley Fire Support Team (BFIST), M7 (NSN 2350-01-432-1526)

(b) A total quantity of 39 M113 FoV OEVs may be exchanged. Offerors may propose any mix of M113 FoV OEVs, consisting of the following models:

- M113A3 Full Tracked Armored Personnel Carrier (NSN 2350-01-219-7577)
- M1064A3 Self-Propelled Mortar Carrier 120mm M121 (NSN 2350-01-369-6082)
- M1068A3 Standardized Integrated Command Post System Carrier (NSN 2350-01-369-6086)
- M577A3 Light Tracked Command Post (NSN 2350-01-369-6085)

H.7.2.2 If an offeror's AMPV material solution incorporates any of the available Bradley OEV variants (as specified in the offeror's submittal of Attachment 0106, End Users Certificate - DLA Form 1822), acquired through the exchange program to fulfill the full AMPV requirement, the offeror shall select at least one M3 or M2 and at least one M2A2, M2A2 ODS, M3A2, M3A2 ODS, or M7 Bradley OEV variant.

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H.7.2.3 Offerors shall not propose to exchange more OEVs than are being offered for exchange, as outlined in Sections H.7.1 and H.7.2.1. The offeror proposes the following OEV exchange mix:

- \_\_\_\_\_ EA of as-is Bradley M2 vehicles
- \_\_\_\_\_ EA of as-is Bradley M3 vehicles
- \_\_\_\_\_ EA of as-is Bradley M2A2 vehicles
- \_\_\_\_\_ EA of as-is Bradley M3A2 vehicles
- \_\_\_\_\_ EA of as-is Bradley M2A2 ODS vehicles
- \_\_\_\_\_ EA of as-is Bradley M3A2 ODS vehicles
- \_\_\_\_\_ EA of as-is Bradley M7 vehicles
- \_\_\_\_\_ EA of as-is M113A3 vehicles
- \_\_\_\_\_ EA of as-is M1064A3 vehicles
- \_\_\_\_\_ EA of as-is M1068A3 vehicles
- \_\_\_\_\_ EA of as-is M577A3 vehicles

H.7.2.3.1 An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for the exchange of the proposed OEVs in Section H.7.2.3 above. This credit will be applied to the vouchers directly following the transfer of title of the Optional Exchange Vehicles until the credit is exhausted. This credit will not factor into incentive calculations.

**H.7.3 LRIP Exchange of Vehicles Option Year 1**

H.7.3.1 The maximum number of OEVs available for exchange during LRIP Option 1 is 124 vehicles. If participating in the exchange program, offerors shall propose an exchange quantity in Section H.7.3.3 below. The following is a breakdown of OEVs available:

(a) A total quantity of 62 Bradley OEVs may be exchanged. Offerors may propose any mix of Bradley OEVs, subject to the provision in Section H.7.3.2, consisting of the following models:

- Infantry Fighting Vehicle, M2 (NSN 2350-01-048-5920)
- Cavalry Fighting Vehicle, M3 (NSN 2350-01-049-2695)
- Infantry Fighting Vehicle, M2A2 (NSN 2350-01-248-7619)
- Cavalry Fighting Vehicle, M3A2 (NSN 2350-01-248-7620)
- Operation Desert Storm Infantry Fighting Vehicle, M2A2 ODS (NSN 2350-01-405-9886)
- Operation Desert Storm Cavalry Fighting Vehicle, M3A2 ODS (NSN 2350-01-405-9887)
- Bradley Fire Support Team (BFIST), M7 (NSN 2350-01-432-1526)

(b) A total quantity of 62 M113 FoV OEVs may be exchanged. Offerors may propose any mix of M113 FoV OEVs, consisting of the following models:

- M113A3 Full Tracked Armored Personnel Carrier (NSN 2350-01-219-7577)
- M1064A3 Self-Propelled Mortar Carrier 120mm M121 (NSN 2350-01-369-6082)
- M1068A3 Standardized Integrated Command Post System Carrier (NSN 2350-01-369-6086)
- M577A3 Light Tracked Command Post (NSN 2350-01-369-6085)

H.7.3.2 If an offeror's AMPV material solution incorporates any of the available, Bradley OEV variants (as specified in the offeror's submittal of Attachment 0106), acquired through the exchange program to fulfill the full AMPV requirement, the offeror shall select at least one M3 or M2 and at least one M2A2, M2A2 ODS, M3A2, M3A2 ODS, or M7 Bradley OEV variant.

H.7.3.3 Offeror's shall not propose to exchange more OEVs than are being offered for exchange, as outlined in Sections H.7.1 and H.7.3.1. The offeror proposes the following OEV exchange mix:

- \_\_\_\_\_ EA of as-is Bradley M2 vehicles
- \_\_\_\_\_ EA of as-is Bradley M3 vehicles
- \_\_\_\_\_ EA of as-is Bradley M2A2 vehicles
- \_\_\_\_\_ EA of as-is Bradley M3A2 vehicles
- \_\_\_\_\_ EA of as-is Bradley M2A2 ODS vehicles
- \_\_\_\_\_ EA of as-is Bradley M3A2 ODS vehicles
- \_\_\_\_\_ EA of as-is Bradley M7 vehicles
- \_\_\_\_\_ EA of as-is M113A3 vehicles
- \_\_\_\_\_ EA of as-is M1064A3 vehicles
- \_\_\_\_\_ EA of as-is M1068A3 vehicles
- \_\_\_\_\_ EA of as-is M577A3 vehicles

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\*H.7.3.3.1 An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for the exchange of the proposed OEVs in Section \*H.7.3.3 above. This credit will be applied to the vouchers directly following the transfer of title of the Optional Exchange Vehicles until the credit is exhausted. This credit will not factor into incentive calculations.

## H.7.4 LRIP Exchange of Vehicles Option Year 2

H.7.4.1 The maximum number of OEVs available for exchange during the LRIP Option 2 portion of the contract is one Bradley and one M113 for each AMPV vehicle. If participating in the exchange program offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose exchange credits per each in Section H.7.4.2 below. The following is a breakdown of OEVs available:

(a) Offerors may propose only one Bradley OEV variant per each AMPV ordered. The Bradley OEVs consist of the following models:

- Infantry Fighting Vehicle, M2 (NSN 2350-01-048-5920)
- Cavalry Fighting Vehicle, M3 (NSN 2350-01-049-2695)
- Infantry Fighting Vehicle, M2A2 (NSN 2350-01-248-7619)
- Cavalry Fighting Vehicle, M3A2 (NSN 2350-01-248-7620)
- Operation Desert Storm Infantry Fighting Vehicle, M2A2 ODS (NSN 2350-01-405-9886)
- Operation Desert Storm Cavalry Fighting Vehicle, M3A2 ODS (NSN 2350-01-405-9887)
- Bradley Fire Support Team (BFIST), M7 (NSN 2350-01-432-1526)

(b) Offerors may propose only one M113 FoV OEV per each AMPV ordered. The M113 FoV OEVs consist of the following models:

- M113A3 Full Tracked Armored Personnel Carrier (NSN 2350-01-219-7577)
- M1064A3 Self-Propelled Mortar Carrier 120mm M121 (NSN 2350-01-369-6082)
- M1068A3 Standardized Integrated Command Post System Carrier (NSN 2350-01-369-6086)
- M577A3 Light Tracked Command Post (NSN 2350-01-369-6085)

H.7.4.2 Offerors shall not propose to exchange more OEVs than are being offered for exchange, as outlined in Sections H.7.1 and H.7.4.1.

H.7.4.2.1 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV General Purpose (GP) variant.

H.7.4.2.1.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV GP variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M2 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M3 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M2A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M3A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.4.2.1.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV GP variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M113A3 vehicle

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- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M1064A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M1068A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.4.2.2 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Mortar Carrier (MC) variant.

H.7.4.2.2.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV MC variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M2 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M3 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M2A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M3A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.4.2.2.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV MC variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M113A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is M1064A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is M1068A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.4.2.3 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Medical Evacuation (ME) variant.

H.7.4.2.3.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV ME variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M2 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M3 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered

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in exchange for one EA as-is Bradley M2A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M3A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.4.2.3.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV ME variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GE variant ordered in exchange for one EA as-is M113A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is M1064A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is M1068A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.4.2.4 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Medical Treatment (MT) variant.

H.7.4.2.4.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV MT variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M2 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M3 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M2A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M3A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.4.2.4.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV MT variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GE variant ordered in exchange for one EA as-is M113A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is M1064A3 vehicle

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- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is M1068A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.4.2.5 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Mission Command (MCmd) variant.

H.7.4.2.5.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV MCmd variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M2 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M3 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M2A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M3A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.4.2.5.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV MCmd variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is M113A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is M1064A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is M1068A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.4.3 The exchange credits proposed in H.7.4.2 will be applied to the vouchers directly following the transfer of title of the Optional Exchange Vehicles until the credit is exhausted. This credit will not factor into incentive calculations.

**H.7.5 LRIP Exchange of Vehicles Option Year 3**

H.7.5.1 The maximum number of OEVs available for exchange during the LRIP Option 3 portion of the contract is one Bradley and one M113 for each AMPV ordered. If participating in the exchange program offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose exchange credits per each in Section H.7.5.3 below. The following is a breakdown of OEVs available:

(a) Offerors may propose only one Bradley OEV variant per each AMPV ordered. The Bradley OEVs consist of the following models:

- Infantry Fighting Vehicle, M2 (NSN 2350-01-048-5920)
- Cavalry Fighting Vehicle, M3 (NSN 2350-01-049-2695)
- Infantry Fighting Vehicle, M2A2 (NSN 2350-01-248-7619)
- Cavalry Fighting Vehicle, M3A2 (NSN 2350-01-248-7620)
- Operation Desert Storm Infantry Fighting Vehicle, M2A2 ODS (NSN 2350-01-405-9886)
- Operation Desert Storm Cavalry Fighting Vehicle, M3A2 ODS (NSN 2350-01-405-9887)

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- Bradley Fire Support Team (BFIST), M7 (NSN 2350-01-432-1526)

(b) Offerors may propose only one M113 FoV OEV per each AMPV ordered. The M113 FoV OEVs consist of the following models:

- M113A3 Full Tracked Armored Personnel Carrier (NSN 2350-01-219-7577)
- M1064A3 Self-Propelled Mortar Carrier 120mm M121 (NSN 2350-01-369-6082)
- M1068A3 Standardized Integrated Command Post System Carrier (NSN 2350-01-369-6086)
- M577A3 Light Tracked Command Post (NSN 2350-01-369-6085)

H.7.5.2 Offerors shall not propose to exchange more OEVs than are being offered for exchange, as outlined in Section H.7.1 and H.7.5.1.

H.7.5.2.1 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV General Purpose (GP) variant.

H.7.5.2.1.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV GP variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M2 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M3 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M2A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M3A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.5.2.1.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV GP variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M113A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M1064A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M1068A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.5.2.2 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Mortar Carrier (MC) variant.

H.7.5.2.2.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV MC variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M2 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M3 vehicles

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- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M2A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M3A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.5.2.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV MC variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GP variant ordered in exchange for one EA as-is M113A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is M1064A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is M1068A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MC variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.5.2.3 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Medical Evacuation (ME) variant.

H.7.5.2.3.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV ME variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M2 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M3 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M2A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M3A2 vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.5.2.3.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV ME variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GE variant ordered in exchange for one EA as-is M113A3 vehicle
- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is M1064A3 vehicle

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- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is M1068A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV ME variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.5.2.4 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Medical Treatment (MT) variant.

H.7.5.2.4.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV MT variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M2 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M3 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M2A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M3A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.5.2.4.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV MT variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV GE variant ordered in exchange for one EA as-is M113A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is M1064A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is M1068A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MT variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.5.2.5 Offerors shall select up to one Bradley OEV and up to one M113 FoV OEV and propose an exchange credit for the AMPV Mission Command (MCmd) variant.

H.7.5.2.5.1 Offerors shall select up to one of the seven available Bradley OEV variants and propose a corresponding exchange credit for the AMPV MCmd variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M2 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M3 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered in exchange for one EA as-is Bradley M2A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCmd variant ordered

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in exchange for one EA as-is Bradley M3A2 vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCcmd variant ordered in exchange for one EA as-is Bradley M2A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCcmd variant ordered in exchange for one EA as-is Bradley M3A2 ODS vehicles

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCcmd variant ordered in exchange for one EA as-is Bradley M7 vehicles

H.7.5.2.5.2 Offerors shall select up to one of the four available M113 FoV OEV variants and propose a corresponding exchange credit for the AMPV MCcmd variant:

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCcmd variant ordered in exchange for one EA as-is M113A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCcmd variant ordered in exchange for one EA as-is M1064A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCcmd variant ordered in exchange for one EA as-is M1068A3 vehicle

- An exchange credit, in the amount of \$\_\_\_\_\_ is being offered to the Government for each AMPV MCcmd variant ordered in exchange for one EA as-is M577A3 vehicle

H.7.5.3 The exchange credits proposed in H.7.5.2 will be applied to the vouchers directly following the transfer of title of the Optional Exchange Vehicles until the credit is exhausted. This credit will not factor into incentive calculations.

H.8 INCENTIVES (OPTIONAL)

H.8.1 EMD Incentives

H.8.1.1 All work efforts funded by CLIN 0001 shall be conducted on a Cost Plus Incentive Fee (CPIF) basis. These CLINs include two incentives as follows:

- (a) Cost
- (b) Performance (Reliability Availability Maintainability (RAM))

H.8.1.2 Cost Incentive. The terms and conditions for the cost incentive are as set forth in FAR Clause 52.216-10 (located in Section I).

H.8.1.3 Performance Incentive (RAM Scoring Event #1)

The AMPV vehicles shall demonstrate a minimum 850 Mean Miles Between System Abort (MMBSA) (refer to Attachment 0098). The performance incentive will apply to EMD CLIN 0001. The contractor's fee shall be increased by as much as \$16M if its AMPV vehicles achieve an MMBSA score as described below:

Scoring Event: Production Prove-out Test (PPT) Phase 2 (PPT 2) and Limited User Test (LUT)  
Point Estimate: End of LUT

Measurement Scale:	MMSBA	Addl Fee
	900 miles	\$3M
	975 miles	\$6M
	1,064 miles	\$10M
	1,170 miles	\$16M

H.8.1.3.1 Determination of Fee Adjustments

The Government will conduct Test Incident Report (TIR) Scoring Conferences during and immediately after Government test in accordance with Section C.6.2.3. The Government will make its determination regarding the AMPV vehicle Mean Miles Between System Abort (MMBSA) at the Scoring. The contractor will be notified of MMBSA results within 10 calendar days after completion of the Scoring Conference. A Fee Determining Official (FDO) will be appointed who will make the formal incentive fee determination based on MMBSA results stated in the conclusion paragraph of the published Scoring Conference Board Minutes. The FDO will be an official from

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the Army Contracting Command (ACC) - Warren. If the contractor is due additional fee in conjunction with this RAM performance incentive, the Government will issue a modification to adjust the fee within 90 calendar days after completion of the Scoring Conference. The criteria for scoring of the RAM incentive are provided in H.8.1.3.1.1 below.

\*H.8.1.3.1.1 RAM Scoring Event #1 (PPT 2 and LUT)

When: LUT completed

\*Criteria: To prove that the MMBSA incentive has been demonstrated, the Program Management Office will evaluate the scored System Aborts (SAs) from all completed PPT 2 and LUT testing to date.

H.8.1.3.1.2 Fee Calculation

The Government will make a determination on the amount of the Performance Incentive due based on H.8.1.3.

H.9 TEST RANGE USAGE

The contractor is authorized to receive test services from a Major Range Test Facility Base and receive the Government furnished rate.

H.10 TITLE OF PROPERTY TRANSFER

The contractor shall transfer title to the Government of any additional furnished material, parts, or equipment installed or incorporated onto Government owned test assets after inspection and acceptance of the test assets.

H.11 LOW RATE INITIAL PRODUCTION (LRIP) OPTIONS (SEPARATELY PRICED LINE ITEMS)

H.11.1 This contract includes three option years of LRIP. These options will be separated into fifteen different CLINs (CLINs 0004AA - 0006AE), broken out by variant (five variants), for each option year (Option Year 1: CLINs 0004AA - 0004AH; Option Year 2: CLINs 0005AA - 0005AE; Option Year 3: CLINs 0006AA - 0006AE. Refer to Section B for the option CLIN breakdown. Option Years Two (CLINs 0005AA - 0005AE) and Three (0006AA - 0006AE) will included range pricing. Refer to Sections H.11.4 and H.11.5 below for additional range pricing guidance. The option CLINs will be placed on contract with Fixed Price Incentive (Successive Targets) (FPI(S)) pricing. Vehicles under these options shall be built in accordance with Section C.10 (Option LRIP) in the SOW and the AMPV Performance Specification (Attachments 0001 and 0082).

H.11.1.1 Refer to Federal Acquisition Regulation (FAR) Clause 52.216-17 (Incentive Price Revision - Successive Target) regarding negotiating the option targets. In accordance with FAR Clause 52.216-17, the contractor shall submit a proposal for establishing firm target pricing for the three option years of LRIP under CLINs 0004AA - 0006AE. The above referenced FAR clause establishes a definitive schedule regarding contractor submittal of this proposal. The Government anticipates negotiating all three-option periods (CLINs 0004AA - 0006AE) at one time. In addition, the Government also anticipates negotiating a 50/50 final share ratio for performance of the LRIP options under the FPIF arrangement. The contractor shall, as part of proposal submission, submit Certified Cost or Pricing Data, in accordance with FAR 52.215-20.

H.11.1.2 The Target Cost proposed shall include the price for all Contract Data Requirements List (CDRL) deliverables and Contractor Manpower Reporting requirements, as well as any other required deliverables stated in Section C.10.

H.11.2 LRIP Incentives

All work efforts funded by CLINs 0004AA - 0006AE, if exercised and contract type is converted to a Fixed Price Incentive Firm (FPIF) arrangement, shall be incentivized. These CLINs include two (2) incentives as follows:

- (a) Cost
- (b) Performance (Reliability Availability Maintainability (RAM))

H.11.2.1 Cost Incentive. The cost incentive will be handled in accordance with FAR Provision 52.216-17 (Incentive Price Revision - Successive Targets). The cost incentive will apply to CLINs 0004AA - 0006AE (if exercised).

H.11.2.2 Performance Incentive (RAM Scoring Event #2)

The AMPV vehicles shall demonstrate a minimum 1,100 Mean Miles Between System Abort (MMBSA) (refer to Attachment 0098). The performance incentive will apply to CLINs 0004AA - 0004AE (if exercised). The contractor's fee shall be increased by as much as \$12M if its AMPV vehicles achieve an MMBSA score as described below:

Scoring Event: Production Qualification Test (PQT)

Point Estimate: End of PQT

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Measurement Scale:	MMSBA	Addl Fee
	1,273 miles	\$ 3M
	1,400 miles	\$12M

## H.11.2.2.1 Determination of Fee Adjustments

The Government will conduct Test Incident Report (TIR) Scoring Conferences during and immediately after Government test in accordance with Section C.6.2.3. The Government will make its determination regarding the AMPV vehicle MMBSA at the Scoring Conference. The contractor will be notified of MMBSA results within 10 calendar days after completion of the Scoring Conference. A Fee Determining Official (FDO) will be appointed who will make the formal incentive fee determination based on MMBSA results stated in the conclusion paragraph of the published Scoring Conference Board Minutes. The FDO will be an official from the Army Contracting Command (ACC) - Warren. If the contractor is due an adjustment to fee in conjunction with this RAM performance incentive, the Government will issue a modification to adjust the fee within 90 calendar days after completion of the Scoring Conference. The criteria for scoring of the RAM incentive are provided in H.11.2.2.1.1 below.

## H.11.2.2.1.1 RAM Scoring Event #2 (PQT)

When: PQT Phase completed

Criteria: To prove that the MMBSA incentive has been demonstrated, the Program Management Office will evaluate the scored System Aborts from completed PQT testing to date.

## H.11.2.2.1.2 Fee Calculation

The Government will make a determination on the amount of Performance Incentive due based on H.11.2.2.

H.11.2.2.2 As set forth in Paragraph 3.5.2.1.1 of the AMPV Performance Specification (P-Spec) (Attachment 0001) and Section H.11.2.2, the AMPV vehicles shall demonstrate a minimum Mean Miles Between System Abort (MMBSA) of 1,100 miles. The Government is incentivizing the contractor, during LRIP Option 1, to improve its Reliability Availability and Maintainability (RAM) of the AMPV vehicles above the minimum requirement of 1,100 MMBSA. The contractor shall maintain the RAM level achieved during the Production Qualification Testing (PQT). Therefore, if the RAM level achieved during PQT testing exceeds the minimum of 1,100 MMBSA as required by Section H.11.2.2, the achieved RAM level shall become the new baseline RAM requirement which the Government will test all LRIP and follow on Full Rate Production (FRP) vehicles against for acceptance. In accordance with FAR Clause 52.215-8, Order of Precedence - Uniform Contract Format, of this contract, this paragraph shall take precedence over the RAM requirements set forth in Paragraph 3.5.2.1.1 in the AMPV P-Spec and Section H.11.2.2 of the contract.

## H.11.3 LRIP Option Year 1

If exercised, this option contains 52 AMPV vehicles in the following configurations and test support hardware: 10 General Purpose Vehicles (CLIN 0004AA), 10 Medical Evacuation Vehicles (CLIN 0004AB), 10 Mortar Carrier Vehicles (CLIN 0004AC), 13 Mission Command Vehicles (CLIN 0004AD), and nine Medical Treatment Vehicles (CLIN 0004AE), four System Support Packages for test support (CLIN 0004AF), four Special Tools and Test Equipment for test support (CLIN 0004AG), and 10 Class V Protection and Installation Kits (if required)(CLIN 0004AH).

## H.11.4 LRIP Option Year 2

If exercised, the most probable quantity the Government anticipates exercising under this option is 107 AMPV vehicles in the following configurations: 20 General Purpose Vehicles (CLIN 0005AA), 30 Medical Evacuation Vehicles (CLIN 0005AB), 12 Mortar Carrier Vehicles (CLIN 0005AC), 40 Mission Command Vehicles (CLIN 0005AD), and five Medical Treatment Vehicles (CLIN 0005AE). CLINs 0005AA - 0005AE also contain range pricing, with quantities specified by the Government in three separate ranges (Ranges 1 - 3). Refer to Section B, CLIN Narratives B003 - B005, under each CLIN (0005AA - 0005AE) for a breakdown of the ranges. The Government will have the unilateral authority under the resulting contract to exercise this option within any of the specified ranges, at the price established under CLIN Narratives B003 - B005.

## H.11.5 LRIP Option Year 3

If exercised, the most probable quantity the Government anticipates exercising under this option is 130 AMPV vehicles in the following configurations: 21 General Purpose Vehicles (CLIN 0006AA), 40 Medical Evacuation Vehicles (CLIN 0006AB), 17 Mortar Carrier Vehicles (CLIN 0006AC), 47 Mission Command Vehicles (CLIN 0006AD), and five Medical Treatment Vehicles (CLIN 0006AE). CLINs 0006AA - 0006AE also contain range pricing, with quantities specified by the Government in three separate ranges (Ranges 1 - 3). Refer to Section B, CLIN Narratives B003 - B005, under each CLIN (0006AA - 0006AE) for a breakdown of the ranges. The Government will have the unilateral authority under the resulting contract to exercise this option within any of the specified ranges, at the price established under CLIN Narratives B003 - B005.

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H.12 The contractor shall provide a Manufacturing Cost Estimate Report (CDRL A003) that demonstrates auditable estimates for expected Production & Deployment (P&D) phase contract prices based on the AMPV concept and the contractor's delivered designs, in accordance with the contractor Manufacturing Cost Estimate Template (Attachment 0067). Attachment 0067 provides the formatted delivery template and ground rules and assumptions for vehicle and kit production schedules and quantities.

H.13 In (d) of the FAR Order of Precedence clause (i.e., FAR 52.215-8(d)), the AMPV Performance Specification (Attachment 0001) shall take precedence over other documents, exhibits and attachments.

H.14 EMD Prototype Material

The Contractor shall not order EMD prototype material until approved through contract modification or written approval from the PCO. The Contractor shall request approval to order material when the design is firm and after successful completion of PDR (see Section C.5.1.1).

\*Revised via Amendment 0004

\*\*\* END OF NARRATIVE H0001 \*\*\*

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## SECTION I - CONTRACT CLAUSES

<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
I-1 CHANGED	52.222-19	CHILD LABOR--COOPERATION WITH AUTHORITIES AND REMEDIES	JAN/2014
I-2 CHANGED	52.244-6	SUBCONTRACTS FOR COMMERCIAL ITEMS	DEC/2013

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## SECTION J - LIST OF ATTACHMENTS

<u>List of</u> <u>Addenda</u>	<u>Title</u>	<u>Date</u>	<u>Number</u> <u>of Pages</u>	<u>Transmitted By</u>
Exhibit A	CONTRACT DATA REQUIREMENTS LIST (CDRL)	13-MAR-2014	179	
Attachment 0001	PERFORMANCE SPECIFICATION (P-SPEC)	29-JAN-2014	257	
Attachment 0008	TEST SUMMARY	06-FEB-2014	023	
Attachment 0009	COST AND SOFTWARE DATA REPORTING PLAN	11-FEB-2014	010	
Attachment 0010	AMPV SYSTEMS ENGINEERING PLAN	21-FEB-2014	126	
Attachment 0061	AMPV INTEGRATED MASTER SCHEDULE	13-FEB-2014	003	
Attachment 0083	PERFORMANCE SPECIFICATION (P-SPEC) - DOORS FILE	29-JAN-2014		
Attachment 0089	VHMS PORTABLE MAINTENANCE AID SPECIFICATION	22-AUG-2012	056	
Attachment 0095	FULL RATE PRODUCTION SCHEDULE	11-MAR-2014		
Attachment 0101	DIGITAL ARCHITECTURE/VICTORY REPORT INSTRUCTIONS	05-FEB-2014	003	

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## SECTION K - REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS

<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
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K-1 CHANGED	52.204-8	ANNUAL REPRESENTATIONS AND CERTIFICATIONS	JAN/2014
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(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 336992.

(2) The small business size standard is 1,000 employees.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b)(1) If the provision at 52.204-7, System for Award Management, is included in this solicitation, paragraph (d) of this provision applies.

(2) If the provision at 52.204-7 is not included in this solicitation, and the offeror is currently registered in the System for Award Management (SAM), and has completed the Representations and Certifications section of SAM electronically, the offeror may choose to use paragraph (d) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

(i) Paragraph (d) applies.

(ii) Paragraph (d) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(c)(1) The following representations or certifications in SAM are applicable to this solicitation as indicated:

(i) 52.203-2, Certificate of Independent Price Determination. This provision applies to solicitations when a firm-fixed-price contract or fixed-price contract with economic price adjustment is contemplated, unless--

(A) The acquisition is to be made under the simplified acquisition procedures in Part 13;

(B) The solicitation is a request for technical proposals under two-step sealed bidding procedures; or

(C) The solicitation is for utility services for which rates are set by law or regulation.

(ii) 52.203-11, Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions. This provision applies to solicitations expected to exceed \$150,000.

(iii) 52.204-3, Taxpayer Identification. This provision applies to solicitations that do not include the provision at 52.204-7, System for Award Management.

(iv) 52.204-5, Women-Owned Business (Other Than Small Business). This provision applies to solicitations that--

(A) Are not set aside for small business concerns;

(B) Exceed the simplified acquisition threshold; and

(C) Are for contracts that will be performed in the United States or its outlying areas.

(v) 52.209-2, Prohibition on Contracting with Inverted Domestic Corporations Representation. This provision applies to solicitations using funds appropriated in fiscal years 2008, 2009, 2010, or 2012.

(vi) 52.209-5, Certification Regarding Responsibility Matters. This provision applies to solicitations where the contract value is expected to exceed the simplified acquisition threshold.

(vii) 52.214-14, Place of Performance Sealed Bidding. This provision applies to invitations for bids except those in which the place of performance is specified by the Government.

(viii) 52.215-6, Place of Performance. This provision applies to solicitations unless the place of performance is specified by the Government.

(ix) 52.219-1, Small Business Program Representations (Basic & Alternate I). This provision applies to solicitations when the contract will be performed in the United States or its outlying areas.

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(A) The basic provision applies when the solicitations are issued by other than DoD, NASA, and the Coast Guard.

(B) The provision with its Alternate I applies to solicitations issued by DoD, NASA, or the Coast Guard.

(x) 52.219-2, Equal Low Bids. This provision applies to solicitations when contracting by sealed bidding and the contract will be performed in the United States or its outlying areas.

(xi) 52.222-22, Previous Contracts and Compliance Reports. This provision applies to solicitations that include the clause at 52.222-26, Equal Opportunity.

(xii) 52.222-25, Affirmative Action Compliance. This provision applies to solicitations, other than those for construction, when the solicitation includes the clause at 52.222-26, Equal Opportunity.

(xiii) 52.222-38, Compliance with Veterans Employment Reporting Requirements. This provision applies to solicitations when it is anticipated the contract award will exceed the simplified acquisition threshold and the contract is not for acquisition of commercial items.

(xiv) 52.223-1, Biobased Product Certification. This provision applies to solicitations that require the delivery or specify the use of USDAdesignated items; or include the clause at 52.223-2, Affirmative Procurement of Biobased Products Under Service and Construction Contracts.

(xv) 52.223-4, Recovered Material Certification. This provision applies to solicitations that are for, or specify the use of, EPAdesignated items.

(xvi) 52.225-2, Buy American Act Certificate. This provision applies to solicitations containing the clause at 52.225-1.

(xvii) 52.225-4, Buy American Act/Free Trade Agreements/Israeli Trade Act Certificate. (Basic, Alternates I, II, and III.) This provision applies to solicitations containing the clause at 52.225-3.

(A) If the acquisition value is less than \$25,000, the basic provision applies.

(B) If the acquisition value is \$25,000 or more but is less than \$50,000, the provision with its Alternate I applies.

(C) If the acquisition value is \$50,000 or more but is less than \$79,507, the provision with its Alternate II applies.

(D) If the acquisition value is \$79,507 or more but is less than \$100,000, the provision with its Alternate III applies.

(xviii) 52.225-6, Trade Agreements Certificate. This provision applies to solicitations containing the clause at 52.225-5.

(xix) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan Certification. This provision applies to all solicitations.

(xx) 52.225-25, Prohibition on Contracting with Entities Engaging in Certain Activities or Transactions Relating to Iran-Representation and Certifications. This provision applies to all solicitations.

(xxi) 52.226-2, Historically Black College or University and Minority Institution Representation. This provision applies to

(A) Solicitations for research, studies, supplies, or services of the type normally acquired from higher educational institutions; and

(B) For DoD, NASA, and Coast Guard acquisitions, solicitations that contain the clause at 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns.

(2) The following certifications are applicable as indicated by the Contracting Officer:

\_\_\_ (i) 52.219-22, Small Disadvantaged Business Status.

\_\_\_ (A) Basic.

\_\_\_ (B) Alternate I.

\_\_\_ (ii) 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products.

\_\_\_ (iii) 52.222-48, Exemption from Application of the Service Contract Act to Contracts for Maintenance, Calibration, or Repair of Certain Equipment Certification.

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- \_\_\_ (iv) 52.222-52, Exemption from Application of the Service Contract Act to Contracts for Certain Services Certification.
- \_\_\_ (v) 52.223-9, with its Alternate I, Estimate of Percentage of Recovered Material Content for EPA Designated Products (Alternate I only).
- \_\_\_ (vi) 52.227-6, Royalty Information.
  - \_\_\_ (A) Basic.
  - \_\_\_ (B) Alternate I.
- \_\_\_ (vii) 52.227-15, Representation of Limited Rights Data and Restricted Computer Software.

(d) The offeror has completed the annual representations and certifications electronically via the SAM Web site accessed through <https://www.acquisition.gov>. After reviewing the SAM database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause #	Title	Date	Change
_____	_____	_____	_____
_____	_____	_____	_____

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on SAM.

(End of provision)

K-2 CHANGED 252.225-7000 BUY AMERICAN STATUTE--BALANCE OF PAYMENTS PROGRAM CERTIFICATE JAN/2014

(a) Definitions. "Commercially available off-the-shelf (COTS) item," "component," "domestic end product," "foreign end product," "qualifying country," "qualifying country end product," and "United States" have the meanings given in the Buy American and Balance of Payments Program clause of this solicitation.

(b) Evaluation. The Government

(1) Will evaluate offers in accordance with the policies and procedures of Part 225 of the Defense Federal Acquisition Regulation Supplement; and

(2) Will evaluate offers of qualifying country end products without regard to the restrictions of the Buy American statute or the Balance of Payments Program.

(c) Certifications and identification of country of origin.

(1) For all line items subject to the Buy American and Balance of Payments Program clause of this solicitation, the offeror certifies that

(i) Each end product, except those listed in paragraphs (c)(2) or (3) of this provision, is a domestic end product; and

(ii) For end products other than COTS items, components of unknown origin are considered to have been mined, produced, or manufactured outside the United States or a qualifying country.

(2) The offeror certifies that the following end products are qualifying country end products:

<u>Line Item Number</u>	<u>Country of Origin</u>
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(3) The following end products are other foreign end products, including end products manufactured in the United States that do not qualify as domestic end products, i.e., an end product that is not a COTS item and does not meet the component test in paragraph (ii) of the definition of "domestic end product":

Line Item Number

Country of Origin (If known)

(End of provision)

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## SECTION L - INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS

## L.1 General Proposal Information

The proposal, subject to the Submission, Modification, Revision and Withdrawal paragraph of Instructions to Offeror(s) Competitive Acquisitions (FAR Provision 52.215-1, ALT I) contained in Section L of the solicitation, shall be submitted in the format and quantities set forth below. All information necessary for the review and evaluation of a proposal is to be contained in the proposal volumes set forth below. Section M of the solicitation sets forth the evaluation criteria and delineates the Factors, SubFactors, and elements to be evaluated and their relative order of importance. The Offerors proposal, as required by this section, shall be evaluated as set forth in Section M of this solicitation. The Government will not assume the Offeror possesses any capability, understanding, or commitment not specified in its proposal. It is an Offerors responsibility to submit a well-written proposal, with adequately detailed information, which clearly demonstrates an understanding of and the ability to comply with the solicitation requirements to allow for a meaningful evaluation. The Government does not assume the duty to search for data to cure problems it finds in proposals.

\*L.1.1 The Offeror's proposal shall be submitted in eight separate volumes as set forth below. Some parts of the RFP contain page recommendations. These recommendations based upon the use of standard 8.5 x 11 paper with a minimum font size of 10 point and with a minimum of 1 inch margins. Schedules, drawings and other documents more appropriate to larger paper may be formatted no larger than 11 x 17. The Offerors proposal shall consist of the following volumes:

- (a) Volume 1: Unclassified Design & Build Volume. Submit three identical sets of CD-ROMs or DVDs and three paper copies. CAD Models may be submitted on three identical hard drives with a Firewire or eSATA interface, in lieu of CD-ROMs or DVDs.
- (b) Volume 2: Unclassified Performance Volume. Submit three identical sets of CD-ROMs or DVDs and three paper copies.
- (c) Volume 3: Cost/Price Volume. Submit three identical sets of CD-ROMs or DVDs and three paper copies.
- (d) Volume 4: O&S (Operations and Support) Volume. Submit three identical sets of CD-ROMs or DVDs and three paper copies.
- (e) Volume 5: Small Business Participation Volume. Submit three identical sets of CD-ROMs or DVDs and three paper copies.
- (f) Volume 6: Proposal Terms and Conditions Volume. Submit three identical sets of CD-ROMs or DVDs and three paper copies.
- \* (g) Volume 7: Classified Portions of Design & Build and Performance Factors Volumes. Submit three identical sets of CD-ROMs or DVDs and three paper copies.
- (h) Volume 8: System Description and 3D CAD Models, in support of the Design & Build Factor, Performance Factor and RAM SubFactor under the O&S Factor, submit three identical sets of CD-ROMs or DVDs. Any classified data shall be submitted in Volume 7.

Each CD-ROM and DVD shall be properly labeled with contractor name, proposal number, if applicable, and volume number.

## L.1.2 Procedure for Submitting Volume 7 Classified Portions of Design &amp; Build and Performance Factors Volume:

Classified information shall be submitted separately. Do not submit any classified information in the other volumes listed above (Volumes 1 through 6 and 8). The classified information must be received by the due date and time on the cover sheet of this solicitation, subject to the late proposal conditions in FAR Provision 52.215-1, ALT 1. When submitting Volume 7 classified information, follow the NISPOM Chapter 5 instructions using the below mailing address:

SFAE-GCS-ABCT-AAM  
6501 E. Eleven Mile Road, MS 463  
Warren, MI 48397

## L.1.3 CD-ROMs/DVDs

Each volume listed above shall be submitted on a separate set of CD-ROMs or DVDs utilizing Microsoft (MS) Word, MS Excel, MS PowerPoint, MS Project, MS Access, or PDF compatible formats. All MS files shall be 2003/2007 compatible unless otherwise indicated. Each CD-ROM or DVD shall be labeled so that it is easily identifiable for evaluation purposes (example Technical Volume, Set 1 of 3, CD 1 of X), and shall also include the Offerors name and the solicitation number. Each volume shall include a (i) title page, (ii) table of contents, and (iii) list of tables and figures. Each page of the proposal shall be numbered, and each paragraph of the proposal shall have a reference number. The table of contents for each volume listed in L.1.1 shall be organized by SubFactor, where applicable. Provide a list of all attachments and substantiating data in the table of contents under the specific SubFactor which it supports. The table of contents shall include the following information for each SubFactor, attachment and substantiating data listed:

- (a) Cross-reference to related section L paragraph number
- (b) Page number
- (c) CD-ROM or DVD Volume and number
- (d) File name

## L.1.4 Submission Due Date

The Offeror must ensure its proposal, in its entirety, reaches its intended destination before the date and time set for closing of the

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solicitation set forth in Block 9 on the SF33, front page of the solicitation.

L.1.5 Proposal Submission Address

Submit the UNCLASSIFIED proposal to the address below. All proposals delivered in response to this solicitation, whether hand-carried or submitted via U.S. mail, shall be addressed as follows:

U.S. Army Contracting Command - Warren  
Bid Room, Bldg 231, Mail Stop 303  
Attn: AMPV Proposal  
6501 E. Eleven Mile Rd. Warren, MI 48397-5000

Solicitation Number: W56HZV-13-R-0022  
DATE & Time: Refer to Standard Form 33 (Pg. 1), Number 9  
TO BE DELIVERED UNOPENED (Offerors name)

L.1.6 Method of Submission for Unclassified Proposal

Proposals may either be hand-carried or submitted via US mail. Electronic mail or facsimile of proposals and amendments are not authorized. Hand-carried submissions\* include proposals delivered by commercial carriers such as FedEx, UPS, or services other than the US Postal Service. Hand-carried proposals must be delivered to the Detroit Arsenal (DTA) Mail Handling Facility (Building 255) between the hours of 8:00AM and 1:00PM local Warren, MI time. The package(s) will be dated and time stamped at the Mail Handling Facility and the Government will be responsible for forwarding the package(s) to the appropriate personnel. Offerors should ensure that any commercial carrier it uses has a tracking system that can provide documentation that will prove the date and time of delivery to the Government. If the proposal is hand-carried by other than a commercial carrier, the delivery person (even if an employee of the Offeror) must be a US citizen, and must obtain a signed receipt, indicating date and time of delivery, from the Mail Handling Facility personnel.

\*Directions to DTA: From Van Dyke Avenue, travel west on East Eleven Mile road to railroad track. Immediately after crossing railroad track turn right into DTA main gate and follow security officer directions to the Mail Handling Facility (Building 225). It may be necessary for the delivery person to obtain a visitors badge prior to being allowed to enter the installation. If so, the security officer will advise the delivery person of the procedures to follow.

Exterior envelopes must identify the solicitation number and date specified for receipt of proposals.

Offerors are cautioned that approval to enter the installation must be obtained prior to the closing date and time for receipt of proposals. Follow the procedures outlined above for entry. It is the Offeror's responsibility to plan sufficient time to clear Detroit Arsenal security.

L.1.7 Site Visit

The Government may conduct site visits of potential prime contractors and its major sub-contractors (see Section M.3.1.4 (Determination of Responsibility)).

L.2 All or None

Offers in response to this solicitation must be submitted for all the requirements identified in the solicitation. Offers submitted for less than all the requirements called for by this solicitation may be rejected or ineligible for award.

L.3 Separate Proposal Submission

Offerors may submit one alternate proposal with a differing approach to meeting the requirements. An Offeror is defined as an entity competing independently that does not share a common parent, does not have a parent/subsidiary relationship with any other Offeror, and is not affiliated with any other Offeror (as defined in Federal Acquisition Regulation (FAR) 19.101). The Government will separately evaluate the alternate proposal received. Therefore, the alternate proposal submitted must be complete, comprehensive, stand-alone and fully responsive to the information requested in the RFP. An alternate proposal must be clearly identified and submitted separately with its own set of CD-ROMs or DVDs. A separate CD-ROM or DVD which contains an index delineating the specific differences between the two proposals in each volume shall be provided with each proposal.

L.4 Evaluation Factors

Offeror proposals shall address the following five Factors:

- (a) Design & Build
- (b) Performance

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- (c) Cost/Price
- (d) O&S
- (e) Small Business Participation

## L.4.1 Volume 1 Design &amp; Build Factor

The Design & Build Factor includes three SubFactors: 1) System Design Maturity, 2) Manufacturing, and 3) Integrated Master Schedule (IMS). For the System Design Maturity and Manufacturing SubFactors, and unless otherwise specified in Attachments 0051 (System Design Maturity) and 0072 (Manufacturing Maturity), the Offeror shall include the specified Design & Build maturity level/characteristic data relative to all five AMPV variants, as set forth below.

## L.4.1.1 Design &amp; Build Factor

L.4.1.1.1 For the System Design Maturity and Manufacturing SubFactors, the Offeror shall provide the following:

(a) For each SubFactor, the Offeror shall self assess the extent of maturity of its proposed design, for all five AMPV variants, against each level/characteristic of maturity for both 1) System Design Maturity, and 2) Manufacturing. The self-assessment shall be consistent with the design configurations detailed in the Offeror's System Descriptions, and will be based on the definitions contained in Attachment 0051 (System Design Maturity), and Attachment 0072 (Manufacturing Maturity). In addition, for the Manufacturing SubFactor, Offerors shall also provide the manufacturing approach information specified in Attachment 0060 (Manufacturing Approach).

(b) The self-assessments shall be accompanied by substantiating data supporting the Offeror's asserted extent of maturity for 1) System Design Maturity, and 2) Manufacturing. The Offeror shall provide substantiating data for each characteristic achieved, within each level identified in Attachments 0051 and 0072 and for all five AMPV variants. The resulting technical information, documentation, test data and rationale shall be complete, specific, and relevant to the specific characteristics of the Offeror's self-assessment assertions. If the substantiating data is from a design other than the proposed design solution, the Offeror shall discuss the extent of the variance and the impact such variance has on the credibility of the substantiating data. Additionally, the Offeror shall complete Attachment 0052 (Matrix of Substantiating Data) to support 1) System Design Maturity, and 2) Manufacturing.

## L.4.1.1.2 IMS SubFactor

The baseline schedule is listed in Attachment 0061 (AMPV IMS).

L.4.1.1.2.1 The Offeror shall provide its Integrated Master Schedule (IMS) for the EMD Phase and the first five vehicles in LRIP (to include completion of the LRU Qualification and Highly Accelerated Life Test), including the events, accomplishments, and criteria in Attachment 0075 (Integrated Master Plan (IMP)). The Offeror shall include all significant external interfaces, critical items from subcontractors or other detailed schedules that depict significant and/or critical elements, and GFE/GFI dependencies. The Offeror shall use a calendar consistent with the Offeror's work schedules. The IMS shall clearly indicate at least one unbroken critical path that reaches from the base Contract Award (CA) to the delivery of the first five LRIP vehicles. Text names for tasks/milestones on the critical path shall be displayed in underlined, bold red text. If the IMS has multiple critical paths, the proposal shall include the assumptions and logic associated with the multiple critical paths. The electronic version of the IMS shall be submitted on a separate CD-ROM and shall adhere to the following:

(a) The IMS shall be submitted in a MS Project file. The file shall be unlocked and, in addition to typical schedule specific information, shall include the following for each activity:

- (b) Work Breakdown Structure (WBS) number;
- (c) Crosswalk to Integrated Master Plan Accomplishment Criteria;
- (d) Responsible organizational entity;
- (e) Crosswalk to Basis of Estimate (if applicable); and

(f) The IMS shall clearly describe, with activity names/descriptions, the work being accomplished. The IMS shall consist of no more than 6,000 activities (excluding Summary activities). If the Offeror provides an IMS with more than 6,000 activities, only the first 6,000 activities listed will be evaluated. In order to facilitate evaluation, the IMS shall not include:

- i. Level of Effort activities;
- ii. Duplicate activities (i.e., the same activity shall not be included more than once in the schedule network);
- iii. Regular recurring deliveries (i.e., deliveries that occur every month or quarter);
- iv. Regular recurring meetings (i.e., monthly Program Management Reviews, etc); and
- v. IMP Significant Accomplishments / Accomplishment Criteria / Completion Criteria as activities.

<b>CONTINUATION SHEET</b>	<b>Reference No. of Document Being Continued</b> <b>PIIN/SIIN</b> W56HZV-13-R-0022 <b>MOD/AMD</b> 0004	<b>Page</b> 181 <b>of</b> 198
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**Name of Offeror or Contractor:**

L.4.1.1.2.2 Additionally, for EMD only, the Offeror shall provide a schedule risk assessment using the DCMA 14 point Assessment. Subcontractor schedules shall be incorporated into the IMS for all first and second tier suppliers whose contract value exceeds 10% of the total EMD contract value.

L.4.2 Volume 2 Performance Factor

The Performance Factor contains three SubFactors: 1) Tier 1, 2) Tier 2, and 3)Tier 3.

L.4.2.1 The following instructions apply to all three SubFactors. Attachment 0053 (Tier Guidance) defines the tiering of requirements. Based on its system description, the Offeror shall identify, in the Volume 2 Unclassified Compliance Matrix (Attachment 0055) and the Volume 7 Classified Compliance Matrix (Attachment 0105), as submitted under separate cover, the proposed level of performance for every requirement and on every variant listed in the matrix. In specifying the proposed performance levels above Threshold, if any, for (1) the two Tier 1 Objectives, and (2) all Tier 2 Objectives, the offeror may only change the tradeable parameter within the applicable performance specification Paragraph as identified in Attachments 0055 and 0105. No other language in these Performance Specification Paragraphs may be modified. In support of the proposed levels of performance, the Offeror shall provide, for each AMPV variant's mission role highlighted in Attachment 0132 (Variant Guidance), a detailed narrative with applicable functional diagrams and architectures within the AMPV FoVs that corresponds to the overall proposed design approach. The narrative shall clearly substantiate the proposed performance levels cited in the Compliance Matrix (Attachment 0055) and the Classified Compliance Matrix (Attachment 0105).

L.4.2.2 Additionally, the Offeror shall provide, for each AMPV variant's mission role highlighted in Attachment 0132, the following completed data sheets to be used, as applicable, to evaluate the three Performance SubFactors: Attachment 0016 (Vehicle Vulnerability Data Sheet), Attachment 0017 (Structure Design Data Sheet), Attachment 0018 (Armor Recipe Data Sheet), Attachment 0019 (Blast Protection Data Sheet), Attachment 0056 (Power Management Data Sheet), Attachment 0057 (Vehicle Data Package for Propulsion), Attachment 0058 (Thermal Management Data Sheet), Attachment 0066 (ATTLA Universal Data Sheet), Attachment 0101 (Digital Architecture / VICTORY Report Instructions), Attachment 0102 (Information Assurance Data Sheet), Attachment 0130 (MANPRINT Data Sheet), and Attachment 0059 (Vehicle Data Package for NRMM Modeling and Simulation). Offerors shall also provide NATO Reference Mobility Model (NRMM) and VehDyn input and results files in electronic format on a CD-ROM. Offerors may arrange to obtain the latest version (Version 2.8.2) of the NRMM by contacting Mr. Randolph Jones at the following e-mail address: [mailto: Randy.Jones1@us.army.mil](mailto:Randy.Jones1@us.army.mil).

L.4.3 Volume 3 - Cost/Price Factor

Offerors are responsible for including sufficient detail to permit a complete evaluation. Any information provided as part of the Cost/Price Volume may be used to correlate the evaluation of the other proposal volumes and contract deliverables.

(a) For the Cost Plus Incentive Fee (CPIF) CLIN, the Offeror shall submit target cost and target fee dollars as stated in Section B of this solicitation. The Offeror shall not propose alternative share ratios, or an alternative minimum fee or maximum fee percentage, other than what the RFP requires. For the Fixed Price Incentive (Successive Targets) (FPI(S)) subCLINs associated with LRIP year one (0004AA - 0004AH), the Offeror shall submit an initial Target Cost, initial Target FCCM, initial Target Profit, and Ceiling Price for each subCLIN as stated in Section B of the RFP.

(b) For the FPIS subCLINs associated with LRIP years two and three (0005AA - 0005AE and 0006AA - 0006AE), the Offeror shall submit an initial Target Cost, initial Target FCCM, initial Target Profit, and Ceiling Price for each subCLIN using the quantity identified in CLIN narrative B002 included in Section B of the RFP. In addition, for each quantity range included in the FPIS subCLINs for LRIP years two and three, the Offeror shall also submit the initial Target Cost per vehicle, initial Target FCCM per vehicle, initial Target Profit per vehicle, initial Target Price per vehicle, Optional Vehicle Exchange Credit per vehicle, and the Ceiling Price per vehicle.

(c) The Offeror shall not propose an alternative share ratio, Target Profit percentage, Ceiling Profit percentage, or Floor Profit percentage, other than what the RFP requires.

L.4.3.1 Electronic Copies. Electronic spreadsheet files (Workbooks) shall be MS Excel 2003/2007 compatible. Workbooks must be sent in a format that includes all formulas, functions, macros, computations, or equations used to compute the proposed amounts. There can be no cell references to data or files which are not included in the Cost/Price Volume. For each Workbook, all Rows, Columns, Cells and Worksheets must be Visible (object.Visible=True). Zero height/Zero width rows/columns in Worksheets are not acceptable. Worksheet cells formatted with the Font color equal to the Fill color are unacceptable. If Workbooks or Worksheets are password protected, then the password(s) must be provided. Print image files or pictures (for example a picture of an Excel spreadsheet embedded in a word document) or files containing only values are not acceptable. Supporting narrative, including Basis of Estimate (BOE) sheets, shall be provided in files which are MS Excel or MS Word 2003/2007 compatible. BOEs may not be submitted as pictures. Text or spreadsheets used as supporting rationale within a BOE may not be included as a picture.

L.4.3.2 Table of Contents. The Offeror and each Major Subcontractor shall provide a Table of Contents showing each file submitted as part of the Cost/Price Volume with a short description of the contents of the file. Each of these entries in the Table of Contents shall be hyperlinked to the respective files.

**Name of Offeror or Contractor:**

L.4.3.3 A Cost/Price Summary by CLIN spreadsheet is included in this RFP as Attachment 0004 (Cost/Price Data Sheet) for both EMD and LRIP. Offerors shall complete and submit this spreadsheet with the relevant information requested.

L.4.3.4 In accordance with FAR Provision 52.214-35 (Submission of Offers in U.S. Currency), all costs/prices must be in U.S. dollars only, including costs/prices for the Offeror and any potential subcontractors. If the basis for the proposal is any other currency, the Offeror shall:

(a) State the exchange rate(s) being used to convert any currency to the U.S. dollars, and how the exchange rate was developed.

(b) Explain how you intend to deal with the risk that fluctuation in exchange rates may impact this prospective contract.

L.4.3.5 Engineering and Manufacturing Development (EMD)

For the CPIF CLIN, include a top-level spreadsheet, time-phased by quarter, and organized by cost element (i.e. Direct Labor, Subcontracts, Material, Other Direct Costs, Overhead/Indirect, Fee, etc.) which supports the Offeror's proposed cost. If the Offeror's fiscal year does not end on a calendar quarter (i.e. 31 March, 30 June, 30 September, or 31 December), also provide the top-level spreadsheets time-phased by Offeror fiscal year. The cost breakdown must be consistent with your cost accounting system. Provide the following information in support of each top level spreadsheet:

L.4.3.5.1 Direct Labor. Support for costs related to direct labor shall include the following:

(a) A quarterly time-phased breakout of the direct labor hours, by labor category, appropriate to the Offerors accounting system.

(b) BOEs by level 3 WBS element (see Attachment 0074, WBS and WBS Dictionary) to include:

- i. a narrative description of the tasks to be performed
- ii. a description of the method used to estimate the hours (identifying assumptions used and any Cost Estimating Relationships)
- iii. the calculations showing the computation of the direct labor hours for each specific task
- iv. the labor function (i.e. Engineering, Logistics, Test, Production, etc) that the tasks within the BOE relate to, and
- v. a description of each labor category used in the BOE.

(c) The labor rate for each labor category of direct labor, including the basis for the rate and any escalation used.

L.4.3.5.2 Major Subcontracts (Over \$15M)

L.4.3.5.2.1 If there are major subcontractors (those with a total cost expected to be greater than \$15M), provide cost information from the subcontractor equivalent to that required of the prime Offeror. Segregate the subcontractor cost information by CLIN, same as required of the prime Offeror's cost breakdowns. Include the evaluation of the subcontractor's submission required by FAR Part 15.404-3 (b), and rationale for determining that the subcontract price is reasonable and realistic. Also state the type of subcontract the Offeror anticipates (e.g. firm-fixed price, cost-plus-fixed-fee, etc.).

L.4.3.5.2.2 The same kind of information shall be provided for inter-organizational transfers, regardless of dollar value, except you need not provide your evaluation of such cost data. Please indicate whether the inter-organizational transfer includes upward or downward adjustments for contingencies or negotiation challenges and the supporting rationale.

L.4.3.5.2.3 For major subcontractors as defined above, if the subcontract is for purchased material and you can demonstrate that the subcontract item is either commercial or based on adequate price competition, cost information from the subcontractor is not required.

Instead, provide copies of competitive subcontractor price quotes, or the kind of information noted in FAR Clause 52.215-20(a)(1)(ii).

L.4.3.5.2.4 If the major subcontractor declines to provide complete cost proposals to the Offeror or higher-tier subcontractor, then those subcontract proposals may be submitted by the subcontractor directly to the PCO using the same submission instructions noted above. Such submissions shall arrive at or prior to the due date for proposals as noted on the front page of this RFP.

L.4.3.5.3 Material and non-Major Subcontracts (Less than \$15M). Provide a narrative that explains the method used to develop proposed cost for material and subcontracts less than \$15M, including information about the extent to which the cost is based on vendor quotes, purchase order history, estimates, etc. Indicate whether the amount includes upward or downward adjustments for contingencies or negotiation challenges and supporting rationale.

(a) High Dollar-Value Material/Subcontracts: For the items with a material/subcontract extended cost (purchase price to Offeror) greater than \$75,000, provide a Bill of Material (BOM) with the following information:

**Name of Offeror or Contractor:**

- 1) Level 3 WBS (see Attachment 0074)
- 2) National Stock Number (NSN), as applicable
- 3) Part Number
- 4) Item Name/Description
- 5) Vendor
- 6) Unit Cost (purchase price to Offeror)
- 7) Quantity used
- 8) Extended Cost (unit cost multiplied by quantity used)
- 9) Basis for cost (engineering estimate, vendor quote, purchase history, etc.)
- 10) Indicate whether component is sole-source, competitive, or commercial
- 11) For material/subcontract costs based on engineering estimates, please provide rationale and methodology for how the estimate was developed
- 12) Identify the next higher assembly

(b) All Other Material: State the total amount of material cost not included in high dollar-value material.

(c) Provide a separate list of OEV material that will be used in the performance of the EMD portion of the contract.

- 1) Level 3 WBS (see Attachment 0074)
- 2) National Stock Number (NSN), as applicable
- 3) Part Number
- 4) Item Name/Description
- 5) Quantity used
- 6) Identify the next higher assembly

L.4.3.5.4 Other Direct Costs. Depending on the Offerors accounting system, this may include costs such as computing charges, etc. Identify each category of proposed Other Direct Cost, and the dollar amount for each category. Provide an explanation of what is included in each category and how the cost was estimated.

L.4.3.5.4.1 Travel. For each proposed trip, please provide the purpose of the trip, the trip origin, the trip destination, the number of travelers, the number of days, and the proposed hotel cost, M&IE cost, rental car cost, and any other costs associated with the trip. The Offeror may use a Cost Estimating Relationship (CER) for Travel as an alternative estimating methodology. If a CER is used to estimate Travel, please provide a detailed explanation supporting how the CER was developed. Include information such as the programs used and associated Travel costs, amounts included in the base (i.e. number of labor hours, labor costs, etc), and the calculation showing how the CER factor was derived. In addition, please provide the calculation showing how the CER factor is applied to estimate the proposed Travel cost for this effort.

L.4.3.5.5 Rates. Provide a list of the direct and indirect rates, by category and by Offerors fiscal year, used in the development of the proposal and include:

(a) The date of the current Cost Accounting Standards Board (CASB) Disclosure Statement.

(b) The effective date of the rates or the data that formed the basis for the rates (the date of the burden study analysis or payroll run, etc.), and state whether or not the rate package has been submitted to Defense Contract Audit Agency (DCAA) for review.

(c) The ending month for the Offeror's fiscal year.

(d) A narrative explaining the basis for the estimated rates. And specifically identify any escalation factors used.

(e) State whether these rates represent a Forward Pricing Rate Submission (FPRS) or a Forward Pricing Rate Agreement (FPRA) and note the date of the agreement.

(f) State whether or not the business volume that would be generated if a contract was awarded to your firm as a result of this RFP has been included in the proposed rate package.

(g) For each of the rate categories, provide both the prior and current fiscal year's Incurred Cost rates. Indicate if the prior year rates have been audited. For the current year's Incurred Cost rates, provide the month ending for those rates.

L.4.3.5.6 Facilities Capital Cost of Money (FCCM). The Offeror shall state the total amount estimated for FCCM and identify the Treasury Rate used to develop the amount.

L.4.3.5.7 Fee. State the target fee rate and the target fee dollars.

**Name of Offeror or Contractor:**

## L.4.3.5.8 Engineering and Manufacturing Development (EMD) Credit for Exchange of Vehicles

For the CPIF CLIN, as referenced in Section H.7.2 EMD Exchange of Vehicles, the Offeror shall incorporate and provide the dollar amount of the proposed credit after the total proposed target cost and target fee has been stated. Provide the supporting narrative and documentation used in estimating this proposed credit.

## L.4.3.5.9 Government Property Use

In accordance with Section M.4.3.1.2(c)(1)(iii) - Use of Existing Government-Owned Property, the offeror must provide a list of Government-Owned Property that includes the acquisition cost, age, and type of Government-Owned Property. The final evaluation factors calculated in accordance with Section M.4.3.1.2(c)(1)(iii) shall be separately set forth by the offeror under the proposed target price.

## L.4.3.6 Low Rate Initial Production (LRIP) Options

For the FPIS subCLINs associated with LRIP year one (0004AA - 0004AH), the Offeror shall submit an initial Target Cost, initial Target FCCM, initial Target Profit, and Ceiling Price for each subCLIN as stated in Section B of the RFP. For the FPIS subCLINs associated with LRIP years two and three (0005AA - 0005AE and 0006AA - 0006AE), the Offeror shall submit an initial Target Cost, initial Target FCCM, initial Target Profit, and Ceiling Price for each subCLIN using the quantity identified in CLIN narrative B002 included in Section B of the RFP. In addition, for each quantity range included in the FPIS subCLINs for LRIP years two and three, the Offeror shall also submit the initial Target Cost per vehicle, initial Target FCCM per vehicle, initial Target Profit per vehicle, initial Target Price per vehicle, Optional Vehicle Exchange Credit per vehicle, and the Ceiling Price per vehicle. For further detail regarding the LRIP Option proposal process, please refer to section H.11 LRIP Options (Separately Priced Line Items).

For each FPIS subCLIN, include a top-level spreadsheet, time-phased by quarter, and organized by cost element (i.e. Direct Labor, Subcontracts, Material, Other Direct Costs, Overhead/Indirect, Target Profit, etc.) which supports the Offerors proposed Target price. Within the top-level spreadsheet for each subCLIN, also include the proposed Ceiling Price which does not need to be time phased. For each subCLIN associated with LRIP years two and three (0005AA - 0005AE and 0006AA - 0006AE), the Target Price, Ceiling Price, and supporting information shall be based on the quantity identified in CLIN narrative B002 included in Section B of the RFP. If the Offerors fiscal year does not end on a calendar quarter (i.e. 31 March, 30 June, 30 September, or 31 December), also provide the top-level spreadsheets time-phased by Offeror fiscal year. The cost breakdown must be consistent with your cost accounting system.

L.4.3.6.1 For each cost element included in the top-level spreadsheet referenced in Section L.4.3.6 (i.e. Direct Labor, Subcontracts, Material, Other Direct Costs, Overhead/Indirect, Target Profit, etc.), provide a detailed narrative explaining what is included in the proposed cost and how the cost was estimated.

L.4.3.6.2 For each FPIS subCLIN, provide a detailed narrative explaining how the Ceiling Price was developed. For each FPIS subCLIN associated with LRIP years two and three (0005AA - 0005AE and 0006AA - 0006AE), the detailed narrative shall support the Ceiling Price based on the quantity identified in CLIN narrative B002 included in Section B of the RFP.

L.4.3.6.3 For each FPIS subCLIN, the total proposed target price provided in response to Section L.4.3.6 shall equal the total price provided in the Manufacturing Cost Estimate requested in RFP Section L.4.6.6 (Attachment 0067). In addition, for each FPIS subCLIN associated with LRIP years two and three, the proposed initial target price per vehicle for each quantity range provided in response to Section L.4.3.6 shall equal the total price provided in the Manufacturing Cost Estimate requested in RFP Section L.4.6.6 (Attachment 0067).

## L.4.3.6.4 Low Rate Initial Production (LRIP) Credit for Exchange of Vehicles

For each FPIS subCLIN, as referenced in Sections H.7.3, H.7.4 and H.7.5 LRIP Exchange of Vehicles, the Offeror shall provide the dollar amount of the proposed credit after the total proposed target cost and target profit has been stated. Provide the supporting narrative and documentation used in estimating this proposed credit. For each subCLIN associated with LRIP years two and three (0005AA - 0005AE and 0006AA - 0006AE), the Credit for Exchange of Vehicles and supporting information shall be based on the quantity identified in CLIN narrative B002 included in Section B of the RFP.

L.4.3.6.5 For each quantity range included in the FPIS subCLINs for LRIP years two and three (0005AA - 0005AE and 0006AA - 0006AE), the Offeror shall submit a detailed crosswalk explaining how the initial Target Cost per vehicle, initial Target FCCM per vehicle, initial Target Profit per vehicle, initial Target Price per vehicle, Optional Vehicle Exchange Credit per vehicle, and the Ceiling Price per vehicle relate to the total initial Target Cost, initial Target FCCM, initial Target Profit, and Ceiling Price provided in response to L.4.3.6 above (which are developed based on the quantity identified in CLIN narrative B002).

L.4.3.6.6 Government Property Use. In accordance with RFP Section M.4.3.1.2(c)(1)(iii) - Use of Existing Government-Owned Property, the offeror must provide a list of Government-Owned Property that includes the acquisition cost, age, and type of Government-Owned Property. The final evaluation factors calculated in accordance with RFP Section M.4.3.1.2(c)(1)(iii) shall be separately set forth by the offeror under the proposed target price.

L.4.3.7 The Offeror and each Major Subcontractor shall provide the address, email, and telephone number of the cognizant DCAA Field

**Name of Offeror or Contractor:**

Audit Office and the cognizant Defense Contract Management Agency (DCMA) office.

L.4.3.8 In addition to the above information, the Government reserves the right to request additional or more detailed cost/price breakdown data to support its determination of most probable cost to the Government and price reasonableness.

L.4.3.9 Cost Accounting System. In order to be considered for award, the Offeror must provide evidence that it has adequate financial management and fund tracking procedures to accommodate a cost-reimbursement type contract. This evidence may include a letter from either DCMA or DCAA or a Certified Public Accountant that states that the Offeror has an acceptable accounting system for this type of contract. If an accounting system has not been determined to be adequate by DCMA or DCAA, the Offeror shall coordinate with the PCO to obtain an accounting system review prior to submitting a proposal.

L.4.4 Volume 4 O&S Factor

The O&S Factor includes two SubFactors: 1) Reliability Availability Maintainability (RAM), and 2) Commonality.

L.4.4.1 RAM SubFactor

(a) The Offeror shall self assess the extent of maturity of its proposed design, for all five AMPV variants, against each level/characteristic of maturity for RAM. The self assessment shall be consistent with the design configurations detailed in the Offeror's System Descriptions, and will be based on the definitions contained in Attachment 0084 (RAM).

(b) The self-assessment shall be accompanied by substantiating data supporting the Offeror's self assessment of its proposed design against RAM. The Offeror shall provide substantiating data for each characteristic achieved, within each level, identified in Attachment 0084 for all five AMPV variants. The resulting technical information, documentation, test data and rationale shall be complete, specific, and relevant only to the specific characteristics of the Offeror's self-assessment assertions. If the substantiating data is from a design other than the proposed technical solution, the Offeror shall discuss the extent of the variance and the impact such variance has on the credibility of the substantiating data. The Offeror shall complete Attachment 0052 (Matrix of Substantiating Data) to support RAM.

L.4.4.2 Commonality SubFactor

Following the instructions in the attachment, the Offeror shall complete Attachment 0062 (Commonality Matrix) for the list of Subsystems and assemblies/LRUs shown in columns B and C of the attachment.

L.4.5 Small Business Participation Factor Volume

The Small Business Participation Factor Volume is comprised of a single chapter. Offerors are responsible for including sufficient detail to permit a complete evaluation. Any information provided as part of the Small Business Participation Factor Volume may be used to correlate the evaluation of the other proposal volumes. As described below, the Small Business Participation Factor shall include participation for the EMD CLIN and all of the LRIP Option CLINs.

L.4.5.1 Application

The following Small Business Participation proposal submission instructions apply to every Offeror (U.S. and non-U.S.), regardless of size status or locations of working facilities or headquarters.

L.4.5.2 Definitions

(a) U.S. small business concerns are defined in FAR Part 19 and DFARS Part 219. U.S. small business concerns include small businesses (SBs), small disadvantaged businesses (SDBs), woman-owned small businesses (WOSBs), HUBZone small businesses (HUBZone SBs), veteran-owned small businesses (VOSBs), and service disabled veteran-owned small businesses (SDVOSBs).

(b) Contractor team arrangements are defined in FAR Part 9.601 and include partnerships, joint ventures, and prime and subcontractor relationships.

L.4.5.3 Small Business Participation Factor Submittal (Attachment 0065)

(a) ALL Offerors, including Offerors who are themselves U.S. small business concerns based on the NAICS code assigned to this requirement, are required to complete Attachment 0065, "Small Business Participation Factor Submittal".

(b) The Attachment contains detailed instructions for filling out each tab in the file.

(c) Offerors shall fill out Attachment 0065 with goals for this solicitation specifically, even if they are Other-Than-Small-Businesses (OTSB) submitting Comprehensive Subcontracting Plans in accordance with Section I of the solicitation.

**Name of Offeror or Contractor:**

(d) If the Offeror has a contractor team arrangement as defined in FAR Part 9.601, the members could be considered either primes or first tier subcontractors according to the legal agreement. The Offeror shall follow additional specific instructions throughout Section L.4.5, as well as on the tabs in the Attachment, related to such team arrangements.

(e) Attachment 0065 shall be submitted in the Microsoft Excel workbook format with all tabs, formulas, and functions that are built into the template in the solicitation. Print image files or pictures (for example, a picture of an Excel spreadsheet embedded in a Word document) or files containing only values are not acceptable.

L.4.5.3.1 Dollar Tabs: In Attachment 0065, Offerors shall fill in the two tabs listed below. The Offeror shall include in the dollars for prime contractor participation and subcontractor participation the EMD CLIN and all of the LRIP Option CLINs. For the LRIP Option CLINs, the offeror shall use the Proposed Price to project dollars for both prime and subcontractor participation.

(a) ("Prime \$" Tab) Prime Contractor Participation Dollars - Offeror shall provide the dollars for the portion of work the prime contractor (s) will be performing. Dollars shall be broken out for Other Than Small Business (OTSB) and each category of Small Business (SB). Dollars for the portion of work to be performed by any member of a contractor team arrangement who is considered a prime according to the team legal agreement shall be included under each applicable category.

(b) ("Sub \$" Tab) Subcontractor Participation Dollars - Offeror shall provide the dollars for the portion of work the First Tier Subcontractors will be performing. Dollars shall be broken out for Other Than Small Business (OTSB) and each category of Small Business (SB). Dollars for the portion of work to be performed by any member of a contractor team arrangement who is considered a first tier subcontractor according to the team legal agreement shall be included under each applicable category.

L.4.5.3.2 List Tabs: In Attachment 0065, Offerors shall fill in the two tabs listed below. The information in these two tabs is to provide support for the dollars in the two tabs in Section L.4.5.3.1 above. Therefore, the Offeror shall include in the dollars for the prime contractor participation and subcontractor participation, the EMD CLIN and all of the LRIP Option CLINs. For the LRIP Option CLINs, the offeror shall use the Proposed Prices to project dollars for both prime and subcontractor participation.

(a) ("SB Prime List" Tab) Small Business Prime List - Offeror shall provide pertinent information about the small business prime contractors, including small business members of contractor team arrangements who are, according to their team legal agreement, prime contractors and not 1st tier subcontractors.

(b) ("SB Sub List" Tab) Small Business Subcontractor List - Offeror shall provide pertinent information about the first tier small business subcontractors it plans to use for the contract. This shall include any small business members of contractor team arrangements who are, according to the team legal agreement, first tier subcontractors and not prime contractors.

L.4.5.3.3 Consistency and Rollup Tabs: Small Business Participation Factor Submittal content shall be consistent with any small business prime and subcontracting related information cited in the Offeror's Cost/Price proposal and elsewhere in the Offeror's response to the RFP. In Attachment 0065, there are two tabs used to check for consistency within the Small Business Participation Factor Submittal and between the Small Business Participation Factor Submittal and other parts of the proposal:

(a) ("Con" Tab) Consistency between the Small Business Participation Factor Submittal and Small Business Subcontracting Plan. This tab is filled in automatically based on the information from the "Sub \$" Tab. Offerors who are Other-Than-Small-Business shall use this tab to check for consistency between their Small Business Participation Factor Submittal and Small Business Subcontracting Plan. Note that this tab does not constitute the submittal of Small Business Subcontracting Plan goals (see Section L.4.5.6).

(b) ("Roll-up" Tab) Participation Roll-Up.

1) This tab rolls up automatically the information from the "Prime \$" Tab, "Sub \$" Tab, "SB Prime List" Tab, "SB Sub List" Tab, and "Con" tab. All Offerors shall use this tab to carefully check for accuracy and consistency in their proposals.

2) The Offeror's extent of small business participation in each small business category will be calculated automatically on this "Rollup" Tab. The embedded formula takes the 'Dollars for portion of work to be performed by Small Business Prime' and adds it to the Dollars for portion of work to be performed by First Tier Small Business Subcontractors', then divides the sum by 'Total Contract Amount', and multiplies the result by 100 to obtain the percentage. The Total Contract Amount is defined as the Total Proposed Amount for the EMD CLIN and all of the LRIP Option CLINs.

L.4.5.4 Narrative: If the Offeror has a contractor team arrangement, the Offeror shall submit a very brief introductory narrative that explains the arrangement. If any Offeror has any other need to clarify or explain anything in the Small Business Participation Factor Submittal, the information can be included in this narrative.

L.4.5.5 How Offerors can meet the Government's Small Business Participation Factor Goals listed in Section M.4.5.2:

(a) Small Business prime Offerors can meet the Small Business Participation Factor goals through:

**Name of Offeror or Contractor:**

1) The dollars for the portion of the work to be performed as a prime, including work to be performed as a small business member of a contractor team arrangement who is considered a prime by the team legal agreement.

2) A combination of (1) and dollars for first tier subcontracting to other small businesses, including a small business member of a contractor team arrangement who is considered a first tier subcontractor by the team legal agreement.

(b) Other-Than-Small-Business Offerors can meet the Small Business Participation Factor goals through:

1) The dollars for first tier subcontracting to small businesses, including a small business member of a contractor team arrangement who is considered a first tier subcontractor by the team legal agreement.

2) The dollars for the portion of the work to be performed by a small business member of a contractor team arrangement who is considered a prime by the team legal agreement.

3) A combination of (1) and (2).

**L.4.5.6 Differences between the Small Business Subcontracting Plan and Small Business Participation Factor:**

(a) The Small Business Subcontracting Plan:

1) is not required of small businesses.

2) is developed and submitted in accordance with FAR Clause 52.219-9 Small Business Subcontracting Plan and its ALT II and DFARS Clause 252.219-7003 incorporated by reference in Section I (or DFARS Clause 252.219-7004 if the Offeror has a comprehensive subcontracting plan) and TACOM Provision 52.219-4005 in Section L.

3) is evaluated in accordance with the FAR, DFARS, and AFARS.

4) has goals that are expressed as a percentage of Total Subcontracting Amount.

5) has goals broken out separately for the Basic EMD CLIN and each LRIP Option CLIN.

(b) The Small Business Participation Factor Submittal:

1) is required of all Offerors, including small businesses.

2) is developed and submitted in accordance with this Section L provision.

3) is evaluated in accordance with Section M.

4) has goals that are expressed as a percentage of Total Contract Amount.

5) has goals which are not separately established for either the EMD CLIN or any LRIP Option CLINs.

**L.4.6 Volume 6 - Proposal Terms and Conditions Volume****L.4.6.1 Signature Actions/Offeror Fill-Ins**

Submit a signed copy of the Standard Form 33 (SF33) cover page and a copy of all completed fill-ins for Sections A through K, including all signed copies of Amendments to the solicitation.

**L.4.6.1.1 Certifications and Approved Systems**

Where certifications and approved systems are required for an Offeror, if the proposal is being submitted by a Joint Venture, certifications and approved systems for the principals (partners) of the joint venture will be considered as valid for that Offeror providing the necessary documentation from all principals (partners) is provided with the proposal.

**L.4.6.2 Statement of Acknowledgement**

A statement specifying agreement with all terms, conditions, and provisions shall be included in the solicitation or any exceptions. Any exceptions taken to the attachments, exhibits, enclosures, or other solicitation terms, conditions, or documents must be fully explained; however, any such exceptions may be grounds for the Contracting Officer to reject the proposal from further consideration in the source selection process, before initial evaluation.

**L.4.6.3 Small Business Subcontracting Plan**

Other than U.S. Small Business concerns, as defined by the North American Industry Classification System (NAICS) code applicable to this solicitation, 336992, shall submit an acceptable small business subcontracting plan in accordance with FAR Clause 52.219-9 and its ALT II and Defense FAR Supplement (DFARS) Clause 252.219-7003 or 252.219-7004 and provide this plan as part of the proposal submission. Refer to Clause 52.219-4005 - Submission of Subcontracting Plan, for additional instructions.

**L.4.6.4 Assertion of Restrictions**

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The Offeror shall include in its proposal submission, each of the following: Non-Commercial Technical Data, Non-Commercial Computer Software and Software Documentation, Commercial Technical Data, and Commercial Computer Software and Software Documentation and on its Assertion of Restrictions listing required under DFARS 252.227-7017. Omission of restrictions applicable to Commercial Technical Data and Commercial Software and Software Documentation from the 252.227-7017 Assertion of Restrictions listing will bar the Offeror from asserting such a restriction upon delivery of the data, unless the omission would analogously qualify for the allowable post-award presentations based on the conditions provided in subsection (e) of either DFARS Provision 252.227-7013 or 252.227-7014.

L.4.6.5 Facility Clearance (FCL)

Include documentation demonstrating, as applicable, that the Offeror and subcontractors have a Facility Clearance (FCL) for any location that will handle classified material. Offerors must submit documentation indicating its facility has been granted a SECRET FCL. Offerors who are considering a subcontractor must also submit documentation indicating that its subcontractor has obtained the necessary clearance in order to be considered for award for those subcontractors that will handle classified material.

L.4.6.6 Manufacturing Cost Estimate

The Offeror shall provide a Manufacturing Cost Estimate in Volume 6 of its proposal by filling out the Manufacturing Cost Estimate Template (Attachment 0067).

L.4.6.7 Optional Integration Items (OII) and Optional Hosted Items (OHI)

All OII and OHI that will be utilized in the materiel solution shall be identified and submitted in tabular format to include the information from the Identifier (ID), Item, and Part Number columns of Attachment 0006. The Government will not provide any OII and OHI that are not identified in the proposal.

L.4.6.8 Exchange Agreement

Offerors proposing to enter into an exchange agreement in accordance with Section H.7 shall propose the amount of exchange credit to be applied to the contract in accordance with the instructions set forth in Section H.7. In addition, Offerors shall submit a DLA Form 1822 End Use Certificate (Attachment 0106) with their proposals. The End Use Certificate will provide information about how OEVs will be utilized if an exchange agreement is entered into. Instructions for filling out the End Use Certificate are provided in Attachment 0107. In addition, Offerors shall submit information that describes the major components or subsystems (if any) that will be returned to the Government as part of the AMPV materiel solution.

L.4.6.9 Assumptions

The Offeror shall consolidate and identify, in Volume 6, all offeror's generated "assumptions" contained anywhere in the proposal. Also, include a statement that none of the "assumptions" contradict or take exception to any terms, conditions or requirements of the RFP.

L.4.7 Volume 7: Classified Portions of Design & Build and Performance Factors Volume:

Submit any classified information for the Design & Build and Performance Factors in accordance with paragraph L.1.2 above. Classified Compliance Matrix (Attachment 0105) shall be submitted in this volume, for the proposed level of performance for every requirement listed in the matrix.

L.4.8 Volume 8: System Description and 3D CAD MODELS (Unclassified)

L.4.8.1 System Description: The Offeror shall provide the proposed vehicle design for the AMPV FoVs. This description shall be consistent with and considered in the assessment of the Offeror's proposal, and may include text, photos, illustrations, and model and drawing extracts. The description shall include subsystem and component selections, if completed. It is recommended that the system description be presented in no more than 25 pages per variant. Any classified data shall be submitted in Volume 7.

L.4.8.2 The Offeror shall provide complete 3D CAD Model representative of their proposed AMPV FoV design configurations IAW Attachment 0137. In addition, they shall provide a narrative with applicable functional diagrams and architectures describing the overall physical arrangement of its AMPV FoVs with initial concepts and the desired physical location of subsystems.

\*Revised via Amendment 0004

**Name of Offeror or Contractor:**

## SECTION M - EVALUATION FACTORS FOR AWARD

## M.1 Basis of Award

M.1.1 It is the Government's intent to award one contract for the combined AMPV EMD and LRIP efforts. The Government will select for award the proposal which represents the best value to the Government as described below.

There are five evaluation Factors:

- (a) Design & Build
- (b) Performance
- (c) Cost/Price
- (d) O&S (Operation & Support)
- (e) Small Business Participation

The relative order of importance of these Factors, and SubFactors where applicable, are described in section M.4 below.

M.1.1.2 Selection of the proposal which is most advantageous and represents the best value to the Government will be determined on a Source Selection trade-off basis from Offeror proposals which are otherwise eligible for award.

M.1.1.3 To be eligible for award, Offeror proposals shall:

- (a) Establish that the Offeror possesses a Secret Facility Clearance as verified through the Defense Security Service (see Section M.1.3);
- (b) Be Affordable (see Section M.3.2);
- (c) Be determined responsible (see Section M.3.1.4);
- (d) Be rated no less than Acceptable under (i) each SubFactor within the Design & Build Factor (see Section M.4.1) and (ii) the RAM SubFactor in the O&S Factor, (see Section M.4.4.1);
- (e) Not be assessed as High Risk for any of the following P-Spec (Attachments 0001 and 0082) requirements within the Performance Factor:
  - PSPEC-1941 Integrate Equipment into General Purpose Variant
  - PSPEC-1676 Integrate Equipment into Mortar Carrier Variant
  - PSPEC-1677 Integrate Equipment into Medical Evacuation Variant
  - PSPEC-1678 Integrate Equipment into Medical Treatment Variant
  - PSPEC-1675 Integrate Equipment into Mission Command Variant
  - PSPEC-1275 Sand Desert Terrain Speed (GP, MCMd, ME, MC)
  - PSPEC-1446 Sand Desert Terrain Speed (MT)
  - PSPEC-670 Dry Hilly Terrain Speed (GP, MCMd, ME, MC)
  - PSPEC-1449 Dry Hilly Terrain Speed (MT)
  - PSPEC-1277 Wet Hilly Terrain Speed (GP, MCMd, ME, MC)
  - PSPEC-1450 Wet Hilly Terrain Speed (MT)
  - C-PSPEC-37 Protect Occupant from Underbody IED Detonation
  - C-PSPEC-41 Protect Vehicle from Underbody IED Detonation;
- (f) Include no Deficiencies (per FAR Part 15.001); and
- (g) Not exceed a 25% price premium limit. The price premium limit will be established through application of a 25% price premium factor to the Cost/Price Factor proposal of the Offeror with the lowest total evaluated Cost/Price, who is otherwise eligible for award as described above. The low Offeror's Total Evaluated Cost/Price will be used as the denominator to calculate the price premium percentage limit. Proposals of Offerors whose total evaluated Cost/Price exceeds the price premium limit, including any fractions above 25%, will be ineligible for award regardless of any comparative discriminators (strengths, weaknesses, risks) under the non-Cost/Price Factors.

For example:

1. Offeror A has the lowest total evaluated Cost/Price (\$3,000,000) of an Offeror who is otherwise eligible for award IAW M.1.1.3 (a-g).
2. Based on Offeror A's total evaluated Cost/Price, the Cost/Price premium limit would be \$750,000 (25% X \$3,000,000 = \$750,000).

**Name of Offeror or Contractor:**

3. Under this scenario, examples of eligibility for award would be as follows:

	Total Evaluated Cost/Price	Price Premium Relative to Offeror A	Eligible for Award under M.1.1.3 (g)
Offeror A	\$3,000,000	N/A	Yes
Offeror B	\$3,500,000	16.7% (\$500,000)	Yes
Offeror C	\$3,750,000	25.0 (\$750,000)	Yes
Offeror D	\$3,750,100	25.003% (\$600,100)	No
Offeror E	\$3,800,000	26.7% (\$800,000)	No

M.1.1.3.1 Proposals which are eligible for award in accordance with Section M.1.1.3 will be subject to the Source Selection Trade-off process, considering both the evaluation Factors and their relative order of importance as cited in Section M.4, to identify the proposal which represents the best value and is most advantageous to the Government. The Government will weigh the evaluated proposals (other than the Cost/Price Factor) against the total evaluated cost/price to the Government. As part of the best value determination, the relative strengths, weaknesses, and risks of each proposal shall be considered in selecting the offer that is most advantageous and represents the best overall value to the Government. The Government may choose not to award a contract where it concludes that no proposal exists with a reasonable probability of achieving program requirements complying with contract terms and conditions.

## M.1.2 Importance of Cost/Price

Award will be made to the Offeror whose proposal (1) is otherwise eligible for award under M.1.1.3, and (2) represents the best value to the Government. This may not be the Offeror with the lowest evaluated cost/price. However, the closer Offerors evaluations are to each other in those Factors other than the Cost/Price Factor, the more important cost/price becomes in the decision. Notwithstanding the relative order of importance of the five evaluation Factors stated herein, cost/price may be controlling when:

- (a) proposals are otherwise considered approximately equal in non-cost/price factors; or
- (b) an otherwise superior proposal is unaffordable; or
- (c) the advantages of a higher rated, higher cost/price proposal are not considered to be worth the cost/price premium; or
- (d) an Offerors total evaluated cost/price is more than 25% higher than the lowest total evaluated cost/price of an offeror who is otherwise eligible for award (see Section M.1.1.3).

## M.1.3 Requirement for Facility Clearance (SECRET)

Portions of the information on this program will be classified as SECRET. To be considered for award, Offerors and subcontractors (whoever will handle SECRET material) must have a SECRET Facility Clearance (FCL). All FCL information will be verified through the Defense Security Service for all Offerors and their subcontractors. Offerors without a SECRET FCL will neither be able to discuss or access key aspects of the program that are classified nor will they be able to pass such information on to their subcontractor.

## M.1.4 Export Controlled Information

This solicitation contains Export Controlled information in Controlled Unclassified Attachments and within the Classified Annexes to this solicitation. It is the responsibility of the Offeror, not the Government, to obtain the necessary export licenses to share any such information with subcontractors or to obtain access to the files themselves. The failure or inability of an Offeror to obtain the appropriate license or agreement will not be considered as a mitigating factor in the evaluation process.

## M.2 Rejection of Offers

The Government may reject any proposal if in the Governments best interest. Examples include, but are not limited to, the following proposal conditions:

- (a) Merely offers to perform work according to the solicitation terms or fails to present more than a statement indicating its capability to comply with the solicitation terms without support and elaboration as specified in Section L of this solicitation; or
- (b) Is unbalanced as to price. An unbalanced offer is one which is based on pricing significantly higher or lower for one given period versus another period or the price of one or more contract line items is significantly over or understated. There must be a direct relationship between the effort expended and its price for each CLIN and incrementally funded period; or
- (c) Fails to meaningfully respond to the proposal preparation instructions that are specified in Section L of this solicitation; or
- (d) Is unaffordable for either EMD or LRIP; or
- (e) Proposes exceptions to the attachments, exhibits, enclosures, or other solicitation terms and conditions.

**Name of Offeror or Contractor:****M.3 Evaluation and Source Selection Process****M.3.1 Evaluation Process**

Selection of the successful Offeror shall be made following an assessment of each proposal, based on the response to the information called for in Section L of this solicitation and against the solicitation requirements and the evaluation criteria described in Section M. Proposals will be evaluated as specified herein, to include narrative support for the evaluation conclusions under each Factor and SubFactor. The Government reserves the right to reject offers in accordance with solicitation provision Rejection of Offers above.

**M.3.1.1 Source Selection Authority**

The Source Selection Authority (SSA) is the official designated to direct the source selection process and select the Offeror for contract award. A Source Selection Advisory Council (SSAC) will provide a written comparative analysis of the proposals and an award recommendation for the SSA prior to the selection decision.

**M.3.1.2 Source Selection Evaluation Board (SSEB)**

An SSEB has been established by the Government to evaluate proposals in response to this solicitation. The SSEB is comprised of technically qualified individuals who have been selected to conduct an evaluation in accordance with the evaluation criteria listed for this solicitation. Careful, full and impartial consideration will be given to all proposals received pursuant to this solicitation. All proposals shall be subject to evaluation by a team of Government personnel.

**M.3.1.3 Award with Discussions**

This solicitation includes FAR Provision 52.215-1 Instructions to Offerors - Competitive Acquisition (ALT I) in Section L, which advises the Government intends to conduct discussions with Offerors in the Competitive Range. Discussions will be conducted in accordance with FAR Part 15.306. Since written and oral discussions are limited prior to any competitive range determination (FAR Part 15.306 (c)), it is vitally important that Offerors initial proposals are complete and comprehensive.

**M.3.1.4 Determination of Responsibility**

Per FAR Part 9.103, a contract will be placed only with the Offeror that the Contracting Officer determines to be responsible. That is, the contractor who satisfactorily demonstrates the capability to perform the necessary tasks and delivery of the required items on time. Prospective Offeror(s), in order to qualify as sources for this acquisition, must be able to demonstrate that they meet standards of responsibility set forth in FAR Part 9.104. In addition, the Government may assess the Offeror's financial and management capabilities to meet the solicitation requirements. The Government reserves the right to conduct a Pre-Award Survey on any or all Offeror(s) or their subcontractors to aid the Contracting Officer in the evaluation of each Offeror's proposal and ensure that a selected Offeror is responsible. Additional requirements of responsibility for this contract are the necessary Defense Security Service (DSS) Facility Clearance. No award can be made to an Offeror who has been determined to be not responsible by the Contracting Officer. To make sure that you meet the responsibility criteria at FAR Part 9.104, the Government may:

(a) arrange a visit to your plant and perform a necessary Pre-Award Survey, or

(b) request an Offeror provide financial, technical, production, or managerial background information. If the requested information is not submitted within seven calendar days from the date of the receipt of the request, or if an Offeror refuses the Government access to its facility, the Government may determine the Offeror non-responsible. If the Government visits the Offeror's facility, please ensure that current data relevant to the proposal is available for Government personnel to review.

**M.3.2 Availability of Funding and Affordability**

M.3.2.1 No proposal, no matter how highly rated under the non-Cost/Price Factors, will be considered for award if unaffordable for either (1) the EMD phase or (2) the LRIP phase. For EMD, this includes affordability based on (a) the total available funding in FY15-FY19 and, (b) available RDT&E funding within each of the FY15-FY19 funding periods, since the contract will be RDT&E incrementally funded. For LRIP, this includes affordability based on (a) the total available Production funding for each option period and, (b) available Production funding within each of the option funding periods is listed in Section M.3.2.4 since the option year CLINs will be funded by fiscal year. Proposals specifying funding in excess of the following will be considered unaffordable and ineligible for award:

M.3.2.2 EMD Phase - The availability of funding for the AMPV EMD Phase is:

FY15: \$ 70 Million

FY16: \$174 Million

FY17: \$114 Million

FY18: \$ 64 Million

FY19: \$ 14 Million

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The affordability limits established in EMD are inclusive of the exchange credit (if proposed) and exclusive of the performance incentives for CLIN 0001.

M.3.2.3 EMD proposals that require funding in advance of availability may not be considered for award. Fiscal year funding is not often available to the AMPV Product Management Office prior to January of each fiscal year. Offerors should account for this in their execution planning and resourcing.

M.3.2.4 LRIP Phase - The availability of funding for the AMPV LRIP Phase is:

Option 1: \$244 Million

Option 2: \$479 Million

Option 3: \$505 Million

The affordability limits established in LRIP are inclusive of the exchange credit (if proposed) and based on the vehicle quantities identified in Section B, CLIN Narrative B002 for CLINs 0004AA 0006AE. The affordability limit is exclusive of the performance incentive for CLINs 0004AA-0004AE.

**M.4 Evaluation Criteria****A. There are five evaluation Factors:**

- (a) Design & Build
- (b) Performance
- (c) Cost/Price
- (d) O&S
- (e) Small Business Participation

Relative Order of Importance. Design & Build and Performance are equal in importance to each other. Design & Build and Performance are, on an individual basis, more important than either Cost/Price or O&S. Cost/Price and O&S are equal in importance to each other. Cost/Price and O&S are, on an individual basis, significantly more important than Small Business Participation. The non-Cost/Price Factors, when combined, are more important than the Cost/Price Factor.

**B. Evaluation Consideration of the RFP Paragraph L.4.8 specified System Description and 3D CAD Models**

RFP Section L Paragraph L.4.8 (Volume 8) specifies the submission of a System Description and 3D CAD Models. With respect to use of this information in the evaluation of the Design & Build Factor, Performance Factor and RAM SubFactor under the O&S Factor, the Government will review the System Description and 3D CAD Models to assess the Offeror's proposal. Notwithstanding the information contained in Volume 8, offerors are still required to submit the supporting data specified in Section L, for all Factors, by separate stand alone submission. Offerors shall not assume that the System Description and 3D CAD Models submitted will be considered in the evaluation of other Factors and SubFactors. However, the Government reserves the right to utilize this data in other areas of the evaluation at its sole discretion.

**C. Substantiating Data in support of the System Design Maturity SubFactor (Attachment 0051) and Manufacturing SubFactor (Attachment 0072) under the Design & Build Factor, and RAM SubFactor (Attachment 0084) under the O&S Factor**

The primary purpose of the substantiating data submitted for the above SubFactors is to document and support the achievement and credibility of the Offerors proposed maturity levels. The Government will review the substantiating data to assess the Offerors maturity. Notwithstanding the information contained in Attachments 0051, 0072 and 0084, offerors are required to submit the information and supporting data required for the other factors by separate stand alone submission. Offerors may not assume that substantiating data submitted for the System Design Maturity SubFactor (Attachment 0051), Manufacturing SubFactor (Attachment 0072), and RAM SubFactor (Attachment 0084) will be considered in the evaluation of other Factors or Sub-factors of the proposal. However, the Government reserves the right to utilize the Attachment 0051, 0072 and 0084 substantiating data in other areas of the evaluation at its sole discretion.

**D. Evaluation of (1) Design & Build Factor, (2) the Performance Factor and (3) RAM SubFactor under the O&S Factor**

In the evaluation of (1) Design & Build Factor, (2) the Performance Factor and (3) RAM SubFactor, the Government will consider substantiating data that is consistent with the proposed design configuration to represent the most credible form of substantiating data. However, the greater the extent to which the Offerors proposed design configuration meaningfully varies from the design configuration to which the data applies, thereby undermining the credibility of the substantiating data, the more the Government may discount the validity of the substantiating data.

**M.4.1 Design & Build Factor**

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The Design & Build Factor contains three SubFactors: (1) System Design Maturity, (2) Manufacturing, and (3) Integrated Master Schedule (IMS). SubFactor (1) System Design Maturity is more important than SubFactor (2) Manufacturing. SubFactor (2) Manufacturing is more important than SubFactor (3) IMS.

M.4.1.1. For SubFactor (1) System Design Maturity, the Government will assess the risk that, based on the extent and credibility of the System Design Maturity data provided (Attachment 0051) for all five AMPV variants, the Offeror will timely deliver EMD test vehicles which will successfully complete EMD testing. This assessment will be based on the proposal information submitted in response to Section L.4.1.1.1.

M.4.1.2 For SubFactor (2) Manufacturing, the Government will assess the risk that, based on (1) the extent and credibility of the Manufacturing Maturity data (Attachment 0072) provided for the AMPV FoVs and (2) the thoroughness and credibility of the Attachment 0060 provided Manufacturing Approaches to be employed by the offeror, the Offeror will timely and successfully deliver both (a) EMD test vehicles, and (b) LRIP production vehicles.

M.4.1.3 For SubFactor (3), Integrated Master Schedule, the Government will assess the risk that, based on the proposal information submitted in response to Section L.4.1.1.2, the Offeror will timely and successfully (a) deliver EMD test assets, (b) deliver the first five LRIP vehicles no later than the dates specified in the Attachment 0061 (AMPV Integrated Master Schedule), and (c) complete both the LRU Qualification and Highly Accelerated Life Test.

**M.4.2 Performance Factor**

The Performance Factor includes the following three SubFactors: (1) Tier 1, (2) Tier 2, and (3) Tier 3. SubFactor (1) Tier 1 is more important than SubFactor (2) Tier 2. SubFactor (2) Tier 2 is more important than SubFactor (3) Tier 3.

M.4.2.1 For the Performance Factor, and as described in the Attachment 0053 Tier Guidance, the terms Requirement, Threshold and Objective represent the following when used in (a) Attachments 0055 and 0105, (b) RFP Section L&M and (c) the Performance Specification:

M.4.2.1.1 Tier 1: RFP Sections L&M and Attachments 0055 and 0105 refer to Tier 1 Requirements as Threshold performance levels. For the purposes of Tier 1 as defined in the Compliance Matrices (Attachments 0055 and 0105), the term Requirement in the Performance Specification means Threshold performance level.

M.4.2.1.2 Tier 2: RFP Sections L&M and Attachment 0055 refer to Tier 2 Requirements as having both Threshold and Objective performance levels. For the purposes of Tier 2 as defined in the Compliance Matrix (Attachment 0055), the term Requirement in the Performance Specification means the Objective performance level. The Threshold performance levels are identified in Attachment 0055, but not in the Performance Specification.

M.4.2.1.3 Tier 3: RFP Sections L&M and Attachment 0055 refer to Tier 3 Requirements as Objective performance levels. For the purposes of Tier 3 as defined in the Compliance Matrix (Attachment 0055), the term Requirement in the Performance Specification means the Objective performance level. There are no Threshold performance levels in Tier 3.

\*M.4.2.2 For SubFactor (1) Tier 1, the Government will assess, for each AMPV variants mission role highlighted in Attachment 0132:

(a) The risk that the Offeror's proposal will meet the Tier 1 threshold requirements in Attachments 0055 and 0105. Proposals will be assessed as deficient and ineligible for award where the Offeror does not meet a Tier 1 threshold requirement. In the case of the two Classified Performance Specification (C-PSPEC) Underbody Force Protection/Survivability Requirements cited in M.4.2.2 (b), and to the extent the Offeror proposes to achieve performance above the threshold performance level, the Government will evaluate the risk that the Offeror will meet the proposed level of performance.

\*(b) The extent to which the Offeror credibly achieves Objective levels of performance for the following two Underbody Force Protection/Survivability requirements:

\*1) C-PSPEC 60; Paragraph 3.2.1.1.2.4; Protect Occupants From Underbody Improvised Explosive Devices (Detonation) - Objective.

\*2) C-PSPEC 61; Paragraph 3.2.1.1.2.6; Protect Vehicle From Underbody IED Detonation - Objective.

M.4.2.3 For SubFactor (2) Tier 2, the Government will assess, for each AMPV variants mission role highlighted in Attachment 0132:

(a) The risk that the Offeror's proposal will meet the Tier 2 threshold requirements in Attachment 0055. Proposals will be assessed as deficient and ineligible for award where the Offeror does not meet a Tier 2 threshold requirement. In the case of the objective performance levels cited in Attachment 0055, and to the extent the Offeror proposes to achieve performance above the threshold performance level, the Government will evaluate the risk that the Offeror will meet the proposed level of performance.

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(b) The extent to which the Offeror credibly achieves the objective levels of performance for the objectives cited in Attachment 0055.

**M.4.2.4 Evaluation of Tier 1 and Tier 2 Objective requirements**

For the objective requirements being evaluated under Tier 1 and Tier 2, evaluation credit in the form of a proportional strength may be given for proposed performance above the threshold requirement up to the objective. A strength may result in an increase in the assigned rating for the appropriate Factor and SubFactor. Evaluation credit will not be granted for exceeding the objective performance requirement except to the extent that performance beyond the objective level reduces the risk of achieving the objective performance level.

M.4.2.5 To receive objective performance evaluation credit, the Offerors proposal must demonstrate to the Government that the proposed performance level is achievable at moderate or lower risk. Where the objective performance level is evaluated as having risk higher than moderate risk for achieving proposed performance, no additional evaluation credit shall be given, nor shall such a proposal be considered a proposal strength or to have benefit to the Government.

M.4.2.6 If the Government evaluation of the proposal indicates that the achievement of the proposed performance level above the threshold, up to the objective, is likely at moderate risk or lower, the proposed level of performance will be included in any resulting contract. In the event an Offeror does not agree to incorporate the proposed level of performance into the resulting contract, the Offeror will not be credited, in whole or in part, with achievement of performance beyond the threshold.

M.4.2.7 For SubFactor (3) Tier 3, the Government will assess, for each AMPV variant's mission role highlighted in Attachment 0132, the extent to which the Offeror proposes to meet Tier 3 objectives in Attachment 0055. Tier 3 objectives are divided into thirteen groups. Within the thirteen Priority Groups, Basic Vehicle Network (Priority Group 1) is more important than VHMS Increment 1 (Priority Group 2), which is slightly more important than VHMS Increment 2 (Priority Group 3), which is slightly more important than Portable Maintenance Aid (Priority Group 4), which is more important than Advanced Power Management (Priority Group 5). Priority Groups 5-13 are in descending order of importance. In order to receive evaluation credit for any of the thirteen groups, Offerors must propose to meet:

(a) all objectives in the group at the full objective performance level, and

(b) the full objective performance level for all variants listed in Attachment 0055.

M.4.2.8 For the objective performance groups being evaluated under Tier 3, extra evaluation credit in the form of strengths may be given for each group where the offeror proposes to meet the full objective performance level for each objective in the group and on all variants listed in Attachment 0055.

M.4.2.8.1 A strength may result in an increase in the assigned rating for the Performance Factor and Tier 3 SubFactor. Where the offeror does not propose to meet the full objective performance level for each objective in the group and on all variants listed in Attachment 0055, no additional evaluation credit shall be given, nor shall such a proposal be considered a proposal strength or to have any benefit to the Government.

M.4.2.8.2 Proposed Objective performance levels for a group, which satisfy M.4.2.7 (a-b) above, will be included in any resulting contract. In the event an Offeror does not agree to incorporate the objective levels of performance into the resulting contract, including each objective in that group and on all variants listed in Attachment 0055, the Offeror will not be credited with achieving any objective performance, nor be given a strength, for that group.

**M.4.3 Cost/Price Factor**

M.4.3.1 The Offeror's proposal shall be evaluated to determine the Total Evaluated Cost/Price to the Government.

M.4.3.1.1 Total Evaluated Cost/Price - The Government will evaluate Offerors for award by summing the Evaluated Cost to the Government in EMD and the Evaluated Price in LRIP as detailed in Sections M.4.3.1.2(c) and M.4.3.1.3(a) below. The Total Evaluated Cost/Price may differ from the total proposed cost/price. The Total Evaluated Cost/Price, rather than the total proposed cost/price, shall be used in the trade-off evaluation to determine best value. The incentive structure will not be considered in the Evaluated Price for LRIP. Performance Incentive Fee will not be considered in the Evaluated Cost/Price for EMD and LRIP.

M.4.3.1.2 For the CPIF EMD CLIN, the Evaluated Cost will include an assessment of the reasonableness of proposed costs, and a realism assessment. Cost Reasonableness and Cost Realism will be assessed as described below. Defense Contract Audit Agency (DCAA) and Defense Contract Management Agency (DCMA) may be requested to verify rates and projections.

(a) Cost Realism: The Government shall evaluate realism by independently reviewing and evaluating the specific elements of the Offeror's proposed cost estimate to determine whether the cost accurately reflects the Offeror's proposed effort to meet program requirements and objectives. The result of the realism evaluation will be a determination of the most probable cost to the Government (which consists of cost and fee) of performance for the Offeror. The most probable cost will be determined by adjusting the Offeror's proposed cost to reflect any additions or reductions to cost elements to realistic levels based on the

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results of the realism analysis.

(b) Cost Reasonableness: The Government shall evaluate the reasonableness of the Offeror's proposed cost, fee, and credit for exchange in vehicles in accordance with the definition in FAR Part 31.201-3. A cost is reasonable if, in its nature and amount, it does not exceed that which would be incurred by a prudent person in the conduct of competitive business.

(c) Evaluated Cost - CPIF CLIN:

1) The Evaluated Cost for the CPIF CLIN will consist of summing:

i. The most probable cost to the Government, consisting of:

a) The evaluated cost based on the cost realism evaluation described in Section M.4.3.1.2(a); and

b) Cost incentive fee, which will be determined by applying the cost incentive fee structure (as set forth in FAR Clause 52.216-10 located in Section I) (70/30 underrun and 30/70 overrun share ratio, a minimum fee percentage of 3%, and a maximum fee percentage of 13%) to the cost based on the cost realism evaluation described above; and

ii. The proposed credit for exchange of vehicles (as defined in Sections H.7.2 and L.4.3.5.8). Note that the credit for the exchange of vehicles will be applied to the most probable cost to the Government as detailed in Section M.4.3.1.2(c)(1)(i) above (after the cost incentive fee has been calculated); and

iii. Use of Existing Government-Owned Property:

a) Rent-free use of existing facilities, special test equipment, and/or special tooling, title to which is in the Government or to which the Government has the right to take title (all of which is herein described as property), including rent-free use by prospective subcontractors, will be a consideration in the evaluation of responses to this solicitation.

b) For purposes of evaluation only, the proposed items for each classification of property, computed as follows, shall be included by the Government in the Evaluated Cost. The proposed items shall be computed by multiplying the acquisition cost of each item of property by the rental rates specified below, and then multiplying the product obtained by the number of months of use proposed. A minimum of one month of use shall be required for purposes of evaluation. Fractional portions of a month shall be counted as a full month. The final items shall be separately set forth by the offeror under the proposed price.

c) Monthly Rental Rates:

(1) For land and land preparation, buildings, building installations, and land installations other than those items specified in (2) below: the prevailing commercial rate.

(2) For industrial plant equipment of the types covered by Federal Supply Classification Code Numbers 3405, 3408, 3410, 3411 through 3419 (machine tools), and 3441 through 3449 (secondary metal forming and cutting machines), the following rates shall apply:

Age of Equipment	Monthly Rental Rates
0-2 years	3.00%
Over 2 to 3 years	2.00%
Over 3 to 6 years	1.50%
Over 6 to 10 years	1.00%
Over 10 years	0.75%

(3) For personal property and equipment not covered in (1) and (2) above (including all production equipment not in the Federal Supply Classification Codes set forth above, and including special tooling and special test equipment), the following rates shall apply:

- Two percent (2.00%) per month for electronic test equipment and automotive equipment;
- One percent (1.00%) per month for special tooling and for all other property and equipment.

d) If any item of property is to be used on other work for which use has been authorized during the period such property is requested for use on any contract resulting from this solicitation, the evaluation factors shall be calculated in accordance with the following: the acquisition cost of each item of property shall be multiplied by the rental rates specified for the applicable classification of property set forth above, and the product obtained shall then be multiplied by the number of months of rent-free use requested. The resulting product shall be multiplied by a fraction, the numerator of which is the amount of use of the

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property proposed under this solicitation, and the denominator of which is the sum of the previously-authorized use of the property during the period of proposed use and the use proposed under this solicitation. The measurement unit for determining the amount of use to be considered in establishing the fraction referred to in the foregoing calculation shall be direct labor hours, sales, hours of use, or any other measurement unit which will result in an equitable apportionment of the factor. The measurement unit used and the amount of respective uses shall be set forth in sufficient detail to support the proration for each item of property.

e) For the purposes of determining the evaluation factors set forth above, the following definitions apply:

(1) The term acquisition cost means the total cost to the Government for an item of property, including the cost of (i) transportation, (ii) installation, (iii) accessories to be used with the item, and (iv) any rebuilding and modernization which has enhanced the original capability of the item;

(2) The age of an item of property shall be based on the year in which it was manufactured, with an annual birthday on 1 January of each year thereafter. On 1 January following the date of manufacture, the item shall be considered one year old; and on each succeeding January 1st, it shall become one year older (thus, an item manufactured on 15 July 1978 would be one year old on 1 January 1979, and over two years old on and after 1 January 1980).

f) Where this solicitation provides that the property is offered for use on an as-is basis, F.O.B. loading dock at present location, the Government shall add to the Evaluated Cost, in addition to the evaluation factors described above, a factor, for purposes of evaluation, which will be composed of the costs to the Government of making such property available at the F.O.B. point, including the costs of disconnection, preparation for shipment, and placement on the loading dock.

M.4.3.1.3 For the FPIS LRIP Option subCLINs, the Evaluated Price for LRIP year one shall include the proposed Ceiling Prices for each FPIS subCLIN. The Evaluated Price for LRIP years two and three shall include the proposed Ceiling Price at the quantity identified in CLIN Narrative B002, which represents the most probable quantity the Government expects to exercise, included in Section B of the RFP. In addition, for each FPIS subCLIN in LRIP year one, the Government will evaluate the reasonableness of the proposed Ceiling Price. For each FPIS subCLIN in LRIP years two and three, the Government will evaluate the reasonableness of the proposed ceiling price at the quantity identified in CLIN narrative B002 included in Section B of the RFP, and the ceiling price per vehicle for each quantity range. As part of this evaluation, the Government will consider the reasonableness of the proposed Ceiling Price in comparison to the proposed Target Cost, using the detailed narrative explaining how the proposed Ceiling Price was developed (as requested in Sections L.4.3.6.2 and L.4.3.6.5 of the RFP). Price reasonableness may also be evaluated by various means as identified in FAR Part 15.404-1(b), such as historical data and experience available from Government sources. A price is reasonable if, in its nature and amount, it does not exceed that which would be incurred by a prudent person in the conduct of competitive business.

(a) Evaluated Price - FPIS CLINs:

1) The Evaluated Price for the FPIS CLINs will consist of summing:

i. The total proposed Ceiling Price for each subCLIN (0004AA - 0004AH, 0005AA - 0005AE, 0006AA - 0006AE). Note that for the FPIS subCLINs associated with LRIP years two and three, the Ceiling Price will be based on the quantity identified in CLIN narrative B002 included in Section B of the RFP; and

ii. The proposed credit for exchange of vehicles for each subCLIN (0004AA - 0004AE, 0005AA - 0005AE, 0006AA - 0006AE) as defined in Sections H.7.3, H.7.4, H.7.5 and L.4.3.6.3. Note that the credit for the exchange of vehicles will be applied to the proposed price (including profit) detailed in Section M.4.3.1.3(a)(1)(i) above. Also note that for the FPIS subCLINs associated with LRIP years two and three, the Credit for Exchange of Vehicles will be based on the quantity identified in CLIN narrative B002 included in Section B of the RFP; and

iii. Use of Existing Government-Owned Property:

a) Rent-free use of existing facilities, special test equipment, and/or special tooling, title to which is in the Government or to which the Government has the right to take title (all of which is herein described as property), including rent-free use by prospective subcontractors, will be a consideration in the evaluation of responses to this solicitation.

b) For purposes of evaluation only, the proposed items for each classification of property, computed as follows, shall be included by the Government in the Evaluated Cost. The proposed items shall be computed by multiplying the acquisition cost of each item of property by the rental rates specified below, and then multiplying the product obtained by the number of months of use proposed. A minimum of one month of use shall be required for purposes of evaluation. Fractional portions of a month shall be counted as a full month. The final items shall be separately set forth by the offeror under the proposed price.

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## c) Monthly Rental Rates:

(1) For land and land preparation, buildings, building installations, and land installations other than those items specified in (2) below: the prevailing commercial rate.

(2) For industrial plant equipment of the types covered by Federal Supply Classification Code Numbers 3405, 3408, 3410, 3411 through 3419 (machine tools), and 3441 through 3449 (secondary metal forming and cutting machines), the following rates shall apply:

Age of Equipment	Monthly Rental Rates
0-2 years	3.00%
Over 2 to 3 years	2.00%
Over 3 to 6 years	1.50%
Over 6 to 10 years	1.00%
Over 10 years	0.75%

(3) For personal property and equipment not covered in (1) and (2) above (including all production equipment not in the Federal Supply Classification Codes set forth above, and including special tooling and special test equipment), the following rates shall apply:

- Two percent (2.00%) per month for electronic test equipment and automotive equipment;
- One percent (1.00%) per month for special tooling and for all other property and equipment.

d) If any item of property is to be used on other work for which use has been authorized during the period such property is requested for use on any contract resulting from this solicitation, the evaluation factors shall be calculated in accordance with the following: the acquisition cost of each item of property shall be multiplied by the rental rates specified for the applicable classification of property set forth above, and the product obtained shall then be multiplied by the number of months of rent-free use requested. The resulting product shall be multiplied by a fraction, the numerator of which is the amount of use of the property proposed under this solicitation, and the denominator of which is the sum of the previously-authorized use of the property during the period of proposed use and the use proposed under this solicitation. The measurement unit for determining the amount of use to be considered in establishing the fraction referred to in the foregoing calculation shall be direct labor hours, sales, hours of use, or any other measurement unit which will result in an equitable apportionment of the factor. The measurement unit used and the amount of respective uses shall be set forth in sufficient detail to support the proration for each item of property.

e) For the purposes of determining the evaluation factors set forth above, the following definitions apply:

(1) The term acquisition cost means the total cost to the Government for an item of property, including the cost of (i) transportation, (ii) installation, (iii) accessories to be used with the item, and (iv) any rebuilding and modernization which has enhanced the original capability of the item;

(2) The age of an item of property shall be based on the year in which it was manufactured, with an annual birthday on 1 January of each year thereafter. On 1 January following the date of manufacture, the item shall be considered one year old; and on each succeeding January 1st, it shall become one year older (thus, an item manufactured on 15 July 1978 would be one year old on 1 January 1979, and over two years old on and after 1 January 1980).

f) Where this solicitation provides that the property is offered for use on an as-is basis, F.O.B. loading dock at present location, the Government shall add to the Evaluated Cost, in addition to the evaluation factors described above, a factor, for purposes of evaluation, which will be composed of the costs to the Government of making such property available at the F.O.B. point, including the costs of disconnection, preparation for shipment, and placement on the loading dock.

M.4.3.2 Unbalanced Pricing. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly over or understated as indicated by the application of cost/price analysis techniques. Offerors are cautioned that a proposal the Government assesses to be unbalanced as to price, may be either rejected or unacceptable for award.

## M.4.4 O&amp;S Factor

The O&S Factor contains two SubFactors: (1) Reliability Availability Maintainability (RAM), and (2) Commonality. The RAM SubFactor is more important than the Commonality SubFactor.

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## M.4.4.1 RAM SubFactor

The Government will assess the risk that, based on the extent and credibility of the RAM data provided (Attachment 0052) for the AMPV FoVs, the Offeror will timely deliver EMD test vehicles which will successfully complete EMD RAM testing. This assessment will be based on the proposal information submitted in response to RFP Paragraph L.4.4.1.

## M.4.4.2 Commonality SubFactor

The Government will assess the extent to which each of the items listed in Attachment 0062 are common across all five AMPV FoVs to achieve complete commonality. Only commonality across all five variants will be given evaluation credit as a strength in the Commonality SubFactor evaluation. Proposals will be assessed as progressively more advantageous the greater the extent to which complete commonality is achieved.

## M.4.5 Small Business Participation Factor

M.4.5.1 The Government will evaluate the Offeror's proposed extent of Small Business Participation in the performance of the contract (EMD and LRIP) for the Small Business categories listed in Section M.4.5.2 below.

M.4.5.2 The evaluation will consist of the following:

(a) The extent to which the proposal identifies participation by U.S. small business concerns to achieve the Government's goals for U.S. small businesses (SBs) in the categories listed below and expressed as percentage of Total Contract Amount. The term Total Contract Amount is defined for evaluation purposes as total proposed amount for the Basic EMD CLIN and all of the LRIP Option CLINs.

- 13% for Small Business (SB)
- 1.8% for Small Disadvantaged Business (SDB)
- 1.8% for Woman Owned Small Business (WOSB)
- 1% for Historically Underutilized Business Zone Small Business (HubZone SB)
- 1% for Veteran Owned Small Business (VOSB)
- 1% for Service Disabled Veteran Owned Small Business (SDVOSB)

(b) An assessment of the proposal risk probability that the Offeror will achieve the levels of Small Business Participation identified in the proposal.

\*Revised via Amendment 0004

\*\*\* END OF NARRATIVE M0001 \*\*\*