

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code | **Page 1 Of 21**
 Cost Plus Incentive Fee (Cost Based)

2. Amendment/Modification No. P00010 | **3. Effective Date** 2014APR23 | **4. Requisition/Purchase Req No.** SEE SCHEDULE | **5. Project No. (If applicable)**

6. Issued By Code W56HZV | **7. Administered By (If other than Item 6)** Code S2305A
 U.S. ARMY CONTRACTING COMMAND
 REBECCA K BERNOCK
 WARREN, MICHIGAN 48397-5000
 HTTP://CONTRACTING.TACOM.ARMY.MIL
 EMAIL: REBECCA.K.BERNOCK@US.ARMY.MIL
 DCMA DETROIT
 35803 MOUND ROAD
 STERLING HEIGHTS MI 48310

8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code)
 GENERAL DYNAMICS LAND SYSTEMS INC.
 38500 MOUND RD
 STERLING HEIGHTS, MI 48310-3200
 9A. Amendment Of Solicitation No.
 9B. Dated (See Item 11)
 10A. Modification Of Contract/Order No.
 W56HZV-14-C-B019
 10B. Dated (See Item 13)
 2013NOV25
Code 7W356 | **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 _____ 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)
 NO CHANGE TO OBLIGATION DATA

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

A. This Change Order is Issued Pursuant To: _____ **The Changes Set Forth In Item 14 Are Made In**
 The Contract/Order No. In Item 10A.
 B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).
 C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of: FAR 43.103(a)
 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)**
 MARY HERNANDEZ
 MARY.P.HERNANDEZ@US.ARMY.MIL (586)282-7021
15B. Contractor/Offendor | **15C. Date Signed** | **16B. United States Of America** | **16C. Date Signed**
 _____ | _____ | By _____ / SIGNED/ _____ | 2014APR23
 (Signature of person authorized to sign) | (Signature of Contracting Officer)

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SECTION A - SUPPLEMENTAL INFORMATION

Buyer Name: REBECCA K BERNOCK
Buyer Office Symbol/Telephone Number: CCTA-AIL-B/(586)282-7056
Type of Contract: Cost Plus Incentive Fee (Cost Based)
Kind of Contract: Research and Development Contracts
Type of Business: Large Business Performing in U.S.
Surveillance Criticality Designator: C
Weapon System: No Identified Army Weapons Systems

*** End of Narrative A0000 ***

1. This Modification P00010 to Contract W56HZV-14-C-B019 is a bilateral action.
2. The purpose of this modification is to revise paragraph C.3.1.2-Integrated Baseline Reviews (IBRs) in Section C DESCRIPTION/SPECIFICATIONS/WORK STATEMENT.
3. Resultant from this Modification P00010, Section C-DESCRIPTION/SPECIFICATIONS/WORK STATEMENT, paragraph C.3.1.2-Integrated Baseline Reviews (IBRs), has been revised as follows:

CHANGED FROM: C.3.1.2-Integrated Baseline Reviews (IBRs). IBRs shall occur within 150 days of contract award, and subsequently following all major changes to the baseline.

CHANGED TO: C.3.1.2-Integrated Baseline Reviews (IBRs). IBRs shall occur within 180 days of contract award, and subsequently following all major changes to the baseline.
4. As a result of this Modification P00010, the obligated amount of Contract W56HZV-14-C-B019 is neither increased nor decreased.
5. Except as specifically stated above, all other terms and conditions of the Contract remain unchanged and in full force and effect.

*** END OF NARRATIVE A0011 ***

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ECP PHASE II SCOPE OF WORK

C.1. General.

C.1.1. Scope. This scope of work (SOW) consists of Engineering Design, Prototype Development, Logistics, Test and Evaluation support that shall be performed by the contractor during the Phase II ECP Upgrade Program.

C.1.2. The contractors responsibilities under Phase II of the ECP Upgrade Program shall be to restore lost platform performance through a limited set of engineering upgrades and ensure Stryker vehicles are able to accept the Army network. The technical enhancements to be performed by the contractor under the development effort include Improved Automotive Power Generation, Improved Electrical Power Generation, Improved In-Vehicle Network Capabilities and Increased Payload/Improved Mobility (Chassis Upgrades).

C.1.3. Contract Data Requirements. Data shall be delivered in accordance with the DD1423, Contract Data Requirements Lists (CDRLs), as set forth in Attachment 0001 and as called out in this SOW. Should any data deliverable require revision after original delivery, the Government shall notify the contractor no later than 30 days after receipt of the original submission and the required revision shall be delivered no later than 30 days after the request unless the Government grants relief in writing to allow another delivery date. Except for those items that specifically require hard copy submission, all data specified in this contract shall be provided to the Government electronically.

C.1.4. Contract Data Requirements Delivery. Data shall be delivered in accordance with the DD1423, Contract Data Requirements Lists (CDRLs), as set forth in Attachment 0001 and as called out in this SOW. Should any data deliverable be due on a non week day or holiday, the contractor shall be required to deliver the CDRL on the next work day unless otherwise specifically stated in the DD1423.

C.2. Program Security and Protection.

C.2.1. The contractor shall provide the security of classified and unclassified information, data, hardware and software generated for the program or provided to the program. Per Under Secretary of Defense for Acquisition, Technology and Logistics (USD AT&L) direction, the contractor shall comply with the security procedures and processes to satisfy the security requirements identified in DD Form 254, Attachment 0002. As stated in the DD 254, the Contractor shall complete OPSEC training and submit a report in accordance with CDRL A015.

The Contractor shall also follow the Governments OPSEC Plan, as well as annexes and updates, and the Stryker Family of Vehicles Program Protection Plan (PPP) dated 23 August 2012. Upon contractor request, the Stryker Security Manager will provide the OPSEC plan and PPP. The PPP is effective immediately and is mandatory for use by all program participants and field activities at all locations where Critical Program Information (CPI) is researched, manufactured, stored, processed or tested.

C.3. Business Management.

C.3.1. Earned Value Management System (EVMS). EVMS shall be in accordance with DFARS 252.234-7001 and 252.234-7002.

C.3.1.1. Performance Measurement Baseline (PMB). The contractor shall generate a time-phased budget baseline assigning all contract costs to their scope specific Work Breakdown Structure (WBS) elements no later than 45 days after authorization to proceed. The PMB shall be the basis for the Integrated Program Management Report (IPMR). Retroactive changes to the PMB are prohibited, except for the correction of errors and/or routine accounting adjustments.

C.3.1.1.1. Formal Reprogramming. When indicated by contract performance, the contractor shall submit a request for approval to initiate an over-target baseline (OTB) or over-target schedule (OTS) to the Procuring Contracting Officer (PCO). The content of the contractors reprogramming request shall be consistent with DFARS 252.234-7002(h). The contractors formal reprogramming request shall be submitted no later than 60 days prior to the contractors anticipated implementation date. The PCO will issue a letter no later than 30 days after receipt of the request stating whether it has been approved or denied.

C.3.1.1.2. Replanning and Single Point Adjustments (SPA). Replanning actions and SPAs shall not be used as a means to improve cost and/or schedule performance. The contractor shall submit a request for approval to the PCO to initiate any action that modifies the timing of milestones in the contractors Integrated Master Schedule (as reported in IPMR Format 6) or eliminates accrued cost and/or schedule variances. Replanning and SPA requests shall be submitted to the PCO no later than 60 days prior to the contractors anticipated implementation date. The PCO will issue a letter no later than 30 days after receipt of the request stating whether it has been approved or denied.

C.3.1.2. Integrated Baseline Reviews (IBRs). IBRs shall occur within 180 days of contract award, and subsequently following all major changes to the baseline.

C.3.1.3. Integrated Program Management Report (IPMR). The contractor shall prepare and electronically deliver all IPMR Formats in accordance with CDRL A001. IPMR Format 6 shall be applied separately where DFARS 252.234-7002 is not applicable. The Government and the contractor shall periodically review and adjust as necessary reporting levels and variance thresholds to ensure they continue to provide

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appropriate visibility without requiring excessive information. If there is a significant problem with respect to cost, schedule, or performance at a lower level, detailed reporting for that WBS element shall be required until the problem is resolved.

C.3.1.4. Sub-contract Implementation. DFARS Clauses 252.234-7001 and 252.234-7002 shall be flowed down to all subcontracts, regardless of tier, that have a total expected value \$20 million or greater. Flow-down of EVMS requirements to subcontracts of less than \$20 million is not required unless directed by the Government. The contractor shall be responsible for reviewing and assuring the validity of all subcontractors reporting through surveillance and other means.

C.3.1.5. Integrated Master Schedule (IMS, IPMR Format 6). The contractor shall use the IMS as a day-to-day execution tool, to assess progress in meeting contractual requirements and to provide realism to the contractors approach to executing the awarded effort within cost and schedule constraints. The IMS shall include the activities of EVMS qualifying subcontractors. The IMS shall be resource loaded. The contractor shall deliver the IMS, perform requisite analyses, report potential or existing problem areas, and recommend corrective actions to eliminate or reduce schedule impact in accordance with CDRL A001. The contractor shall maintain and update the IMS to reflect changes in detailed execution of activities or changes in schedule.

C.3.1.6. Cost and Software Data Reporting (CSDR). The contractor shall electronically produce and deliver Contractor Cost Data Reports (CCDR) in accordance with DoDM 5000.04-M-1 (CSDR Manual, November 2011) and CDRLs A002, A003, and A004.

C.3.1.6.1. CSDR Sub-contractor Flow-down. The contractor shall flow-down CSDR requirements to all subcontracts that have a total expected value of \$50 million or greater in accordance with DFARS 252.234-7004(b).

C.3.1.6.2. Resource Distribution Table (RDT). The RDT (Attachment 0003) shall be based on the work breakdown structures used in OSD-DDCA approved CSDR Contract Plans (Attachment 0004). The RDT shall identify the value of work assigned to subsidiaries and subcontractors. The contractor shall electronically produce and deliver an RDT in accordance with CDRL A005 whenever the Government adds funding to the contract.

C.3.1.7. Work Breakdown Structure (WBS) Index and WBS Dictionary. The WBS Index and WBS Dictionary shall be used for CSDR and EVM.

C.3.1.7.1. Cost and Software Data Reporting. The contractor shall maintain a product oriented WBS Index and WBS Dictionary in accordance with the OSD-DDCA approved CSDR Contract Plans, Attachment 0004, and CDRL A004.

C.3.1.7.2. Earned Value Management. The WBS for earned value management activities shall be consistent with the lowest levels specified by the OSD-DDCA approved CSDR Plans in Attachment 0004. Tailoring of the WBS below the levels specified in the CSDR plans shall be as mutually agreed between the contractor and the Government. The contractor shall implement a WBS that is consistent with the lowest levels specified in MIL-HDBK-881A (30 Jul 2005). The WBS shall be extended down to the appropriate level required by the contractor to provide adequate internal management, surveillance, and performance measurement, regardless of the reporting level stipulated in the contract for Earned Value Management purposes.

C.3.1.8. Contract Funds Status Report (CFSR). The contractor shall produce and deliver CFSRs, in accordance with CDRL A006.

C.3.1.9. Development/Procurement Cost Reporting. The nonrecurring development engineering effort and the recurring manufacturing effort of the developed item shall be reported separately in the CSDR and IPMR deliverables. Each separately reported effort shall use all applicable elements of the WBS according to their intended use as described in MIL-HDBK-881A (30 Jul 2005) and the approved OSD-DDCA CSDR Contract Plans, or as otherwise agreed.

C.4. ECP Configuration Management (CM).

C.4.1. ECP Configuration Management Plan (CMP). The contractor shall leverage the existing Stryker FOV CM Process to maintain CM of Stryker ECP variants and supporting equipment using ANSI/EIA-649, National Consensus Standard for Configuration Management, and MIL-HDBK-61A (SE), Configuration Management Guidance as guidance. The CM program shall be documented in the CMP, CDRL A007. The CMP shall include a description of how the contractor will maintain the CM program. Any deviation from the CMP shall require Government Contracting Officer approval.

C.4.1.1. ECP Configuration Identification and Document Control. The contractor shall document and maintain the configuration status across all ECP Stryker variants, production kits, and supporting equipment, hardware, software, and firmware to assure complete identification status accounting and control throughout the program lifecycle. The contractor shall synchronize the efforts of all variant and configuration management activities to ensure that the Stryker vehicles conform to the system performance specifications and are identified and documented in sufficient detail to support its life cycle, to ensure component interchangeability, and to ensure accurate system information and safety of system operations and maintenance. The contractor shall make documentation of the configuration status available for Government review on their TeamCenterwebsite.

C.4.2. ECP Configuration Control Board (CCB). The contractor shall utilize the existing Stryker FOV CCB for review of proposed ECP configuration changes. The contractor shall email the agenda identifying the proposed ECP Engineering Change Orders (ECOs) to be discussed with the Government Representatives no later than 72 hours prior to the CCB.

C.4.2.1. ECP ECO Package Coordination. Before submitting a proposed ECO for CCB review and including it in the agenda, the contractor

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shall coordinate the proposed ECO packages, using the Government approved ECO forms, with its Government counterpart. The ECO package shall include the contractors ECO leads contact information (phone number, mobile number, and email address) and contact information for an alternate point of contact. The contractor shall address and respond to Government questions and revise the ECO packages, as necessary.

C.4.2.2. ECP Indented Bills of Material (IBOM). The contractor shall prepare and maintain an IBOM for each ECP Stryker variant or configuration. The contractor shall maximize commonality across the ECP Stryker vehicles and minimize the logistics footprint to the ERR at the system, subsystem, Line Replaceable Unit (LRU), and maintenance significant spare and repair level with other configurations of the Stryker FoV at the Minimum Commonality Baseline (MCB). The contractor shall further maximize the commonality of Tools and Test, Measurement, and Diagnostic Equipment (TMDE), Technical Documentation and interchangeability of operator, crew and maintenance tasks, skills and positions. The contractor shall make the ECP IBOM available for Government review on their Team Center website.

C.4.2.3. ECP Configuration Documentation. The contractor shall maintain Support Replaceable Unit (SRU) and LRU performance specifications or equivalents that were developed under this contract. The contractor shall identify all the specifications developed under the terms of this contract. These specifications shall be delivered with the applicable Engineering Release Record (ERR) in accordance with CDRL A008.

C.5. Hazardous Material.

C.5.1. The contractor shall not deliver any Stryker common and unique parts containing cadmium, hexavalent chromium, beryllium, mercury, asbestos, radioactive materials, lead, lead solder, or other highly toxic or carcinogenic materials as defined in 29 CFR 1910.1200 under the Stryker ECP Development Program without Procuring Contracting Officer (PCO) approval in accordance with C.5.1.1 below. The contractor shall identify all parts containing any of the above hazardous materials (with the exception of lead and lead solder individual components), in accordance with CDRL A009 that have been approved through the process outlined in Section C.5.1. The contractor shall evaluate non-hazardous substitute materials and technologies for potential implementation and document the findings in the Hazardous Materials Management Program Reports (HMMP) (CDRL A010).

C.5.1.1. If the contractor determines that the hazardous materials listed in C.5 are the only acceptable substance or components with no known alternatives, then the contractor shall seek and obtain PCO approval via deviation request 45 days prior to delivering any such item in any form. The Government will consider deviations in these situations on a case-by-case basis. Under no circumstances will hazardous materials containing components or items be used or delivered to the Government without prior Government approval. If the contractor can verify that previously submitted waivers have included the parts to be delivered, a waiver submission is unnecessary and the earlier waiver will grandfather these part occurrences. A list of affected components is required in each HazMatDeviations submission, with the exception of lead and lead solder found in individual electrical components. Lead found in other part assemblies is required. The contractor shall make formal notification at the Critical Design Reveiw (CDR) of each variant of components with no known alternatives parts and seek PCO approval via deviation 45 days prior to prototype vehicle delivery.

C.5.2. Hazardous Materials Management Program/Plan. The contractor shall fully implement and maintain a Hazardous Materials Management Program (HMMP) using National Aerospace Standard 411, "Hazardous Materials Management Program. The contractor shall amend their current HMMP plan for any material or process unique to the ECP program. The HMMP Plan amendment shall include the information required by paragraph 4.3 of NAS 411, including all subparagraphs, and document the approach for minimizing Cr6+. The amended plan shall identify and describe the organizational relationships and responsibilities for eliminating hazardous materials, define the process used to identify the hazardous materials utilized in the manufacturing process, establish prioritization criteria for ranking the relative risks of these hazardous materials and methodology of non-hazardous substitute materials/technologies trade-off studies. The amended HMMP Plan shall address hazardous materials imbedded in the system, produced by the system, and used or created by operation and maintenance of the system. The HMMP is subject to Government approval per the conditions set forth in associated CDRL A010. Compliance to the HMMP is required for the duration of the contract period.

C.5.3. Hazardous Materials Management Report The contractor shall submit Hazardous Material Management Reports in accordance with CDRL A011 which shall identify all hazardous materials (excluding materials and equipment provided by the Government) that are used or delivered in the performance of this contract. The contractors report shall include a listing of prioritized hazardous materials for minimization or elimination per the criteria established in the HMMP Plan and identify those hazardous materials and processes for which non-hazardous substitute materials and technologies may be available for implementation.

C.5.4. Hazardous Materials Parts Tracking Per Prototype Vehicle. The contractor shall identify and provide an electronic report in spreadsheet or database format, in accordance with CDRL A009 , identifying all components containing hazardous materials as identified in C.5 specific to each prototype vehicle.

C.5.5. Solder Requirement. The contractor shall query all of its present and potential Commercial off the Shelf (COTS) suppliers/vendors regarding the types of electrical solder used on all electronic equipment in the Stryker ECP effort. If an alternative, Lead-free electrical solder is used, the contractor shall include this information in a written report to the Government in accordance with CDRL A012.

C.6. Safety Engineering and Health Hazards.

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C.6.1. Safety Engineering. The safety program developed for the Stryker FOV shall be updated to address each variant and configuration within the Stryker ECP Program. The Contractor shall continue to apply the standard safety practices in accordance with MIL-STD-882 during the design or modification of the Stryker FOVs when incorporating the ECP design changes.

C.6.1.1. Safety Support. The contractors safety program shall further consist of providing the following support:

C.6.1.1.1. Identifying hazards and associated causal factors within the system by conducting Safety and Occupational Health analyses and hazard evaluations. This analysis shall be to the functional depth necessary to identify logical, practical, and cost-effective mitigation techniques and requirements for each causal factor. It shall further include operational, maintenance, test and training aspects, hardware, software, environmental and human factors interfaces as potential contributors in all phases of each variant/configuration within the Stryker ECP Program. The contractor shall include the results of any analysis at the System Safety Work Group (SSWG) Meeting and, in the Safety Assessment Report CDRL A013. Any new hazards shall be reported in the Safety Assessment Report CDRL A013.

C.6.1.1.2. Eliminating or reducing significant hazards by appropriate design or material selection. Significant hazards are hazards that are within Severity Category level I and II in accordance with MIL-STD-882. If the contractor determines a significant hazard to personnel cannot be avoided or eliminated, steps shall be taken to control or minimize those hazards. For any significant hazards identified, the contractor shall develop and present its mitigation(s) to the System Safety Working Group at working group meetings. The SSWG will make recommendations to the PM with regards to the approval. The hazards as well as the mitigations shall be included in the Safety Assessment Report (CDRL A013).

C.6.1.1.3. The Contractor shall ensure that warning and caution information detailing the hazards, and actions operators or soldiers must follow are included in instructions for operation, maintenance, assembly, and repairs. The contractor shall further ensure warning or caution markings/labels are placed on hazardous components of the equipment.

C.6.1.1.4. The contractor shall provide Safety Engineering support to the SSWG. The support shall include attendance at SSWG Meeting, providing technical briefs on identified hazards, and recommended mitigations for the elimination or reduction of those hazards. The contractor shall brief on additions to the Technical manuals in the form of warnings/cautions or changes to tasks associate with hazards. The SSWG meetings shall be held at test centers or at TACOM-Warren.

C.6.2. Safety Assessment Report (SAR). The contractor shall update a Safety Assessment Report for each ECP Stryker variant and configuration in accordance with CDRL A013.

C.6.2.1. For kits identified within Attachments 0005 and 0006, ECP delta design changes must be reviewed against the initial safety assessment; the safety assessment shall be updated by the contractor in accordance with CDRL A013. If the kit's initial safety assessment was performed by a Government agency, that report will be provided to the Contractor to be updated for the ECP delta design changes.

C.6.3. Radioactive Materials. The contractor shall not use any radioactive materials without the approval of the Government. If the contractor wishes to furnish any items under this contract that will contain Thorium, or other source material (see Title 10, Code of Federal Regulations, Part 40) in excess of 0.05 percent by weight of the mixture, compound, solution, alloy or any other intentionally added radioactive material, the contractor shall provide a list to the Government for approval in accordance with the CDRL A014. The Nuclear Regulatory Commission (NRC) license or Agreement State License and if applicable NRC Form 241 must be in place before contractor integration, possession, manufacturing, distribution and storage of the radioactive component or item. A copy of the contractors NRC license or Agreement State License application (if applicable NRC Form 241) and eventual NRC license or Agreement State License must be provided to the Tank-automotive and Armaments Command Life Cycle Management Command (TACOM LCMC) Safety Office in order to review the application and license, and to assure Government requirements, as provided in AR 385-10 and NRC 10 CFR, are met. The contractor during its application for NRC or Agreement State License shall immediately notify the Government of their requirement for NRC licensing. The contractor under their NRC or Agreement State License shall account for possession, system integration, distribution, storage, maintain records and document transfer of the Rad component or item to include documenting transfer to another NRC or Agreement State License.

C.6.3.1. Verification of Authorization to Receive Radioactive Material. The Government shall not issue direction to the contractor to receive or ship commodities, items or end items that contain radioactive materials without prior written verification from the TACOM LCMC or Communications-Electronics Command (CECOM) Radiation Safety Officer (RSO) listed on the U.S. Army NRC licenses for the items that the receiving destination, organization and consignee are authorized by an NRC or Agreement State license, and if applicable, an Army Radiation Permit (ARP), to receive or ship the items. The contractor shall not execute the direction from the Government to receive or ship items containing radioactive materials, nor shall the contractor upon the contractors own initiative receive or ship items containing radioactive materials, without prior written verification from the GDLS RSO listed on the GDLS NRC licenses for the items that the receiving destination, organization and consignee are authorized by an NRC or Agreement State license, and if applicable, an ARP to receive or ship the items.

C.7. Development.

C.7.1.1. The contractors responsibilities under Phase II of the ECP Upgrade Program shall be to restore lost platform performance through a limited set of engineering upgrades and ensure Stryker vehicles are able to accept the Army network.

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C.7.1.2. Systems Engineering. The contractor shall use its Systems Engineering process to execute the detailed design phase, in accordance with the Stryker Systems Engineering Plan (SEP), dated 25 June 2012, Attachment 0007.

C.7.1.3. Design to Unit Retrofit Cost (DTURC). The contractor shall design to cost in accordance with the DTURC goal given below and shall provide the DTURC status at Technical Reviews. The DTURC goal shall be used by the contractor as a design parameter to control vehicle production cost for the variants identified in paragraph C.7.1.6. The DTURC goal consists of the hardware associated with the critical technologies identified in sections C.7.2.1 through C.7.2.1.4, and the labor for teardown and rebuild/retrofit.

C.7.1.3.1. The DVH vehicle DTURC goal is \$0.905M for the first year of retrofits, assumed FY17. The DVH goal is based on a weighted average across all seven variants. The contractor should assume all existing DVH Stryker vehicles will be retrofitted, at a retrofit quantity of one brigade per year. The DTURC goal refers only to vehicle production costs and do not include modifications to kits. The control of vehicle production costs shall be achieved Identifying opportunities to simplify the PDR design while integrating the critical technologies in section C.7.2.1 improving existing cost source data and continuing to use cost as a key design parameter throughout detail design.

C.7.1.4. Information Assurance (IA).

C.7.1.4.1. Information Assurance Engineering Reports. The contractor shall provide IA reports pertaining to the ECP Upgrade to the Government in accordance with CDRL D001.

C.7.1.4.2. Information Assurance(IA)Design Review Information Package (DRIP). The contractor shall provide an Information Assurance Design Review Information Package in accordance with CDRL D002.

C.7.1.5. Engineering and Manufacturing Development.

C.7.1.5.1. Technology Demonstrations.

C.7.1.5.1.1. System and Subsystem Test Plan Execution. The contractor shall execute the Government approved Contractor System and Subsystem Test Plans delivered as CDRL D003.

C.7.1.5.1.2. Demonstrations and Contractor Tests. The contractor shall demonstrate/test capability improvements in a laboratory environment, during two user juries, and/or on a Stryker vehicle. The contractor shall provide test reports to the Government in accordance with CDRL D004 - System and Subsystem Test Reports.

C.7.1.6. Design. The contractor shall develop detailed designs in accordance with the Stryker Systems Engineering Plan (SEP) (Attachment 0007) and deliver them in accordance with CDRL D022. The Contractor shall also make the detailed designs available for Government review on their TeamCenter website. The contractor shall present the detailed design at the Critical Design Review (CDR) and at the Technical Interchange Meetings (TIMs) for the following vehicle variants:

DVH
ICVV
MCVV
CVV
FSVV
ESVV
MEVV
ATVV

C.7.1.6.1. Commonality. The contractor shall maximize the use of common components across all ECP Stryker variants. In the event a modification resulting from ECP Upgrade diminishes current levels of common components, the contractor shall notify the Government at the next TIM. The commonality considerations shall include the four technologies identified in Section C.7.2.

C.7.1.6.1.1 Any common and Mission Equipment Package (MEP) FOV changes shall be authorized by the PCO prior to incorporation into the ECP Program. Changes will be executed in accordance with the Changes clause FAR 52.243-2- Changes- Cost Reimbursement- Alternate V.

C.7.1.6.2. Throughout the development effort, the contractor shall prioritize the selection of components for commonality (hardware and software) in accordance with the following hierarchy:

- a. Stryker FoV - 7 DVH variants
- b. Stryker FOV FB Fleet
- c. Stryker Brigade Combat Teams - All equipment resident within an SBCT
- d. PEO GCS Inventory- Example: Combat Vehicle Platforms/ ABCT. United States Army Inventory
- e. Department of Defense Inventory - Includes Navy, Air Force, and other services within the DoD.

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C.7.1.7. Integration and Test.

C.7.1.7.1. Integration and Test Planning. The contractor shall integrate the design and plan subsystem and system level testing prior to formal Government developmental and operational testing and operational assessment. The contractor shall present design progress at the TIMs.

C.7.1.7.2. Integration Test Plans. The contractor shall provide test plans including schedules and procedures. The contractor shall present test planning progress at the TIMs. The contractor shall deliver system and subsystem test plans in accordance with CDRL D003 - Contractor System and Subsystem Test Plans.

C.7.1.7.3. Prototype Build. The contractor shall build prototypes in accordance with the quantities and variants listed below. The USG will replace any Non-Functioning Common and MEP parts for the build as GFE. In the event of an existing noncompliance in common or MEP hardware, the responsibility for the non-recurring costs to correct (eg., problem investigation and development and validations of the corrective actions) will not be covered under the terms and conditions of this contract.

DVH

ICVV: 4
 MCVV: 1
 CVV: 2
 FSVV: 1
 ESVV: 2
 MEVV: 1
 ATVV: 1

C.7.1.7.4. Contractor Systems Level Development Test. The contractor shall plan and conduct a final system level development test prior to delivery of vehicle prototypes. The contractor shall maintain system level test procedures, assemble and integrate the system, perform tests, review test results, and conduct regression testing prior to delivery of vehicle prototypes. The contractor shall deliver test results in accordance with CDRL D004.

C.7.1.7.5. Interface Control Documents (ICDs) and Interface Description Documents (IDDs). The contractor shall provide access to ICDs and IDD or equivalents (such as production drawings for LRUs and SRUs specifications) or other applicable requirements as determined necessary by the Government on the contractor Team Center website. The contractor shall maintain ICDs and IDDs in contractor format.

C.7.1.7.6. ECP Kit Drawings. The contractor shall provide delta kit and ECP DVH kit drawings IAW CDRL D015 utilizing the existing Stryker FOV kit TDPs.

C.7.1.8. Vehicle Electronics, Vehicle Network, and Software Development and Processes.

C.7.1.8.1. Vehicle Electronics and Vehicle Network Development Documentation. The contractor shall deliver updated vehicle electronics and vehicle network design documentation in accordance with CDRLs D005 and D019. The contractor shall deliver all one-wire diagrams developed in support of automotive systems, in-vehicle network, C4ISR, and power distribution architectures. The delivery shall be in accordance with CDRL D017.

C.7.1.8.2. Software Development Documentation. The contractor shall deliver updated software design documentation in accordance with CDRL D006. The contractor shall require first tier software subcontractors to develop and deliver a software design documentation set, or to provide the contractor the information necessary to develop a software design documentation set, in accordance with CDRL D006. The USG will coordinate with the Stryker FOV Software Program and provide the latest production software to ensure the ECP test vehicles are production representative.

C.7.1.8.3. Software Release Documentation. The contractor shall deliver updated software release documentation to the Government, in support of all software releases, in accordance with CDRL D018.

C.7.1.8.4. Software Development Process. The contractor shall deliver an updated Software Development Plan in accordance with CDRL D021.

C.7.1.8.5. Software Quality Assurance Process. The contractor shall prepare and deliver a Software Quality Assurance Plan (SQAP) for the development effort in accordance with CDRL D007.

C.7.1.8.6. Software Transition Process. The contractor shall prepare and deliver a Software Support Plan for the development effort in accordance with CDRL D008.

C.7.1.8.7. Software Metrics. The contractor shall prepare and deliver software process metrics in accordance with CDRL D009.

C.7.1.8.8. Software Support. The contractor shall apply a software life cycle process in accordance with the Institute of Electrical and Electronics Engineers (IEEE) Standard, Systems and Software Engineering Software Life Cycle Processes [IEEE Std 12207-2008 | ISO/IEC

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12207:2008(E)], to provide production software support and maintain and upgrade Mission Critical Computer Resources. Mission Critical Computer Resources are defined as the contractor-supplied hardware/software items necessary for the vehicle to be operative.

C.7.1.9. Structural Analysis. The contractor shall evaluate the structural integrity of new and modified mechanical structures and LRU designs. The contractor shall provide conclusions and recommendations regarding design adequacy and provide analyses of conformance to the System Performance Specification (SPS) (Attachment 0010) at TIMs.

C.7.1.10. Modeling and Simulation (M&S). The contractor shall perform M&S in accordance with the Systems Engineering Plan (Attachment 0007).

C.7.1.11. Survivability Analysis and Validation. The contractor shall evaluate the survivability of new and modified mechanical structures and LRU designs. The contractor shall provide conclusions and recommendations regarding design adequacy and provide analyses of conformance to the SPS (Attachment 0010) in accordance with CDRL D010-Fire Suppression M&S Data, and CDRL D011-Ballistic Vulnerability M&S Data. Upon written request, the contractor shall provide input for updating the Government Stryker Simulation Support Plan. The contractor shall utilize the existing Stryker FOV baseline models.

C.7.1.12. Thermal Analysis and Validation. The contractor shall manage the design of vehicle subsystems and determine thermal loads and temperature distributions. The contractor shall provide conclusions and recommendations regarding design adequacy and provide analyses of conformance to the SPS (Attachment 0010) at scheduled TIMs.

C.7.1.13. Reviews.

C.7.1.13.1. Meeting Documentation. For each formal technical review, the contractor shall prepare a meeting agenda and presentation material prior to each of the meetings. The contractor shall prepare written minutes following each of the meetings and forward to all attending organizations no later than 48 hours after the meeting in accordance with CDRL D020 - Meeting Minutes. Organizations responsible for each action item shall be indicated with suspense dates mutually agreed upon during the meeting.

C.7.1.13.1.1. Technical Reviews. The contractor shall conduct technical reviews in accordance with the IMS and SEP for each variant identified in Section C.7.1.6. Whenever feasible, multiple variants shall be covered during a formal review. The entry and exit criteria for each formal review in the current Stryker SEP (Attachment 0007).

C.7.1.13.1.2. Integrated Product Process Development (IPPD).

C.7.1.13.1.2.1. Integrated Product Process Development (IPPD). Integrated Product Team (IPT) Working Groups (WGs) comprised of Government and Contractor subject matter experts (SMEs) shall review progress of the ECP Program. The Contractor shall inform the Government of the schedule of those WG meetings that correspond to the Test, Systems Engineering, Survivability, Lethality, Mobility, Vetrionics, and Software Working IPTs (WIPTs) identified in Table 3.4.4-1 of the SEP.

C.7.1.13.1.2.2. Reliability Contractor Support. The contractor shall provide support to the Government Stryker Brigade Combat Team (BCT) Project Manager for selected Government briefings and presentations. The contractor shall attend formal and informal meetings and prepare appropriate electronic media to support Government briefings and presentations. The meetings may include, Integrated Product Team (IPT) meetings, RAM scoring conferences, Test Readiness Reviews (TRR), and RAM Assessment Conferences.

C.7.1.14. Technical Performance Parameters (TPPs). The contractor shall propose TPPs for the purpose of mitigating program risk. The contractor shall propose TPPs no later than 30 days after contract award at the next scheduled TIM. The contractor may propose modification of the TPPs with Government concurrence. The contractor shall report on the status of TPPs and their effect on conformance to the SPS (Attachment0010 at TIMs and formal reviews. The initial TPPs for the Stryker ECP are weight, CG, and DTURC.

C.7.1.15. Reliability Requirements. The contractor shall design and test for compliance to reliability requirements. As an ECP effort, the vehicles designed and built under this ECP shall not degrade the reliability performance of Contractor Furnished Equipment (CFE), hardware, and software below the level specified in the SPS (Attachment0010). The contractor shall present progress at theTIMs.

C.7.1.15.1. Reliability Program Plan Execution. The contractor shall execute the approved Reliability Program Plan, Attachment 0008 ,developed in Phase 1 of the ECP Program.

C.7.1.15.2. Reliability Case Report. The contractor shall document in the form of a Reliability Case Report the achievement of the Government approved Reliability Program Plan objectives in accordance with CDRL D012. The contractor generated report shall assess the reliability of the system using the System Reliability Model, the life-cycle operational & environmental load estimates generated therein, and the Failure Definition and Scoring Criteria (FDSC), Attachment 0009.

C.7.1.15.3. Reliability Analysis. The contractor shall establish and maintain an integrated Reliability model for the ECP effort based upon the FDSC identified by the Government that translates the development design into allocations and predictions enabling achievement of the reliability quantitative performance parameters. The system reliability model shall be used to: (1) generate and update the reliability allocations from the system level down to lower indenture levels; (2) aggregate system-level reliability based on reliability estimates from lower indenture levels; (3) identify single points of failure; and (4) identify reliability critical items

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and areas where additional design or testing activities are needed in order to achieve system reliability requirements. The system reliability model shall be used in order to assess if the design (including GFE integration) is capable of realizing reliability requirements in a user environment.

C.7.1.15.4. Failure Modes and Mechanism. The contractor shall identify and characterize failure modes and mechanisms for the ECP effort. The identification of failure modes and mechanisms shall be performed as a part of the design effort for any configuration items developed or modified under the ECP effort. The estimates of life-cycle loads on assemblies, subassemblies, and components shall be used as inputs to engineering and physics-based models in order to identify potential failure mechanisms and the resulting failure modes. Failure modes that may be induced by user or maintainer error shall be identified and confirmed through analysis or test. Failure modes and distributions that may be induced by manufacturing variation or errors shall be identified and confirmed through analysis or test.

C.7.1.15.5. Closed-Loop Failure-Mode Approach. The contractor shall establish and implement a closed loop failure reporting, analysis and corrective actions system. The contractor shall have an integrated team, consisting of suppliers of assemblies, subassemblies and components that shall analyze failure modes arising from modeling, analysis, test, or the field throughout the life cycle in order to formulate corrective actions. This process will be used to respond to Test Incident Reports (TIRS) and develop Failure Analysis & Corrective Action Reports (FACARS). Failure modes shall be mitigated by one or more of the following approaches: eliminating the failure mode, reducing its occurrence probability or frequency, incorporation of redundancy, mitigation of failure effects (e.g., fault recovery, degraded modes of operation, providing advance warning of failure), or acceptance of failure mode, failure rate, or detection rate.

C.7.1.16. Chemical, Biological, Radiological, and Nuclear (CBRN) Survivability and Decontamination Compliance Report. The contractor shall provide an analysis of the Stryker ECP Upgrade compliance with Army FM 3-11.5 "CBRN Decontamination", April 2006, denoting CBRN survivability and decontamination requirements, to the Government in accordance with CDRL D013, CBRN Survivability Compliance Report.

C.7.1.17. System Integration Laboratories (SIL).

C.7.1.17.1. ECP SIL Capability. The contractor shall modify existing ECP SIL capability as required to support the design, development, and testing of the Stryker ECP variants cited in paragraph C.7.1.6.

C.7.1.17.2. Unique SIL Benches. In the event the contractor requires utilization of the unique Stryker FoV SIL benches for ECP purposes, the contractor may perform hardware and software modifications to the unique SIL benches. Upon completion of testing, the modifications shall be reversed and the bench shall be returned to the latest approved level of configuration.

C.7.1.17.3. Facility Demonstrator Vehicle and ECP Stryker SIL Maintenance. The contractor shall provide routine maintenance, not to exceed \$5,000, to the Facility Demonstrator Vehicle and the ECP portion of the SIL facilities and equipment created or modified under this contract. If the routine maintenance is expected to exceed \$5,000, the contractor must obtain Contracting Officer approval prior to proceeding with the routine maintenance.

C.7.2. Specific Scope. The contractor shall execute Stryker ECP Upgrade activities for the four key vehicle improvements and corresponding technologies listed below. Whenever feasible, the contractor shall use previous Stryker and LAV subsystem and component designs to mitigate cost and risk to the Stryker ECP Upgrade. Unless otherwise stated within this SOW, vehicle performance requirements can be found in Attachment 0010-Stryker Double V-Hull(DVH)FoV Performance Specifications No. 2014.11-2014.20 inclusive (Attachment 0010). In the event that the key technologies inhibit the system's ability to meet the Stryker DVH SPS, the contractor shall notify the Government, and a mutually agreed upon path forward shall be developed for final Government approval.

C.7.2.1. Critical Technologies.

C.7.2.1.1. The contractor shall add a mechanical power upgrade

- a. The contractor shall integrate into the Stryker DVH vehicle the 450 hp rated engine used during the Phase 1 development activities.
- b. The contractor shall integrate into the Stryker DVH vehicle the six speed transmission used during the Phase 1 development activities.
- c. The contractor shall integrate into the Stryker DVH vehicle a climate control system capable of removing 15kW of heat from the crew compartment of the vehicle.
- d. The contractor shall upgrade all the supporting subsystems on the Stryker DVH vehicle, within the Full Up Power Pack), to maintain sub-system fluid temperatures within the manufacturers specification, while subjected to a continuous tractive effort weight ratio of 0.62 at a vehicle weight of 60,000 lbs, ambient temperature of 120 °F /49 °C, 3% RH, 1125 W/m2 solar load, and with the climate control system off.

The supporting sub-systems are as follows:

- i. Engine
- ii. Transmission
- iii. Transfer Case
- iv. Hydraulics
- v. Fuel Delivery

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C.7.2.1.2. The contractor shall add an electrical power upgrade.

a. The contractor shall integrate into the Stryker FoV the 910 amp alternator capable of producing a minimum current of 910 amps @ 28 Vdc at standard temperature and atmospheric pressure conditions onto the FUPP as outlined above in section C.7.2.1.1 (mechanical power upgrade).

b. The contractor shall integrate into the Stryker FoV an electrical power distribution system capable of distributing the maximum amount of electrical power generated by the 910 amp alternator.

c. The contractor shall develop a software controlled and reconfigurable solid state breaker architecture to replace the existing power distribution panel (PDP), PDP #2, and Communications Power Distribution Unit). The architecture shall support the additional electrical generation capacity of the 910 amp alternator. The architecture shall provide a uniform circuit protection method and allow for control of solid state circuit breakers from multiple crew stations. The power distribution system shall provide CAN SAE J1939 standard vehicle interfaces. The contractor shall utilize MIL-STD-1275 for the electrical power distribution system. The electrical power distribution system shall have the ability to monitor and report over the CAN interface, power usage by channel in order to enable future LRU prognostics and diagnostics.

C.7.2.1.3. The contractor shall add a chassis upgrade.

a. The contractor shall integrate into the Stryker DVH vehicle a chassis design solution (suspension, driveline and steering subsystems) supporting a Gross Vehicle Weight Rating (GVWR) of no less than 63,000 lbs).

b. The contractor shall integrate into the Stryker DVH vehicle the following suspension & driveline systems:
GDLS 6.0 suspension & driveline. Passive spring and damper response tuned to the requirements within the current DVH SPS, No. 2014.11-2014.20, para 3.1.1.6.5. at a vehicle weight of 60,000 lbs. 395/85R20 tires.

c. The driveline ratio on the Stryker DVH vehicle shall be optimized for the following parameters:

i. Top speed: 60 MPH

ii. 50 meter dash: less than nine seconds

iii. Sustained tractive effort ratio cooling: 0.62

The following parameters shall be used in system analyses conducted to support this optimization:

Power pack updates described in Section C.7.2.1.1

Electrical system upgrades described in Section C.7.2.1.2

Vehicle weight of 60,000 lbs 550 amp power draw from alternator

Vehicle frontal area of 91.84 ft²

Drag coefficient of 1.2 Cooling fan speed representative of the test condition

C.7.2.1.4. In-Vehicle Network.

C.7.2.1.4.1. The contractor shall add an In-Vehicle Network (IVN) hardware and software architecture, designed in accordance to Attachment 0011 (Attachment 0011 references the specifications described in Attachments 0012, 0013, 0014, and 0015) "Stryker In-Vehicle Network Architecture (IVNA) Specifications" to the Stryker FoV.

C.7.2.1.4.1.1. The contractor shall apply the IVNA specifications to all software and hardware components that are created or added to the Stryker FoV system; resultant from the contractors implemented IVN design. All pre-existing software and hardware Stryker Upgrade components are exempt from IVNA specification compliance, with regards to their integration with the contractors implemented IVN design.

C.7.2.1.4.2. The contractor shall use Commercial off the Shelf (COTS), Information Assurance enabled IT products as applicable per DoDI 8500.2.

C.7.2.1.4.3. The contractor shall meet the audit standards of data integrity for the following information assurance control items as specified in DODI 8500.2 and as applicable to the contractors IVN ECP design:

COBR-1 DCSR-3 ECCT-2 PECF-2

PRRB-1 DCFA-1 DCP-1 IATS-2

DCSP-1 ECCR-2 ECID-1 ECCR-3

DCPA-1 ECAT-2 DCAS-1 DCNR-1

ECTC-1 PRMP-2 DCBP-1 ECTM-2

DCSL-1 ECCD-2 ECIC-1

PESL-1 EBB-3

C.7.2.1.4.4. The contractors IVN design shall be premised on integration with the Video Display Electronic Terminal (VDET) based Stryker architecture. The contractor shall not create an IVN design premised on integration with the VDT based Stryker architecture.

C.7.2.1.4.5. The contractors IVN design shall replace the Strykers existing GFM Drivers Vision Enhancer display with an alternate

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multifunction capable display and shall maintain or exceed functionality as implemented in the current Stryker (Reference: IVN Display Resource, per Attachment 0011).

C.7.2.1.4.6. The contractors IVN design shall replace the Strykers existing GFM PM-FBCB2 JV-5 systems display (P/N# TBD) with an alternate multi-function capable display and shall maintain or exceed functionality as implemented in the current Stryker platform (Reference: IVN Display Resource, per Attachment 0011).

C.7.2.1.4.7. The contractors IVN design shall replace the Strykers existing 10/100 Ethernet switch with a 10/100/1000 (Gigabit) Ethernet switch(es) and shall maintain or exceed functionality as implemented in the current Stryker (Reference: Ethernet Switch, per Attachment 0011).

C.7.2.1.4.8. The contractors IVN design shall network the VDET, the commanders IVN Computing Resource, and the drivers IVN Computing Resource (Reference: IVN Computing Resource, per Attach 0011).

C.7.2.1.4.9. The contractor shall implement a Stryker FoV Multi-Function Vehicle Port (MFVP) that provides electrical power and signal interfaces between Government Off-The-Shelf (GOTS) Training Aides, Devices, Simulators, and Simulations (TADSS) and the Stryker FoV's corresponding subsystems. (Reference Multi-Function Vehicle Port Standard, Attachment 0012)

C.7.2.1.4.10. IVN Functionality.

C.7.2.1.4.10.1. All automotive gauges, indicators, signals, and statuses available on the Strykers Gauge Cluster Unit (GCU), that are driven by data delivered to the GCU via the Strykers CAN data busses, shall be viewable on the VDET and the commanders IVN Display Resource (Reference: IVN Display Resource, per Attach 0011).

C.7.2.1.4.10.2. Strykers Embedded Diagnostics System (EDS) Enhancements. The Stryker EDS user interface shall be made available on the VDET, the commanders IVN Display Resource, and the drivers IVN Display Resource (Reference: IVN Display Resource, per Attach 0011). The Stryker EDS active fault display and acknowledgment location shall be configurable to each of the EDS user interface locations cited above.

C.7.2.1.4.10.2.1. Option. The Stryker EDS shall be modified in accordance with the requirements contained in Attachment 0016.

C.7.2.1.4.10.3. The Strykers electrical power distribution system software user interface shall be made available on the VDET, the commanders IVN Display Resource, and the drivers IVN Display Resource (Reference: IVN Display Resource, per Attach 0011).

C.7.2.1.4.10.4. The Strykers GPS location (longitude, latitude, and elevation), GPS time, and GPS direction of travel shall be viewable on the VDET, the commanders IVN Display Resource, and the drivers IVN Display Resource (Reference: IVN Display Resource, per Attach 0011).

C.7.2.1.4.10.5. The Strykers Environmental Control System (ECS) settings shall be both viewable and controllable on the VDET, the commanders IVN Display Resource, and the drivers IVN Display Resource (Reference: IVN Display Resource, per Attachment 0011).

C.7.2.1.4.10.6. The Strykers PDF Viewer, accessible on the VDET of the current Stryker, shall be made accessible on the commanders IVN Display Resource and the drivers IVN Display Resource (Reference: IVN Display Resource, per Attach 0011).

C.7.2.1.5. Government Furnished Equipment (GFE).

C.7.2.1.5.1. In accordance with the IMS, the Government will provide one vehicle by the specified need dates for each ECP-modified variant to support logistics validation and verification. The contractor shall utilize the vehicles for processes supporting logistics validation and verification during ECP phase II. Logistics validation and verification may necessitate vehicle alteration as required for development of logistics products approved by the Government.

C.7.2.1.5.2. The Government will provide test vehicles by the IMS-specified need dates for selected ECP-modified variants to support contractor testing. The variants and the quantity provided will be selected by mutual agreement between the Government and the contractor. The contractor shall utilize the vehicles for processes supporting contractor testing during ECP phase II. Contractor testing may necessitate vehicle alteration.

C.7.2.1.5.3. The contractor shall provide the Government with a GFM/E/I requirements list to support Phase II in accordance with CDRL L020.

C.7.2.1.5.4. The Government will provide the use of the following Government test sites: Aberdeen Proving Grounds, Yuma Proving Grounds, and Electronics Proving Grounds as required to support the initiatives.

C.7.2.1.6. Interface to Existing kits and C4ISR Kits. As necessary and in accordance with the kit assessment accomplished during Phase 1, the contractor shall modify the existing kits and kit interfaces identified in Attachments 0005 and 0006 to allow for kit installation onto Stryker vehicles such that the variant roles, referenced in Attachment 0005, can be configured from the Contractor's

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Technical Data Package (TDP) managed variant configurations. The contractor shall utilize the existing Stryker FOV C4ISR Technical Data Package (TDP).

C.7.2.1.6.1. Vehicle Fit-Up. Subsequent to the efforts conducted under C.7.2.1.6, the contractor shall conduct a trial fit up of the kits, document and list corrective actions for any interferences/incompatibilities and provide to the Government IAW CDRL D014. The contractor shall conduct a second fit up to verify corrective actions taken as a result of initial fit up. All Stryker kits shall be checked against applicable Stryker FoV ECP vehicles. The USG will provide the Stryker FOV base hardware for the vehicles to include the DVH delta kits in accordance with CDRL L020-Government Furnished Material.

C.7.2.1.7. Risk Management.

C.7.2.7.1. The contractor shall follow the Stryker Risk Management Plan (Attachment 0017).

C.7.2.7.2. The contractor shall provide a risk status report in accordance with CDRL D016.

C.7.2.1.8. Transportability Analysis & Report. The Contractor shall analyze each Stryker DVH variant for its ability to be transported by road, rail, ship and air (C-17 and C-5 airframe); with and without a full complement of kits. Preliminary Transportability analysis results will be presented at the USG scheduled CDR. A final Stryker Transportability Report will be supplied per CDRL D023.

C.8. Integrated Logistics Support (ILS). The Contractor shall plan, manage and execute an ILS Program for Stryker ECP Phase II. The Contractor shall use the existing Stryker logistic support products as a baseline, conduct a Logistics Support Analysis (LSA) of the ECP changes/improvements, and update Logistics Management Information (LMI) to match the ECP vehicle configurations. The contractor shall ensure LSA/LMI data is available with sufficient lead time to validate/verify and field a logistics support package in support of ECP vehicle testing, and ECP vehicle fieldings. Logistic product updates under this scope are for ECP vehicle changes only, to include all vehicle configuration/technical data package changes, and the resolution of all ECP testing. Single OPTEMPO will be provided by the USG.

C.8.1. Level of Repair Analysis (LORA). The contractor shall conduct a LORA for new/modified ECP Field level components/ Line Replaceable Units (LRUs) The contractor shall conduct an economic and non-economic repair analysis. The contractor's examination and analyses shall determine the system, subsystems, assemblies, and subassemblies level of repair to the Field Level and determine if discard is warranted using the latest version of the Computerized Optimization Model for Predicting and Analyzing Support Structures (COMPASS) or Equipment Designers Cost Analysis System (EDCAS) Model. The contractor shall provide a LORA report, to include all COMPASS or EDCAS input and output data files used in the assessment (CDRL L001).

C.8.2. Reliability Centered Maintenance (RCM) Analysis. The contractor shall perform RCM analysis on ECP program unique components in accordance with AR-700-127 to identify and document on and off system Operator and Field Level Maintenance service tasks based on scheduled and on-condition preventive maintenance requirements. The analysis shall be conducted to support the Stryker Two Level maintenance concept. The contractor shall provide a validated final report that will summarize the findings of the RCM analysis and provides the following information (CDRL L002):

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

C.8.3. LMI/LSA Database. Supportability data shall be stored in the contractor's integrated LMI/LSA system database and shall be accessible to the Government at the contractors facility. The contractor's supportability database shall be capable of producing preformatted logistics reports including but not limited to Maintenance Allocation Charts (MAC) and shall have a query capability. LMI/LSA-001 & LSA-004 reports shall be developed using MIL-HDBK-502 for Acquisition Logistics as guidance. Reports from the LMI/LSA database shall be provided to the Government upon request. The contractor shall update their LMI databases to match the ECP configuration, and shall include Government Furnished Information (GFI)/Government Furnished Equipment/Material (GFE/M) data as required to document complete configurations and interfaces. (L003)

C.8.4. Maintenance Task Analysis. The contractor shall define all tasks required to operate, maintain, and support the system to the lowest field replaceable assembly, and to the lowest Field component level. The task analysis shall identify all logistic support resources (i.e., manpower, force structure, facilities, support equipment, test program sets, training, initial parts allocations, etc) required to perform each task. The analysis shall consider and define the ECP impacts on the Stryker FoV. Task analysis shall be documented via LMI reports. (L003)

C.8.5. Provisioning. The contractor shall conduct provisioning in accordance with the established Stryker 2 Level maintenance philosophy down to the lowest field replaceable assembly. The contractor shall provide production representative drawings for all P-coded items to support item identification, application and next higher assembly in accordance with CDRL L004.

C.8.5.1. Provisioning Conferences. The contractor shall conduct formal provisioning conferences quarterly, and shall provide the necessary information to allow the Government to screen all part numbers for existing National Stock Numbers (NSNs) prior to delivery of

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LMI in accordance with CDRL L004. Ensure first delivery is after CDR.

C.8.5.2. Provisioning Alignment with Technical Publications Development. The contractor shall coordinate and schedule provisioning activities to ensure technical manual tasks and associated RPSTL updates are in alignment.

C.8.5.3. Engineering Data for Provisioning (EDFP). The contractor shall assemble the EDFP 30 days prior to the provisioning conference using 1388 delivery format. (CDRL L004).

C.8.5.4. Quality of LSA 036 Reports. The contractor shall ensure that the LSA 036 reports presented to the Government are acceptable for loading into the Logistics Modernization Program (LMP)/SAP system. The contractor shall deliver the LSA 036 for provisioning conferences in accordance with CDRL L004. The quality of the LSA 036 will be measured by the number of Provisioning Line Item Sequence Numbers (PLISNs) presented versus the number of errors found at each provisioning conference. For the entire contract period, the contractor shall present LSA 036 reports for each conference with a minimum of 98% acceptance rate (no more than 2 errors per 100 lines). The contractor shall provide all drawings to support the provisioning conferences. (CDRL L004).

C.8.6. Technical Publications.

C.8.6.1. DVH Technical Publications. The contractor shall create new Technical Publication's for DVH ECP using current DVH as a baseline. For the - 10 (Operator) and -13&P IETM DVH technical publications the contractor shall incorporate ECP changes into current DVH publications. All new and modified tasks will be written to existing Operator/IETM publication MIL-STD, determined at the start of work meeting and updated ECP style guide (Attachment 0025), Legacy current FoV waivers apply to carry over tasks only The contractor shall use the Stryker FOV current DVH publications and current kit publications.

C.8.6.2. The contractor shall update and provide, in accordance with CDRLs L005 and L006, validated and verified Interactive Electronic Technical Manuals (IETMs) and paper Operator manuals and updated kit publications to include an editable PDF file on CD-ROM or DVD for paper-based publications. The publications shall be based on the production configuration of the Stryker ECP variants.

C.8.6.3. Publication History File. The contractor shall maintain a publication history file (CDRL L008). This file shall contain a record of all changes to each publication as a result of ECP change drivers (including but not limited to ECOs or ECPs, DA Form 2028s, FACARs, Government comments).

C.8.6.4. Technical Manual Validation and Verification. The contractor shall provide combined validation and verification support in accordance with AR 700-127. The contractor shall provide technical (SME) and administrative Val/Ver Monitors support for the Government TM Validation and Verifications. Validation and Verification shall be performed per USG Validation and Verification Plan. (Attachment 0022) This support may consist of management support, logistics engineering support, maintenance engineering, diagnostic engineering, technical writers/editors and illustrators, provisioning support, field representative support and other specialties engaged in development. The contractor shall monitor and document (IAW CDRL L005) the combined contractor validation and government verification of the IETMs, paper operator manuals, kit publications, and incorporate all changes or corrections into the final products. The contractor will incorporate all contractor and government comments and corrections made during the validation and verification in the time frame specified in the USG Validation & Verification Plan. USG will be available to support the contractors validation/verification schedule.

C.8.6.5. Technical Publication Quality Assurance Plan (TP QA). The contractor shall adhere to the current Stryker TP QA (Attachment 0021).

C.8.6.6 External Agency Tasks Review Comment Incorporation Cycle Time. External agency review comments shall be incorporated within 30 working days of the contractor receiving direction to include these comments by the COR. Incorporation shall be demonstrated to the Government by a joint review of the IETM/Operator Manual/Kit Publication content upon final delivery (Government may use sampling to ensure incorporation). Schedule may be subject to rebaselining due to USG priority changes or influences affecting schedule outside GDLS control and may be adjusted based on date and magnitude of external agency comments (Safety, CASCOM, TCM, etc.).(CDRL L005, CDRL L006)

C.8.6.7. Rejected Tasks Cycle Time. Tasks that are rejected during validation & verification shall have all comments/corrections incorporated, and be presented to the Government within 20 working days of task rejection date unless the error is not the result of logistics product development.

C.8.6.8. Technical Publication Source Materials. The contractor shall create, provide and deliver technical publications source materials in accordance with AR 25-30 and DA PAM 25-40. The contractor shall deliver technical publications source material as part of all deliveries of the IETM (CDRL L005), Operator Manuals (CDRL L006), Technical Manuals and Technical Bulletins (TBs) (CDRL L009), and any other technical publication provided as part of this contract.

C.8.7. Battle Damage Assessment and Repair (BDAR) TM. The contractor shall update the current Stryker BDAR manuals (Operator and Field Level) to incorporate Stryker ECP deltas. (CDRL L007) The contractor shall use the current Stryker FOV BDAR manuals GFE.

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C.8.7.1. Demil Instructions. Contractor shall update current FOV Demil instructions to incorporate ECP deltas. (L007) The contractor shall use the current Stryker FOV Demil instructions GFE.

C.8.8. The contractor shall develop Paper Schematics. The current DVH schematics shall be updated and provided in accordance with (CDRL L007).

C.8.9. Special Tools and Test Equipment (STTE). The contractor shall conduct an analysis of the tools, special tools and test equipment for ECP components. If STTE requires a change an ECP shall be prepared. The USG must be notified and give authorization prior to preparing an ECP for new or modified STTE. The contractor shall follow the order of precedence below when considering new or modified STTE:

- a. Use of equipment available to Stryker units or Stryker support units.
- b. The use of a federal supply item by adding it to the Stryker RPSTL as a special item.
- c. The development of a new support item.

C.8.9.1. The contractor shall maintain and furnish to the Government, special tool records and documentation updates, if changes occur due to ECP program. (CDRL L010). The contractor shall ensure that any new software/hardware is Department of Defense Information Assurance Certification compliant.

C.8.9.2. BII & STTE Drawings. Contractor shall update any changes to current BII Drawings (L010). The contractor shall use the current Stryker FOV BII drawings GFE.

C.8.10. Packaging Data Development: The Contractor shall develop and provide packaging data (CDRL L011) for new or modified ECP items with a Source, Maintenance & Recoverability (SMR) code of P (procure) excluding PR (procure terminal obsolete, replaced) and PZ (procure terminal obsolete, not replaced) to provide for life cycle support and safe distribution of repairable items. Packaging data development priority shall be given to repairable items, Line Replaceable Units, and any large, high cost item classified as a Special Group Item. All items shall be classified as a selective group item or special group item. 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. Validation 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, and 05047 are excluded from packaging data development.

C.8.10.1. The contractor shall generate and provide LMI packaging data in accordance with CDRL L011 to ensure compatibility with the Governments data repository. The contractor shall develop, maintain and update packaging data.

C.8.10.2. The Contractor shall develop Special Packaging Instructions (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 IAW CDRL L012.

C.8.10.3. Validation Testing of Packaging. Validation testing of Special group items shall be in accordance with CDRL L012. Each SPI submitted shall have a validation report including photographs. Photographs shall show the product is undamaged. Validation report shall be submitted concurrently with SPI submittal.

C.8.10.4. Equipment Preservation Data Sheets (EPDS). Contractor shall update the current Equipment Preservation Data Sheets (EPDS) for each ECP vehicle variant IAW CDRL L018.

C.8.11. 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.8.11.1. Reusable Containers for ECP Unique items. Container Design Retrieval System (CDRS) is a management system program to provide a DoD centralized automated database 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.8.11.2. Reusable Container Searches. The contractor shall identify ECP unique engine, transmission 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 LCMC 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 IAW CDRL L013.

C.8.11.3. Reusable Container Proposal. The contractor shall propose reusable container development for TACOM LCMC 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 (Attachment 0024). Container proposals, testing/validation, and TDP development shall be IAW CDRL L014.

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C.8.11.4. Development. Upon approval of a LLRC design proposal or container modification proposal, the contractor shall build a prototype.

Training and Training Support.

C.8.12. Training Products. The contractor shall develop all training products IAW Tradoc Regulation 350-70 using the existing Contractor System. The contractor shall provide the following training products for Operator and Maintenance Training. The training products will consist of Course outlines, draft Program of Instruction (POI), Lesson Plans and Student Evaluation Guides. CDRL L015.

C.8.12.1. Instructor and Key Personnel Training (I&KPT). The contractor shall conduct four operator and four maintainer training classes using training materials developed under this contract, at four CONUS locations (2 EA JBLM, 1 EA Ft. Benning, 1 EA Ft. Lee). The purpose of the classes is to teach instructors and key personnel on ECP training material updates, and verify the content of OPNET and FLMNET ECP training materials. The contractor shall provide to the government class rosters, student evaluations and After Action Report. (CDRL L016) Class size and durations as follows:

I&KPT Training - 4 students / Each class NTE 80 hours

C.8.12.2. Training shall consist of proper operating procedures, equipment and familiarization, safety precautions, operator and maintainer Preventative Maintenance Checks and Services (PMCS) maintenance tasks IAW the appropriate Vehicle Technical Manual. All necessary materials and equipment required to support training of the Stryker ECP variants shall be provided by the contractor. Draft manuals shall be used for training purposes until manuals have been authenticated.

C.8.12.3. Instructor Requirements/Qualifications. The contractor shall provide instructors for each training course. Instructors shall be present to instruct, and to ensure adequate supervision of student performance during practical exercises. The instructors shall be ARMY BASIC INSTRUCTOR COURSE (ABIC) certified.

C.8.12.4. Course Material Development. Training materials shall be developed in accordance with TRADOC Regulation 350-70, Systems Approach to Training Management (SATM), Processes, and Products.

C.8.12.5. The contractor shall conduct a Training Task Analysis on new and updated Military Occupation Specialty tasks added to the Program of Instruction (POI), in conjunction with the TRADOC Proponent Schools to ensure all tasks are complete, correct, and allocated the proper amount of time, as set forth in the POI. (CDRL L017)

C.8.13. Contractor shall provide access to technical data (to include drawings, 3D CAD modeling and description of functionality) to the government to support ECP changes to the Stryker Training Aids Device Simulations and Simulators (TADSS).

C.8.14. Maintenance of ECP Logistics Vehicles. The contractor shall conduct maintenance of ECP logistics vehicles located at the Shelby facility in accordance with AR 750-1, Army Materiel maintenance Policy. The contractor shall perform periodic schedule maintenance and unscheduled vehicle maintenance of all facility vehicles, in accordance with the applicable technical manual for the vehicle. The contractor shall document the condition and configuration status of all facility vehicles and provide documentation access to the COR upon request. The ECP vehicle(s) shall be maintained in ECP configuration unless directed other by USG.

C.8.14.1. Maintenance of ECP Prototype/Demo Vehicles. The contractor shall conduct maintenance of ECP vehicles in accordance with AR 750-1, Army Materiel maintenance Policy. The contractor shall perform periodic schedule maintenance and unscheduled vehicle maintenance of all facility vehicles, in accordance with the applicable technical manual for the vehicle. The contractor shall document the condition and configuration status of all facility vehicles and provide documentation access to the COR upon request. The ECP vehicle(s) shall be maintained in ECP configuration unless directed other by USG.

C.8.15. ITEM UNIQUE IDENTIFICATION (IUID) MARKING: The contractor shall adhere to IUID standards per DFARS Clause 252.211-7003 for ECP. The contractor shall identify IUID candidates at quarterly LMI Reviews for USG approval. After approval, The contractor shall implement specific IUID markings, IAW MIL-STD-130. The contractor shall incorporate the IUID marking into the existing data plates. Whenever feasible, the location of the marking on the item shall ensure its readability during normal operational use.

C.8.16. Log Management Information (LMI) Reviews. LMI reviews shall be conducted quarterly at a time that will not conflict with quarterly provisioning conferences. The contractor shall prepare in contractor format a presentation to show the current status of logistics products. These reviews will be used to monitor progress, identify and resolve problems, prioritize activities, and establish schedules for all logistics products. Minutes will be recorded by the contractor to include action items and provided to all attendees NLT three working days after the LMI reviews IAW CDRL L019. All LMI reviews will be held at a mutually agreed upon location and time.

C.9. Contractor Test Support (CTS).

C.9.1. Contractor Technical Testing. The Contractor shall execute tests to sufficiently mitigate technical risks and confirm the readiness of the system to enter Government test.

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C.9.2. Contractor Support to USG Testing. The contractor shall support Government testing as defined in Stryker ECP draft TEMP (Attachment 0023). Contractor test support consists of the following: (1) Training for Government test officers, data collectors, operator, crew and maintenance personnel; (2) Providing technical manuals, delta kits, special tools and test equipment, (3) Field Test Engineers (FTE) to support testing of all ECP vehicles at the test sites, and mechanics to support testing of vehicles at CRTC, TRTC, EPG, Contractor Technical Testing and the first scheduled services at YPG and APG. . The FTE and mechanics shall orient, advise and make recommendations to Government personnel with respect to operations, maintenance, repair and parts supply for the equipment furnished under this contract. (4) The contractor shall verbally notify the Government data collector of any known errors or inconsistencies in technical manuals or publications. (5) The contractor shall be required to resolve all GFE integration and vehicle performance issues that result during Contractor supported Government testing. (6) The contractors FTEs shall deprocess all prototypes identified in this scope of work. Deprocessing shall consist of the repair of transit damage, integration of over-packed items, integration of mission equipment and deployment kits and repairs to ensure the system is fully mission capable prior to test. The contractor shall meet the operational readiness of Full Mission Capable (FMC) in accordance with the Interactive Electronic Technical Manuals (IETM).

C.9.2.1. Delta Kits. The Contractor shall deliver ECP delta kits to support USG Development and Live Fire Testing. The delta kits and accompanying installation instructions shall be delivered to the test sites 30 days in advance of the arrival of test vehicles at the test sites as defined in the Stryker ECP Draft TEMP. The USG will be responsible for providing the GFM kits.

C.9.3. System Support Package List (SSPL). The contractor shall deliver a System Support Package List (SSPL) to the Government for each major test required by the Stryker ECP Draft TEMP. The SSPL shall be delivered in accordance with CDRL T001 and identify all common and unique SSP requirements. The USG will provide all Stryker FOV common and MEP SSP items required for test.

C.9.3.1. The Contractor shall assemble, furnish and ship (to include packing, packaging, and transportation) the Stryker ECP unique System Support Package (SSP) to each designated test site 30 days prior to the start of test. The SSP shall include all required Contractor support parts and items. Replacement items which are not available in the SSP or were not furnished in sufficient quantities shall be provided by the contractor within 3 working days. The Contractor system support package does not include GFM related SSP support and warehouse functions (stock, store, issue, etc.).

C.9.3.2. The Contractor shall maintain a database containing all Stryker ECP unique SSP parts acquired in support of Government testing. The Contractor shall deliver an electronic file, in Contractor format, of that database as described in CDRL T003. The Contractor shall prepare an After Action Report (AAR), in Contractor format, each week noting items provided, maintenance completed, spare parts provided, items still required, and serial numbers of major components as described in CDRL T003.

C.9.4. Office Space. The Government will provide available office space for test support personnel.

C.9.4.1. The Government will provide available storage facilities for Contractor SSP at two test sites, one at the Aberdeen Test Center and the other at Yuma Proving Grounds.

C.9.5. Potential Warranty Coverage. If any part(s) removed from a vehicle during testing is later determined to be covered by a passthrough warranty included in this contract, the contractor shall credit the test support with any cost to repair or replace (whichever is applicable) the warranted asset.

C.9.6. Test Incident Reports (TIRS) and Failure Analysis & Corrective Action Reports (FACARS). During USG testing, the contractor shall be responsible for accessing the test site computer databases, primarily the Versatile Information Systems Integrated Online (VISION) Digital Library System, for all TIR data. The TIR will identify the level of defect as, Critical Defect, Major, Minor, or informational. Upon receipt of a TIR, the contractor shall determine the root cause of the failure and furnish a failure analysis with a proposed corrective action plan (FACARS) in accordance with CDRL T004. Receipt is defined as the day the TIR is posted to the database.

C.9.7. Monthly Performance Report. The contractor shall submit a monthly performance report for all work performed to support Government test in accordance with CDRL T005.

C.9.8. Configuration Management of Prototypes. The contractor shall provide quarterly reports regarding configuration of vehicles in test in accordance with CDRL T002.

C.9.9. Live Fire Testing. The contractor shall support and participate in the Government Live Fire IPTs. The contractor shall provide technical descriptions of components and their functions. The contractor shall provide spare parts sufficient to replace any damaged component during full up system (FUSL) testing to support Government planning and conduct of live fire testing.

C.9.10. Performance Standards. Failure to comply with the Section above will be documented by the COR and recorded in the Contractor Performance Assessment Report (CPAR).

C.10 Stryker FoV - Fabrication of Prototypes.

C.10.1. The contractor shall provide Stryker FoV prototypes that meet the requirements of this SOW and the Stryker FoV performance specifications as referenced in Attachment 0010 classified ANNEX Appendix 4, Survivability/Lethality Requirements Draft Rev B dated 26

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Name of Offeror or Contractor: GENERAL DYNAMICS LAND SYSTEMS INC.

April 2012. Efforts addressed in this Section C.10 for prototypes shall be performed for each variant/configuration.

C.10.1.1. Producibility Analyses. The contractor shall conduct producibility engineering analyses during this phase and document the results at the TIMs.

C.10.1.2. Government Plant Facilities /Equipment. The Government will provide, on a non-interference basis, rent-free use of the Lima, Ohio Joint Systems Manufacturing Center (JSMC) and at the Scranton, Pennsylvania facility for ECP Prototype build. Non-interference, as used in this context shall mean that as long as the USG has no need for it, the contractor can use JSMC for ECP Prototype build. The contractor shall provide the following: (1) square footage of the JSMC facility attributable to Stryker production; and (2) labor hours of the JSMC facility attributable to Stryker production. The contractor shall seek Contracting Officer approval for any planned increases or decreases equal to or exceeding 10% in: (1) floor usage (i.e. square footage) attributable to Stryker production at the JSMC facility; and/or (2) labor attributable to Stryker production at the JSMC facility.

*** END OF NARRATIVE C0001 ***