JOINT ASSAULT BRIDGE (JAB)
Production and Deployment Phase

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C.1 OVERVIEW OF THE PROGRAM

The Joint Assault Bridge (JAB) Program Production & Deployment Phase; Low Rate Initial Production (LRIP)/Full Rate Production (FRP) Effort

C.1.1 General Description

The JAB system shall employ a turret-less Army M1A1 Abrams Main Battle Tank, with the M1A2 Heavy suspension, the Total InteGrated Engine Revitalization (TIGER) engine installed and a launch mechanism to launch and retrieve the Military Load Class-85 (MLC-85) Armored Vehicle Launched Bridge (AVLB), accomplishing the mission requirements as set forth in the Army Technical Purchase Description (ATPD-2402) incorporated to this solicitation/contract under Section J as Attachment 0001.

Throughout this statement of work (SOW), the MLC-85 AVLB Scissor Bridge will be referenced as MLC-85 AVLB. The JAB chassis is defined as the M1A1 hull and launch mechanism installed. The JAB system is defined as the JAB chassis with MLC-85 AVLB scissor bridge stowed on the launcher mechanism above the M1A1 hull. The MLC-85 AVLB scissor bridge is an existing item, will be supplied as Government furnished equipment (GFE), and shall not be modified from the current design. The ATPD-2402 does not include performance requirements for the MLC-85 AVLB.

C.1.2 Hardware and Deliverables

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C.1.2.1 The contractor shall manufacture JABs in accordance with the requirements of the Attachment 0001, ATPD 2402 and the schedule supplied by the Government (Attachment 0002).

C.1.2.2 Basic Issue Items (BII)
The contractor shall provide all JAB System BII to include applicable M1A1 chassis items and those that are unique to the bridge launcher. The contractor shall provide a JAB System BII List in accordance with Contract Data Requirements List (CDRL) A001. The contractor shall over-pack the BII, to include the JAB BII list, with each JAB at delivery.

C.1.2.3 Component of End Items (COEI)
COEI are components that are part of the end item but must be removed and separately packaged for military transportation. The contractor shall over-pack the COEI with each JAB. The COEI should be separately packed from the BII.

C.1.2.4 Initial Support Package (ISP)
The contractor shall provide an ISP for each JAB system. The ISP shall consist of all service parts/items, with the exception of petroleum, oils and lubricants, required to meet service routine intervals during the first two years of service. The contractor shall mark each item/package with the nomenclature and part number. The contractor shall over-pack the ISP, to include the ISP List (CDRL A002), with each JAB.

C.1.2.5 ISP List
The contractor shall provide an ISP List in accordance with CDRL A002 detailing all of the items to be included in the ISP. A complete ISP List shall include each item identified by nomenclature, part number and NSN (if assigned).

C.1.3 Modifications for JAB / AVLB MLC-85 Scissor Bridge Interface
The contractor shall not modify the MLC-85 AVLB.

C.1.4 All contract references to days shall be recognized as calendar days, unless specifically identified as work days.

C.2 DEPOT INVOLVEMENT

In accordance with 10 U.S.C. 2464 the Department of Defense (DoD) has a necessity in the interests of national security to maintain a core depot-level maintenance and repair capability. The Secretary of the Army designated Anniston Army Depot (ANAD) as the Center of Industrial and Technical Excellence (CITE) for Combat Vehicles (tracked and wheeled) (except Bradley) and assault bridging systems.

ANAD has the capability to support the M1A1 hull, which is the mobility platform for the JAB system. ANAD's support capabilities include a full range of refurbishment related tasks including, but not limited to, complete hull disassembly, inspection and overhaul, engine and transmission overhaul, suspension overhaul, demilitarization of non-essential items for the JAB, and production/re-assembly of the hull related items. ANAD has the capability to order all M1A1 hull components and line replaceable units (LRUs) for use in the JAB program. In addition, ANAD has capabilities for other aspects of JAB chassis production.

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The Government will use ANAD to prepare M1A1 chassis for re-build as a JAB, prior to delivery to the contractor. The tasks associated with this effort include those "Above the Line" costs and events shown in Attachment 0003. Title 10 U.S.C. 2474 enables ANAD to establish Public-Private Partnerships (P3) with industry to perform work of benefit to the Government. More information may be found through the ANAD business office and at the link below:
URL: http://www.anad.army.mil/pppANAD.shtml

The Government will fund depot labor towards the M1A1 hull refurbishment, modification and re-assembly up to a ceiling level of effort if the contractor establishes a P3 work share agreement with ANAD. The Government will provide funding for a ceiling level of hours of ANAD labor per JAB system , as specified in Attachment 0003, for use in refurbishment, modification and re-assembly of the M1A1 hull prior to contractor integration with the JAB launcher mechanism. The Government will fund these hours directly to ANAD, to include any changes in ANAD's annual labor rate. The ceiling level of effort is detailed in terms of the ANAD M1A1 refurbishment work breakdown structure (WBS) under Section J, Attachment 0003. The WBS includes a placeholder for potential insertion of contractor specified hull modifications during the refurbishment process. The contractor shall include planned utilization of ANAD labor up to the ceiling of labor hours in the P3 plan which if utilized will become an attachment to the contract.

The contractor can, at its sole discretion, enter into a separate partnership agreement with ANAD for other services necessary to produce JABs beyond those efforts funded by the Government as described above and in Section J, Attachment 0003.

The contractor is responsible for quality control and supply chain management of all subcontractors to include ANAD.

C.3 TOTAL SYSTEM PERFORMANCE

The contractor shall assume responsibility for the total system performance of each JAB system produced, as detailed in ATPD-2402.

The contractor shall apply its supply chain, production and management expertise to optimize the JAB production line from end-to-end and ensure timely delivery of JAB systems that meet the required performance specification.

The contractor shall apply its experience in total quality management to ensure that quality management processes, work procedures, and in-process inspections are documented and followed throughout the production.

During Government developmental test efforts, the contractor is responsible for support for the entire JAB chassis as detailed in C.20, even if employing a P3 arrangement to obtain M1A1 chassis expertise.

Some Government Furnished Material (GFM) will be provided for the base year and first two option years and the GFM list will indicate "like new" or "as-is." In the following option years, a larger number of parts will be the responsibility of the contractor to reclaim or procure. Certain items, primarily limited to those with critical procurement lead-times, will be supplied as GFM in a "like new" condition

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for the entire duration of the LRIP/Production contract. Details on GFM can be found at Attachment 0019.

C.4 PROGRAM STRUCTURE, DATA, MEETINGS AND REVIEWS

C.4.1 Integrated Product Team (IPT)

Integrated Product Teams (IPTs) shall be established to serve as the primary management tool and key method of communication for this contract. As part of the Start Of Work Meeting (SOWM), the Government and contractor will form IPTs. The Government IPTs are detailed in Attachment 0004. IPTs and membership shall be assigned in the areas of contract and program management, engineering, software, and Integrated Logistics Support (ILS) (provisioning publications, packaging, training, quality assurance, safety, human factors/MANPRINT, test progress, cost reporting, and production status). The IPT meetings shall be held via teleconferences or electronic means unless specified otherwise in Section C.4.3. The contractor shall provide and maintain an IPT Membership List in accordance with CDRL A004.

C.4.2 Data

C.4.2.1 Data Requirements

The contractor shall deliver all data in English in accordance with the requirements established in Exhibit A, Contract Data Requirements Lists (CDRL) (DD Form 1423).

C.4.2.2 The contractor shall validate all documentation prior to submittal to the Government. Government receipt of data deliverables does not constitute acceptance. Government acceptance of data deliverables hinges on the completeness, accuracy, compatibility of submitted documentation, and the applicable military standards and specifications.

C.4.2.3 Cost Reporting

The contractor shall provide cost and schedule reporting on a monthly basis in accordance with CDRL A005, Cost Report. Section J, Attachment 0005 is provided as an example for formatting this report. The contractor shall modify the report to match the actual production WBS for the JAB program. The contractor shall provide data reflecting three levels of WBS.

C.4.2.4 Integrated Master Schedule

The contractor shall deliver an Integrated Master Schedule in accordance with CDRL A006 for the JAB Production phase that incorporates information contained within the Government initial schedule as provided in Attachment 0002.

C.4.2.4.1 The Summary Master Schedule shall include all milestones, system design and integration events, design and logistics meetings, Program Management Reviews, CDRL deliverable dates, contractor test, Government test, logistics events, and system production and modification tasks. The contractor shall present the project schedule at each Program Management Review (PMR), explain all program slippages, and provide get-well plans within 30 days of discovery (CDRL A006).

C.4.2.4.2 Intermediate and Detailed Schedules

The contractor shall provide intermediate schedules and detailed schedules reflecting all program events. The schedule shall reflect all key tasks and events required to produce JAB systems. The

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schedule shall have a separate section that reflects all key tasks and events required to conduct test activities and to prepare and produce logistical support products including parts provisioning, technical manuals, and training materials (CDRL A006).

C.4.3 Meetings

C.4.3.1 Contractor Participation
The contractor shall participate in the meetings and reviews as described herein. The Government will determine when meetings shall be held in person or by electronic means (via teleconferences, email, etc). Meetings specifically related to Logistics and Technical Publications are contained in those sections of the SOW.

C.4.3.2 Agendas and Briefing Charts
The contractor shall develop and submit an agenda and read-ahead package including briefing charts in contractor format for all meetings, conferences and reviews in accordance with CDRL A007, Agenda and Briefing Charts.

C.4.3.3 Meeting Minutes
The contractor shall prepare and submit Meeting Minutes in accordance with CDRL A008 for all meetings, conferences and reviews. Minutes shall include all topics discussed, issues, actions, CDRL progress, program decisions, and a summary of intent for the next PMR or technical review.

C.4.3.4 Start of Work Meeting (SOWM)
The contractor shall conduct a SOWM within thirty (30) Days After Contract Award (DACA), at the contractor's production facility. The purpose of the SOWM is to ensure the contractor has a clear understanding of all contract requirements and an executable plan for all contract deliverables.

C.4.3.5 Publications Start of Work Meeting (PSOWM)
Within 30 days after contract award, a PSOWM will be held by the Government with the contractor. This meeting may be a sub-meeting of the overall contract SOWM or a subsequent stand-alone meeting. The purpose of this meeting is to review publications contract requirements, establish lines of communications, answer all questions, and develop a publications schedule based on the requirements of the program and the contract.

C.4.3.6 Program Management Reviews (PMR)
The contractor shall conduct quarterly PMRs with the Government at the contractor's production facility, alternative location, or via teleconference as mutually agreed by both parties. The first PMR shall be concurrent with the SOWM. At each PMR, the contractor shall present the cost, schedule, performance, supportability status and risk assessment and risk mitigation initiatives. These meetings will also include separate discussions for safety, engineering, logistics, production, contracting, test, and product assurance.

C.4.3.7 Critical Design Review (CDR))
The contractor shall conduct a CDR at the contractor's production facility with Government attendance no later than 60 DACA. The purpose of the CDR is to conduct a technical review of the contractor's Initial Product Baseline and any design changes resulting from testing prior to LRIP fabrication to ensure the system can meet stated performance requirements before finalizing design. The JAB Initial Product

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Baseline shall be considered locked for start of LRIP following Government approval of the design and documentation presented at the CDR. The contractor shall deliver CDR documentation as specified by CDRL A009, CDR Entrance Criteria Package, and Attachment 0006 Technical Review Criteria (Entrance and Exit). The contractor must meet all CDR Entrance Criteria, as specified in Attachment 0006, to commence the CDR meeting, and the contractor must meet all CDR Exit Criteria, as specified in Attachment 0006, to successfully complete CDR.

C.4.3.8 Pre-Test Readiness Review (TRR)
The contractor shall conduct a Pre-TRR at the contractor's production facility with Government attendance no later than 30 days before delivery of the first Low Rate Initial Production (LRIP) JAB System. The purpose of the Pre-TRR is to provide the Government validation that the test requirements can be performed within the stated schedule and be prepared to provide supporting information related to Attachment 0006.

C.4.3.9 TRR
The contractor shall attend, participate, and be prepared to provide supporting information related to Attachment 0006 (Pre-TRR Entry and Exit criteria) for the Government conducted, one day, TRR at Aberdeen Proving Grounds, MD, no more than 30 days after delivery of the first test asset(s). The purpose of the TRR is to verify that all required resources and plans are ready so that the Government can commence test activities. (CDRL A009) (Attachment 0006)

C.4.3.10 Production Readiness Review (PRR)
The contractor shall conduct the PRR at their production facility with Government attendance to determine if the design is ready for production and if the contractor and major subcontractors have accomplished production planning without incurring unacceptable residual risks that negatively impact schedule, performance, supportability, or cost. The PRR shall be conducted no later than 60 days after the end of the Initial Operational Test (IOT) event (CDRL A009) (Attachment 0006). The contractor shall deliver PRR documentation.

C.4.3.11 System Requirements Compliance Matrix
The contractor shall develop a System Requirements Compliance Matrix in accordance with CDRL A010 that tracks the current compliance with all ATPD 2402 requirements. The initial matrix shall be developed as estimates and shall be updated to reflect actual performance as development and test progresses. The matrix shall follow the sequence and format of Table 1 in ATPD 2402, and clearly depict if the data is an estimate or actual performance. The supporting documentation used to populate the System Requirements Compliance Matrix shall be submitted to the Government in accordance with CDRL A010.

C.5 RISK MANAGEMENT

The contractor shall identify, monitor, manage and mitigate all program risks. The contractor shall develop and deliver a Risk Mitigation Plan in accordance with CDRL A112. The contractor shall continue to track and manage risk elements to completion of mitigation and closure of the risk element as mutually agreed by both parties. The contractor shall implement risk management and rework procedures with each subcontractor to address component and integration problems early in the production process, before the JAB systems are completed and delivered. The contractor shall provide a

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Risk Management Plan in accordance with CDRL A112 and also provide a Risk Management Status Report in accordance with CDRL A003 in conjunction with each PMR. The contractor shall incorporate all risks as identified by either the contractor or the Government. Resolved risks shall be archived on the report after Government approval.

C.6 CONFIGURATION MANAGEMENT (CM)

C.6.1 Configuration Management (CM) Program

The contractor shall have a formal CM program in place at contract award for configuration identification, control, status accounting, audit, and data management of the JAB. To maximize return on investment and reduce life cycle costs, the contractor shall use best practices to implement the technical and program management principles fundamental to CM. The contractor is requested to use the latest versions of ANSI/EIA-649, National Consensus Standard for Configuration Management; EIA-649-1, CM Requirements for Defense Contracts, GEIA-HB-649, Implementation Guide for CM, GEIA-859, Data Management (DM); and MIL-HDBK-61, Configuration Management Guidance, as references for CM and DM. The contractor shall deliver a CM Plan in accordance with CDRL A011.

C.6.1.1 CM Definitions. For the purposes of Section C.6, Configuration Management, the following definitions apply. Refer to ANSI/EIA 649 for additional definitions.

Enterprise: Design activity, company, contractor, design authority, manufacturer, and supplier.

Product: An item or component which is the result of a development process (e.g., hardware, software, firmware, materials, documentation, services, facilities). Alias Terms: Configuration Item (CI), end item, part, software, system.

Product Configuration Information (PCI): Information about a product that defines the product's requirements, documents the product attributes, and is the authoritative source for configuration management of the product, as well as information developed to test, operate, maintain and dispose of a product. Alias Terms: product data, configuration documentation, product information, product configuration documentation.

C.6.2 Configuration Identification

C.6.2.1 Configuration Baseline

The contractor shall develop, manage and maintain the JAB product baseline throughout the contract performance period to ensure the status of the design can be determined at any point in the lifecycle.

C.6.2.1.1 The contractor shall deliver an Indentured Bill of Materials (IBOM) of the LRIP configuration in accordance with CDRL A012. The contractor shall continue to update the Initial Product Baseline as changes are approved by the Government as referenced in C.6.5.1. Upon incorporation of all approved changes, including those resulting from the Physical Configuration Audit (PCA), the Initial Product Baseline shall become the final Product Baseline. The Government will assume configuration control of the JAB final Product Baseline upon PCA approval. The contractor shall submit the engineering IBOM establishing the final Product Baseline. All subsequent changes shall be submitted to the Government in

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accordance with the change management requirements of this contract in accordance with CDRL A013, Product Drawings/Models and Associated Lists.

C.6.2.2 Product and Enterprise Identifiers
The contractor shall use the military or specification-identified part numbers in the product data. If the aforementioned part numbers are not available, then the contractor shall utilize the Original Equipment Manufacturer (OEM) part number and Commercial and Government Entity (CAGE) code to identify parts that the contractor does not manufacture, whenever available. The contractor shall adhere to this requirement and C.X-C.X for all fasteners, standard hardware, bulk material, and other items that can be defined by Government and non-Government standardization documents, or international or foreign standardization documents adopted by the American National Standards Institute (ANSI) for use in the U.S. The contractor's product data, including BOMs, Drawings, Models, Parts Lists, and reports, shall be consistent in identifying the true manufacturer part number and CAGE code as the primary part. The contractor shall not re-mark, re-number, or re-identify already developed products (e.g., commercial, Non-Developmental Items (NDI), Commercial- Off- The- Shelf (COTS), products defined by Government or non-Government standardization documents) with its own number and CAGE code unless physically modified (altered) to the extent that interchangeability is affected.

When one or more products are modified to the point that they are not interchangeable with the original product or the next higher assembly, the contractor shall identify the new next higher assembly(s) up to the level at which interchangeability is re-established. 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 A015). The contractor shall adhere to the Government CAGE code and part number requirements when using or modifying Army developed items, in accordance with C.X through C.X.

C.6.3 Data Management

C.6.3.1 Data Accession List (DAL)
All contractor technical data or computer software generated in the performance of this contract, or any subcontract, that is not delivered under any other CDRL shall be indexed on the DAL. The contractor shall deliver DAL in accordance with CDRL A014. Data or computer software shall be delivered, if ordered under DFARS 252.227-7027, “Deferred Ordering of Technical Data or Computer Software,” when not already otherwise ordered.

C.6.3.2 Product Data Management System
The contractor shall utilize an authoritative product data, engineering or configuration management system and 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 PCI.

C.6.3.3 Version Control
The contractor shall utilize a disciplined version control process in managing digital data. Each revision delivered under CDRL A013, CM Plan, 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 identify and access a specific revision when needed. The content of PCI is fixed once approved by the Government.

C.6.4 Configuration Status Accounting (CSA)
The contractor shall submit a CSA Report in accordance with CDRL A015 and this information shall be recorded and maintained by the contractor for the term of this contract. Government approved changes shall not be recorded or reported as "completed" or "closed" until the contractor releases the new or revised documentation (incorporating the approved change).

C.6.5 Configuration Control/Change Management
The contractor shall ensure that changes to the JAB are accomplished using a systematic, measurable change process. The contractor shall identify, justify, classify, document, coordinate, evaluate and disposition changes, and use a release process to incorporate approved changes into the JAB and JAB PCI, throughout the contract performance period.

C.6.5.1 Engineering Change Notification
After CDR and prior to PCA the contractor shall provide an engineering change notification including detailed technical, economic, design, and/or production reasons for a proposed change, the cost of potential resolution, and the effect of the resolution on other requirements. The contractor shall submit a notification of any Class I Engineering Change Proposals in accordance with CDRL A016. An Engineering Change is considered Class I when it affects:

a. Performance
b. Reliability, maintainability or survivability
c. Weight, balance, moment of inertia
d. Interface characteristics
e. Electromagnetic characteristics
f. Other technical requirements in the specifications.
g. Government Furnished Property (GFP)
h. Safety
i. Compatibility or specified interoperability with interfacing Configuration Items (CIs), support equipment or support software, spares, trainers or training devices/equipment/software
j. Interchangeability, substitutability, or replaceability as applied to CIs, and to all subassemblies and parts except the pieces and parts of non-reparable subassemblies
k. Sources of CIs or repairable items at any level defined by source- control drawings
l. Skills, manning, training, biomedical factors or human-engineering design
m. Deliveries
n. Scheduled milestones

C.6.5.2 Configuration Control Authority
The Government assumes configuration control of the JAB at successful completion of the PCA. The contractor shall continue to use a systematic, measurable change process; however, all changes after PCA shall be prepared and submitted to the Government as an ECP (CDRL A016) for evaluation and disposition.

C.6.5.3 Engineering Change Proposals (ECPs) and Value Engineering Change Proposals (VECP)
After the successful completion of the PCA, the contractor shall prepare and submit all major (i.e., Class

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I) and minor (Class II) ECPs for Government review and disposition in accordance with CDRL A016 using the Data Delivery Description (DDD) for ECPs and VECPs in Attachment 0007. Proposed changes to specifications, engineering documents, software and software documents shall be described using Notice of Revisions (NORs) in accordance with CDRL A017, prepared using the DDD for NORs in Attachment 0007. NORs are not required if data is electronically marked-up to clearly show proposed changes or if CAD files are furnished to include the current version as well as a 'preliminary' new version showing the revisions incorporated. The contractor shall identify affected portions of the IBOM in accordance with CDRL A012, and provide impact statements and supporting data sufficient to evaluate the proposed ECP with each request (e.g., engineering, software, specification, safety, quality, cost, schedule, MANPRINT, packaging, provisioning, maintenance, Technical Manuals (TMs), training).

C.6.5.3.1 Value Engineering Change Proposals (VECPs)
The contractor shall prepare and submit VECPs in the same manner as major (Class I) ECPs in accordance with CDRL A016.

C.6.5.3.2 ECP Numbers
The contractor shall request ECP numbers via e-mail to the Government Configuration Data Management (CDM) representative (See JAB IPT list, Attachment 0004). The contractor shall utilize these numbers on an individual basis as a control identifier for ECPs. 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, using C1, C2, etc, as a suffix for minor, corrected ECPs, and R1, R2, etc., as a suffix for major, reworked ECPs. The contractor shall maintain records of where and when each ECP number was used. The ECP number shall consist of the Government-assigned contractor three character alpha prefix (xxx), followed by the Government assigned five-digit alpha/numeric number (e.g., ABCT1234). (CDRL A016)

C.6.5.3.3 ECP Approval-Implementation
After PCA, the contractor shall not implement any ECP changes into hardware or PCI prior to Government ECP approval. The contractor shall finalize incorporation of Government-approved changes and new designs into the PCI (CDRL A013) and submit the data via an Engineering Release Record (ERR) package (CDRL A018), with updated IBOM (CDRL A012), reflecting the latest JAB product baseline for each approved ECP (CDRL A016).

C.6.5.4 Requests for Deviation (RFD)
Contractor requests to temporarily deviate from requirements of the JAB shall be submitted as RFDs in accordance with CDRL A019, using the DDD-RFD, Attachment 0008. The contractor's internal tracking numbers shall be assigned to RFDs. RFDs shall be properly classified in accordance with the classification requirements in the DDD-RFD. The Government will not approve Critical RFDs, as they have a profound impact on safety. Recurring deviations or deviations effecting a change to the product baseline documentation may be rejected by the Government and returned for resubmission as a formal major (Class I) ECP.

C.6.5.5 Effectivity Certification
The contractor shall maintain the original effectivity point information on file for all approved ECPs, VECPs, and RFDs. This information shall be reported in the CSA Reports in accordance with CDRL A015.

C.6.6 Engineering Release

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Engineering release formally approves configuration documentation and makes configuration documentation available for its intended use. The contractor shall have an engineering release system in place at contract award to incrementally incorporate approved changes into the JAB and JAB PCI and to validate that PCI is complete, accurate, and suitable for use in the JAB product baseline.

C.6.6.1 Engineering Release Record (ERR)
The contractor shall create, revise and release approved changes to the PCI to update the JAB product baseline for the entire contract performance period. Following Government approval of the PCA and final product baseline, the contractor shall submit ERR packages in accordance with CDRL A018 as verification that approved changes have been implemented in the JAB PCI. The ERR is the method by which the contractor initially delivers new PCI (i.e., "initial release") to establish a product baseline for new products within the JAB product baseline, and delivers revised PCI (i.e., "change release") to implement approved changes to the existing JAB Product Baseline, subsequent to a Government-approved ECP. The ERR Package is defined as the ERR form submitted concurrently with the new and revised PCI for Product Baseline initial release and change release, to include the updated IBOM (CDRL A012). The contractor shall insure that PCI is marked with appropriate distribution statements, and, as applicable, data rights legends and export control warnings (CDRL A013).

C.6.6.2 ERR Number
The contractor shall utilize a unique ERR number for submission of any new PCI for initial release (CDRL A013). The contractor shall add the Government-assigned 3-character prefix to the 5-character alpha-numeric number furnished by the Government. The Government CDM shall assign ERR numbers. The resulting 8-character number shall be the engineering release authority number reflected on the ERR form (CDRL A018). When preceded by an ECP, the change release ERR number shall be the same as the ECP number.

C.6.6.3 ERR Submittal/Approval
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 is not allowed. There shall be no missing or erroneous down parts, references, interface data, or other deficiencies. The ERR will be approved only after all required PCI (CDRL A013) has been delivered as part of the ERR package (CDRL A018) and the data is accurate, complete, and approved for release by the Government.

C.6.7 Configuration Audits

C.6.7.1 Physical Configuration Audit (PCA)
The Government will conduct a PCA at the contractor's facility within 60 days after completion of Production Qualification Test (PQT) to verify that the JAB hardware matches the design documentation. The contractor shall provide support for pre-audit, PCA, and post-audit activities. The PCA will not exceed 14 days.

C.6.7.1.1 The Government will provide the contractor with an outline of the requirements for the PCA Plan. The contractor shall submit a PCA Plan in accordance with CDRL A020 prior to the PCA. Any findings that require corrective actions, resulting from the PCA, shall be the responsibility of the contractor.

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C.6.7.2 Indentured Bill of Materials (IBOM)
The contractor shall submit the master engineering IBOM in accordance with CDRL A012 for the as-designed JAB at CDR. Any design changes will require the contractor to resubmit a new IBOM (CDRL A012). The Government will review the updated IBOM and advise the contractor which items it intends to audit during the PCA. The contractor shall incorporate approved changes from the PCA into the product baseline and submit an updated IBOM for Government review and approval of the Final Product Baseline.

C.6.7.3 Configuration Audit Summary Report
The contractor shall submit a PCA Summary Report in accordance with CDRL A021 after the Physical Configuration Audit (PCA) to identify discrepancies found between hardware and contract requirements. The contractor shall identify action items and address each issue to include resulting close-out action.

C.7 PRODUCTION KIT TECHNICAL DATA PACKAGE (TDP) REQUIREMENTS- CONTRACTOR'S FORMAT (OPTION)
The contractor shall prepare and deliver product data in contractor format, in English, for the JAB BLM and associated components added or modified to the M1A1 chassis (hull and associated parts) to meet the ATPD 2402in accordance with CDRLs A022 (Technical Data Package, Contractor Format), A023 (Engineering Release Record, Contractor Format) (in lieu of A018 (Engineering Release Record)), and Attachment 0009.

C.8 GOVERNMENT DATA RIGHTS
The Government's rights in any technical data or software to be delivered under this contract will be determined pursuant to all applicable statutes and regulations. The contractor shall identify any data to be delivered to the Government with less than Unlimited Data Rights in accordance with DFARS 252.227-7017. Such assertions will be documented in an attachment to the contract at contract award and are subject to Government validation in accordance with DFARS 252.227-7019.

C.9 ENVIRONMENTAL, SAFETY AND OCCUPATIONAL HEALTH (ESOH)

C.9.1 ESOH Engineering Principles
The contractor shall apply MIL-STD-882 standard safety practices during design and/or modification of the JAB System and its components. System design and operational procedures shall be developed to include paragraphs C.9.1.1 through C.9.1.4.

C.9.1.1 ESOH analyses shall be conducted to identify hazards and their causal factors. The analyses shall identify logical, practical, and cost-effective mitigation techniques and requirements for each causal factor. These analyses shall consider all hardware, software, environmental, and human factor interfaces as potential contributors in all phases of operation.

C.9.1.2 The contractor shall identify and implement specific hazard mitigations required to eliminate, control or minimize the risks of each causal factor identified for system and personnel. The contractor shall provide engineering evidence that each hazard mitigation strategy is implemented within the design. This evidence shall be included in the System Safety Program Progress Report in accordance with CDRL A024.

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C.9.1.3 Access to equipment, components and controls during operation and maintenance shall not expose personnel to uncontrolled hazards. Moving parts, mechanical power transmission devices, exhaust system components, pneumatic components and hydraulic components of such a nature or location posing a hazard to operating or maintenance personnel shall be either enclosed or guarded. Protective devices shall not impair operational functions. Safety and environmental hazards to be considered include, but are not limited to: high temperature, chemical burns, electrical shock, cutting edges, sharp points, toxic fumes, fluid leaks and spills, and exposure to hazardous materials from system operation, maintenance or disposal.

C.9.1.4 Ensure warnings, cautions, and notes are included in instructions for operation, maintenance, and trouble-shooting/repairs. Ensure distinct markings/labels/decals are placed on hazardous components.

C.9.2 System Safety Program Plan
The contractor shall prepare a System Safety Program Plan (SSPP) in accordance with CDRL A025 and MIL-STD-882 Task 102. The contractor SSPP shall detail the tasks and activities of system safety management and system safety engineering required to identify, evaluate, and eliminate or control hazards throughout the system life cycle. In addition, the SSPP shall describe the contractor's plans to incorporate the System Safety Program Requirements as defined in ATPD 2402.

C.9.3 Hazard Tracking System (HTS)
The contractor shall develop and maintain a process to identify, document and track ESOH hazards until they are eliminated or the associated risk is reduced to a level acceptable to the Government. The HTS shall contain the fields identified in MIL-STD-882 Task 106 for each potential or actual ESOH hazard of the system and when the hazard may be expected to occur under both usual and unusual operating and maintenance conditions. The contractor shall categorize the risk before and after mitigation in accordance with MIL-STD-882. The contractor shall identify if the hazard is hardware, software or environmental related. Mitigation actions include redesign, recommended engineering controls, safety features or devices, warning devices and procedures and training. Hazards to be identified in the HTS include, but are not limited to: sharp edges/moving parts hazards, physical hazards (e.g. extreme temperatures, acoustical energy, ionizing and non-ionizing radiation), chemical hazards (e.g. flammables, corrosives, carcinogens), toxic fumes (exhaust emissions), electrical hazards, whole-body vibration, compliance issues with regulatory organizations, generation of hazardous wastes, biological hazards, fire prevention issues, and ergonomic hazards. The HTS shall also include findings from the Environmental Hazards Analysis (MIL-STD-882, Task 210).

C.9.3.1 Disposition and Closeout
All identified hazards must be successfully mitigated by the contractor. The contractor's proposed mitigation and resulting residual risk must receive final approval by the Government prior to closure of the hazard in the Hazard Tracking System. The contractor shall perform any redesign required due to a hazard and the adequacy of the design change shall remain the responsibility of the contractor.

C.9.4 System Safety Program Progress Report (SSPPR)
The contractor shall prepare a System Safety Program Progress Report (SSPPR) in accordance with MIL-STD-882 Task 107 and CDRL A024. The SSPPR shall detail and document any hazard analysis performed since the last delivery of the SSPPR as well as changes incorporated into the system design to enhance

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ESOH and to mitigate hazards identified. The SSPPR shall include updates from the HTS, to include new hazards and work accomplished on previously identified hazards since the submission of the last report.

C.9.5 Safety Assessment Report (SAR)
The contractor shall develop and document an ESOH assessment based on results of system safety analyses, hazard evaluations, and Government or independent testing. The ESOH hazard assessment shall identify all known ESOH features of the hardware, software, system design, and inherent hazards and shall establish operational/maintenance procedures and/or precautions to be followed by Government testers and all system users. The contractor shall prepare the SAR in accordance with MIL-STD-882 Task 301 and CDRL A026, including the information contained in the HTS. The contractor shall identify environmental, safety and occupational health hazards associated with the system to include any modifications as described in C.9.5.2 and C.9.5.3. The contractor shall provide certifications to safety related requirements from ATPD–2402 as part of the SAR.

C.9.5.1 SAR Updates
In the event the JAB System is modified or operational/maintenance procedural changes are made, the contractor shall update the SAR to reflect those modifications or changes. The contractor shall submit an updated SAR in accordance with CDRL A026. After additional SAR deliveries, the contractor shall provide updated SAR change page notices within 30 days after any new system modification or procedural change is implemented. In addition, the contractor shall immediately notify the PCO and Contracting Officers Representative (COR) (within 24 hours) via phone and email if new hazards or increased risk/hazard probability levels are identified while Government testing of the JAB System is ongoing.

C.9.5.2 Hazardous Materials
A list of hazardous materials used in or on the system, except for GFP as identified in Attachment 0019, shall be included in the SAR (CDRL A026)and identified by chemical name, common or trade name, NSN (if applicable), physical form and manufacturer/supplier. The list shall annotate the location in the JAB System of the hazardous materials, the conditions under which hazardous materials pose a health threat, and the recommended disposal actions. Highly toxic or carcinogenic materials as defined in 29 CFR 1910.1200 shall not be used in the manufacture or assembly of the system without PCO approval except for GFP per Attachment 0019.

C.9.5.3 Radioactive Materials
Radioactive materials shall not be used without PCO approval unless provided by the Government as GFP per Attachment 0019. As part of the request for PCO approval, the contractor shall establish justification as to why these materials are the only means of meeting military operational requirements; provide sufficient data to permit the Government to secure a license for the radioactive material; and describe design and procedures required to minimize hazards to personnel during manufacture, use, transportation, and disposal. The contractor shall specify the following information and procedural controls for each item containing radioactive material: marking of the item(s); ultimate disposal method; NSN and part nomenclature for each radioactive item; NSN for all end articles containing the radioactive item; total number of radioactive items per end article; the total number of radioactive items to be procured per JAB (including initial spares); and, a Material Safety Data Sheet.

C.9.6. Hazardous Materials Management Program (HMMP) Report

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The contractor shall prepare an HMMP Report in accordance with CDRL A027 which shall identify all hazardous materials delivered on the system or required for operation and sustainment, specifying the part(s) containing the hazardous material(s). The HMMP report shall identify all hazardous materials used in final system manufacture and assembly, specifying the process(es) that require them. Status, changes, or issues with the HMMP Report shall be discussed as a part of each technical review and program management review.

C.9.7 JAB System Safety Working Group (JSSWG)/Safety Review Support
The contractor shall provide representation at the JSSWGs, which will be held in conjunction with Quarterly PMRs. The JSSWG is a PM chartered advisory group dedicated to addressing ESOH and supporting the Program Manager in implementing the ESOH Program.

C.10 CORROSION CONTROL

C.10.1 Corrosion Prevention and Control Plan (CPCP)
The contractor shall develop, maintain and implement a Corrosion Prevention and Control Plan (CPCP) for the JAB system in accordance with CDRL A028. The contractor shall identify corrosion risks, recommend mitigation measures and implement mitigation measures related to system design and production. The contractor shall inform the Government of critical or major corrosion issues as they arise during the execution of this contract.

C.10.2 Corrosion Prevention Advisory Team (CPAT)
The contractor shall support the Government Corrosion Prevention Advisory Team (CPAT) for the JAB system. The contractor shall remotely participate in meetings, complete assigned action items, identify and inform the CPAT of new corrosion risks or issues, review and discuss the CPCP, and analyze ECPs for impacts on corrosion prevention and control. Meetings will be held on an annual basis but may convene more frequently as needed to address corrosion prevention and control concerns if they arise over the life of this contract.

C.11 WELDING

C.11.1 Welding Procedures
The contractor and sub-contractors shall develop Weld Repair Procedures and Welding Procedure Specifications (WPS) in accordance with CDRL A029, Procedure Qualification Records (PQRs) in accordance with CDRL A030, and Welder Qualification Records (WQR) in accordance with CDRL A031 pursuant to the welding standard(s) specified in ATPD 2402 Table 1: Welding Standards. The contractor and sub-contractors shall follow the appropriate welding standard(s) to qualify the welding and weld repair procedures. The contractor and sub contractors shall prepare weld samples and test the weld procedure for qualification in accordance with the appropriate standard(s). Changes to the Weld Repair Procedures and WPS, PQR, or WQR that require requalification, shall be resubmitted as part of the relevant CDRL(s). The use of pre-qualified weld joints as specified in American Welding Society (AWS) D1.1 does not preclude submittal of welding procedures pursuant to this section, except as described in C.11.2.

C.11.2 Previously Qualified Procedures
The Government may consider contractor or sub-contractor welding procedures that have been previously qualified to meet the requirements of other standards, specifications, codes or earlier

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versions of the standard(s) listed in ATPD 2402 Table 1: Welding Standards to support a Weld Procedure Specification (WPS) under this contract. All essential variables specified in the applicable welding standard(s) shall be included on the Procedure Qualification Record(s) (PQRs) and submitted for approval prior to usage under this contract.

The Government may consider contractor or sub-contractor requests approval for use of welding procedures previously qualified under another DOD contract. The contractor shall submit such requests to the Government via procedures in CDRL A029 (Welding Repair Procedures), A030 (Procedure Qualification Records), and A031 (Welder Qualification Records). The following requirements shall be met and documentation shall be provided:

a. The weld procedure was qualified by destructive testing and approved on a previous DOD contract and the essential variables are within the tolerance as specified in the applicable welding standard(s) for the current contract.

b. The contractor has certified welders and equipment for the qualified procedures in accordance with the applicable welding standard(s) in ATPD 2402 Table 1: Welding Standards.

c. There was no break in production for more than six months at the facility where the procedures were used.

d. A favorable quality history with regards to weld quality on the previous contract where the procedures were used.

C.11.3 Weld Repair Procedures
The contractor shall provide written Repair Procedure(s) identifying proper technique and approach to correct a defective product (CDRL A029). The welding procedures for the repair shall be in accordance with the applicable welding standard(s) in ATPD 2402 Table 1: Welding Standards. A repair is defined as the act of restoring the functional capability of a defective article in a manner that precludes compliance of the article with applicable drawings or specifications. Repairs are generally changes to an unacceptable end product to make it acceptable in accordance with original functional requirements.

C.11.4 Weld Equipment
The contractor or manufacturer shall develop and maintain a welding equipment calibration program, including but not limited to gauges and meters. This program shall consist of, as a minimum, an annual comparison check of the machine output with instrumentation that has been certified and calibrated using standards traceable to the National Institute of Standards and Technology (NIST).

C.11.5 Welding Inspectors
Qualified weld inspectors trained to perform inspection functions shall be used for the verification of weld quality, and the contractor shall provide evidence of inspectors' certification to at least one of the following conditions (CDRL A031):

C.11.5.1 Current certification in accordance with the American Welding Society (AWS), Certified Welding Inspector (CWI) or Senior Certified Welding Inspector (SCWI), qualified and certified in accordance with provisions of AWS QC1.

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C.11.5.2 Current certified welding inspectors qualified by the Canadian Welding Bureau (CWB) to Level II or the Level III requirements of the Canadian Standards Association (CSA) Standard W 178.2 Certification of Welding Inspectors.

C.11.5.3 Current certified welding inspectors qualified by the Canadian Welding Bureau (CWB) to Level II or the Level III requirements of the Canadian Standards Association (CSA) Standard W 178.2 Certification of Welding Inspectors.

C.11.6 Welder, Welding Operators and Tack Welders
Before assigning any welder, welding operator, or tack welders to the welding work covered by the contract, the contractor shall obtain certification that the welder, welding operator, or tack welder has passed qualification tests as prescribed by the standards listed in ATPD 2402 Table 1: Welding Standard.

C.11.7 Welding Design

C.11.7.1 Armor Welding Design
Prior to manufacturing, the contractor shall develop welding procedures for all ballistic weldments in accordance with the Ground Combat Vehicle Welding Code for Steel and the Ground Combat Vehicle Welding Code for Aluminum as applicable. The Procedures shall be submitted to the Government when specified in the contract (CDRL A029 and A030) and approved prior to usage. All base materials used for ballistic weldments shall be qualified under the applicable MIL-DTL to be qualified as armor.

C.11.7.2 Structural Welding Design
Non-armor and structural welding design shall be performed by the contractor and will ensure that all metallic weldments meet the design and fabrication requirements in the prescribed standards listed in ATPD 2402 Table 1: Welding Standard, or equivalent if requested and approved by PCO. The use of pre-qualified weld joints as specified in AWS D1.1 does not preclude submittal of Welding Procedures (CDRL A029 and A030).

C.11.8 Nondestructive Testing of Welds

C.11.8.1 Visual Inspection
The contractor shall perform visual inspections in accordance with the applicable weld standards in ATPD 2402 Table 1: Welding Standard. Armor steel(s) and quenched and tempered steel(s) shall be visually inspected after the welds have been completed and cooled to ambient temperature, and after no less than a 48 hour hold period.

C.11.8.2 Acceptance
The contractor shall perform visual inspection and acceptance for non-ballistic applications shall be performed in accordance with the following weld codes: AWS D1.1 Structural Welding Code, Steel; AWS D1.2 Structural Welding Code, Aluminum

C.11.8.3 Nondestructive Critical Weld Joint Inspection
The contractor shall clearly identify all critical joints required for NDT other than visual inspection.

C.11.8.4 Nondestructive Inspectors

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When NDT is required, the inspectors shall be qualified in accordance with the current edition of American Society for Nondestructive Testing Recommended Practice No. SNT-TC-1A. Only individuals qualified for NDT LEVEL I and working under the NDT LEVEL II, or individuals qualified for NDT LEVEL II, may perform nondestructive testing other than visual examination. The NDT personnel need not be an AWS CWI. The contractor shall make all NDT personnel qualification records available upon request by the Government.

C.11.8.5 Nondestructive Testing Acceptance Criteria for Armor Material(s)
When NDT is required for armor, the procedures and acceptance criteria shall be in accordance with TACOM Ground Combat Vehicle Welding Code for Steel (drawing number 19207-12479550), and the Ground Combat Vehicle Welding Code for Aluminum (drawing number 19207-12472301). Steel Armor materials MIL-DTL-46100, MIL-DTL-12560, or low alloy steels that are 1/8 inch (3mm) or thicker with a minimum specified yield strength greater than 100ksi (600MPa) shall be held for a minimum of 48 hours and inspected after welding is completed and has cooled to an ambient temperature.

C.11.8.6 Nondestructive Testing Acceptance Criteria for Non Armor and Structural Material(s)
When NDT is required for non-armor and structural material(s) the acceptance criteria shall be as stated in the applicable standard. The acceptance criteria differ based on the design loads. The contractor shall state what joints are critical load bearing members and clearly identify these weldments for inspection purposes. In the case of critical structures, the acceptance criteria for cyclic loads will be as stated in AWS D1.1 and Class II structures for Aluminum welds in accordance with AWS D1.2.

C.11.8.7. Surface Treatment and Finish Requirements
All painting operations shall be in accordance with MIL-STD-53072C. The contractor shall develop a finishing procedure. The finishing procedure shall be submitted to the Government for review and approval prior to starting work in accordance with CDRL A009, CDR Entrance Criteria Package.

C.11.9 Welding Fixtures
Fabricated components (except for minor components) shall be assembled in fixtures or frames and welded while held securely into position. Minor components may be held together by any means that will ensure secure and proper positioning. Major component fixtures shall be designed in accordance with ASME Y14.43. The fixtures or frames shall be designed to minimize the distortion of the components being welded and to ensure that drawing tolerances are maintained.

C.11.10 Weld Layout Drawings
Prior to production, the contractor or manufacturer shall prepare and submit Weld Layout Drawings (WLD) (CDRL A013) to the procuring engineering activity for approval when specified in the contract.

C.11.10.1 Preparation of weld layout drawings
Weld layout drawings shall include proper weld symbols in accordance with AWS A2.4 and ASME Y14.100. The WLD shall include all weld number locations for all assemblies and sub assemblies (see 1.11.2, 1.11.3).

C.11.10.2 Drawings for vehicles
A WLD, either Isometric or 3D solid model, of the vehicle shall uniquely identify the location of each weld using a numbering method. At a minimum, each unique weld number shall identify subsystem,

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weld number, weld class, vehicle location, and weld process. Table 1 is an example of a numbering method. Clarification of the numbering method, such as a key or legend, shall be included in the WLD. The WLD shall contain a summary table containing all numbered welds for that drawing.

TABLE 1. Weld identification number format

X	XXX	X	X	X
SUBSYSTEM #	WELD #	CLASS #	VEHICLE LOCATION	WELD PROCESS #
1 = Turrets	Consist of three numbers, EX: 001, 002, 123, 321	1 = Class I	M = Mirror	1 = Process 1
2 = Closures			L =Left Hand Only	2 = Process 2
3 = Underbody		2 = Class II		3 = Process 3
4 = Body sides			R = Right Hand Only	4 = Process 4
5 = Framing		3 = Class III		5 = Process 5
6 = Engine Box			X = Not Applicable	
7 = Other				

C.11.10.3 Drawings for components, subassemblies and non-vehicle assemblies: A WLD, either Isometric or 3D solid model, of the vehicle shall uniquely identify the location of each weld using a numbering method. At a minimum, each unique weld number shall identify subsystem, weld number, weld class, and weld process. Table 1 is an example of a numbering method. Clarification of the numbering method, such as a key or legend, shall be included in the WLD. The WLD shall contain a summary table containing all numbered welds for that drawing

C.12 QUALITY ASSURANCE

C.12.1 Quality Plan

The contractor shall have a documented Quality Control Program (QCP) prepared in accordance with International for Standardization (ISO) 10005 Quality Management Systems Guidelines for Quality Plans (adopted by DOD 1 DEC 95) and FAR clause at 52.246-11, “Higher-Level Contract Quality Requirement (FEB 1999)”. The contractor shall submit the QCP to the Government for approval in accordance with CDRL A032. All work to be performed shall be conducted by qualified personnel in accordance with the approved Quality Control Plan (QCP). If work cannot be accomplished as described by the QCP, or would result in defective product, all work shall be stopped until the QCP is amended to reflect the appropriate work practice and approved by the Government.

C.12.1.1 Sub -Contractor Quality Assurance Program

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The contractor shall have a supplier quality assurance program that requires all suppliers to be compliant to ASME/ISO/ASQ Q9001-2008, as a minimum. The contractor's supplier quality assurance program shall ensure each supplier has a documented quality system which includes development, implementation, and maintenance of control plans for all JAB chassis products. The contractor's supplier quality assurance plan shall be encompassed within the supplier's quality manual. Contractor's documentation and acceptance of the subcontractor quality assurance system and control plans shall be made available for review upon Government request. The contractor shall use the subcontractor's accepted system when conducting quality audits. The Government reserves the right to perform quality audits at the contractor and Subcontractor facilities, as deemed necessary.

C.12.2 Manufacturing Plan
The contractor shall develop and submit a Manufacturing Plan describing its manufacturing process in accordance with CDRL A033.

C.12.3 Audits
Internal quality audits for this contract shall be performed by qualified auditors in accordance with paragraph, 8.2.2 of ISO 9001-2000. The contractor's records shall provide documentation in accordance with CDRL A034, Contractor Audit Records, that fully describes the root cause of deficiencies in products or processes and corrective actions taken.

C.12.4 Quality Records
The contractor shall establish and maintain records that are legible and identifiable to this contract. Such records shall be filed and indexed in a logical fashion that will allow for easy and timely retrieval. QA records shall include:

- Quality work plans and revisions
- Qualification and training
- Analysis records
- Review documentation
- Inspection documentation to include records of inspection, test, and examinations
- Final deliverable reports
- Results of internal and supplier audits to include Production Parts Approval Process (PPAP)
- Certifications
- Purchase Orders

These documents shall be retained by the contractor for a minimum period of three years after contract close out and shall be made available to the Government upon request. In addition, where product or process deficiencies have occurred during performance of work, the contractor's records shall provide documentation that fully describes the root cause of deficiencies and corrective actions taken.

C.12.5 Pre-Production Vehicle Inspection and Induction
Upon receipt of the hull and LRU's by the contractor, the hull shall be identified by model number and serial number and be inspected by the contractor and approved by a local Government designated Quality Assurance Representative (QAR). All missing, damaged, destroyed, or non-standard components shall be noted and recorded on a DA Form 2404 and reported to the PM and ANAD.

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C.12.6 Warranty

If any commercial components have a warranty, the contractor shall include warranty information in the Operator and Operator and Field Maintenance Lubrication Order manuals. This information shall include a listing of items under warranty, the term of the warranty and procedures for pursuing a warranty.

C.13 INSPECTIONS

C.13.1 Inspection & Test Equipment

The contractor shall make inspection equipment available to the Government Inspector during Government in-process or end item inspection. The contractor is responsible for the supply and maintenance of all inspection and test equipment necessary to assure that end items and components conform to contract requirements. Upon completion of the inspection by the Government Inspector, all inspection equipment shall be returned to the contractor. The provisions of this paragraph shall also apply to sub-contractors.

C.13.2 JAB System Inspection Overview

Prior to delivery to the Government, the contractor shall conduct inspections and tests for the JAB Systems in accordance with ATPD 2402.

C.13.2.1 In-Process Inspections

During fabrication of the JAB Systems, the Government shall have access to the contractor's and subcontractors' facilities to perform in process inspections in accordance with ATPD 2402.

C.13.2.2 Post-Production Inspection and Functional Test

Prior to delivery of the JAB Systems, the contractor shall conduct quality inspections and functional testing of each JAB system in accordance with ATPD 2402.

C.13.2.3 Final Inspection Record (FIR)

The contractor shall prepare a FIR in contractor format to be used during Quality Conformance Inspection (QCI) in accordance with CDRL A035 and in accordance with ATPD 2402. The FIR shall list each characteristic or function inspected or tested, and the relationship to the contract requirement. Deficiencies disclosed and corrective action taken during inspection by the contractor or the Government shall be described in writing on the Deficiency Sheet attached to the FIR. The contractor shall perform 100% final inspection of the end item in accordance with the requirements of ATPD 2402 utilizing the Government approved FIR.

C.13.2.4 Functional Test and Inspection Schedules

The contractor shall provide a test schedule and notification in advance of all tests at the contractor's facility prior to delivery of JAB systems to the Government. The contractor shall provide access to the test facility during the test so Government officials may monitor test activities. After completion of each test, the contractor shall provide the Government with a Test Report in accordance with CDRL A109 documenting the results.

C.14 SOFTWARE

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C.14.1 The contractor shall have and maintain at least a Capability Maturity Model Integration (CMMI) Level III Software Engineering Institute (SEI) certification for all business units and subcontractors performing software development work and deliver a CMMI Organization process in accordance with CDRL A108. The contractor shall deliver all software, including Non-Developmental Item (NDI) and Commercial Off-The-Shelf (COTS) software in each delivered vehicle with appropriate licenses and without restrictions for usage in its intended vehicle application.

C.14.2 Software License Package
The contractor shall develop a Software License Package in accordance with CDRL A036 to identify and deliver all commercial software licenses for all software and updates utilized on the delivered vehicles.

C.14.3 Software Maintenance
The contractor shall develop and maintain embedded software packages for the software reloading capability of the whole JAB or an individual LRU/LRM reload. The contractor shall also develop the capability to update vehicle software using the Maintenance Support Device (MSD) V3 or future versions of the MSD. (Attachment 0022, GFI List) The procedures for updating software into the system shall be documented in the published procedures in the technical manuals and electronic technical manuals.

C.14.4 Software Metric Report
The contractor shall provide documentation on the software development effort to provide details on the number of Source Lines of Code (SLOC) by Software Configuration Item, software defects and software size. Software Metrics Reports (CDRL A037) shall be provided quarterly in conjunction with the PMR. The contractor shall provide Problem Reporting metrics to track the number, type and severity of open software problem reports against the total number of closed reports quarterly in conjunction with the PMR.

C.14.5 Interface Control Document (ICD)
The contractor shall provide initial Interface Control Documents (ICDs) (CDRL A038) for LRUs at CDR. The ICD shall define the protocol, word formats, and data types for the data packets listing all released Interface Information (such as drawings, tables, and diagrams); a revision record, a cross-reference listing, a description of the physical and function relationships between all released Interface Information. Any changes to system design that affect the ICD shall require the contractor to submit an ECP (CDRL A016) which includes an updated ICD and a summary of the changes to that ICD (CDRL A038).

C.14.6 Software Test Plan (STP)
The contractor shall provide a Software Test Plan (STP) (CDRL A039) which provides details of the software test environment, test identification, test schedules, requirements traceability, and notes in advance of all tests at the contractor's facility prior to delivery of JAB systems to the Government.

C.14.7 Software Test Report
The contractor shall provide a Software Test Report (CDRL A109) which provides an overview of the test and detailed test results including successful and unsuccessful test events.

C.14.8 Software Release Notes
The contractor shall provide Software Release Notes (CDRL A041) for each delivered Software Version which provides details of the following:

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1. Configuration Management (CM) Released Software Version and Drop Number
2. The Third Party Configuration Items and CSCI Version Numbers
3. LRUs and LRMs Version Numbers, Description of the Release, known problems and limitations with the Release
4. Baseline Version of the Software, New Functions and Change Requests, Requirements Definition Document, System Trouble Report Fixes, Enhancement Issues, and Downloaders Version and Description

C.14.9 Software Development Plan (SDP)
All embedded JAB software shall be developed in accordance with a contractor developed SDP (CDRL A042). The contractor shall use its own corporate software standards in developing the SDP and shall tailor the SDP to program needs. The SDP shall focus on contractor developed software, but shall also address configuration management and the integration approach for NDI/COTS/Government-Off-the-Shelf (GOTS)/GFE software. The SDP information shall be delivered to the Government and discussed at IPT meetings. The SDP shall include but not be limited to the following content: scope, referenced documents, overview of required work, schedules and activity network, project organization and resources, and notes.

C.14.10 Systems Integration Lab (SIL)
The contractor shall develop and use a SIL to integrate and test the JAB system electronics, Line Replaceable Units (LRUs), and Configuration Items (CIs) prior to full vehicle integration. This lab shall be used to test, improve, and re-test the hardware and software sub-components as well as the complete electrical/electronic architecture as interfaced together during the overall development of the JAB. The SIL shall remain fully functional throughout the life of the contract. Proposed corrective actions and ECPs shall be validated in the SIL prior to implementation on the vehicles. The SIL shall be kept current using the Change Management process defined in section C.6.5 for configuration changes in order to reflect the current state of the vehicles until the end of the contract. The contractor shall provide access to the SIL for Government testing when needed. The Government will coordinate any SIL usage so as to not disrupt contractor schedule or testing.

C.14.11 Software Installation and Update
The contractor shall install up to date and approved software releases on each JAB during production and document the version of software installed on each JAB as it was delivered. The contractor shall develop and maintain procedures for uninstalling a new software version and reinstalling a previous version.

C.14.12 Final Version Delivery for Version Updates
The contractor shall deliver to the Government final versions of each new release of JAB software and include detailed instructions on installing that software as an update to already fielded JABs in accordance with CDRL A043, Final Version Delivery for Version Updates.

C.14.13 Systems Interoperability
The contractor shall be responsible for systems interoperability as defined in ATPD 2402. Systems interoperability shall include all hardware, software, communications and logistics systems included in the JAB operational configuration (e.g. BFT, FBCB2, etc.) or used in support of the JAB (e.g. MSD, NGATS, etc.). Integration of GFM and contractor provided LRUs shall not degrade demonstrated performance of

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or interoperability between the components. The contractor shall provide support and required documentation for all Government interoperability testing.

C.15 JAB CYBERSECURITY STRATEGY

The contractor shall develop and implement a Cyber Security Strategy (CDRL A044) that includes but is not limited to a Software Development Plan, Software Assurance Plan, Hardware Validation Plan, Supply Chain Risk Management Plan, Testing Plan (Architecture and Configuration), Vulnerability Management Plan, Patch Management Plan, Release Management Plan and Configuration Management Plan. This strategy will be used to validate the systems cyber security posture throughout development.

The contractor shall provide a copy of their Cybersecurity Strategy in accordance with CDRL A044 which will be incorporated into the program's CyberSecurity Strategy. The contractor shall execute the Cyber Security Strategy which includes analyzing system security requirements derived from the requirements of this contract, designing a system and the security architecture, developing detailed system security design; developing security test strategy, and developing a report that outlines the system risk for the proposed architecture in accordance with CDRL A045, System Security Design and Risk Assessment. The contractor shall support Information Assurance (IA)/cyber certification and accreditation of the system by providing Cybersecurity Accreditation Artifacts Package in accordance with CDRL A046, analyses, test, evaluation and assessments. This information shall be available to the Government and discussed at IPT meetings as well as major reviews.

The contractor shall comply with the latest version, as of the time of contract award, of Army and DoD Information Assurance / Cybersecurity policies to include Army Regulation 25-2, Information Assurance (IA), associated Best Business Practices, Security Technical Implementation Guides, Department of Defense (DoD) policy to include DoD Instruction (DoDI) 8500.01 Cybersecurity, National Institute of Standards and Technology (NIST) standards, including Federal Information Processing Standards (FIPS) publications. The contractor shall provide the IA documentation needed for accreditation as outlined in DODI 8510.01 and conform to IA controls outlined in NIST SP 800-53 Rev 4, Recommended Security Controls for Federal Information Systems and Organizations. The contractor shall conform to DoDI 8551.1, Ports, Protocols and Services (PPS) Management (PPSM). In addition the contractor shall provide a complete list of PPS and what functions and/or modules each is used for in the software.

C.15.1 CyberSecurity Risk Assessments

The contractor shall evaluate the system’s security posture, both physical and logical, identifying weaknesses and potential exposures, and providing countermeasures and controls available to mitigate 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 also evaluate the security of the JAB against the Common Attack Pattern Enumeration and Classification (CAPEC) catalog of common attack patterns and identify assets that need additional security protection against these common attack patterns. 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 System Security Plan SSP and IA/Cyberartifacts Package in accordance with CDRL A046. This information shall be made available to the Government and discussed at IPT meetings as well as major reviews.

C.15.2 Cyber Security Accreditation Artifact Package

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The contractor shall provide a Cybersecurity Accreditation Artifact Package (CDRL A046). The information used to create CDRL A046, shall be available to the Government and discussed at IPT meetings as well as major reviews. The contractor shall provide the following security related documents as part of the Artifact Package:

1) Systems Security Plan (SSP), which will provide an overview of the security requirements of the system and describe the controls in place or planned for meeting those requirements. It will also delineate responsibilities and expected behavior of all individuals who access the system.

2) Evidence of applied Best Business Practices (BBPs) and STIGs as applicable based on architecture and software

3) Data Flow Diagram

4) Architecture (topology) Diagram

5) Hardware and Software List (included vendors, versions)

6) Ports Protocols and Services (PPS) List and how each PPS impacts the function of the system.

7) Vulnerability Assessment with impact to the system to identify the threats and vulnerabilities, and the impact if exploited.

8) Process/Procedures used to document remediation strategies and actions to correct identified vulnerabilities

9) Procedures/process to monitor, detect, report, and respond to security incidents

C.15.3 Software Development Best Practices
The contractor shall provide the Army a copy of the contractor's Software Development Plan that demonstrates the inclusion of software development best practices per CMMI Level III standards specified in C.15. Upon delivery of any Software to the Army the contractor shall certify to the Army in writing that the contractor complied with its Software Development Plan in the performance of its obligations under this contract. The contactor shall provide all operating system, middleware, and application software to the Government free of common weaknesses as specified in the Common Weakness Enumeration, A Community-Developed Dictionary of Software Weakness Types that can be retrieved from http://cwe.mitre.org/.

C.15.4 Software Quality Assessments
The contractor shall support Government software quality assessments. The contractor shall provide software, source code, and related documentation to the Government (including the Government's support contractors) to support an independent review of the contractor's software in areas such as error detection, memory leaks, performance tuning, test coverage, and other software areas of concern. The Government shall decide if and when to conduct such a review and if multiple reviews are desirable.

The contractor shall establish, measure, and regularly report System, Program and Technical Performance Metrics (TPMs), including both hardware and software metrics. The metrics will be used to

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monitor the status of systems development, integration and test. These should include details on the amount of code produced, software defects, and other metrics that the contractor intends to provide to the Government. The contractor shall also provide Government access to the contractor's databases that contain the metrics so the Government can view metrics at any time and produce metrics reports as desired.

The contractor shall demonstrate how software quality will be assured during the Software Life Cycle. The contractor shall document the means (documented tools, techniques, processes, measures, and any other factors) to ensure software quality, security, reliability and maintainability attributes. The contractor shall also document plans on how it will meet Government and industry requirements and guidance such as DoDI 8510.01(Risk Management Framework for DoD IT), Networthiness, DoDI 8500.2 DCSQ-1, the Defense Information Systems Agency (DISA) Application Security And Development Security Technical Implementation Guide, Version 2, Release 1, 24 July 2008, and IEEE 1028-2008 Standard for Software Reviews and Audits.

C.15.5 Cyber Security and Software Scans

C.15.5.1 The contractor shall provide the Government access to the software source code repositories for all JAB software (excluding closed source Commercial Off The Shelf (COTS)) for Software Code Scans. The contractor shall allow the Government to conduct Software Assurance scans on the contractor's software to determine if there are any vulnerabilities in the system software code. The contractor shall mitigate any vulnerabilities discovered in Level I or Level II critical functions as a result of the baseline software analysis. Mitigation information shall be provided to the Government and discussed at IPT meetings. The contractor shall resolve findings identified in all software (including open source software) evaluated in the software code scans. The contractor shall ensure each source code repository can accept the Government's Hewlett Packard (HP) Fortify 360 Suite Static Code Analyzer scanning software tool. Follow-on-scans will only be conducted if the initial scan requires action on the contractor's part to resolve deficiencies or at the discretion of the Government.

C.15.5.2 The CyberSecurity vulnerability scans will be conducted on the JAB system architecture utilizing an approved SCAP scanner to determine if there are any vulnerabilities or nonconformance in the system. The contractor shall provide the Government a report in accordance with CDRL A047 of the CyberSecurity Vulnerability Scans completed on the JAB System. The Initial Baseline CyberSecurity Scan shall be completed 90 days after CDR. A second scan will be conducted at TRR on final configuration managed software build that has gone through a pre-software qualification test by the contractor. The report shall address root cause determination, corrective action development and implementation, process control improvement, and scan results. This information shall be provided to the Government and discussed at IPT meetings as well as major reviews.

C.15.6 Cyber Security Testing
The contractor Cyber security personnel shall attend Cyber Security readiness (Red Team) testing execution and recovery. Cyber Security readiness testing will be conducted during Operational Test events and test events jointly determined with the Government.

C.15.7 Cyber Security Vulnerability Management
The contractor shall establish an Information Assurance Vulnerability Management (IAVM) Program that is consistent with DoD guidelines for patch application. The contractor shall ensure that all applicable

patches have been applied within 7 days of Information Assurance Vulnerability Alert (IAVA) release. If an applicable IAVA is not able to be applied, the justification will be documented and provided as an artifact to the Government. The contractor shall monitor Government, vendor, and industry releases by subscribing to vulnerability notification services and reviewing other data available to identify vulnerabilities in software and hardware used in the JAB systems. The contractor shall subscribe to the Government email notifications from the Information Assurance Vulnerability Management notification system, currently hosted at https://iavm.csd.disa.mil/.

C.16 TRANSPORTABILITY

The contractor shall conduct a transportability analysis to ensure the transportability requirements of ATPD 2402 are satisfied. The Transportability Report shall be delivered in accordance with CDRL A048. If, after Government acceptance, configuration changes are made which impact the data contained in this report, the contractor shall provide change pages for insertion in the report.

C.17 HUMAN FACTORS ENGINEERING (HFE)

C.17.1 The contractor shall assure that the system design is consistent with the capabilities and limitations of the fully equipped Soldier to operate, maintain, supply, and transport it in its operational environment, consistent with tactical requirements and logistical capabilities. The scope of the HFE analysis, design and test activities shall include compensation for the effects of personal equipment; clothing; protective gear; extremes of natural environment including atmospheric, degraded visibility, thermal, and terrain conditions as defined by system requirements; workload contingencies; and combat training scenarios for each deployment mode and intended duty cycle (normal, sustained, and emergency). The contractor shall evaluate the system to assess capability to maximize system and human performance and combat effectiveness and identify any shortfalls and implement appropriate resolutions.

C.17.2 Human Factors Engineering Analysis (HFEA)
The contractor shall perform and deliver an HFEA (CDRL A049). The HFEA shall describe the status of the systems human factors engineering program and contain adequate data to support the contractor's assertions that the system meets the human factors engineering requirements for Milestone Decision and Design Reviews. The contractor shall identify HFE shortfalls or issues and implement appropriate resolutions. The contractor shall maintain a database of the issues and provide updates per CDRL A049, HFEA. As guides for managing the HFE program, the contractor may use MIL-STD-1472, Human Engineering Design Criteria for Military Systems Equipment and Facilities, and MIL-STD-1474, Noise Limits Design Criteria for Military Systems Equipment and Facilities.

C.18 GOVERNMENT TEST OVERVIEW

The Government conducted test and evaluation will consist of: PQT/ Reliability Availability Maintainability (RAM), Live Fire Test and Evaluation (LFT&E), Logistics Demonstration (LD), and Operational Testing (OT).

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C.18.1 Production Qualification Test (PQT)
The Government will conduct testing in accordance with ATPD 2402, Section 4. Some portions of PQT may be conducted at alternate locations at the Government's discretion.

C.18.2 Live Fire Test and Evaluation (LFT&E)
Live Fire Testing will be conducted in four stages; coupon testing, ballistic hull (exploitation test), system level and Full Up System Level (FUSL) testing. Testing will be conducted by ATC with the U.S. Army Research Laboratory (ARL), Weapons and Materials Research Directorate (WMRD) at Aberdeen Proving Grounds (APG). If the contractor participated in the EMD phase of the JAB program, one of the EMD vehicles will be used for LFT&E.

C.18.2.1
If the contractor participated in the EMD phase of the JAB program, then the contractor shall reconfigure both of the EMD JAB prototypes to the LRIP configuration as approved at the CDR. The Government will provide these JAB EMD prototypes back to the contractor as GFP for this purpose. The contractor shall deliver these vehicles no later than 180 DACA. These vehicles will account for the two units under CLIN XXX required for test as described in C.20.5.

C.18.2.1.1 Ballistic Coupons
The contractor shall deliver ballistic coupons as defined in Ground Combat Vehicle Welding Code - Steel, Drawing Number 12479550 to APG within 180 DACA. See https://contracting.tacom.army.mil/engr/12479550%20TACOM%20WELD%20CODE%20STEEL.pdf

C.18.2.1.2 Not Fully Functional Vehicle
The contractor shall deliver an LRIP configured JAB system for use in the system level Live Fire Test event. To create this test asset, the contractor shall install all components and subsystems required for one (1) JAB bridge launcher system (fully operational) on a not fully functional chassis provided by ANAD. The "not fully functional" vehicle configuration is defined in Attachment 0010. The contractor shall deliver this test asset to APG no later than 9 months DACA.

C.18.2.1.3 Fully Functional Vehicle
The contractor shall deliver one fully functional LRIP configured JAB system for use in the FUSL event. If the contractor produced prototype JAB vehicles for the EMD phase of the JAB program, this asset shall be one of the EMD prototypes re-configured to LRIP configuration for the LFT&E event. See Section C.20. The contractor shall deliver this test asset to APG no later than 9 months DACA.

C.18.3 Logistics Demonstration.
If the contractor participated in the EMD phase of the JAB program, one of the EMD vehicles, re-configured to LRIP configuration, will be used for Log Demo. See Section C.21.

C.18.4 Operational Test (OT)
The OT will consist of two discrete events, an integrated Developmental Testing (DT)/OT event and an Initial Operational Test (IOT) event. The DT/OT will be conducted at ATC and the DT/OT will focus on collecting Reliability data. The contractor shall provide Field Service Representatives (FSR(s)) to ATC to conduct New Equipment Training (NET) for the combined DT/OT event.

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The IOT event will be conducted with a field unit operating LRIP JABs in an operationally relevant environment (tentative location FT. Hood). The contactor shall train the selected unit in Operator New Equipment Training (OPNET) and Field Level Maintainer NET (FLMNET) for the JAB prior to the start of IOT.

C.18.5 Reliability, Availability, Maintainability (RAM) Program

C.18.5.1 Reliability

C.18.5.2 Reliability, Availability, and Maintainability (RAM) Program Management
The contractor shall update and maintain a RAM management program plan and Reliability and Maintainability Report (CDRL A050) throughout the program cycle. The program plan shall include analysis and predictions that assess and ensure the JAB System design's ability to achieve the RAM requirements of ATPD 2402 (using ANSI/GEIA-STD-0009 as a guide) and develop essential information for the development of the JAB System logistics support package. Reliability growth achieved through a closed-loop failure mode mitigation reliability program shall be incorporated in the RAM Report.

C.18.5.3 Scoring Conference
During and after Government testing, Scoring Conferences will be held to review and unilaterally score Test Incident Reports (TIRs). The contractor shall support Government Scoring Conference and Assessment meetings as necessary by presenting information, evidence, or opinions that the Government will consider when scoring test incidents. The contractor will not attend the meetings for actual scoring of the TIRs.

C.18.5.4 Assessment Conference
After PQT testing is complete, the Government will conduct a final Assessment Conference to review all corrective actions. The contractor shall prepare and present all materials to support the assessment conference. The contractor shall not participate in the Government only portion of the Assessment Conference. The Government will provide the results of the Assessment Conference to the contractor.

C.19 TEST DEFICIENCIES

C.19.1 Failure Analysis and Corrective Action Reporting System (FACARs)
The contractor shall be responsible for accessing the Army Test Incident Reporting System (ATIRS) database at Aberdeen Test Center (ATC) to obtain the Test Incident Reports (TIRs) generated on the equipment during the Government tests. TIRs are the means by which data collected during Government testing will be reported. Information on access to ATIRS, and points of contact at ATC are available on the web at: http://www.vision.atc.army.mil. The contractor shall apply for access to the ATIRS database for the corrective action reporting via the ATC website. The contractor's date of receipt of the TIR shall be defined as the day the TIR is posted to the database. Upon acquiring a TIR, the contractor shall assess the failure, and shall deliver a Failure Analysis and Corrective Action Report (FACAR) in accordance with CDRL A051 with the proposed corrective action to prevent or minimize the probability of incident recurrence. The contractor shall upload the FACAR to ATIRS. In addition, the contractor shall upload any supporting documentation (photos, fishbone diagrams, etc.) for the FACAR to a corresponding folder on the Vision system. The FACAR review board will review the corrective

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action and approve or reject the FACAR. If a FACAR is rejected, the contractor will modify and re-submit the FACAR for final approval.

C.19.2 Retest
In the event of a JAB System test defect/failure, the Government reserves the right to retest the JAB System upon correction of the defect(s)/failure(s). The contractor shall be responsible for delays in the program test period resulting from all JAB system (as defined under C.1.1) failures, including failure to adequately or timely furnish parts support, and the Government shall have the right to extend the specified program test period accordingly. The contractor shall continue to provide test support for the extended test period at no additional cost to the Government. Test failures will be discussed at the quarterly PMRs and the contractor shall submit an updated IMS in accordance with CDRL A006.

C.19.3 TIR Closeout and FACAR Review Meetings
During and after Government testing, the Government will schedule TIR closeout meetings monthly to review the functional/performance failure data and corrective action status of TIRs which require a contractor response. Meetings will be held via teleconference or at the Government's facility. The contractor shall present information, evidence, or opinions that the Government may consider when assessing corrective actions.

C.19.4 Test Status Meetings
The contractor shall participate in teleconferences to review and discuss open TIRs, draft FACARs, and related analyses when necessary. Test status meetings will occur no more frequently than bi-weekly.

C.20 TEST SUPPORT

C.20.1 Test Support Package (TSP) List
The contractor shall provide a separate TSP List in accordance with CDRL A052 for each test event: PQT, LD, LFT&E, and IOT. The PQT TSP list shall identify quantities of supplies needed for the testing of each test event, totaling twelve JAB launcher systems. The contractor shall evaluate failure rates expected as well as administrative lead time and procurement lead time requirements when determining the items and quantities of items to place in the TSP. The contractor shall ensure that the TSP for test events is adequate to repair the JABs in a timely manner so as not to cause schedule delays. Petroleum, Oils and Lubricants (POL) shall not be included in the TSP list. The TSP shall include the following:

a. Spare/repair parts for the JAB chassis (including launcher). All items required to support the service intervals defined in the technical manuals for the duration of the full reliability cycle for PQT (approximately 1650 miles and 360 launch and retrieve cycles)
b. Common and special tools.
c. Basic Issue Items.

C.20.2 TSP Delivery
The contractor shall assemble, furnish and ship (to include packing, packaging and transportation) the TSPs to the test site and ensure that the entire TSP to support all test vehicles is received upon delivery of the first test vehicle to Aberdeen Proving Grounds, or signature of the DD250 for the first vehicle, whichever is earlier. The method of shipping shall be FOB Destination. The TSPs shall consist of items

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listed on the TSP lists. The contractor shall resupply any items consumed during test within forty-eight (48) hours of usage to ensure test continuity.

C.20.3 Contractor Test Support
Contractor technical support shall include technical representation at the Government test site throughout each of the test events. The contractor shall provide support for each test event as is described below. The contractor shall provide FSRs who are Subject Matter Experts (SMEs) on the JAB hydraulic systems (bridge launcher, hydraulic power unit, controls, etc.) and the Abrams chassis (drive train, suspension, etc.) The Government will provide secure storage facilities for contractor TSP at the test sites.

C.20.4 Production Qualification Testing (PQT)
The Government will operate the JAB Systems during PQT and the contractor shall perform all maintenance and repairs on the entire JAB system. All maintenance and repairs shall be conducted in the presence of the Government personnel. The contractor may use Government maintenance facilities but must provide its own tools. The contractor shall sustain equipment in a mission capable status and perform maintenance both preventive and corrective in nature. The contractor shall perform maintenance which entails inventory, cleaning, inspecting, preserving, lubricating, adjusting, and testing as well as fault isolating and replacing parts and components. The contractor shall replace the failed component, assembly, or module to return the system to an operational (mission capable) status. The Government will provide the start date for PQT. The contractor shall provide maintenance support for the duration of PQT (not to exceed nine months). The contractor shall provide New Equipment Training for JAB operators at the start of this event.

C.20.5 LFT&E Test Support
The Government LFT&E events will be conducted at APG. The contractor shall provide FSRs and SMEs to assist Government test personnel in preparation for LFT&E events, as well as post-test analysis as necessary. The FSRs shall repair the JAB chassis after each live fire event (excluding the last event on each vehicle) to fully operational status. The live fire events are planned to consist of three events on the system level vehicle (two repairs) and four events on the FUSL vehicle (three repairs).

C.20.6 Solid and Finite Element (FE) Models for LFT&E Support
The contractor shall deliver Solid Model Design and System-Level Finite-Element (FE) Models of the JAB System in accordance with CDRL A053 to the Government NLT 30 days after the Critical Design Review (CDR). The contractor shall submit to the Government updated Solid Models in the event of any significant JAB system design changes as determined by the Government.

C.20.7 DT/OT Test Support.
The contractor shall support the DT/OT test event by providing FSRs and Test Engineers (TEs) on site at APG for up to 8 weeks. The Government will provide the contractor with the start date. The contractor shall provide New Equipment Training for JAB operators and also for JAB maintainers at the start of this event.

C.20.8 Operational Test Support
The contractor shall support the OT event at a stateside military installation for up to 12 weeks. The Government will provide the contractor with the start date and location for this event. The contractor shall provide FSRs for on call support, TEs available for onsite support, design engineers on call to the

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test support personnel. These FSRs and TEs shall also ensure that the Test Support Package (TSP) is maintained with the proper quantity of repair and replacement parts for the JAB System test at the OT test site.

C.20.9 Logistics Demonstration.
See section C.21

C.21 RESERVED

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