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INCH-POUND
ATPD-2402
DRAFT V2

PURCHASE DESCRIPTION

U.S. ARMY JOINT ASSAULT BRIDGE

Comments, suggestions, or questions on this document should be addressed to U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or emailed to DAMI_STANDARDIZATION@conus.army.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.daps.dla.mil.

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Revision List for ATPD Draft V2			
Edited Sections		**Inserted Sections**	**Moved Sections**
FORWARD	3.9.1.2	3.7.8.3	Table 2
2.2.2	3.9.1.3	3.7.8.6	4.6 moved to 4.1.2
2.3	3.10.10.2	3.7.8.8	4.7 moved to 4.1.3
3.6	3.11.1	3.8.5.3	
3.7.2	3.11.2.1	3.9.1.4	
3.7.4	3.11.2.2	3.10.5	
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3.7.7.1	3.11.2.7		
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3.8.5.2	6.3.9		
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3.8.7.4	B. Abrams Mandatory Performance Levels		
3.9.1	C. Abrams M1A1 Ballistic Survivability		

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FORWARD

This Purchase Description entails the technical requirements and the means for verification for the Joint Assault Bridge (JAB) Capability. Comments, suggestions, or questions regarding this document may be addressed to Winslow (Tom) Morrow, Contract Specialist, Army Contracting Command - Warren (DTA), CCTA-HBF-B, PH 586.282.3549

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1. SCOPE

1.1. Scope

This Purchase Description (PD) covers the performance requirements for the Joint Assault Bridge (JAB) system. The purpose of the JAB system is to meet the gap crossing requirements of the Operating Forces by providing a rapidly employable, short gap, assault crossing system for the armored / mechanized forces, capable of spanning natural and manmade obstacles up to 60 feet.

1.2. Required/Desired

Within this PD, the requirement refers to the minimum threshold that will be expected or accepted (required). Desired refers to the Army's objective that it would like to achieve. Required is also referred to as Threshold (T), and Desired is also referred to as Objective (O). Unless otherwise stated, if a requirement does not contain a T or O, the requirement is a threshold.

2. APPLICABLE DOCUMENTS

2.1. General

The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirement documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2. Government documents

2.2.1. Specifications, Standards, and Handbooks

The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

FEDERAL STANDARDS

FED-STD-313	-	Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities
FED-STD-595/33446	-	Yellow, Flat or Lusterless (Tan 686)

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-6083	-	Hydraulic Fluid, Petroleum Base, for Preservation and Operation
MIL-DTL-46100	-	Armor Plate, Steel, Wrought, High-Hardness
MIL-PRF-46170	-	Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base, North Atlantic Treaty Organization (NATO) Code No. H-544

MIL-DTL-53072 - Chemical Agent Resistant Coating (CARC) System Application Procedures and Quality Control Inspection
MIL-DTL-64159 - Camouflage Coating, Water Dispersible Aliphatic Polyurethane, Chemical Agent Resistant

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-130 - Identification Marking of U.S. Military Property
MIL-STD-209 - Lifting and Tiedown Provisions
MIL-STD-461 - Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment
MIL-STD-464 - Electromagnetic Environmental Effects Requirements for Systems
MIL-STD-810 - Environmental Engineering Considerations and Laboratory Tests
MIL-STD-882 - System Safety
MIL-STD-1366 - Transportability Criteria
MIL-STD-1472 - Human Engineering
MIL-STD-1474 - Noise Limits
MIL-STD-2169 - HEMP (Classified)

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-454 - General Guidelines for Electronic Equipment
MIL-HDBK-759 - Human Engineering Design Guidelines

(Copies of the above specifications, standards, and handbooks are available from Document Automation and Production Service, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094 or website: https://assist.daps.dla.mil/quicksearch/.)

2.2.2. Other Government Documents, Drawings, and Publications

The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND TRANSPORTATION ENGINEERING AGENCY (SDDCTEA) – Pamphlet (PAM)

SDDCTEA-PAM 55-19 - Tiedown Handbook for Rail Movements
SDDCTEA-PAM 55-20 - Tiedown Handbook for Truck Movement
SDDCTEA-PAM 55-22 - Marine Lifting and Lashing Handbook
SDDCTEA-PAM 55-24 - Vehicle Preparation Handbook for Fixed Wing Air Movements
SDDCTEA-PAM 70-1 - Transportability for Better Deployability

(Copies of these pamphlets are available from http://www.tea.army.mil/pubs/pubs_order.htm or from Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA), 709 Ward Drive, Bldg. 1990, Scott AFB, IL 62225.)

TRILATERAL AGREEMENTS

TRILATERAL DESIGN AND TEST CODE (TDTC) FOR MILITARY BRIDGING AND GAP CROSSING EQUIPMENT

(Copies of these documents are available online at www.dtic.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

CODE OF FEDERAL REGULATIONS

Title 10 - Energy
Title 19 - Customs Duties
Title 29 - Labor
Title 49 - Transportation
- Part 571 (FMVSS) No. 207 - Seating Systems
- Part 571 (FMVSS) No. 209 - Seat Belt Assemblies
- Part 571 (FMVSS) No. 210 - Seatbelt Assembly Anchorages

(Copies of these documents are available from www.gpoaccess.gov/cfr/index.html or U.S. Government Printing Office, P.O. Box 979050, St. Louis, MO 63197-9000.)

U.S. ARMY PUBLICATIONS

AR 750-1 - Army Material Maintenance Policy
FM 3-11.4 - Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection
FM 4-30.31 - Recovery and Battle Damage Assessment and Repair
TM 5-5420-203-14 - Operator's, Unit, Direct Support, and General Support Maintenance. Bridge, Armored-Vehicle Launched: Scissoring Type Class 60 & Class 70 Aluminum, 60 Foot Span; For M48A5 and M60 Launcher
TM 5-5420-202-10 - AVLB Operators Manual

(Copies of these documents are available from http://www.army.mil/usapa/index.html.)

U.S. ARMY DRAWINGS

12479550 - Ground Vehicle Combat Welding Code - Steel

(Copies of these drawings are available from DAMI_STANDARDIZATION@conus.army.mil or U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000.)

2.3. Non-Government Publications

The following documents form a part of this PD to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

Threshold Limit Values and Biological Exposure Indices
(Copies of this document are available from www.acgih.org or American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, OH 45240.)

ASTM INTERNATIONAL

ASTM A123/A123M	-	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153/A153M	-	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM B663	-	Standard Specification for Silver-Tungsten Carbide Electrical Contact Material
ASTM D2000	-	Standard Classification System for Rubber Products in Automotive Applications

(Copies of these documents are available from www.astm.org or ASTM International, P.O. Box C700, West Conshohocken, PA 19428-2959.)

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	-	Structural Welding Code - Steel
AWS D1.2/D1.2M	-	Structural Welding Code - Aluminum
AWS D1.3/D1.3M	-	Structural Welding Code - Sheet Steel
AWS D1.6/D1.6M	-	Structural Welding Code - Stainless Steel
AWS D1.9/D1.9M	-	Structural Welding Code - Titanium
AWS D8.1M	-	Specification for Automotive Weld Quality - Resistance Spot Welding of Steel
AWS D8.6	-	Specification for Automotive Resistance Spot Welding Electrodes
AWS D8.9M	-	Recommended Practices for Test Methods for Evaluating the Resistance Spot Welding Behavior of Automotive Sheet Steel Materials

(Copies of these documents are available from www.aws.org or American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 2631-1	-	Mechanical Vibration and Shock – Evaluation of Human Exposure to Whole-Body Vibration – Part 1: General Requirements.
ISO 10055	-	Mechanical Vibration – Vibration Testing Requirements for Shipboard Equipment and Machinery Components

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(Copies of these documents are available from www.iso.org or www.ansi.org or ANSI Customer Service Department, 25 W. 43rd Street, 4th Floor, New York, NY 10036.)

SAE INTERNATIONAL

SAE J516	-	Hydraulic Hose Fittings
SAE J1273	-	Recommended Practices for Hydraulic Hose Assemblies
SAE J1708	-	Serial Data Communications Between Microcomputer Systems in Heavy-Duty Vehicle Applications
SAE J1939	-	Serial Control and Communications Heavy-Duty Vehicle Network – Top Level Document
SAE J1939/13	-	Off-Board Diagnostic Connector

(Copies of these documents are available from www.sae.org or SAE Customer Service, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4. Order of Precedence

In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1. Description

The JAB system shall employ a turret-less Army M1A1 Abrams Main Battle Tank with the M1A2 Heavy suspension, 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 this document. The JAB chassis is defined as the M1A1 hull and launch mechanism installed, while the JAB system is defined as the M1A1 hull, launch mechanism and MLC-85 AVLB loaded on top of the M1A1 hull. The JAB system shall accomplish mission requirements while maintaining pace and maneuvering with the Mobility Augmentation Command (MAC) wherever and whenever they are deployed. A combat loaded JAB system is defined as the M1A1 hull, MLC-85 AVLB, launcher mechanism, full fuel and hydraulics, and 2 crew members. All functions of the JAB system shall be performed by no more than the two-person crew.

3.2. MLC-85 AVLB

The MLC-70 AVLB is currently undergoing reclassification to MLC-85. The reclassification of the bridge will not change the configuration. TM 5-5420-203-14 will reflect the MLC-85 reclassification in a forthcoming revision. Throughout this PD, MLC-85 AVLB Scissor Bridge will be referenced as MLC-85 AVLB. The MLC-85 AVLB shall not be modified from the current design. The MLC-85 AVLB is an existing end-item; this PD does not address or verify its performance.

3.3. Technical and Verification Requirements

Table 1 consists of Section 3 Technical Requirements and Section 4 Verification Requirements for which the JAB system shall comply.

3.3.1. Table 1 Definitions

For definitions of Verifications Methods and Verification Events, see section 4.3 and 4.4 respectively of this document.

3.4. Design

The design of the JAB system shall be in accordance with the performance standards invoked in this PD. Unless otherwise specified, the design, materials and manufacturing processes selected are the prerogative of the contractor so long as the final product conforms to the requirements set forth in this performance based PD.

3.5. Regulations

All systems and components shall be designed to prevent environmental hazards and inadvertent product discharge or leakage during operation, storage, and maintenance. The JAB system shall incorporate commercial design features, while ensuring the design considers mission requirements and combat capability as primary considerations.

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Table 1: Technical and Verification Requirements

3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.6. JAB chassis Characteristics					
The following list of M1A1 basic performance characteristics shall be maintained through the design of the JAB chassis. The M1A1 basic characteristics are attached in Annex B.					Verify the JAB chassis maintains the characteristics equivalent to Annex B, 3.6 and the subsections listed.
• Vehicle lighting system (Annex B, Paragraph B1.1)	I	I	I	I	
• Chemical, Biological, Radiological, and Nuclear (CBRN) capability and warning systems (Annex B, Paragraph B1.2)			T	T	
• Electromagnetic Effects and Spectrum Supportability (Annex B, Paragraph B1.3)				T	
• Battle override capability (Annex B, Paragraph B1.4)	I			T	
• Internal Electrical Slaving Capability (Annex B, Paragraph B1.5)	I		I		
• External Rear Electrical Slaving Capability (provided on the Government Furnished Property (GFP) hull)	I		I		
• Drivers Station (Annex B, Paragraph B1.6)	I	I	I	I	
• Mobility (Annex B, Paragraph B1.7)			C/T	T	

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7. Operating Environment					
The JAB system shall be operable, maintainable, storable, and transportable day or night, in hot and basic climate design types as defined in MIL-STD-810. Additional environmental effects consist of the following conditions as defined in MIL-STD-810 without degradation or installation of special kits while maintaining full mission capability. • wind • rain • sand and dust • salt fog • humidity				T T T T T T	To determine conformance to 3.7, the JAB system shall be tested in accordance with MIL-STD-810, Test Method 501.5, Procedures I, II, and III, (high temperature), Test Method 502.5, (low temperature). • Wind tested and analyzed through a simulated wind load. • Rain tested in accordance with MIL-STD-810, Method 506.5, Procedure I • Sand and dust tested in accordance with MIL-STD-810, Test Method 510.5, Procedures I and II • Salt fog tested in accordance with MIL-STD-810, Method 509.4 • Humidity tested in accordance with MIL-STD-810, Method 507.5, Procedure I
3.7.1. Operation altitude					
The JAB system shall meet the threshold requirements of this document while operating at altitudes up to 8,000 ft (T), 12,000 ft (O).			A	A/T	To determine conformance to 3.7.1, verify the JAB system meets all threshold performance requirements at operational altitude of 8,000 ft (T), 12,000 ft (O).
3.7.2. Operating Temperature					
The operating ambient temperature range of the JAB system without starting aids shall be -25 degrees F to 125 degrees F (-32 degrees C to 52 degrees C) (T), installation of cold weather kits may be used to operate at -50 degrees F (-46 degrees C) (O) within 5 minutes of main engine start.				T	To determine conformance to 3.7.2, the JAB system shall be tested in the operating ambient temperature ranges without starting aids at -25 degrees F to 125 degrees F (-32 degrees C to 52 degrees C) (T), installation of cold weather kits to -50 degrees F (-46 degrees C) (O).

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.3. Storage Temperature					
The JAB system when in storage shall withstand the temperature range of -50 to 160 degrees F in accordance with MIL-STD-810 without deterioration of any component.				T	To determine the conformance to 3.7.3, the JAB system when in storage shall withstand the temperature range of -50 to 160 degrees F in accordance with MIL-STD-810 Method 501.5, Procedure I, without deterioration of any component.
3.7.4. Wind					
The JAB system shall launch and retrieve the MLC-85 AVLB in winds up to 29.2 knots as defined in the TDTC.				A	To determine conformance to 3.7.4, the JAB system shall be tested and analyzed through a simulated wind load.
3.7.5. MLC-85 AVLB Mud Buildup Conditions					
The JAB system shall launch and retrieve the MLC-85 AVLB with 2438 lbs of mud distributed over the roadway surface.				T	To determine conformance to 3.7.5, verify the JAB system has the ability to launch and retrieve an MLC-85 AVLB bearing an area load distributed over the roadway surface equivalent to 2438 lbs of mud.
3.7.6. Water Fording					
The JAB system shall conduct shallow water fording up to a depth of 48 inches without preparation or use of fording kit.				T	To determine conformance to 3.7.6, the JAB system shall be tested with the front drain valve closed, engine running, JAB System on level ground, the bilge pump OFF, and the system standing in 48 inches of water for 10 minutes and, verify there is no accumulation of water over the center of the crew compartment floor after 10 minutes.
3.7.6.1. Waterproofing					
All internal / external electronic components of the JAB system shall be waterproof without additional equipment or preparation.			C	T	To determine conformance to 3.7.6.1, verify there is no electrical component damage after fording.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.6.2. Drain Valves					
The JAB chassis shall utilize the M1A1 hull drain valves operable by the driver.	I			T	To determine conformance to 3.7.6.2, verify the JAB chassis drain valves operate in accordance with TM 9-2350-264-10-1 and is unmodified from the standard M1A1 drain valves that are operable by the driver.
3.7.6.3. Bilge Pump					
The JAB chassis shall utilize the M1A1 bilge pump to remove water that enters the chassis. Controls for operation of the bilge pump shall be located at the driver's station.	I			T	To determine conformance to 3.7.6.3, the JAB chassis bilge pump shall operate in accordance with TM 9-2350-264-10-1 and verify that it is unmodified from the M1A1 bilge pump that removes water that enters the chassis. Verify controls for operation of the bilge pump remain located at the driver's station.
3.7.7. Driver and Commander Vision					
3.7.7.1. Vision System					
The JAB system shall incorporate a vision system that provides the driver 165 degrees and the commander 165 degrees of visibility to the front (+/- 82.5 degrees of the centerline). The Vision system shall also provide the driver and commander visibility of any part of the launcher and bridge that contact the ground on the near bank side for preparation for launch and retrieval. Visibility shall be provided under closed hatch, day and night, in smoke, and all weather conditions as defined throughout 3.7. The rearward vision requirement of the JAB system shall be through the use of the Rear View Sensor System (RVSS) provided as part of the GFP hull.	I	I	I	T	To determine conformance to 3.7.7.1, verify the JAB system incorporates a vision system that provides the driver and commander each 165 degrees of visibility to the front under closed hatch during day and night, in smoke, and all weather conditions as defined throughout 3.7. Verify the JAB System uses the RVSS as provided as GFP to meet the rearward vision requirement.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.7.2. Vision Periscopes					
To permit safe operation of the JAB system under closed hatch, the view through the three (3) driver's hatch vision periscopes shall remain 100% unobstructed by placement of JAB system components. The combined view through the six (6) commander's hatch vision periscopes shall remain at least 50% unobstructed (T), 100% unobstructed (O), by placement of JAB system components under closed hatch.	I	I	I	I	To determine conformance to 3.7.7.2, verify the view through the three (3) driver's hatch vision periscopes of the JAB system remain 100% unobstructed by placement of JAB system components under closed hatch. Verify the combined view through the six (6) commander's hatch vision periscopes remains at least 50% unobstructed by placement of JAB system components under closed hatch.
3.7.8. Hydraulic Power					
The JAB system shall have two independent hydraulic power sources for launch and retrieval of the MLC-85 AVLB. At least one of the hydraulic power sources shall be completely independent of the chassis engine. Crewmembers are not allowed to exit the JAB system during launch operations; the commander is allowed to exit the JAB chassis to connect the hydraulic lines during retrieval operations. Launch and retrieve times shall be in accordance with times defined in Table 2 while operating the tank parking brake.	A/T	T	C/T	T	To determine conformance to 3.7.8, verify the JAB system has two independent hydraulic power sources and one of which is completely independent of the JAB chassis engine. Verify each hydraulic power source is sufficient to launch and retrieve the MLC-85 AVLB within the threshold times stated in Table 2, while operating the tank parking brake.
3.7.8.1. MLC-85 AVLB Primary Hydraulic Power Launch					
After positioning the vehicle at the gap, and with crewmembers inside the vehicle, the JAB system shall launch the MLC-85 AVLB using primary hydraulic and electrical power only (without mud load) across a 60-foot gap in the time limits specified in Table 2.	A/T	T	T	T	To determine conformance to 3.7.8.1, verify the time required to launch the MLC-85 AVLB using only primary hydraulic and electrical power does not exceed 5 minutes. The launch begins when the vehicle is positioned at the obstacle and ends when the MLC-85 AVLB is detached from the JAB chassis.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.8.2. Backup Hydraulic Power Launch					
After positioning the vehicle at the gap and with crew members inside the vehicle, the JAB system shall launch the MLC-85 AVLB (without mud load) using only the backup hydraulic and electrical power within the time limits specified in Table 2.	A/T	T	T	T	To determine conformance to 3.7.8.2, verify the time required to launch the MLC-85 AVLB does not exceed 10 minutes while operating using backup hydraulic and electrical power only. The launch begins when the vehicle is positioned at the obstacle and ends when the MLC-85 AVLB is detached.
3.7.8.3. Electric and Hydraulic Slave Power Launch (O)					
In addition to the primary and backup hydraulic power requirements in sections 3.7.8.1 and 3.7.8.2 the JAB system shall launch the MLC-85 AVLB (without mud load) through hydraulic and electrical power supplied through slave of another JAB system within the time limits specified in Table 2. Operation shall be completely independent of the primary and backup hydraulic systems and JAB chassis power. (O)	A/T	T	T	T	To determine conformance to 3.7.8.3, verify the time required to launch the MLC-85 AVLB does not exceed 10 minutes while operating under slaved hydraulic and electrical power from another JAB system. The launch begins when the vehicle is positioned at the obstacle, JAB chassis engine shutdown is complete, hydraulic and electrical slaving is connected, and ends when the MLC-85 AVLB is fully launched.
3.7.8.4. MLC-85 AVLB Primary Hydraulic Power Retrieval					
With a crewmember allowed to exit the vehicle, the JAB chassis shall retrieve the MLC-85 AVLB (with mud load) using primary hydraulic and electrical power only into the full stowed position within the time limits specified in Table 2. This time requirement excludes the time necessary for initial launcher positioning and connection of the hydraulic lines to the MLC-85 AVLB.	A/T	T	T	T	To determine conformance to 3.7.8.4, verify the time required to retrieve the MLC-85 AVLB does not exceed 15 minutes. The retrieval begins when the vehicle is positioned to connect with the MLC-85 AVLB with the launcher deployed, and ends when the MLC-85 AVLB is in the in the full stowed position.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.8.5. Backup Hydraulic Power Retrieval					
With initial launcher positioning and connection of the hydraulic lines complete, the JAB chassis shall retrieve the MLC-85 AVLB (with mud load) into the travel position using only backup hydraulic and electrical power within the time limits specified in Table 2.	A/T	T	T	T	To determine conformance to 3.7.8.5, verify the time required to retrieve the MLC-85 AVLB using only backup hydraulic and electric power does not exceed 30 minutes. The retrieval time begins when the vehicle is positioned and connected to the MLC-85 AVLB and ends when the MLC-85 AVLB is in the fully stowed position.
3.7.8.6. Electric and Hydraulic Slave Power Retrieval (O)					
In addition to the primary and backup hydraulic power requirements in sections 3.7.8.4 and 3.7.8.5 the JAB system shall retrieve the MLC-85 AVLB (with mud load) through hydraulic and electrical power supplied only through slave of another JAB system within the time limits specified in Table 2. Operation shall be completely independent of the primary and backup hydraulic systems and JAB chassis power. (O)	A/T	T	T	T	To determine conformance to 3.7.8.3, verify the time required to retrieve the MLC-85 AVLB does not exceed 30 minutes while operating under slaved hydraulic and electrical power from another JAB system. The retrieval begins when the vehicle is positioned and connected to the MLC-85 AVLB, JAB chassis engine shutdown is complete, hydraulic and electrical slaving is connected, and ends when the MLC-85 AVLB is in the fully stowed position.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements

Table 2: MLC-85 AVLB Launch and Retrieval Times

Action	Threshold(min)	Objective(min)
MLC-85 AVLB Launch		
Primary Hydraulic Power	5	3
Backup Hydraulic Power	10	6
Electric and Hydraulic Slave Power	10	6
MLC-85 AVLB Retrieval		
Primary Hydraulic Power	15	6
Backup Hydraulic Power	30	12
Electric and Hydraulic Slave Power	30	12

3.7.8.7. Duty Cycle					
The JAB system shall conduct three MLC-85 AVLB launch and retrieve cycles per hour using primary hydraulic power.			C	T	To determine conformance to 3.7.8.7, verify the JAB system primary hydraulic power conducts three launch and retrieve cycles per hour.
3.7.8.8. Hydraulic Power Unit (HPU) Requirements					
3.7.8.8.1. Batteries					
The HPU shall utilize the JAB chassis batteries for starting,	C/I	T	I	T	To determine conformance to 3.7.8.8.1 verify the HPU utilizes only the JAB chassis batteries for starting.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.8.8.2. Fuel compatibility					
The HPU shall operate on both JP-8 and Ultra Low Sulfur Diesel fuels. The engine shall not require any modifications when switching between fuels.	C			T	To determine conformance to 3.7.8.8.2 verify the HPU operates on both JP-8 and Ultra Low Sulfur Diesel fuels without modifications.
3.7.8.8.3. Emissions Technologies					
The JAB system is not subject to Environmental Protection Agency (EPA) non-road exhaust emissions standards since it will contain permanent armor. This determination is in accordance with 40 CFR 89.908 and 1068.225. Contractor shall ensure National Security Exemption labeling requirements are met in accordance with EPA regulations. Due to the sulfur level of the JP-8 fuel (up to 3000 parts per million sulfur), pollution control technologies that impact the HPU engine effectiveness, maintenance, or life expectancy shall not be used.	C			I	To determine conformance to 3.7.8.8.3, verify that National Security Exemption labeling requirements are met in accordance with EPA regulations and the HPU engine does not have pollution control technologies that negatively impact engine effectiveness, maintenance, or life expectancy due to the sulfur level of JP-8.
3.7.8.8.4. Fuel System					
The HPU shall use fuel from the JAB chassis onboard fuel system. The HPU shall have a fuel pump in accordance with engine manufacturer recommendations. Priming the empty fuel system from the fuel tank shall be performed without use of the starter. Fuel shutoff valves shall be positioned to prevent excess spillage when removing components or performing service operations.	C/I		I	T	To determine conformance to 3.7.8.8.4 verify the HPU uses the fuel available through the JAB chassis onboard fuel tanks at any fuel level. Verify the fuel system can be primed without the use of the HPU starter and the fuel shutoff valves are positioned to prevent excess fuel spillage when removing components or performing service operations.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.8.8.5. Alternator					
The JAB HPU shall have an alternator that provides power to operate all functions of the launch and retrieve operations without drawing power from the JAB chassis batteries. When not launching and retrieving the alternator shall charge the JAB chassis batteries.	C/I	T	T	T	To determine conformance to 3.7.8.8.5, verify the HPU alternator has sufficient power to operate all functions of launch and retrieve operations and charges the JAB chassis batteries.
3.7.8.8.6. Engine cooling					
The HPU shall have a cooling system which provides cooling in accordance with engine manufacturer recommendations while operating under ballistic protection.	A/C	T	T	T	To determine conformance to 3.7.8.8.6, verify the HPU has sufficient cooling under ballistic protection during operations in accordance with manufacturer's specification.
3.7.8.8.7. Gauges					
The following analog style gauges shall be provided to the driver for the engine indicating high and low operating limits as applicable: • Engine oil pressure • Engine coolant temperature • Engine RPM Tachometer • Hydraulic fluid temperature •	I	I/T	I	T	To determine conformance to 3.7.8.8.7, verify the listed gauges are provided to the driver and operate properly indicating applicable high and low operating limits.
3.7.8.8.8. Battery disconnect master switch					
A battery disconnect master switch shall be provided on the HPU to isolate it from the JAB chassis electrical system and batteries.	C/I	T	T	T	To determine conformance to 3.7.8.8.8, verify the HPU battery disconnect switch isolates the HPU from the JAB chassis batteries.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.8.8.9. Malfunction indicators					
An audible alarm with a mute function shall be provided through the intercom system which indicates these adverse conditions, as well as visual indicator(s) to the driver at a minimum: • Low oil pressure • High engine temperature • High Hydraulic fluid temperature • High Hydraulic pressure • HPU Fire sensing • AFES system discharge •	C/I	T	T	T	To determine conformance to 3.7.8.8.9, verify the malfunction indicators listed are visually provided to the driver. Verify upon indication of any of the listed malfunction an audible alarm is provided through the intercom system and mute function operates properly.
3.7.8.8.10. Engine shutdown					
The engines shall have both primary and emergency shutdown methods provided to the driver and commander. The emergency shutdown method for the HPU shall be either a fuel or air shutoff.	C/I	T	T	T	To determine conformance to 3.7.8.8.10, verify the driver and commander each have the means to normally shutdown the HPU as well as emergency shutdown method that is either though HPU fuel or air intake shutoff.
3.7.8.8.11. Lubricants and Fluids					
All fluids and lubricants shall be compatible with the following unless approved by the PCO: • Engine Oils: MIL-PRF-2104 (OE/HDO), MIL-PRF-46167 (OEA-30) • Automotive Engine/Preservation Oils: MIL-PRF-21260 (PE) • Antifreezes and Test Kit: A-A-52624 • Gear Lubricants: SAE J2360 (GO) • Multi-purpose Grease: MIL-PRF-10924 (GAA) • Degreasing Solvents: MIL-PRF-680	C		C	T	To determine conformance to 3.7.8.8.11, verify the HPU is compatible with the lubricants listed unless approved in writing by the PCO.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.8.8.12. Oil filter					
Oil filter(s) shall be replaceable with common tools as defined in section 3.13.2 without having to remove or disconnect any other equipment, excluding removal of ballistic covers to gain access.	C/I	I	T	T	To determine conformance to 3.7.8.8.12, verify the HPU oil filter is replaceable through the use of common tools as defined in 3.13.2 without removal or disconnection of other equipment, excluding removal of ballistic covers to gain access.
3.7.8.8.13. Oil sample valve					
An engine oil sampling valve shall be located to allow an in-stream sample to be taken before the HPU oil filter. The valve shall be manually operated and shall close automatically when released. It shall be made of material resistant to corrosion such that it will not contaminate the sample. The discharge port of the valve shall be covered with a captive chain cap conforming to MIL-V-81940/1B and SAE J514.	C/I	T	T	T	To determine conformance to 3.7.8.8.13, verify the oil sampling port is located in-stream and before the HPU oil filter. Verify the valve is manually operated and closes automatically when released; it is of a corrosive resistant material and has a captive chain cap for covering the discharge port of the manually operated valve.
3.7.8.8.14. Fuel filter					
Fuel filter(s) shall be installed in accordance with the engine manufacturer specification. Fuel filter(s) shall be replaceable with common tools as defined in section 3.13.2 without having to remove or disconnect any other equipment, excluding removal of ballistic covers to gain access.	C/I	I	C	I	To determine conformance to 3.7.8.8.14, verify the HPU fuel filter is installed and meets the manufacturer specifications for location and filtration.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.7.8.8.15. Hour Meter					
The HPU shall have an accessible and visually readable hour meter attached, ballistic covers may be opened to gain access to the hour meter.	C/I	I/T	T	T	To determine conformance to 3.7.8.8.15, verify the HPU has an accessible and visually readable hour meter attached. Ballistic covers may be opened or removed to gain access.
3.7.9. MLC-85 AVLB Launch/Retrieve Bank Conditions					
The JAB system shall launch and retrieve the MLC-85 AVLB from both ends of the MLC-85 AVLB in any combination of the following bank conditions 3.7.9.1, 3.7.9.2, and 3.7.9.3.		T		T	To determine conformance to 3.7.9, verify the JAB system can launch and retrieve an MLC-85 AVLB from both ends of the MLC-85 AVLB in any combination of the following bank conditions 3.7.9.1, 3.7.9.2, and 3.7.9.3.
3.7.9.1. Transverse Bank Slope					
The JAB system shall launch and retrieve the MLC-85 AVLB at a vehicle transverse bank slope of ±5 percent. Near and far banks can have like or opposing transverse slopes; ±5 percent near bank, ±5 percent far bank as defined in section 4.2.5.4 of the TDTC.				T	To determine conformance to 3.7.9.1, verify the JAB system launches and retrieves the MLC-85 AVLB at a vehicle transverse bank slope condition of +/-5 percent with near and far banks having like or opposing transverse slopes.
3.7.9.2. Longitudinal Bank Slope					
The JAB system shall launch and retrieve the MLC-85 AVLB at a longitudinal bank slope condition of +/- 15 percent as defined in TM 5-5420-202-10 AVLB operators manual.				T	To determine conformance to 3.7.9.2, verify the JAB system launches and retrieves an MLC-85 AVLB with a longitudinal bank slope condition of +/- 15 percent.
3.7.9.3. Bank height difference					
The JAB system shall launch and retrieve the MLC-85 AVLB at a maximum height difference between the near and far bank of 6.0 ft as defined in section 4.2.5.1 of the TDTC.				T	To determine conformance to 3.7.9.3, verify the JAB system launches and retrieves an MLC-85 AVLB with a maximum height difference between near and far bank condition of 6.0 ft.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.8. Survivability and Vulnerability					
3.8.1. CBRN System					
The JAB system shall retain the capability of the M1A1 Abrams Tank CBRN system; the CBRN system shall be operated and maintained by personnel while in Mission Oriented Protective Posture (MOPP) level IV as described in FM 3-11.4.				T	To determine conformance to 3.8.1, verify the JAB system has the same CBRN capabilities as used on the M1A1 Abrams Tank, modified for JAB system. Verify the CBRN system can be operated and maintained while in MOPP IV.
3.8.2. Electromagnetic Environmental Effects (E3) and Spectrum Supportability					
The JAB system shall retain the M1A1 Abrams Tank ability to be mutually compatible within itself and with other electronic systems in its intended operational electromagnetic environment in accordance with MIL-STD-464. E3 control shall be verified at the system level in accordance with MIL-STD-464, section 5. Mutual compatibility of subsystems and electronics components, including Commercial Off The Shelf (COTS) items shall be verified in accordance with MIL-STD-461.				T	To determine conformance to 3.8.2, verify through testing the JAB system meets the requirements of MIL-STD-461. Certify through the Joint Spectrum Certification Process that the JAB system operates in frequency bands per the national and international tables of spectrum allocation and conforms to applicable spectrum management regulations, directives and specifications. Verify through testing that the JAB system meets the requirements of MIL-STD-464.
3.8.3. High-Altitude Electromagnetic Pulse (HEMP)					
The JAB system shall survive HEMP in accordance with MIL-STD-2169 (classified). System electronics upset is acceptable and may be rebooted or power cycled to restore the JAB system to the operational status prior to the reboot within 15 minutes with no loss of data.				T	To determine conformance to 3.8.3, verify the JAB system complies with all requirements MIL-STD-2169 (classified).

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.8.4. Equipment Vibration and Basic Shock					
Components used in the development of the JAB system shall comply with MIL-STD-810 methods 514.6 and 516.6, ISO 2631, and ISO 10055 to minimize the effect of shock and vibration to on-board equipment.				T	To determine conformance to 3.8.4, verify the JAB system is designed to meet all performance requirements during and after exposure to basic shock. Verify the system is designed to meet all performance requirements during and after exposure to vibration testing in accordance with MIL-STD-810 methods 514.6 and 516.6, ISO 2631, and ISO 10055 to minimize the effect of shock and vibration to on-board equipment.
3.8.5. Ballistic Protection					
Survivability of the JAB chassis shall not be degraded from the protection level of the M1A1. Protection against top attack threats for all areas of the structure to include but not limited to hatches, periscopes, crew station areas as well as areas exposed by the removal of the turret structure shall be equivalent to the top attack protection requirement of the M1A1 Tank as defined in Annex C.	C		C	A	To determine conformance to 3.8.5, verify through analysis mission survivability for the JAB chassis is not degraded from the M1A1 level of protection per Annex C.
3.8.5.1. Turret Cap					
The JAB Turret cap shall have equivalent protection against top attack threats equivalent to the top of the turret structure top attack protection requirement of the M1A1 Abrams tank as defined in Annex C.	C		C	A	To determine conformance to 3.8.5.1, verify the JAB turret cap is constructed to provide the level of protection per Annex C.
3.8.5.2. Launcher Components					
If any hydraulic launcher components are placed on or attached to the outside of the JAB chassis, these components shall have ballistic protection as defined in Annex C.	C		C	A	To determine conformance to 3.8.5.2, verify the JAB chassis hydraulic launcher components provide the level of protection per Annex C.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.8.5.3. Front Armor Section					
No external mounting of components requiring drilling or cutting into or on the enclosed front armor section of the JAB chassis as defined in Annex C shall be allowed. This area shall not be opened or penetrated by any means to include cutting, drilling or flame cutting. For attachment of components to this area, external welding is allowable. If items require bolts for attachment, the items shall be bolted / secured to pads welded to the external surface.	C/I	I	I	I	To determine conformance to 3.8.5.3, verify the front section of the JAB chassis was not opened or penetrated, if components were added to this area verify the attachment of these items were bolted / secured to pads welded to the external surface per Annex C.
3.8.6. Smoke Grenade Launchers					
The JAB chassis shall be equipped with two (2) M250 Smoke grenade launchers that can launch a salvo of 6 at a time and a salvo of 12 at a time non explosive grenades. The JAB chassis shall have two Army M1A1 smoke grenade storage containers for spare grenade storage. One (1) Smoke grenade launcher and storage container shall be mounted and located on each side of the vehicle and be accessible by crew on the ground. The system shall be re-loaded in 10 minutes or less by the crew.	I		I	T	To determine conformance to 3.8.6, verify that both M250 smoke grenade launchers and both storage containers are located properly, the smoke grenade system is operable from the commander's station, the obscuration system creates a 110 degree self-obscuration smoke capability, and can be reloaded in 10 minutes or less by the crew.
3.8.7. System Fire Survivability					
3.8.7.1. Crew Compartment Fire Survivability					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB chassis shall utilize the M1A1 Automatic Fire Extinguishing System (AFES) that provides both automatic and internal manual activation of a single shot fire extinguishing capability for the crew compartment. The AFES shall utilize the M1A1 extinguishing agent.	T		T	T	To determine conformance to 3.8.7.1, verify that each sensor can identify and discriminate between fire and non-fire stimulus. Verify the manual discharge operates when activated. Verify the AFES system utilizes the M1A1 extinguishing agent.
3.8.7.2. Engine Compartment Fire Survivability					
The JAB chassis shall utilize the M1A1 engine compartment AFES that provides both automatic and manual discharge of a first shot, manual discharge of a second shot from inside the vehicle, and manual discharge of a second shot from outside the vehicle. The M1A1 AFES system sensors discriminate between fire and non-fire events. The AFES shall utilize the M1A1 approved extinguishing agent. AFES system power indicator, fire extinguisher discharge indicator light and a reset capability shall be provided to the driver. Engine shutdown shall be initiated as part of the second shot activation. The engine system compartment AFES shall be in accordance with Engineering Change Proposal (ECP) GDLT8891.	T		T	T	To determine conformance to 3.8.7.2, verify that each sensor can identify and discriminate between fire and not-fire stimulus. Verify AFES system status is provided to the driver and the reset capability operates when activated. Verify the engine compartment AFES is not degraded from the M1A1. Verify the engine system compartment AFES is in accordance with ECP GDLT8891.
3.8.7.3. Portable Extinguishers					
The JAB chassis shall provide mounting provisions for a minimum of two internal portable fire extinguishers and one external portable fire extinguisher. Extinguishers shall be mounted in an easily recognizable and readily accessible position for service and use during a fire not addressed by the AFES, an external fire incident, and while refueling the vehicle. The hand held fire extinguishers shall be in accordance with ECP L05T1020.	C/I		C/I	C/I	To determine conformance to 3.8.7.3, verify the JAB chassis has a minimum of two portable fire extinguishers mounted on the inside and a minimum of one portable fire extinguisher mounted outside of the vehicle and in a readily accessible location. Verify the hand held fire extinguishers are in accordance with ECP L05T1020.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.8.7.4. HPU Fire Survivability					
The HPU shall have an AFES that provides both automatic and manual activation of a single shot fire extinguishing capability. The following are approved agents: Water, CO2, HFC-125, HFC-227, and Baking Soda.	C/I		C/I	I	To determine conformance to 3.8.7.4, verify the HPU has an AFES that provides both automatic and manual activation of a single shot fire extinguishing capability. Verify that the HPU AFES shall utilize any of the following agents: Water, CO2, HFC-125, HFC-227, and Baking Soda.
3.9. Interoperability and Compatibility					
3.9.1. Communications and Navigation System					
The JAB system shall provide space claim for current (JV5) and future (JCR, JBC-P) communication equipment and battle command situational awareness equipment that are operable by the commander. The following equipment shall be fully functional and operational without degradation in open and closed hatch modes, with and without the MLC-85 AVLB mounted and during launch and retrieve operations: Defense Advanced GPS Receiver (DAGR), Single Channel Ground and Airborne Radio System (SINCGARS), Force XXI Battle Command, Brigade and Below (FBCB2) JV5, and Blue Force Tracking (BFT).	I		I	T	To determine conformance to 3.9.1, verify correct installation of the equipment listed by installing the components and conducting operations by the commander without degradation in open and closed hatch modes with and without the MLC-85 AVLB mounted and during launch and retrieve operations.
3.9.1.1. Intercommunication Equipment					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB chassis shall provide intercommunication of the VIC-3 intercommunication system that is on the M1A1. The JAB chassis shall provide intercommunication between the driver and commander at all times during operations, and ground forces of the Tank Infantry Phone (TIP) located on the rear of the chassis.	I		I	T	To determine conformance to 3.9.1.1, verify the JAB chassis provides intercommunication of the VIC-3 intercommunication system. With the Combat Vehicle Crewman (CVC) helmet connected to the intercommunication control set, verify internal voice communications between the driver's station and the commander's station, as well as the Tank Infantry Phone (TIP) located on the rear of the chassis.
3.9.1.2. Communications					
The JAB system command and control system shall provide space claim for a tactical radio, SINCGARS AN/VRC-89 or AN/VRC-90, which shall be able to communicate 1.24 miles on flat, level, unobstructed ground in open and closed hatch modes, with and without the MLC-85 AVLB mounted and during launch and retrieve operations.	I		I	A/T	To determine conformance to 3.9.1.2, verify the JAB system radio for inter-vehicle communication operates properly. Verify the JAB system is equipped with a tactical radio and is able to communicate with another tactical radio. Verify through demonstration that the JAB system can communicate 1.24 miles to another JAB system on flat, level, and unobstructed ground with and without the MLC-85 AVLB mounted and during launch and retrieve operations.
3.9.1.3. Navigation System					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall provide space claim for the DAGR. With its antenna, the DAGR shall be integrated into the JAB system to permit operation of the Global Positioning System (GPS) in open and closed hatch modes, with and without the MLC-85 AVLB mounted and during launch and retrieve operations.	I		I	T	To determine conformance to 3.9.1.3, verify that adequate space claim and all required brackets, connectors and antennas for the GPS and operate the equipment to ensure it is fully functional with and without the MLC-85 AVLB mounted and during launch and retrieve operations.
3.9.1.4. Electrical Harnesses/Cables					
All electrical harness and cables added to the JAB chassis shall be in accordance with SC-X15110F.	C/I		I	I	To determine conformance to 3.9.1.4, verify all JAB chassis electrical harnesses and cables added are in accordance with SC-X15110F.
3.10. Maintainability / Reliability					
3.10.1. Preventative Maintenance (PM)					
Preventive Maintenance (PM) of the JAB system shall require no more than one (1) weekly, one (1) semi-annual and one (1) annual PM. This does not include mandatory operational Preventative Maintenance Checks and Services (PMCS) that are to be performed before, and after system operation. All PMCS inspection points shall be accessible by crew without removal of the MLC-85 AVLB from the JAB chassis. The mean time to perform weekly PM shall not exceed 3 man hours. The mean time to perform annual PM shall be less than or equal to 25 man hours (T); 20 man hours (O).				T	To determine conformance to 3.10.1, verify that the PM of the JAB system requires no more than one (1) weekly, one (1) semi-annual, and one (1) annual PM. Verify that all PMCS inspection points are accessible with the MLC-85 AVLB on the JAB chassis. Verify the mean time to perform weekly PMs shall not exceed 3 man hours. The mean time to perform annual PMs shall be less than or equal to 25 man hours (T); 20 man hours (O).
3.10.2. Corrective Maintenance (CM)					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
Corrective maintenance (CM) includes the adjustment, removal, repair, reinstallation, and alignment of repairable parts, modules, subassemblies, and assemblies. The JAB system shall have a Maximum Time to Repair (MaxTTR) no greater than 4 man hours (T); 2 man hours (O) at the crew level. The MaxTTR must be no greater than 16 man hours (T); 12 man hours (O) at the field level.				A/T	To determine conformance to 3.10.2, verify the JAB system has a Maximum Time To Repair (MaxTTR) no greater than 4 man hours (T); 2 man hours (O) at the crew level. The MaxTTR must be no greater than 16 man hours (T); 12 man hours (O) at the field level. Evaluate the impact on mission performance and maintenance burden due to failure to meet the overall system reliability requirements in accordance with the Failure Definitions/Scoring Criteria (FD/SC).
3.10.3. Maintenance Ratio (MR)					
Maintenance Ratio (MR) of the JAB chassis shall not exceed 0.10 Maintenance Man Hours per Operating Hour (MMH/OH).				A/T	To determine conformance to 3.10.3, verify through test the JAB chassis achieves a MR of 0.10 MMH/OH.
3.10.4. Steam and Water Jet Cleaning					
The JAB system exterior components shall withstand cleaning with high pressure steam or water jet cleaner compatible to A-A-59133 without deterioration of seals, hoses, electrical fittings, insulation, thermal barrier material, or removal of paint and rust proofing.				A/T	To determine conformance to 3.10.4, verify the vehicle and all of its components shall withstand cleaning with high pressure steam or water jet cleaner A-A-59133 without deterioration of seals, hoses, electrical fittings, insulation, thermal barrier material, or removal of paint and rust proofing.
3.10.5. Lubrication Fittings					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
Lubrication fittings shall be provided for lubricating all moving parts that require application of lubrication. Fittings shall be located to be accessible by a grease gun with a 10-inch flexible extension. Fittings shall be accessible without removing or adjusting accessories or parts, ballistic covers may be removed.	C/I	I	T	T	To determine conformance to 3.10.5, verify lubrication fittings are provided on the JAB chassis for all moving parts that require application of lubrication. Verify all lubrication fittings are accessible by a grease gun with a 10-inch flexible extension and removal or adjustment of accessories or parts is required. Ballistic covers may be opened or removed to gain access to fittings.
3.10.6. Mean Miles Between Operational Mission Failures (MMBOMF)					
The JAB system shall have a Mean Miles Between Operational Mission Failure (MMBOMF) of no less than 157 miles of operation (21 launch and retrieve cycles per 157 miles).				A/T	To determine conformance to 3.10.6, verify through test the JAB system has a MMBOMF of no less than 157 miles of operation (21 launch and retrieve cycles per 157 miles) at an 80 percent confidence level.
3.10.7. Mean Cycles Between Operational Mission Failure (MCBOMF)					
The JAB system launcher shall achieve a Mean Cycles Between Operational Mission Failure (MCBOMF) rate of 120 launch and retrieve cycles.				A/T	To determine conformance to 3.10.7, verify through test the JAB system launcher demonstrates a MCBOMF rate of 120 launch / retrieve cycles at 80 percent confidence level.
3.10.8. Painting					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall be painted with MIL-DTL-64159, Type II, Coating, Water Dispersible Aliphatic Polyurethane, Chemical Agent Resistant in accordance with MIL-DTL-53072. Color of the JAB system shall be tan 686, #33446 of FED-STD-595.	C/I		C/I		To determine conformance to 3.10.8, certify the JAB system is painted with MIL-DTL-64159, Type II, Coating, Water Dispersible Aliphatic Polyurethane, Chemical Agent Resistant in accordance with MIL-DTL-53072. Verify the JAB system paint is tan 686, #33446 of FED-STD-595.
3.10.9. Rust and Corrosion					
The JAB system shall be resistant to the corrosive effects of a severe marine atmospheric environment consisting of seawater splash and spray and occasional seawater immersion during operation, transport, and storage corrosion susceptibility. The JAB system shall operate for a 5 (T) / 20 year (O) service life, which shall include varying or extended periods in corrosive environments involving one or more of the following: high humidity, salt spray, road de-icing agents, ground contact, gravel impingement, atmospheric contamination and temperature extremes (-40 to 140 degrees F). Excluding the existing M1A1 hull material, the susceptibility of the JAB system to corrosion shall be reduced by design, workmanship, materials of construction, and by specific preservation techniques employed. During the specified service life, surface corrosion shall meet or exceed corrosion grade 8 in accordance with ASTM D610 on any metal surfaces.	C/I		C/I	T	To determine conformance to 3.10.9, verify through Salt Fog Verification section 3.7 of this document.
3.10.9.1. Corrosion Control					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
Components shall be resistant to moisture, corrosion, fungus, and oxidation that may affect its structural integrity or performance levels. During the JAB system service life, surface corrosion, which may include red, black and/or white corrosion products, shall be a maximum of 1% of the surface of any component. Base metal shall be sound with no loss of original thickness greater than 2% or 0.025 millimeter (0.001 inch), whichever is less on any given surface. There shall be no effect on form, fit or function. Corrosion resistance preventative maintenance shall be limited to routine cleaning, washing, periodic inspection, and repair of accidental or incidental damage. Hazardous materials, as defined by http://www.epa.gov/ebtpages/pollutants.html, may not be used for purposes of corrosion control.				T	To determine conformance to 3.10.9.1, verify through Salt Fog Verification section 3.7 of this document.
3.10.10. Welding					
Welds shall be free from defects indicative of poor workmanship. All welding shall be in accordance with the following documents listed in Table 3. The edition (year) to be used shall be the year in effect at time of solicitation release date. If new materials are to be used that do not follow the guidelines in the applicable code book in Table 3, then the Contractor is responsible to demonstrate the correct code book to the Procuring Contract Office (PCO) for approval.	C/I		C/I	C/I	To determine conformance to 3.10.10, certify that all welding is in accordance with requirements of Table 3.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements

Table 3: Welding standards

Structural Steel	American Welding Society (AWS) D1.1
Structural Aluminum	American Welding Society (AWS) D1.2
Structural Sheet Metal	American Welding Society (AWS) D1.3
Stainless Steel	American Welding Society (AWS) D1.6
Titanium	American Welding Society (AWS) D1.9
Specification for Automotive Weld Quality – Resistance Spot Welding of Steel	American Welding Society (AWS) D8.1
Specification for Automotive Spot Welding Electrodes	American Welding Society (AWS) D8.6
Recommended Practices for Automotive Weld Quality – Resistance Spot Welding	American Welding Society (AWS) D8.7
Recommended Practices for Test Methods for Evaluating the Resistance Spot Welding Behavior of Automotive Sheet Steel Materials	American Welding Society (AWS) D8.9
Specification for Robotic Arc Welding Safety	American Welding Society (AWS) D16.1
Guide for Components of Robotic Arc Welding Installations	American Welding Society (AWS) D16.2
Risk Assessment Guide for Robotic Arc Welding	American Welding Society (AWS) D16.3
Specification for the Qualification of Robotic Arc Welding Personnel	American Welding Society (AWS) D16.4
Specification for Friction Stir Welding of Aluminum Alloys for Aerospace Applications	American Welding Society (AWS) D17.3
Recommended Practices for Resistance Welding	American Welding Society (AWS) C1.1
Armor Steel	Ground Combat Vehicle Welding Code –Steel TACOM Drawing Number 12479550 http://contracting.tacom.army.mil/engr/gcv_weldingcodes.htm
Section IX qualification standard for welding and brazing procedures, welders, braziers, and welding and brazing operators	ASME Section IX

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.10.10.1. Alternate Welding Standards					
Subject to PCO written approval, the Contractor may utilize alternate standards or codes once the Contractor or Contractor's suppliers have demonstrated that equivalent or better quality and performance can be obtained by their use. It is the Contractor's responsibility to demonstrate such equivalence to the Government. If the Contractor's component supplier shall not release specific proprietary information, the Government reserves the right to conduct an on-site review of the Contractor's supplier(s) quality system and weld processes to verify the capability of producing acceptable welds. The Government reserves the right to approve/disapprove the use of any and all such alternative weld standards and specifications. The demonstrated equivalent shall be verified prior to fabrication of any weldment under Governmental guidance.	A		A		To determine conformance to 3.10.10.1, certify that all welding is in accordance with requirements of Table 3.
3.10.10.2. Armor Steel Heat Affect Zone (HAZ) Hardness Test					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
When MIL-DTL-46100, Armor Plate, Steel, Wrought, High-Hardness is added to the JAB chassis, at any location of weldment, the Brinell hardness shall not be lower than permitted by MIL-DTL-46100 for minimum hardness requirements.	C/I		C/I		To determine conformance to 3.10.10.2, the Brinell hardness shall be checked at least 5/8 inch from the toe of the weld and on any ballistic surface to certify armor added to the existing system is not be lower than permitted by MIL-DTL-46100 for minimum hardness requirements.
3.10.11. Diagnostic Capability					
3.10.11.1. Chassis Diagnostic Capability					
The JAB chassis shall maintain the capability for fault identification, fault isolation, and health checks consistent with the M1A1 electrical system (Hull Distribution Box (HDB), Driver's Instrument Panel (DIP), Driver's Master Panel (DMP), Digital Electronic Control Unit (DECU), Fire Extinguisher Amplifier (FEA), Transmission (Shift Solenoids/Speed Sensor) (XMSN), Shift Select Assembly (SSA), Hull Networks Box (HNB), Upgraded Tank Commander's Panel (UTCP)), and Tiger Engine Memory Unit (EMU) (T). The JAB system shall incorporate fault identification, fault isolation, and health checks on all Line Replaceable Units (LRUs) (O).	I		I	I/T	To determine conformance to 3.10.11.1, verify through demonstration that the fault identification, fault isolation, and health checks are consistent with the M1A1 electrical system.
3.10.11.2. Launcher Diagnostic Capability					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
JAB chassis and hydraulic diagnostics shall feature either a single data bus network as specified by SAE J1939, SAE J1708, or a multiple data bus network in accordance with SAE J1939, which defines the interface between SAE J1708 and SAE J1939. The data bus shall have built in sensors that provide fault isolation capability sufficient to identify failures of the components of each system monitored by the data bus. Diagnostic outputs shall be transmitted to the vehicle mounted SAE J1939 female 9 pin Deutsch Connector, which shall conform to SAE J1939/13 'Off-board Diagnostic Connector' dated July 1999. Software shall display operator/driver informational data associated with each error code.	C		C	T	To determine conformance to 3.10.11.2, verify through demonstration that the fault identification, fault isolation, and health checks of the components of each system monitored by the data bus are consistent with the M1A1 electrical system.
3.10.11.3. Diagnostic Information					
The JAB system shall be compatible with U.S. Army Standard Unit Level Test Equipment which is presently the Maintenance Support Device (MSD). The MSD shall be used to retrieve and display diagnostic information from the embedded diagnostic systems.	C		C	T	To determine conformance to 3.10.11.3, verify through demonstration the use of the MSD to retrieve and display diagnostic information from the embedded diagnostic system.
3.10.11.4. Diagnostic Connection Check Points					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
Diagnostic connectors and circuits shall be compatible with the MSD. Diagnostic connectors shall be easily accessible, hard mounted and environmentally protected. The diagnostic connectors shall be equipped with a cover, which shall prevent entrance of moisture and contaminants.	C/I		C/I	T	To determine conformance to 3.10.11.4, verify that all Diagnostic Check Points are easily accessible, hard mounted, environmentally protected, have a cover installed and does not require removal of additional components to connect.
3.11. Mobility, Deployability, and Transportability					
3.11.1. Physical Dimensions and Weight					
The length of the JAB system shall be no longer than 42 ft, no wider than 13.6 ft, no higher than 13.1 ft. When combat-loaded the JAB system shall weigh less than 70 tons with ground clearance of at least 19 in.	I		C/I	I	To determine conformance to 3.11.1, verify the JAB system is no longer than 42 ft, no wider than 13.6 ft, and no higher than 13.1 ft with the MLC-85 AVLB stowed in the travel position. Verify if the JAB system, when combat loaded, is less than 70 tons. Verify the ground clearance is no less than 19 in.
3.11.2. Transportability					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB chassis shall be transported separately from the MLC-85 AVLB (T). The JAB system shall be transported via commercial and military maritime with the MLC-85 AVLB installed (O).				T	To determine conformance to 3.11.2, SDDC will assess the feasibility of transporting the JAB chassis by the designated modes. The contractor will submit all appropriate data on the JAB system to the Product Manager (PdM) and SDDC for their assessment. The SDDC assessment will be used as the primary data source to address transportability of the JAB system. The Transportability Test (TT) will be determined and directed by SDDC to determine the most effective and efficient configuration and method of transport for the JAB system.
3.11.2.1. Lifting and Tie down Provisions					
The JAB chassis shall be equipped with built in non-removable tie down provisions that meet the requirements for transportation by highway, rail, maritime, and internal aircraft modes. Components assembled on the JAB chassis shall provide lifting and tie down provisions as necessary to satisfy transportability requirements. These lifting and tie down provisions shall conform to MIL-STD-209 and to MIL-HDBK-1791 for equipment restraint criteria.	C		C	A/T	To determine conformance to 3.11.2.1, verify the JAB chassis is equipped with built in non-removable tie down provisions and conform to all the requirements specified in MIL-STD-209 and MIL-HDBK-1791. Operational testing of loading/unloading and tie-down procedures will be conducted using available transports or mock-up.
3.11.2.2. Commercial Rail					
The JAB chassis shall be transportable by rail within the DOD and Korean rail envelopes as defined in MIL-STD-1366 and in accordance with guidelines in the Military SDDC TEA-PAM 55-19 and SDDC TEA-PAM 70-1.				A/T	To determine conformance to 3.11.2.2, verify the JAB chassis shall conform to all the requirements specified in MIL-STD-810, Method 526, and within the DOD and Korean envelopes defined in MIL-STD-1366 and in accordance with SDDC TEA-PAM 55-19 and 70-1 for worldwide commercial rail guidelines.
3.11.2.3. Highway					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB chassis shall be highway transportable in accordance with U.S. and NATO standards and guidelines in SDDC TEA-PAM 55-20 and SDDC TEA-PAM 70-1.				A/T	To determine conformance to 3.11.2.3, SDDC will assess the feasibility of transporting the JAB chassis by the designated modes. The contractor will submit all appropriate data on the JAB chassis to the PdM and SDDC for their assessment. The SDDC assessment will be used as the primary data source to address transportability of the JAB chassis. The Transportability Test (TT) will be determined and directed by SDDC to determine the most effective and efficient configuration and method for rail and highway transport of the JAB chassis.
3.11.2.4. Commercial and Military Maritime					
The JAB system shall be transportable via commercial shipping (roll-on and roll-off) all U.S. Navy amphibious shipping including Landing Craft Air Cushioned (LCAC) and Landing Craft Utility (LCU) and military Maritime Prepositioned Forces (MPF) ships. The JAB chassis shall traverse a 17-degree ramp and clear the door to enter the ship without disassembly or dunnage in accordance with guidelines in MIL-STD-1366, TEA-PAM 55-22 and SDDC TEA-PAM 70-1.				A	To determine conformance to 3.11.2.4, verify that the JAB system will traverse a 17 degree ramp and clear the door to enter the ship without disassembly or dunnage in accordance with MIL-STD-1366, TEA-PAM 55-22 and SDDC TEA-PAM 70-1.
3.11.2.5. Internal Aircraft					
The JAB chassis shall be transportable on C-5 and C-17 aircraft and meet the requirements of MIL-HDBK-1791, MIL-STD-1366, SDDC TEA-PAM 70-7 and SDDC TEA PAM 55-24 and respective loading manuals.				A	To determine conformance to 3.11.2.5, verify through certification from Air Transportability Test Loading Agency (ATTLA) that the JAB chassis can be transported aboard C-5 and C-17 aircraft.
3.11.2.6. MLC-85 AVLB Travel Lock					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall have a manual travel lock to secure the MLC-85 AVLB while traveling (T). The JAB system shall have an automated travel lock, operable by the driver under closed hatch, to lock the MLC-85 AVLB while traveling and provide visual indication to the driver and commander the MLC-85 AVLB is in the locked position (O).			I	T	To determine conformance to 3.11.2.6, verify the travel locking mechanism locks the MLC-85 AVLB to the JAB chassis when the MLC-85 AVLB is stowed on the launcher by either manual or automatic means. Verify the automatic Bridge lock release is operable from the driver station and provides visual indication to the commander and driver when in the locked position.
3.11.2.7. Load and Unload MLC-85 AVLB					
The JAB system shall unload a folded MLC-85 AVLB onto the ground and onto any military flatbed trailer with sufficient load rating and capability to transport the MLC-85 AVLB in accordance with TM 5-5420-203-14. When the MLC-85 AVLB is removed for travel, The JAB chassis shall load a folded MLC-85 AVLB from the ground in less than 2.5 hours (T), 2 hours (O).	C		C	T	To determine conformance to 3.11.2.7, verify the JAB system unloads a folded MLC-85 AVLB onto the ground and onto any flatbed military trailer with sufficient load rating and capability in accordance with TM 5-5420-203-14. Verify the JAB chassis loads a folded MLC-85 AVLB from the ground and is prepared for travel in less than 2.5 hours (T), 2 hours (O).
3.11.2.8. Towing/Recovery					
The JAB system shall be towed and recovered separately by M88 family of recovery vehicles, another JAB system, or the M1 family of vehicles using tow cables of sufficient length or the Heavy Duty Lightweight Tow bar with the Heavy Assault Bridge Tow Bar Extension (HAB TBE) kit. Towing and recovery conditions and operations are defined in FM 4-30.31 Recovery and Battle Damage Assessment and Repair.				T	To determine conformance to 3.11.2.8, verify the JAB system can be towed by tow cables of sufficient length or the Heavy Duty Lightweight Towbar with the HAB TBE kit by M88 family of Recovery Vehicles, another JAB system, or the M1 family of vehicles separately. Verify the JAB system can be recovered by an M88 family of Recovery Vehicles (fender mired condition), another JAB system, and the M1 family of vehicles (wheeled mired condition) as defined in FM 4-30.31.
3.11.3. Acceleration, Maximum and Minimum Speeds					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The combat loaded JAB system shall perform the requirements stated in this section per the environmental conditions as detailed in section 3.7 of this document.				T	To determine conformance to 3.11.3, the combat loaded JAB system shall perform the requirements stated in this section while operating in the environmental conditions as detailed in section 3.7 of this document.
3.11.3.1. Range					
The JAB system shall operate for the minimum threshold ranges provided in Table 4 in the CBRN system operating conditions specified, on a paved surface level road without refueling, at a sustained speed of 29 miles per hour using only the JAB chassis primary fuel system.				A/T	To determine conformance with 3.11.3.1, verify through mathematical means, that the JAB system ranges 210 miles with the CBRN system ON and 220 miles with CBRN system OFF while maintaining a speed of 29 mph without refueling on dry, paved surface level roads.

Table 4: Range

Threshold and Objective Range in Miles				
Action	Paved Surface level Road (CBRN ON)		Paved Surface level Road (CBRN OFF)	
	Threshold	Objective	Threshold	Objective
Operating Range	210	279	220	289

3.11.3.2. Forward Acceleration					
The JAB system, at combat loaded weight, shall accelerate on a dry, level surface in the forward direction from 0 to 20 mph in 8.5 seconds or less with CBRN System ON.				T	To determine conformance with 3.11.3.2, verify that the JAB system on a hard level surface combat loaded can accelerate from 0 to 20 mph in 8.5 seconds or less with CBRN System ON.
3.11.3.3. Maximum Speeds					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall meet the speed thresholds provided in Table 5 under the required operating temperature range of -25 degrees F to 125 degrees F without consideration to time or visibility. Each speed requirement shall be attained and sustained in the terrain condition specified at the top of each column.				T	To determine conformance with 3.11.3.3, verify that the JAB system on a dry, paved surface level roads that the vehicle can attain and sustain speeds as defined in Table 5.

Table 5: Maximum Speed

Threshold Speed in Miles Per Hour			
Action	Hard Surf/Paved Road (CBRN On and Off)	Cross Country Terrain (CBRN Off)	
	Threshold	Threshold	Objective
Forward Speed *	29	5	10
Reverse Speed *	20	-	-

* Shall travel in a controlled manner

3.11.3.4. Minimum Speeds					
The JAB system shall travel between 1 mph and 2.5 mph in the forward direction on level, flat terrain, with the CBRN system both ON and OFF.				T	To determine conformance with 3.11.3.4, verify the JAB system shall continuously travel a maximum distance of 220 feet in 60 seconds or more (equal to 2.5 mph) in the forward direction on level flat terrain with the CBRN system ON and OFF.
3.11.4. Braking					
The combat loaded JAB system shall perform the requirements stated in this section per the environmental conditions as detailed in section 3.7 of this document.				T	To determine conformance with 3.11.4, the combat loaded JAB system shall perform the requirements stated in this section per the environmental conditions as detailed in section 3.7 of this document.
3.11.4.1. Deceleration					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall stop within 75 feet after the service brake application from initial forward speed of 20 mph on a dry, level, hard surface. After service brake application has been maintained for 2 minutes ± 24 seconds, a SERVICE BRAKE WARNING indication shall be provided to the driver and remain until acknowledged by reset by the driver.				T	To determine conformance with 3.11.4.1, verify the JAB system operating at a forward speed of 20 mph on a dry, paved surface level road can stop within 75 feet. Verify the Service Brake Warning indication is provided to the driver after the service brake has been applied for 2 minutes ± 24 seconds, and remains on until acknowledged by reset.
3.11.4.2. Deceleration Control					
The JAB system shall not deviate from a straight line greater than 6 feet left or right of centerline in 50 feet distance without steering corrections after service brake application from initial forward speed of 20 mph on a dry, level, hard surface.				T	To determine conformance with 3.11.4.2, verify the JAB system operating at a forward speed of 20 mph on a dry, paved surface level roads does not deviate from a straight line more than 6 feet left or right of centerline during the 50 ft braking distance.
3.11.4.3. Parking Brake					
With the engine OFF and engine ON and the transmission in neutral with the parking brake applied, the JAB system shall remain stationary on a 40 percent grade when headed either up and down the grade. The driver shall be provided both a visual and audio parking brake indicator with a reset.				T	To determine conformance with 3.11.4.3, verify the JAB system facing forward on a 40 percent grade, apply the service brake, set the parking brake, place the transmission in neutral, and release the service brake, the JAB system does not move. Shut the system OFF and verify the JAB system remains stationary. Repeat in a reverse direction.
3.11.5. Turning, Steering, Handling					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.11.5.1. Pivot Steer					
The JAB system shall execute a 360-degree pivot turn, in accordance with TM 9-2350-264-10-1.				T	To determine conformance with 3.11.5.1, verify the JAB system, with the transmission selector level in Pivot (PVT), verify the system can execute a 360-degree in accordance with TM 9-2350-264-10-1.
3.11.5.2. Turning Radius					
The JAB system shall traverse a 90 degree, 20 foot radius turn with the system moving at a speed greater than 4 mph, but less than 8 mph, in first transmission range. Turning radius shall be measured from the center of the turn to the centerline of the vehicle.				T	To determine conformance with 3.11.5.2, verify the JAB system, with the vehicle operating at a speed of 4 mph to 8 mph in the first transmission range, can traverse a 90 degree 20 ft radius turn in both directions. Turning radius is defined as the center of the turn to the centerline of the JAB chassis.
3.11.6. Negotiating Obstacles					
3.11.6.1. Vertical Step					
Without assistance or accessory attachments, the JAB system shall climb a vertical step in forward and reverse of at least 18 inches high.				T	To determine conformance with 3.11.6.1, verify the JAB system can climb a vertical step in forward and reverse of 18 inches high.
3.11.6.2. Trench Crossing					
Without assistance or accessory attachments, the JAB system shall cross a trench of at least 7 feet in width in forward and reverse.				T	To determine conformance with 3.11.6.2, verify the JAB system can cross a trench of 7 ft in width in forward and reverse.
3.11.6.3. Slope					
Without assistance or accessory attachments, the JAB system shall ascend and descend (in forward and reverse) a 40 percent slope (T) and 60 percent slope (O) while operating at 3 mph.				T	To determine conformance with 3.11.6.3, verify the JAB system without assistance or attachments negotiates a 40 percent slope (T) and 60 percent (O) in forward and reverse while operating at 3 mph.
3.11.6.4. Side Slope					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
Without assistance or accessory attachments, the JAB system shall negotiate a 25 percent side slope in forward and reverse.				T	To determine conformance with 3.11.6.4, verify the JAB system without assistance or attachments negotiates a 25 percent side slope in forward and reverse.
3.12. Human Factors Engineering (HFE) and Safety					
3.12.1. General					
The JAB system shall minimize exposure of the crew and maintenance personnel to hazards during its use in accordance with MIL-HDBK-454, MIL-STD-882, MIL-STD-1472 and MIL-STD-1474. The JAB system shall mitigate any identified hazards.	C		C	A/T	Verify the JAB system minimizes exposure of the crew and maintenance personnel to hazards during its use in accordance with MIL-HDBK-454, MIL-STD-882, MIL-STD-1472 and MIL-STD-1474. Verify the JAB system has mitigated any identified hazards.
3.12.2. Maintenance—General					
The JAB system parts and components shall be serviced and replaced by a range of 5th percentile female and 95th percentile male Soldiers dressed in Arctic clothing per MIL-STD-1472, Section 5.9 and CBRN MOPP IV attire per MIL-STD 1472, Table VII.	A/C		A/C	A	To determine conformance with 3.12.2, certify that all JAB system provisions for servicing and replacing all components of the JAB system shall be maintained by Soldiers ranging between a 5th percentile female and 95th percentile male Soldier dressed in Arctic clothing per MIL-STD-1472, Section 5.9 and CBRN MOPP IV attire per MIL-STD 1472, Table VII.
3.12.3. Operator—General					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall be operated by two (2) Soldiers within a range of 5th percentile male and 95th percentile male Soldiers dressed in Arctic and CBRN MOPP IV clothing per MIL-STD-1472, Section 5.7. All JAB launcher controls, warnings and indicators shall be provided to the driver to conduct launch and retrieval of the MLC-85 AVLB.	A/C	I	A/C	A	To determine conformance with 3.12.3, certify that all JAB system provisions are made for two (2) operators ranging between a 5th percentile male and 95th percentile male Soldiers dressed in Arctic and CBRN MOPP IV clothing per MIL-STD-1472, Section 5.7. Verify all launcher controls, warnings and indicators are provided to the driver for launch and retrieve operations.
3.12.4. Non-Skid Surfaces					
Surfaces of the JAB system, which are to be used as walkways, working areas, and/or steps, shall have non-skid protection equivalent to the M1A1 system non-skid surfaces.	I		I	I	To determine conformance with 3.12.4, verify that surfaces of the JAB system, which are to be used as walkways, working areas, or steps, have non-skid protection equivalent to the M1A1 system non-skid surfaces.
3.12.5. Audible Alarms and Visual Warnings					
Audible alarms and visual warnings shall be provided to the driver and commander to alert when system design limitations are exceeded during mobility, launch, and retrieve operations. All audible alarms and visual warnings shall comply with MIL-STD-1472.	C		C	T	To determine conformance with 3.12.5, verify that audible alarms and visual warnings are provided to the driver and commander in accordance with MIL-STD-1472.
3.12.6. Vibration					
The JAB system shall meet whole-body vibration requirements as prescribed by ISO 2631 for fatigued-decreased-proficiency on an 8-hour exposure limit curve.			C	T	To determine conformance with 3.12.6, the JAB system will be tested for whole-body vibration requirements as prescribed by ISO 2631 for fatigue-decreased-proficiency on an 8-hour exposure limit curve.
3.12.7. Electrical Hazards					
The JAB system electrical hazards shall be controlled using MIL-HDBK-454.	C		C		To determine conformance with 3.12.7, verify that electrical hazards have been controlled in accordance with MIL-HDBK-454.
3.12.8. MLC-85 AVLB Drop Prevention					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB launch mechanism shall have an automatic means to prevent dropping of the MLC-85 AVLB in the event of a failure of the hydraulic or electrical system. The MLC-85 AVLB shall be lowered and returned to a secured position, under crew control, in the event of a failure of the hydraulic system, excluding catastrophic structural failure or damage to hydraulic actuators.			C	T	To determine conformance with 3.12.8, verify the JAB system through testing to verify the launch mechanism has an automatic means preventing the dropping of the MLC-85 AVLB in the event of a failure of the hydraulic or electrical system. Verification will also be made to verify the MLC-85 AVLB can be lowered and returned to a secure position, under crew control, in the event of a failure of the hydraulic system, excluding catastrophic structural failure or damage to hydraulic actuators.
3.12.9. Controls					
Controls for the launcher mechanism and vehicle driving controls for the JAB system shall be provided within reach of the driver while operating in both open and closed hatch modes. The controls shall be of a dead man control type per MIL-STD-1472 which results in a system shut-down to a no movement operating state when force or input is removed.			C	T	To determine conformance with 3.12.9, verify the JAB system launch mechanism and driving controls are within reach of the driver while in open and closed hatch modes. Verify the controls are of a Dead man type in accordance with MIL-STD-1472.
3.12.10. Toxic Gases and Carbon Monoxide					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system design shall ensure the crew is not exposed to Toxic Gas levels in excess of the requirements in MIL-STD-1472. The equation used to estimate the percent COHb blood levels shall be in accordance with MIL-HDBK-759 using work stress level 3 for all mission activities. Other gases shall be limited to concentration not to exceed those specified in "Threshold Limit Values and Biological Exposure Indices" written by the American Conference of Governmental Industrial Hygienists.			C	A/T	To determine conformance with 3.12.10, verify the JAB system crew is not exposed to Carbon Monoxide (CO) levels in excess of the requirements in MIL-STD-1472. The equation used to estimate the percent COHb blood levels shall be in accordance with MIL-HDBK-759 using work stress level 3 for all mission activities. Other gases shall be limited to concentration not to exceed those specified in the latest publication of the "Threshold Limit Values and Biological Exposure Indices" written by the American Conference of Governmental Industrial Hygienists.
3.12.11. Crew Heat and Cold Protection					
The JAB chassis shall provide cooling to the crew to prevent heat stress through the use of the M1A1 personnel heater and cooling system. Crew shall be protected against heat and cold injury while inside the JAB chassis.			I	T	To determine conformance with 3.12.11, verify that the JAB chassis utilizes the M1A1 personnel heater and cooling system.
3.12.12. Materials					
The Hazardous Material requirements of 3.12.13 shall apply to all components except GFP. Excluding the existing M1A1 hull material, dissimilar metals shall be electrically insulated from one another to minimize or prevent galvanic corrosion.	C		C		To determine conformance with 3.12.12, certify that dissimilar metals are insulated from one another to prevent galvanic corrosion.
3.12.13. Hazardous Materials					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The contractor shall not introduce hazardous materials when a non-hazardous alternative is available which meets the performance requirements of this specification. Asbestos, beryllium, hexavalent chromium, cadmium, mercury, or other highly toxic or carcinogenic materials, as defined in FED-STD-313 Section 3.2, shall not be used in the manufacture, assembly, operation or sustainment of this system. Hazardous materials requirements shall apply to any components/parts purchased through a subcontractor/vendor or Original Equipment Manufacturer (OEM) parts, as well as manufactured parts. Hazardous Materials shall only be used when approved in writing by the PCO.	C		C		To determine conformance with 3.12.13, review and certify the Material Safety Data Sheet (MSDS) documentation for any hazardous materials.
3.12.13.1. Corrosion Mitigation					
To prevent galvanic corrosion, connectors on both sides of electrical connections shall be of the same material. Hazardous Materials may be used without PCO approval on electrical connectors which interface with GFP electrical connectors as long as the same Hazardous Material is used on each side of the connection.	C		C		To determine conformance with 3.12.13.1, verify the JAB system electrical connectors are the same material on both sides of the connection to prevent galvanic corrosion.
3.12.13.2. Radioactive Materials					
Radioactive materials shall not be used on the JAB system without the prior written approval of the PCO. Radioactive material is defined as Thorium or any other source material, as defined by Title 10, Code of Federal Regulations, Part 40, “Domestic Licensing of Source Material”, in excess of 0.05 percent by weight.	C		C		To determine conformance with 3.12.13.2, verify that no radioactive material except as approved in writing by the PCO have been included in the JAB system.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.12.13.3. Lead					
Lead shall not be used on the JAB system without prior written approval by the PCO. The use of lead solder may be approved for electrical components where a suitable alternative is not available. Lead-acid batteries may be used without approval from the PCO.	C		C		To determine conformance with 3.12.13.3, verify the JAB system has not utilized lead without prior written approval by the PCO with the exception of lead-acid batteries.
3.12.14. Ozone Depleting Substances					
All materials and components of the JAB system shall be free of Class I and Class II ozone depleting substances except as already used in the GFP Chassis for AFES.	C		C		To determine conformance with 3.12.14, certify that all materials and components are free of Class I and II ozone depleting substances per applicable Federal regulations in effect on the date of manufacture except for those used for AFES.
3.12.15. Ozone Resistant Products					
Excluding the existing M1A1 hull material, all rubber products introduced on the JAB chassis shall satisfy requirements of ASTM D2000 and be ozone resistant consistent with best commercial practice.	C		C		To determine conformance with 3.12.15, certify that all rubber products introduced to the JAB chassis satisfy the requirements of ASTM D2000 and are ozone resistant consistent with best commercial practice.
3.12.16. Hydraulic System					
3.12.16.1. Hydraulic Fluid					
The JAB system hydraulic fluids shall be of the fire resistant type per MIL-PRF-46170. High-pressure hydraulic components and hoses shall operate with fire resistant hydraulic fluid Type I (MIL-PRF-46170) and with MIL-PRF-6083. There shall be no excessive leakage of hydraulic fluid, as defined by class III leaks per AR 750-1, past couplings or seals at a maximum load, speed and pressure when operated within the technical requirements of this PD.	C		C	T	To determine conformance with 3.12.16.1, verify that the JAB system hydraulic fluid is of the fire resistant type per MIL-PRF-46170, high pressure components use the fire resistant Type 1 MIL-PRF-46170 and MIL-PRF-6083. Verify the JAB hydraulics do not have leakage greater than that as defined by class III leaks of AR 750-1 while under pressure and maximum loading.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.12.16.2. Hydraulic Lines and Hoses					
The hydraulic filters and strainers shall be located so as to provide direct access and to allow replacement without removal of components. Bypasses shall be furnished where necessary to protect filters during cold temperature operations. The JAB hydraulics shall allow for removal of air trapped in the hydraulic system. Hoses and tubing shall conform to SAE J517 or equivalent for burst and test pressure.	A/I		A/I	A/I	To determine conformance with 3.12.16.2, verify if hydraulic lines routed through an operator compartment that provisions are installed to prevent personnel injury by rupturing of lines. Verify that hoses and tubing conform to SAE J517 or equivalent. Verify hydraulic filters and strainers are located with direct access for removal without removal of other components.
3.12.16.3. Hydraulic Fluid Loss from Penetration and Rupture					
The JAB system crew shall be protected from injury caused by exposure to both high pressure and hot hydraulic fluid resulting from ruptured hydraulic lines and reservoirs.	C		C		To determine conformance with 3.12.16.3, verify the crew is protected from injury caused by exposure to hot hydraulic fluid resulting from ruptured lines and reservoirs.
3.12.16.4. Hydraulic Line Routing and Location					
All hydraulic lines and components of the JAB system when routed through the crew compartment shall be located, and shielded to minimize their vulnerability during mission operation and to prevent injury to crew and damage to the vehicle in case of ruptured lines, broken or loose fittings and couplings, fire, or other heat sources. Hydraulic lines shall be routed and mounted properly to prevent damage in accordance with SAE J1273.	C/I		C/I		To determine conformance with 3.12.16.4, verify that all hydraulic lines and components are located, routed, or shielded to minimize vulnerability during mission operation and to prevent injury to the crew and damage to the vehicle in accordance with SAE J1273.
3.12.16.5. Hydraulic Connections					
All JAB system hydraulic connections shall be in accordance with SAE J516.	C/I		C/I		To determine conformance with 3.12.16.5, all hydraulic connections are in conformance with SAE J516.

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
3.12.16.6. Hydraulic Pressure Relief					
The JAB system shall incorporate a pressure relief valve, either manual or automatic, for reducing pressure to zero pressure for maintenance of the hydraulic system and during MLC-85 AVLB hydraulic line connection and disconnection.	I	I	I	T	To determine conformance with 3.12.16.6, verify the JAB system hydraulics system shall incorporate a pressure relief valve, either manual or automatic, for reducing pressure in the hydraulic system to zero pressure.
3.12.17. Noise Limits					
Noise levels produced by the JAB system shall comply with requirements of MIL-STD-1474 with the exception of MIL-STD-1474, Requirement 2 and 3. The noise level at all crew operating positions shall not exceed Category B of MIL-STD-1474(noise attenuating helmet/headsets shall be used by the crew). The vehicle interior shall be posted with warning decals indicating high noise area.	C		C	T	To determine conformance with 3.12.17, the JAB system noise limits and hearing protection requirements will be assessed in accordance with MIL-STD-1474.
3.12.18. Emergency Egress					
The JAB system shall maintain at least two independent escape routes in all modes of operation. Escape routes shall be usable by Soldiers ranging from a 5th percentile female to a 95th percentile male. Maximum escape time, for both crewmembers evacuating the vehicle, shall not exceed 20 seconds (T), 10 seconds (O). The time stops when both crew members get out of the vehicle onto the chassis.	C		C	T	To determine conformance with 3.12.18, JAB system egress time trials will be conducted with the MLC-85 AVLB on and off the JAB chassis to determine that crew can safely egress the vehicle. Times will be evaluated against requirements outlined.
3.12.19. Crew Evacuation					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall allow any disabled crewman located in his assigned crew position to be evacuated from the vehicle with the vehicle oriented in the upright position.	C		C	T	To determine conformance with 3.12.19, an evaluation will be conducted to confirm that the JAB system requirement for disabled crew evacuation can be safely conducted.
3.12.20. Crew Compartment					
3.12.20.1. Display Light Emission					
The JAB chassis shall incorporate adjustable illumination for visual displays (including display, control, and panel labels and critical markings) that must be read under darkened conditions. Illumination shall be continuously adjustable or permit adjustment to a minimum of 30 increments from completely OFF to maximum brightness per MIL-STD-1472.	C/I		C/I	T	To determine conformance with 3.12.20.1, verify the JAB chassis visual displays can be read under darkened conditions and the illumination is continuously adjustable from completely OFF to maximum brightness per MIL-STD-1472.
3.12.20.2. Hatches					
The JAB chassis shall utilize the M1A1 driver's and commander's hatches that allow the crew to safely operate the vehicle in both open and closed hatch modes. The hatch shall provide ingress and egress when open. The hatch shall provide ballistic, environmental, and CBRN protection when closed. The hatch shall lock in both its fully open and fully closed positions.	C/I		C/I	T	To determine conformance with 3.12.20.2, verify the JAB chassis crew hatches are unmodified M1A1 hatches that provide ballistic, environmental, and CBRN protection when closed. Verify both hatches lock in both the open and closed position and can be secured from the inside to prevent unauthorized access.
3.12.20.3. Driver's Hatch					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The driver's hatch shall retain the mounting of three (3) vision periscopes providing a field of view that permits the driver to safely operate the vehicle with the driver's hatch closed as stated in section 3.7.7 of this document. The driver's hatch shall be secured from inside the vehicle to prevent the hatch from being opened from outside the vehicle.	C/I		C/I	T	To determine conformance with 3.12.20.3, Verify the driver's hatch has an unobstructed view through the three (3) vision periscopes providing a field of view that permits the driver to safely operate the vehicle with the driver's hatch closed.
3.12.20.4. Commander's Hatch					
The commander's hatch shall retain the mounting of six (6) vision periscopes providing a field of view stated in section 3.7.7 of this document. The commander's hatch shall be secured from inside the vehicle to prevent the hatch from being opened from outside the vehicle. The commander's hatch shall retain the current brackets that allow the hatch to be secured from the outside to prevent unauthorized access.	C/I		C/I	T	To determine conformance with 3.12.20.4, verify the commander's hatch has an unobstructed view through the six (6) vision periscopes providing a field of view stated in section 3.7.7 of this document. The commander's hatch shall retain the M1A1 capability to allow the hatch to be secured from the outside to prevent unauthorized access.
3.12.20.5. Commander's Hatch Location					
The JAB chassis shall utilize the M1A1 commander's hatch, which shall be located on the turret cap centered above the commander's station seat.	C/I		C/I	T	To determine conformance with 3.12.20.5, verify the JAB chassis commander's hatch is positioned on the turret cap above the commander's station seat.
3.12.20.6. Seats					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB chassis commander and driver shall have a seat that facilitates performance of crew functions in both open and closed hatch modes. The M1A1 driver's seat shall be utilized in the driver's compartment. The commander's seat shall comply with Federal Motor Vehicle Safety Standard (FMVSS) 207 and FMVSS 210. The commander's seat shall provide a full range of adjustability to optimize vision, comfort, and performance of the crew's functions. The seat design and positioning shall facilitate ingress to and egress. The commander seat shall have Type 2 seat belt assembly which is defined as a combination of pelvic and upper torso restraints, and shall be in accordance with FMVSS 209	C/I		C/I	A/I	To determine conformance with 3.12.20.6, verify the driver's seat is the M1A1 seat. Verify the commander's seat is adjustable in open and closed hatch modes, and that commander's seat has Type 2 seat belt assemblies installed and compliant with FMVSS 207,209, and 210.
3.12.20.7. Autoflug Seat					
The JAB chassis driver's compartment shall retain the current brackets for mounting of the Autoflug seat kit. The brackets and provisions for the Autoflug seat shall not be removed or covered by the placement of components.	C/I		C/I	T	To determine conformance with 3.12.20.7, verify the JAB chassis driver's compartment has the current brackets for mounting of the Autoflug seat kit installed. Verify the brackets and provisions for the Autoflug seat are not removed or covered by the placement of components.
3.12.20.8. Dome Lights					
The JAB chassis drivers and commanders crew compartment shall be equipped with M1A1 dome lights with adjustable intensity of illumination from fully extinguished to full brightness.	I		I	T	To determine conformance with 3.12.20.8, verify the JAB chassis has the M1A1 dome lights for the driver and commander installed and function properly. Verify these can be adjusted for intensity from fully extinguished to full brightness.
3.12.21. Smoke Grenade Impulse Noise					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB chassis smoke grenade positioning shall meet MIL-STD-1474, Requirement 4 for impulse noise during deployment of the smoke grenades using the M250 smoke grenade launchers.			C	A/T	To determine conformance with 3.12.21, verify the JAB chassis smoke grenade launchers meet MIL-STD-1474, Requirement 4 for impulse noise during deployment of the smoke grenades using the M1A1 smoke grenade launchers using a 140dB noise contour.
3.13. Logistic Support					
3.13.1. Commonality					
The JAB system shall integrate Government Off The Shelf (GOTS) and COTS components. Parts that have a National Stock Number (NSN) shall be used (O).			C		To determine conformance with 3.13.1, verify through examination that JAB system components use GOTS/COTS and existing NSN's.
3.13.2. Maintainability / Supportability					
All JAB system maintenance shall be performed through the use of tools found in the following tool sets: • Battalion Maintenance Team Tool Set: NSN 4940-01-140-2364 • General Mechanics Tool Kit: NSN 5180-01-548-7634 • Forward Repair System: NSN 4940-01-463-7940 • Standard Automotive Tool Sets: NSN 4910-01-490-6453 • Ground Hop Kit: NSN 4910-01-231-0343 • Army General Mechanics Tool Kit, Automotive, NSN 5180-00-177-7033 Tools not contained in these tool sets require prior written PCO approval and shall be provided with the JAB system.			C/I		To determine conformance with 3.13.2, verify the tools required for JAB system maintenance shall be found in the list of tool sets in section 3.13.2. Verify that if there are any tools not listed in the common tool sets that these special tools are provided.
3.13.3. Pulse Jet System (PJS)					

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3. Technical Requirements	PPUI	FT	QCI	PPQT	4. Verification Requirements
The JAB system shall utilize the self-cleaning air filtration system equivalent to that of the M1A1 PJS, which automatically monitors the status of the air filter and performs its self-cleaning function as required to maintain effective functioning of the main engine and prevent contaminates from entering the engine.			C	T	To determine conformance with 3.13.3, verify that the JAB system has a self-cleaning air filtration system and that the system functionally is equal to that of the M1A1.
3.13.4. Stowage					
The JAB system shall have adequate storage for all Basic Issue Items (BII). All items shall be stowed in a manner that shall not hinder the operation or transport of the JAB system. Items shall be stowed in toolboxes and cases. All BII shall be secured in place during operation.	I		I	T	To determine conformance with 3.13.4, verify there is sufficient internal and external storage for all JAB system BII items and does not hinder operations or transportation.
3.13.5. Marking					
The JAB chassis shall have markings in accordance with MIL-STD-130.	C/I		C/I		To determine conformance with 3.13.5, verify the JAB chassis has markings in accordance with MIL-STD-130.

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4. VERIFICATION REQUIREMENTS

4.1. General

Section 4 in Table 1 consists of the methods used to verify the product meets the requirements shown in Section 3. All tests and test parameters are defined in Section 4. Conformance with Section 3 requirements shall be verified as defined in Section 4, using the verification methods, as identified in Table 1 and defined in section 4.3 respectively: Analysis, Certification, Inspection and Test.

4.1.1. Prototype System Inspection

The contractor at the place of manufacture shall inspect the first two prototype JAB systems. The inspection shall include as a minimum the inspections referenced in Table 1. Upon completion of inspection, the contractor shall submit both prototype JAB systems and all inspection records and certifications to the Government Quality Assurance Representative (QAR) for review. The Government, at its option, may elect to witness the contractor's inspection or conduct its own inspection.

4.1.2. Responsibility for Inspection

Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or this document, the contractor may use their own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any inspection set forth in this document where such inspections are deemed necessary to assure supplies and service conform to prescribed requirements.

4.1.3. Responsibility for Compliance

All items shall meet all requirements of Section 3 of this document. The inspections set forth in this document shall become part of the contractor's overall inspection or quality program. The absence of any inspection requirements in this document shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in Quality Conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2. Approval and Acceptance

Approval and acceptance by the PCO of the first two prototype JAB systems shall be withheld until the Final Inspection Record (FIR) has been completed and final determination has been made by the PCO regarding conformity of the JAB system to contractual requirements.

4.3. Verification Methods

If multiple verifications methods are identified in Table 1, the contractor shall complete all verifications indicated.

4.3.1. Analysis (A)

Analysis shall be conducted by the contractor and shall consist of technical evaluations through either mathematical models, simulations, algorithms, charts, diagrams,

representative data, or other appropriate means to demonstrate compliance with the Section 3 requirement.

4.3.2. Certification (C)

Certifications are defined as contractor-furnished documents certifying compliance with specific Section 3 requirement criteria. Certifications shall be signed by the contractor's certifying official or responsible party, and shall include all supporting performance, inspection, and analytical data, as applicable. As directed by the PCO, certifications may be used in lieu of additional verification methods.

4.3.3. Inspection (I)

Inspections shall constitute those activities conducted by the contractor or Government QAR to verify systems attributes and characteristics are compliant with Section 3 requirements of the JAB system PD. Verification shall be accomplished by visual or physical examination of the end item, subsystems and/or components, and may include but are not limited to recording measurements, evaluating physical characteristics and interfaces with respect to form, fit, and function, and reviewing descriptive documentation.

4.3.4. Test (T)

Testing will be a First Article Test (FAT) and shall be conducted by the Government at a Government test site, and shall be accomplished through the systematic physical operation of the JAB system, its systems, subsystems or components, under the appropriate and specified conditions, with or without instrumentation, and the collection, analysis, and evaluation of resulting data.

4.4. Verification Events

4.4.1. Pre Production Unit Inspection (PPUI)

During fabrication, inspections shall be performed by the contractor to certify conformance with the requirements of the contract and specifications. Upon completion of PPUI, the contractor shall submit the JAB systems and make available all inspection records and certifications to the responsible Government inspection element at the contractor's facility. The approved FIR shall be submitted to the PCO with each JAB system offered for acceptance.

4.4.1.1. In-Process Inspection

During fabrication of the first prototype JAB system, the contractor shall conduct in-process inspections. The Government reserves the right to witness any inspection where such inspections are deemed necessary to evaluate conformance of materials and workmanship to the requirements referenced in Table 1. Government representatives shall have access to the contractor's or subcontractor's facility as appropriate to evaluate conformance of materials and workmanship to the requirements set forth by this document. All components of the JAB chassis shall be available for inspection; these inspections shall be made prior to application of primer and paint. Welding procedures, welder certifications, workstation instructions, control plans, in-process quality check sheets, inspection records, and calibration procedures shall be properly documented. These documents shall be made available for review and evaluation during the in-process inspections.

4.4.2. Functional Trial (FT)

The contractor shall conduct a FT which consists of five (5) launch and retrieve cycles and all items marked with an A, C, I, or T in Table 1 at the contractors facility. Each of these cycles shall be conducted in an alternating manner (launch from one end then retrieval of the MLC-85 AVLB from the opposite end). The Government reserves the right to witness this inspection as set forth in this document.

4.4.3. Quality Conformance Inspection (QCI)

The contractor shall perform a QCI of each prototype JAB system. The QCI shall be performed as defined in Table 1 and utilizing a Government approved FIR. The Government reserves the right to witness the final inspection or conduct its own final inspection. The inspection may be functional, operational, or visual; is not intended to be a control test.

4.4.4. Pre Production Qualification Testing (PPQT)

When specified, to determine conformance of Section 3 of this document, after completion of the QCI and PPUI, the Government will test or analyze two prototype JAB systems at a Government test site in accordance with requirements specified in Table 3. The Government reserves the right to waive any testing requirements.

4.5. Repair of Defects

The contractor shall repair all defects found during QCI and PPUI at no cost to the Government.

5. PACKAGING

5.1. Packaging

For acquisition purposes, the packaging requirements shall be as specified in the contract or delivery order. When packaging of material is to be performed by Department of Defense (DoD) or in-house contractor personnel, these personnel may need to contact the responsible packaging activity to ascertain the packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Services System Commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products or by contacting the responsible packaging activity.

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6. NOTES

6.1. Intended Use

The purpose of the JAB system is to meet the gap crossing requirements of the Operating Forces by providing a rapidly employable, short gap, assault crossing system for the armored / mechanized forces, capable of spanning natural and manmade obstacles up to 60 feet. The JAB system will replace the fielded M60A1 Armored Vehicle Launched Bridge (AVLB) used to launch and retrieve an MLC-85 AVLB.

6.2. Acquisition Documents

Acquisition documents must specify the following:

a. Title, number, and date of this purchase description
b. If required, the specific issue of individual documents referenced (see 2.2.1, 2.2.2, and 2.3 of this document).
c. Packaging requirements (see 5.1 of this document)

6.3. Definitions

The following definitions apply to the entire PD:

6.3.1. Combat Loaded JAB system

A combat loaded JAB system is defined as the M1A1 hull, MLC-85 AVLB, launcher mechanism including all of the launcher components, full fuel and hydraulics, and 2 crew members (driver and commander).

6.3.2. JAB system

The JAB system is defined as the M1A1 hull, launch mechanism and MLC-85 AVLB loaded on top of the M1A1 hull.

6.3.3. JAB chassis

The JAB chassis is defined as the M1A1 hull and launch mechanism installed.

6.3.4. M1A1 hull

M1A1 hull is defined as the M1A1 vehicle with turret removed that will be provided as GFP for development of the JAB system.

6.3.5. Launch and retrieve cycle

One launch and retrieve cycle of the MLC-85 AVLB is defined as completing a full launch from the fully stowed position on the JAB chassis and then retrieving a launched MLC-85 AVLB to the fully stowed position.

6.3.6. Full launch

Full launch is defined as deploying the MLC-85 AVLB from the fully stowed position, such that the MLC-85 AVLB is disconnected from the launching mechanism and ready for vehicle crossings.

6.3.7. Fully stowed position

Fully stowed position is defined as the MLC-85 AVLB being positioned on the top of the JAB chassis, without the travel locks engaged.

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6.3.8. Cross Country Terrain

Vehicle operations over terrain not subject to repeated traffic and where no roads, routes, well-worn trails or man-made improvements exist. These are surfaces having a root mean square roughness value greater than 3.8 cm (1.5 in).

6.3.9. Manual travel lock

Manual travel lock is defined as a travel lock that can be manually disengaged by the crew while the crew is inside the JAB system with all hatches closed. The crew is allowed to exit the JAB system after retrieval to engage the travel lock.

6.3.10. Unobstructed Vision Periscopes

Unobstructed vision through the periscopes as referenced in section 3.7.7.2 is defined as not being able to see any contractor added component (with the exception of vision system components) through the periscopes under closed hatch.

6.4. MLC-85 AVLB Remounting

The MLC-85 AVLB does not require more than a 20 ton crane or M88 family of vehicles support during transition of removing the transported mode to the ground for remounting on the JAB chassis.

Custodian:
Army – AT

Preparing activity:
Army – AT

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Annexes

A. Acronym List

The following acronyms are used within this Purchase Description:

AFES	Automatic Fire Extinguishing System
AR	Army regulation
ARL	Army Research Labs
ATTLA	Air Transportability Test Loading Agency
AVLB	Armored Vehicle Launched Bridge
AFES	Automatic Fire Extinguishing System
BFT	Blue Force Tracker
BII	Basic Issue Items
CBRN	Chemical, Biological, Radiological and Nuclear
CM	Corrective maintenance
COMSEC	Communication Security
COTS	Commercial-Off-The-Shelf
CVS	Command Vehicle Crewman
DAGR	Defense Advanced GPS Receiver
DECU	Digital Electronic Control Unit
DIP	Driver's Instrument Panel
DMP	Driver's Master Panel
ECP	Engineering Change Proposal
E3	Electromagnetic Environmental Effects
EMU	Engine Memory Unit
EPA	Environmental Protection Agency
FAT	First Article Test
FBCB2	Force XXI Battle Command, Brigade and Below
FD/SC	Failure Definitions/Scoring Criteria
FEA	Fire Extinguisher Amplifier
FIR	Final Inspection Record
FM	Field Manual
FMVSS	Federal Motor Vehicle Safety Standards
FT	Functional Trial
GFP	Government Furnished Property
GOTS	Government Off the Shelf
GPS	Global Positioning System
HAB TBE	Heavy Assault Bridge Tow Bar Extension
HAZ	Heat Effect Zone
HDB	Hull Distribution Box
HEMP	High-Altitude Electromagnetic Pulse
HFE	Human Factor Engineering
HNB	Hull Networks Box
HPU	Hydraulic Power Unit
IUID	Item Unique Identification Marking

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JAB	Joint Assault Bridge
LCAC	Landing Craft Air Cushioned
LCU	Landing Craft Utility
LRU	Line Replacement Unit
MAC	Mobility Augmentation Command
MBT	Main Battle Tank
MaxTTR	Maximum Time to Repair
MPF	Maritime Prepositioned Forces
MLC	Military Load Class
MMBOMF	Mean Miles Between Operational Mission Failures
MMH/OH	Maintenance Man Hour per Operating Hour
MN	Material Need
MOPP	Mission Oriented Protective Posture
MOS	Military Occupational Specialty
MR	Maintenance Ratio
MSD	Maintenance Support Device
MCBOMF	Mean Cycles Between Operational Mission Failure
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, Chemical
NSN	National Stock Number
ODS	Ozone Depleting Substances
OEM	Original Equipment Manufacturer
PCO	Procuring Contracting Officer
PD	Purchase Description
PdM	Product Manager
PJS	Pulse Jet System
PM	Preventive Maintenance
PMCS	Preventive Maintenance Checks and Services
PPQT	Pre Production Qualification Test
PPUI	Pre Production Unit Inspection
QAR	Quality Assurance Representative
QCI	Quality Conformance Inspection
SDDCTEA	Surface Deployment And Distribution Command Transportation Engineering Agency
SINCGARS	Single Channel Ground and Airborne Radio System
SSA	Shift Select Assembly
TACOM	Tank-automotive and Armaments Command
TARDEC	Tank and Automotive Research, Development and Engineering Center
TDTC	Trilateral Design and Test Code
TIP	Tank Infantry Phone
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment

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TT	Transportability Test
UTCP	Upgraded Tank Commander's Panel
XMSN	Transmission (Shift Solenoids/Speed Sensor)

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B. Abrams Mandatory Performance Levels

See Annex B

C. Abrams M1A1 Ballistic Survivability

See Annex C

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