JAB Lessons Learned

Purpose: To provide lessons learned from the United States Marine Corps (USMC) JAB program for informational purposes only.

Background: In 2006, The USMC independently developed an Expeditionary Assault Bridge (to be known as JAB from this point forward) to replace the aging and difficult to support AVLB fleet. The M1A1 Abrams tank was selected as the base vehicle in order to maintain speed, survivability, and commonality with the M1A1 fleet.

During the development and testing of USMC JAB, multiple lessons relating to the failure of the launch mechanism and chassis were learned. These lessons may be used as general guidance for all future JAB design efforts.

1	Contractors should immediately contact POC: Tom Morrow, winslow.t.morrow.civ@mail.mil to request any technical data that might be missing or incomplete from the drawing package provided.
2	Unconfirmed or inaccurate data (e.g. models, drawings, technical information) may increase the risk of undesired system performance and durability characteristics of the M1A1 chassis. Calculations for total system weight and distribution should be carefully analyzed and modeled to ensure critical design elements (e.g. center of gravity or road wheel loading) are correctly documented and addressed.
3	The use of proven commercially available parts for the design of the hydraulic, electrical, and auxiliary power systems may increase the overall system integrity and should be incorporated into the design whenever feasible. Adequate subcomponent testing as well as bench testing is recommended prior to system integration.
4	System control panels that contain diagnostic indicators and gauges can provide warnings to the operator of potential problems prior to system failures. Examples include pressure drops, hydraulic temperatures, auxiliary engine oil pressure, temperatures, and fire indicators.
5	Components, fittings and connectors common to the Military are preferred. Designs that require special tools and parts often require longer delivery lead times and add unnecessary cost.
6	Hydraulic systems that allow for the manual release of pressure while connecting or disconnecting hydraulic lines between the MLC-85 AVLB and the JAB chassis are easier and safer for operators.
7	Placement of communication equipment and the accompanying antennas needs to be considered early in the design phase to ensure the launch mechanism and MLC-85 AVLB do not cause interference and the communication equipment operates properly when the MLC-85 AVLB is stowed on the chassis as well as during launch and retrieve operations.
8	Relocation of M1A1 tank components that were previously located in the turret as well as launcher related controls in the driver's and commander's compartments should be considered early in the design phase to ensure space claim is available and locations are easily accessible.
9	Panel controls for the Launch Mechanism should be located and protected to prevent damage or accidental system engagement during operator ingress/egress. Control panel design should account for Soldiers wearing cold weather gloves, and NBC protective gloves.
10	Hydraulic lines that are routed internally must be shielded to prevent injury to the crew in the event of line rupture; safety hazards associated with this issue should be considered early in the design phase.
11	Launcher components that are routed or mounted externally require ballistic covering, which could lead to a significantly decreased vision capability for both the driver and commander. Early consideration of launcher component placement will reduce the risk of not meeting the vision requirement stated in the PD.
12	High stress areas such as the turret cap and hydraulic launcher pivot points should be analyzed for both strength and fatigue to ensure the connection methodology is sufficient for the forces encountered during operations.