



## Joint Light Tactical Vehicle (JLTV) Prototype Builds Underway

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**J**LTV Technology Development (TD) phase industry teams have begun to build government prototypes, engineering an unprecedented blend of mobility, payload capacity, and survivability. They are building a light tactical vehicle that will withstand improvised explosive device attacks, maneuver quickly through diverse terrain, and transport beneath a CH-47 or CH-53 helicopter.

Lockheed Martin JLTV prototypes demonstrate an FOV approach. As the central component of DOD's TWV strategy, JLTV will enhance the military's mix of tactical vehicles by providing a balanced vehicle solution of performance, payload, and protection with increased transportability and expeditionary mobility. (Photo courtesy of Lockheed Martin.)



Being one of the first DOD acquisition programs to embrace the principles of “competitive prototyping,” JLTV’s solid acquisition approach is proving to be successful. “Through the efforts of three contractors to build JLTV variants, we can validate requirements and reduce risk,” said COL John Myers, Project Manager Joint Combat Support Systems.

### Reviews and Testing Phases

The three teams awarded contracts for the 27-month TD phase—BAE Systems, General Tactical Vehicles, and Lockheed Martin—have incorporated design revisions from their independent preliminary and Critical Design Reviews (CDRs). Independent CDRs provide the Army and U.S.

Marine Corps (USMC) with the opportunity to assess the technical maturity of each team’s design relative to the TD phase requirements.

“As we progress from Preliminary Design Reviews to CDRs, each team is further refining their design. Then, they move into the build process,” said LTC Wolfgang Petermann, Product Manager JLTV. “What the government sees coming out of the CDR is what we should see in hardware when the vehicles are delivered for testing.”

Prior to testing, a series of independent test readiness reviews will serve as a checkpoint, ensuring that the vehicles were built as designed; the idea is to make sure that what was delivered on

paper is what is subsequently delivered in hardware. “Shortly after the test readiness reviews, we will begin full vehicle testing, beginning with safety certifications,” said Petermann. “We will then move into performance and RAM [reliability and maintainability] testing. We will conduct user evaluations with Soldiers and Marines to verify requirements suitability. This is a robust test program not typically seen in a TD phase.” The prototypes will undergo 20,000 miles of RAM testing per vehicle. In addition to prototype testing, each of the three JLTV industry teams delivered armor coupons and a number of ballistic hulls for blast-test evaluation at Aberdeen Proving Ground, MD.

Industry partners have also conducted a series of subcomponent tests to include examinations of the adjustable height suspension; power integration capabilities; command, control, communications, computers, intelligence, surveillance, and reconnaissance architecture; and blast-testing of the ballistic hulls. “We have seen many mature individual technologies. The challenge will be seeing them integrated,” said Petermann. At the end of the rigorous testing schedule, the prototype vehicles will go through extensive prototype live-fire tests where they are attacked in combat-like conditions by weapons most likely to be used by current and future enemies.

The TD phase is aimed at informing and refining the requirements for the JLTV family of vehicles (FOV) through prototyping to reduce risks and lower production costs. Upon completion of the 27-month TD phase, the government will conduct a new, full and open competition for a follow-on Engineering and Manufacturing Development (EMD) phase, leading to the awarding of two contracts.

“Since one of the primary objectives of the JLTV TD phase is to demonstrate an achievable set of low-risk requirements, the program, together with the joint combat developers, is using a requirements management process to guide requirements maturation,” said Kevin Fahey, Program Executive Officer



The General Tactical Vehicles design brings an innovative and adaptable FOV and trailers with a projected commonality of components greater than 95 percent. (Photo courtesy of General Tactical Vehicles.)

The BAE Systems-Navistar JLTV prototype called the Valanx was innovatively designed especially for the warfighter. It features a modular, plug-and-play design to ensure unmatched capabilities today and into the future. (Photo courtesy of BAE Systems.)



Combat Support and Combat Service Support (PEO CS&CSS).

Through this process, the requirements, which were the starting point for the TD phase, are continually assessed for achievability through a series of knowledge point reviews based on results seen from current efforts. Simultaneously, requirements for the EMD phase are being developed using results from the TD phase coupled with inputs from ongoing operations. “We are letting ‘events’ drive the program and we are continuously incorporating the challenges posed by the current fleet,” added Fahey.

“The end result from the requirements management process will be a final approved set of requirements, which have been demonstrated and are low risk,” said Myers. Added Petermann, “Our intent is to come out with an RFP [Request for Proposal] for the EMD phase with a low-risk, executable, and affordable set of requirements. We anticipate an RFP release for April 2011,

to be followed by a contract award in fourth quarter 2011.” Following a Milestone C decision in 2013, the Army plans to purchase 55,000 JLTVs and the USMC plans to buy 5,500. Full production is slated for 2015.

### JLTV Capabilities

The Army-USMC JLTV program will produce a fleet of tactical vehicles that can support a range of mission sets. “We are developing an FOV and companion trailers that can be used in any operational environment—low-intensity conflict to high-intensity conflict, and major combat operations to hybrid warfare. We have the SOCOM [Special Operations Command] requirements built into the vehicle, meaning no follow-on modifications will be necessary to accommodate their mission profiles, thus increasing commonality with the operating forces,” said LTC Ben Garza, JLTV Program Manager, USMC.

Other requirements include building a vehicle that can generate 30 kilowatts of exportable power, drive when tires are shot, accommodate scalable armor solutions, and provide extra spill liner and embedded diagnostics. “The unarmored high-mobility multipurpose wheeled vehicle used to have great payload capacity and off-road mobility,

but when you added armor, it threw it off balance,” said Garza. “We want to regain that off-road mobility we had with increased survivability, all on one transportable platform.”

Currently, there are three payload categories that cover 10 JLTV configurations. Category A, the smallest category, will have a combat transport weight of 14,322 pounds and support a 3,500-pound payload while armored. Category B is somewhat larger, supporting a 4,500-pound payload while armored. Category C supports a 5,100-pound payload while armored. The Category C vehicles will also address shelter and ambulance requirements. The entire family of JLTV is transportable by tactical assets (CH-47, CH-53, C-130), greatly reducing the burden on strategic assets such as the limited quantity of C-17 and C-5 aircraft. The JLTV FOV will have an adjustable suspension to a height of 76 inches or less to board maritime pre-position force ships.

Focused on light tactical vehicle capabilities and balancing protection, performance, and payload, JLTV is and remains a key component of the Tactical Wheeled Vehicle (TWV) strategy. “JLTV is the future of light tactical vehicles; it is a critical component of the service’s TWV strategy,” said Fahey.

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## INTERNATIONAL EFFORTS INCREASE INTEROPERABILITY



Kevin Fahey, PEO CS&CSS, briefs Australian Chief of Army LTG K.J. Gillespie on Nov. 4, 2009, at Selfridge Air National Guard Base, Harrison Township, MI, highlighting the importance of demonstrating a mature, transportable, and balanced “iron triangle”—performance, payload, and protection—during JLTV’s TD phase. (Photo courtesy of 127th Wing, Michigan Air National Guard Public Affairs.)

JLTV is designed to meet the long-term strategic and operating goals of the Army and USMC; Australia is looking for the same kind of long-term solution. In January 2009, the U.S. and Australia entered into a Land Force Capability Modernization Project Arrangement for the TD phase of the JLTV. “The JLTV program has really set the framework for coalition armed forces to jointly address similar capability gaps surrounding the tactical vehicle imbalance in protection, performance, and payload ... all while increasing interoperability between our allied, friendly, and coalition partners,” said Fahey.

Australian prototypes are scheduled to be delivered in June 2010, about 45–75 days after the

U.S. delivery. The Australian vehicles will feature right-hand operation, and will maintain a 90-percent commonality with the left-hand operation prototypes. In addition, the Australian vehicles will not exceed a 40-pound difference.

“The commonality of vehicle configurations between the U.S. and Australia means U.S. and Australian vehicles can be deployed together, maximizing the interchangeability and effectiveness of deployed units,” said Australian LTC Robin Petersen, JLTV Cooperative Program Personnel and Systems Engineer. The U.S.-Australian collaboration is aimed at reducing risk, lowering costs, and enhancing testing and simulation for both countries.