Joint Light Tactical Vehicle (JLTV) Family of Vehicles (FoV)

Executive Summary

- In August 2015, DOT&E published the Joint Light Tactical Vehicle (JLTV) Operational Assessment and classified LFT&E reports to support the Defense Acquisition Board JLTV Milestone C decision.
- The Defense Acquisition Executive approved the JLTV program to enter Milestone C low-rate initial production in August 2015.
- The Army awarded the JLTV low-rate initial production contract to Oshkosh Corporation in August 2015.
- In September 2015, Lockheed Martin Corporation protested the Army's decision to award the JLTV contract to Oshkosh Corporation. The General Accountability Office dismissed the protest in December 2015 because Lockheed indicated it would take the matter to the Court of Federal Claims.

System

- The JLTV Family of Vehicles (FoV) is the Marine Corps and Army partial replacement for the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) fleet. The Services intend the JLTV to provide increased crew protection against IEDs and underbody attacks, improved mobility, and higher reliability than the HMMWV.
- The JLTV FoV consists of two vehicle categories: the JLTV Combat Tactical Vehicle, designed to seat four passengers, and the JLTV Combat Support Vehicle, designed to seat two passengers.
- The JLTV Combat Tactical Vehicle has a 3,500-pound payload and three mission package configurations:
  - Close Combat Weapons Carrier Vehicle
  - General Purpose Vehicle
  - Heavy Guns Carrier Vehicle
- The JLTV Combat Support Vehicle has a 5,100-pound payload and one mission package configuration:
  - Utility Prime Mover that can accept a Shelter Carrier.
  - Utility Prime Mover
- JLTV vehicles are equipped with vendor-unique solutions intended to significantly improve, relative to the HMMWV, crew protection against the effects of small arms, fragments, and underbody and underwheel blast loading from mines and IEDs. These include the design of the vehicle underbody hull structure, energy-attenuating seats, and floor specifically designed to mitigate blast loading to the occupants.
- JLTV vehicles are equipped with two separate armor levels: the A-kit, or base vehicle, which is intended for use in low-threat environments, and the B-kit, an add-on armor kit, for additional force protection in the intended deployment configuration but at the cost of additional weight.

Oshkosh Corporation JLTV

Lockheed Martin Systems JLTV

AM General JLTV

Mission

- Military units employ JLTV as a light, tactical-wheeled vehicle to support all types of military operations. JLTVs are used by airborne, air assault, amphibious, light, Stryker, and heavy forces as reconnaissance, maneuver, and maneuver sustainment platforms.

- Small ground combat units will employ JLTV in combat patrols, raids, long-range reconnaissance, and convoy escort.

Major Contractors
- Oshkosh Corporation, Oshkosh, Wisconsin
- Tested Contractors:
  - Lockheed Martin Corporation – Grand Prairie, Texas
  - AM General – South Bend, Indiana

Activity
- In April 2014, the Army and Marine Corps units conducted air assault missions during developmental/operational at Aberdeen Proving Ground, Maryland, using CH-47F and CH-53E helicopters. The Marine Corps unit conducted amphibious assault missions at Joint Base Little Creek, Fort Story, Virginia, using Landing Craft Utility ships.
- In October 2014, the Army Test and Evaluation Command completed the Engineering Manufacturing and Development ballistic phase of the LFT&E program of all three vendor-provided JLTV prototypes, which included:
  - Armor coupon testing against the medium machine gun, as well as fragments from side and underbody IEDs, and overheard artillery to assess if the ballistic protection performance of vendor armor solutions the JLTV requirements.
  - Ballistic structure testing on both the base A-kit structure and the up-armored B-kit structure. This consisted of exploitation testing to determine the vulnerability of unique armor features on each JLTV prototype, as well as blast-fragmentation IED testing conducted to determine the structural vulnerability, resistance to penetration, and force protection provided by JLTV prototypes.
  - System-level testing against underbody mines and IEDs, underwheel mines, side IEDs, rocket-propelled grenades, and explosively-formed penetrators to assess the vendors' compliance with force protection requirements, the vulnerability of the vehicle design, and vehicle recoverability post-event.
- In November 2014, the Army Test and Evaluation Command and Marine Corps Operational Test and Evaluation Agency conducted the JLTV Limited User Test (LUT) at Fort Stewart, Georgia, in accordance with the DOT&E-approved test plan. The Army test unit completed three, 96-hour scenarios and the Marine Corps test unit completed one, 96-hour scenario at the operational tempo consistent with the JLTV Operational Mode Summary/Mission Profile.
- The Joint Requirements Oversight Council approved the JLTV Capability Production Document in November 2014.
- The JLTV Program Office completed development of the JLTV FoV Milestone C Test and Evaluation Master Plan (TEMP) to reflect the T&E activities for the production and deployment phase in May 2015. The Army did not submit the Milestone C JLTV TEMP for OSD approval prior to the Milestone C.
- In August 2015, DOT&E submitted the JLTV Operational Assessment and classified LFT&E reports to support the Defense Acquisition Board JLTV Milestone C decision.
- The Defense Acquisition Executive approved the JLTV program to enter Milestone C low-rate initial production in August 2015.
  The Army awarded the JLTV low-rate initial production contract to Oshkosh Corporation in August 2015.
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Assessment
- Based on the LUT, the JLTV FoV provides enhanced protection and retains the up-armored HMMWV (UAH) FoV capabilities necessary for Army and Marine units to accomplish tactical and combat missions.
  - Platoons equipped with the Oshkosh JLTVs accomplished 15 out of 24 missions similar to the platoon equipped with the UAHs.
  - Platoons equipped with the AM General JLTVs accomplished 13 out of 24 missions.
  - Platoons equipped with the Lockheed Martin JLTVs accomplished 12 out of 24 missions.
  - The majority of failed platoon missions were attributed to combat losses for Oshkosh and Lockheed Martin JLTVs.
  - Platoons equipped with the AM General JLTVs and the UAHs experienced less combat losses against the Opposing Force during missions.
  - Platoons equipped with AM General JLTVs experienced reliability failures on nine missions that slowed the unit's pace and degraded mission performance.
- The JLTVs have similar mobility capabilities to the UAH without the Fragmentation Kit 5. During the LUT, units equipped with JLTVs experienced delays in maneuvering while awaiting adjustment of the vehicle suspension and the Central Tire Inflation System (CTIS). The slow suspension and CTIS adjustment times affected the Army and Marine Corps units' ability to quickly react to changes in the tactical situation and in some LUT missions increased the units' susceptibility to threats.
- Oshkosh JLTVs had improved mission reliability over the UAH and demonstrated 7,051 Mean Miles Between Operational Mission Failure (MMBOMF) versus its operational requirement of 2,400 MMBOMF. The UAH demonstrated 2,968 MMBOMF.

  - AM General JLTVs had less mission reliability versus the UAH and demonstrated 526 MMBOMF.
  - Lockheed Martin JLTVs had less mission reliability versus the UAH and demonstrated 1,271 MMBOMF.
- Marine Corps units equipped with JLTVs have enhanced capabilities to accomplish air assault missions over the UAH. Since the CH-53E has the capability to lift JLTVs with armor, units have better protected maneuver capabilities to counter threat activities at the Landing Zone compared to units equipped with the UAH.
- Army units cannot accomplish air assault missions with JLTVs with B-kit armor because the vehicle's gross weight exceeds the external lift capability of the CH-47F helicopter. The vendors' JLTVs with add-on B-kit armor weigh between 18,000 and 22,000 pounds.
- Marine Corps units equipped with the JLTVs demonstrated the ability to conduct amphibious assault missions during developmental/operational testing. JLTVs are slower to load, prepare for fording and transition to maneuver ashore than the UAH due to their larger size and movement delays awaiting adjustment of the vehicle suspension and tire pressure.
- The JLTVs do not have sufficient capability to carry mission equipment, supplies, and water for extended mission beyond one day of supply. This limits the type and duration of missions for which JLTV is effective. Units operating for long duration will require additional trailers or vehicles to sustain operations.
- The JLTV Utility variants do not have the capability to carry troops like the UAH Cargo/Troop Carrier. This is not a current JLTV requirement. These variants have no seats, no head room, and no underbody crew protection in the rear cargo area. Army and Marine Corps units employ the HMMWV Cargo/Troop Carrier to carry troops required for combat and combat support missions.
- The JLTVs suffered from poor command, control, and communication equipment integration by the vendor affecting the unit commander's ability to command and control platoons, maintain situational awareness, and complete mission tasks during the LUT.
- Due to small rear windows and blind spots around the vehicles, the JLTVs did not provide the Army and Marine Corps crews with sufficient visibility throughout the missions. Crews shared information of potential threats, movements, and activities while moving to maintain shared situational awareness for unit security.
- Both the Oshkosh and Lockheed Martin JLTV prototypes met all threshold force protection requirements and some objective-level requirements. Both of these prototypes provide protection superior to the up-armored HMMWV and similar to the MRAP All-Terrain Vehicle (M-ATV) without the Underbody Improvement Kit across the spectrum of tested threats. Oshkosh implemented lessons learned from the M-ATV program into their JLTV prototypes to provide M-ATV levels of underbody protection on a lighter vehicle. Lockheed Martin's prototype provided protection on par with the M-ATV. However, AM General's prototype would require a significant redesign to meet threshold force protection requirements. Detailed findings on the performance of the vehicle underbody hull structure, armor, energy-attenuating seat and floor designs, and their aggregate impact on survivability against the threshold and other operationally relevant threats, are outlined in DOT&E's classified JLTV LFT&E report.

Recommendations

- Status of Previous Recommendations. The program addressed all previous recommendations.
- FY15 Recommendations. The program should:
  1. Develop a plan to address recommendations identified in DOT&E's Operational Assessment and classified LFT&E reports before production.
  2. Submit the Milestone C JLTV TEMP prior to start of government developmental testing.