Corps, DoD Test Office Differ on Effectiveness of New JLTV

The Marine Corps is beginning to field its new Joint Light Tactical Vehicle and, after improved training and some physical adjustments, the Corps believes JLTVs are "operationally suitable and effective," the program's manager said Feb. 27.

That conclusion is quite different than the findings released last week by the Defense Department's Operational Test and Evaluation office (DOT&E), which said all four variants of the JLTV were "not operationally suitable because of deficiencies in reliability, maintainability, training, manuals, crew situational awareness and safety" and that the close combat weapons carrier was "not operationally effective for use in combat and tactical missions."

The DOT&E findings were "directly lifted from data" collected during joint Army and Marine Corps operational testing done a year ago and "does not take into account the effort and work that's been done since then," said Andrew Rodgers, program manager for Light Tactical Vehicles at Marine Corps Systems Command.

"As we are fielding, we have shown that they are operationally suitable and effective. As we push forward with our training, we will be able to validate that," Rodgers said.

His responses to the DOT&E report came during a telephone conference call with reporters to announce the fielding of the first JLTVs to the Marines' School of Infantry, West, at Camp Pendleton, Calif., the next day.

The JLTV is intended to replace most of the 1980s-era High Mobility Multipurpose Wheeled Vehicle, or Humvee, to provide greater crew protection, tactical mobility and high-tech

communications. Oshkosh Defense will produce 49,099 of the vehicles for the Army, 9,091 for the Marine Corps and 80 for the Air Force.

Rodgers said the problems cited in the DOT&E report had been identified by the Army and the Marines during their testing and most of them reflected decisions made early in the program's development to delay creation of training programs and manuals until the production contract was awarded to Oshkosh Defense in 2015.

"We were very aware that our training material was not mature enough," he said.

After rushing to make up for the late start, the Marine Corps produced a 40-hour maintenance training package but quickly realized that "we were not imparting enough information to the maintainers." There is now an 80-hour training program

for maintainers and a 56-hour package for vehicle operators. Operator training and electronic technical manuals also have been completed.

That has "gone a long way to help beef up the training," which should improve reliability, Rodgers said.

He said the problems in operating the anti-tank TOW missiles on the close combat weapons carrier "can be solved with improvement in tactics, techniques and procedures (TTPs).

Once the Corps has the vehicle and begins working with it, Marines will modify their TTPs to account for the physical changes to the JLTV from the Humvee."

Rodgers said the Army is testing larger rear windows and a front-mounted camera to address the problems with poor visibility and situational awareness cited in the DOT&E report, and problems with getting in and out of the JLTV can be corrected with adjustments to the doors.

Marines also are provided a secondary emergency exit in the new JLTV, he said.

The Feb. 28 delivery to Camp Pendleton is the beginning of fielding 55 JLTVs to supporting units by mid-May, followed by the first deliveries to operational units in July, starting with II Marine Expeditionary Force (MEF) at Camp Lejeune, N.C.

Rodgers said he expects to have fielded 250 to 300 JLTVs by end of this fiscal year and to deliver about 1,000 in fiscal 2020.

Corps Asks Industry for Longer Range, Mobile Fires Technologies for LAR Battalions

ARLINGTON, Va. – The Marine Corps is asking industry to show which technologies could be ready shortly to give its armored scout units a long-range, precision, on-the-move fires capability that could include unmanned aerial sensors, loitering guided munitions and command-and-control systems.

“We’re looking to give the Light Armored Reconnaissance (LAR) battalions this capability. What does industry have out there with range from 7,000 meters out to 100 kilometers?” Lt. Col. Bradley Sams, program manager for fires at Marine Corps Systems Command, said Feb. 25.

The Corps wants something with greater range and precision than the 81mm mortars that are carried by one version of its

light armored vehicles (LAV). “Whether that [is] loitering munitions or a missile,” Sams told reporters in a conference call. “We’re asking industry to tell us what they have now or in development.”

The program, called Organic Precision Fires-Mounted (OPF-M), would be integrated into LAR battalions, probably co-located with the 81mm mortars company, with the weapons mounted on a LAV, a lightly armored, highly mobile eight-wheel vehicle that comes in multiple variants, said Jeff Nebel, the fires team leader. The new system would “take advantage of the sensors that already exist in the battalion. But we’re also interested in exploring other sensors that could support this capability.”

The combined systems “would support the LAR platoons up forward,” Nebel said.

The weapons employed by the OPF-M system could include loitering munitions, which are tube-launched, small rockets with optical or other sensors that can stay airborne for limited periods while the controller finds a suitable target. Later munitions might feature artificial intelligence and target-recognition capability to search for and strike defined targets, Nebel said.

Systems Command has issued requests for information (RFI) and an invitation to attend industry days March 13 and March 14 at Mary Washington University’s campus in Dahlgren, Va.

“We are looking for what’s in the realm of possibilities, what’s available in the next year, year and a half,” to help them clarify the requirements and the concepts of operations, Sams said.

The RFIs and industry days are “kind of a transition from work that’s already been done on the capabilities side” at the Marine Corps Warfighting Laboratory (MCWL), which has been doing some experiments and demonstrations the last couple of

years, he said. “This is a hand-off from experimentation to acquisition.”

Sams said the U.S. Army has been working with the warfighting laboratory and has been helpful in sharing some of its developments in precision fires.

The current plan is to award a contract in the first quarter of fiscal 2020, with a demonstration of the proposed technologies eight to 12 months later, leading to low rate production and fielding an initial capability in the first quarter of fiscal 2022, Nebel said. Then an incremental approach would be followed to field newer technologies to enhance and upgrade the system, he said.

Marine Corps Systems Command said in a statement that the program was part of Commandant Gen. Robert B. Neller’s emphasis on rapidly fielded, longer-range precision fires in preparation for a conflict with a peer competitor, such as Russia or China.

General Dynamics Land Systems Receives Contract to Support Reset of U.S. Marine Corps Light Armored Vehicle Fleet

STERLING HEIGHTS, Mich. – General Dynamics Land Systems-Canada has been awarded a 37.2 million contract to deliver 60 hardware kits for the U.S. Marine Corps’ Light Armored Vehicle (LAV) Reset Program.

The hardware kit addresses key obsolescence and readiness issues and consists of a modern powerpack, driveline system, driver's instrument panel and a new turret slip ring. The fully integrated kits will be procured by General Dynamics and delivered to the Marine Corps for installation at Marine Corps Production Plants.

The contract was signed through the Canadian Commercial Corp., a Crown corporation of the government of Canada, under the Defense Production Sharing Agreement (DPSA) between Canada and the United States.

Advanced 3-D Printing Allows Marines Quick Material Production in the Field

QUANTICO, Va. – From a small plastic clip that keeps a snowshoe fastened to a multi-ton concrete replacement bridge and a wide range of items in between, Marines are using advanced manufacturing, commonly called 3-D printing, to produce in the field or in garrison rather than waiting days or weeks for the normal supply system to respond.

"We're going hot and heavy" into advanced manufacturing, using materials from plastic to aluminum and other metals and even concrete, Capt. Matthew Friedell, the team leader on advanced manufacturing in the Rapid Sustainment Office at Marine Corps Systems Command said Feb. 7.

Systems Command has sent more than 100 3-D printers to Marine units,

mostly small, desktop size instruments, but also a number of mid-size devices in 20-foot shipping containers and three huge machines at the Marine supply depots, Friedell told reporters in a telephone conference call from Marine Corps Base Quantico, Va. Some of the printers, called tactical fabricating kits, are in the hands of infantry units, he said.

They also send training teams to help the field units learn how to use their new equipment and provide a support service that can develop the data required to produce the needed item and email it to the requesting unit, Friedell said.

Other crucial services the SysCom office provides are conducting tests of the material needed for the item to determine if it can be safely printed by the field unit, and studies of the original commercial source of the item to protect the company's intellectual property rights, he said.

Industry has been very cooperative, but their data rights need to be protected, he said.

But most of the time, the request is for five to 10 small parts, for which there is no real profit interest for the producer. And often the needed item is no longer being produced due to the age of the equipment being repaired.

Items produced by Marines using 3-D printers cited by Friedell and other Marine officials include the snowshoe clip, a

plastic buckle on a backpack, a compressor blade for an M-1 tank and a heavy concrete footbridge built by a Marine engineer unit in a test.

The long-term thrust for 3-D printing, Marine officials have said, is to greatly improve the ability of small combat units, well separated from senior commands and supply sources under the distributed forces concept, to sustain themselves by producing critically need parts.

Flexibility is another key contribution of the printers, Friedell said, noting that the prototype machine that produced the concrete bridge could also produce a security barrier or a shelter.

Electrical power is a crucial consideration, Friedell said, because the larger printers require huge amounts of power. Current tactical generators are able to provide the needed power and the services are developing hybrid power sources that combine high-efficiency generators with powerful batteries that can reduce the fuel demands of running the generators.

Marines to Leverage Unmanned Systems, More Capable Amphib Fleet to Fight Great Power Competition

WASHINGTON – The Marine Corps and the amphibious fleet will be critical to prevailing in the emerging great power competition

in which U.S. forces will have to “fight to get to the fight” against China’s growing military capabilities, the Marine’s top combat development officer said Feb. 7.

To meet that challenge, “We have to work on some things to make this amphibious force more lethal, more survivable,” Lt. Gen. David H. Berger, the Deputy Commandant for Combat Development and Integration, told a Capitol Hill forum sponsored by the Amphibious Warship Industrial Base Coalition.

That would include installing vertical launch tubes, “or other ways to make the ships more lethal” to give them organic ways to defend themselves, “including air defense,” Berger said, noting the services has had decades of not having to worry about being attacked from the air. Berger said. And they must do that while decreasing ships’ electromagnetic signature because “if they can find us, they can target us.”

In addition to their traditional role of projecting Marine forces ashore, Berger said the amphibs “can be mother ships,” capable of launching and recovering scores of unmanned systems “from sovereign territory. Why wouldn’t you want to do that?”

Those unmanned systems could operate from shore or from ships, to observe and kill things. “We don’t have the now, but they are coming,” he said.

Citing his recent command of Marine Forces Pacific, Berger said China “knows they have one team to match” and have “poured 100 percent of their resources into overcoming us.” As a result, the U.S. military is losing its traditional technological advantage.

While joining the industry representatives and an array of House members in urging continued development of a larger and more capable amphibious fleet, Berger drew on his command’s role in producing land combat equipment that can support the fight for sea control.

Noting that the National Defense Strategy advocates the Marines returning to their historic role of establishing and defending forward operating bases, he said they would “need long-range fires, from the ship, from the shore.” In order to control land, they will need “platforms that can move from one to the other.”

To do that, the amphibious force will need connectors, but not the current connectors of amphibious tractors, landing craft utilities and landing craft air cushions, but a new family of connectors being developed by Maj. Gen. David Coffman, director of Expeditionary Forces, who was in the audience.

Those will designed to go “ship to shore and shore to ship. If you’re going to move a distributed force, it’s going to be back and forth. It can’t be the old connectors,” Berger said.

Another thing they will need to operate in the littorals, he said, is anti-mine capability, an area where “we fell asleep… We have to have a mine clearance capability to move fast. If we are going to be moving around in the littorals, we need to fight mines.” That is another threat Coffman’s office is addressing.

Earlier in the forum, eight House members, most of whom serve on the House Armed Services Committee, supported the Navy-Marine Corps goal of expanding the amphibious force from the current 32 ships to 38, including building the new Amphibious Transport Dock (LPD) Flight II ships that will replace the aged Landing Ship Docks (LSD).

The industry representatives emphasized the need to move the planned procurement of the next “big-deck” amphibious assault ship, LHA-9, up from 2024 to 2021 to avoid a seven-year production gap that will harm the shipbuilding work force and substantially add costs.

The House members, including Rep. Joseph Courtney, chairman of the House Armed Services Committee Seapower and Projection

Forces Subcommittee, urged the industry coalition to put pressure on lawmakers to support the defense budget, particularly shipbuilding funds.

Courtney noted that the federal budget will not be released until March 12, more than a month late, which "will intensify the need" for industry pressure. "Things will move really fast."

Marines 3D Print First Reinforced Concrete Bridge in Western Hemisphere

MARINE CORPS BASE QUANTICO, Va. – Marines from the 1st Marine Logistics Group (MLG) at Camp Pendleton, California, transformed their motto – "Victory through Logistics" – to action when they successfully 3D printed a concrete bridge in December, with the help of the Marine Corps Systems Command Advanced Manufacturing Operations Cell (AMOC) and the Army Corps of Engineers.

During the Corps' annual Steel Knight exercise, Marines were trained on how to operate the Automated Construction of Expeditionary Structures – or ACES – printer, incorporated new equipment into the process, and printed and assembled a usable foot bridge to demonstrate the concrete 3D printing capability in an operational environment.

"One of our goals was for Marines to learn to operate the equipment on their own, which they did and it was great," said Capt. Matthew Friedell, AMOC project officer. "Another goal is that each time we do one of these tests, we use [fewer]

people. Ultimately, we want one person standing there who hits ‘print,’ and the machine does all the work. We’re getting there.”

This was the first time in the U.S. or western hemisphere that a bridge was 3D printed on site rather than in a factory setting, Friedell said.

“This shows how close 1st MLG and the Marine Corps are to the bleeding edge of innovation,” he said. “We didn’t seek to break any new ground, but with Marine ingenuity, we sure did.”

The demonstration included the use of a concrete mixing process that removes some of the leg work for Marines. Sailors with Naval Mobile Construction Battalion 5 at Port Hueneme, California, brought a volumetric mixer to the site, which saves about six Marines from having to mix the large amounts of concrete needed for the print job.

“The barracks hut print [conducted in August], was more difficult because Marines had to mix the concrete [themselves],” Friedell said. “They had to take five-gallon buckets of gravel, pour them into a bigger bucket, and then use a fork lift to lift them up into the big mixer. The mixer had to mix it and then dump it into the pump. For [the bridge project], we used the volumetric mixer, which did all the gravel, mixed all the concrete and got it ready to pump without anyone doing the really hard work.”

The AMOC provided the printer and led the effort as part of the Corps’ only acquisition command, and the Army Corps of Engineers validated the bridge design to ensure it could bear the load, Friedell said. The idea and design for the bridge came from Marines in the 1st MLG.

“The 1st Marine Logistics Group is always trying to find new solutions when it comes to providing logistics support to I Marine Expeditionary Forces,” said Brig. Gen. Stephen Sklenka, 1st MLG commanding general. “Seeing the Marines learn and

train with new technology, then apply their technical expertise to find new ways of maximizing our capabilities on the battlefield showcases both their dedication and their creativity. This was a terrific demonstration of innovative ideas resulting in tangible progress toward usable results that advance future progress in logistics operations."

In addition to operational uses like bridges and barracks huts, Friedell envisions the Marine Corps using construction-sized additive manufacturing for the Corps' humanitarian relief work as well.

"I see us going in and building things that help communities," he said. "Making homes that don't fall over in a typhoon or hurricane; [providing] buildings and infrastructure that lasts for a while, and possibly leaving the equipment there so they can keep building."

The AMOC hopes to transition additive manufacturing to a program of record for the Marine Corps by fiscal 2021.

"The Army Corps of Engineers have been doing this work for the past four years to get us where we are, and they did a great job with the program before the Marine Corps ever came onboard," Friedell said. "Our focus now is to help this transition into an actual system; a useable program of record. These experiments are helping us draft the requirements to get there."

The Marine Corps and Department of Defense logistics communities are excited about the possibilities, he said.

"The 3D printed bridge demonstration was an excellent example of innovation coming to fruition," Sklenka said. "It is exciting to see our Marines using their creativity to find ways to enhance the way we conduct logistics operations. 1st Marine Logistics Group continuously trains using new technology to test the boundaries of innovation so we can provide the support for maximum readiness. I think this 3D

printed bridge was just the beginning of our progress.”

Marine Rifle Squads Get Upgraded Night Vision Devices

MARINE CORPS BASE QUANTICO, Va. — An updated helmet-mounted night vision system is beginning to make its way to infantry units. Marine Corps Systems Command (MCSC) accelerated the acquisition of about 1,300 Squad Binocular Night Vision Goggles (SNBVG) using existing Defense Logistics Agency contracts, the command reported in a release.

“We have employed a bridge capability to give Marines the best gear right now available in the commercial marketplace,” said Lt. Col. Tim Hough, program manager for Infantry Weapons. “A final procurement solution will allow a larger pool of our industry partners to bid on the program.”

Army/Navy Portable Visual Search devices, or AN/PVS, have been employed by the military since at least the 1990s and upgraded with next-generation systems as funding and technology became available.

The move to the SNBVG is expected to enhance the infantry’s lethality and situational awareness in reduced visibility. It combines two systems: a binocular night vision device and an enhanced clip-on thermal imager.

“It’s a little bit lighter than the current system, and gives Marines better depth perception when they are performing movements,” said Joe Blackstone, Optics team lead at MCSC.

Marines took delivery of the equipment and learned how to use

them in December at Camp Lejeune, North Carolina. Known as NET, the new equipment training entails teaching Marines about the operations, characteristics, maintenance and use of the new devices.

“With these new [BNVGs], having the ability to not only use thermal optics along with it, but just the entire depth perception and speed that we can operate in is going to significantly increase, as opposed to what we were able to do in the past,” said Cpl. Zachary Zapata, a Marine who participated in the training.

The initial buy and follow-on procurement are being funded with Marine Corps dollars as prioritized by the Department of Defense Close Combat Lethality Task Force, which concentrates on the squad-level infantry and is aimed at ensuring close combat overmatch against pacing threats. The SBNVG acquisition strategy is to procure the devices incrementally and concurrently as the Corps looks toward future technologies.

“Right now, we are participating with the Army on their next generation night vision systems, both the Enhanced Night Vision Device-Binocular and Integrated Visual Augmentation System Programs,” Hough said. “We are eager to see the maturation of these capabilities for adoption to improve the effectiveness of our Marines.”

The program office plans on releasing a final request for proposals to procure an estimated 16,000 additional systems on the basis of full and open competition. According to program officials, a draft request for proposals was posted to the Federal Business Opportunities website in mid-November and closed on Dec. 19. The government is currently adjudicating comments and anticipates release of a final request for proposals in the near future.

Additional fielding of the systems is planned for September. While the devices may eventually make their way to the entire

Ground Combat Element (GCE), for now the first priority is given to the Marine Rifle Squad, program officials said.

“This program office is committed to bolstering the combat lethality, survivability, resilience and readiness of the GCE,” said Hough.

Raytheon Selected for Marine Corps Hornet AESA Radar Upgrade

EL SEGUNDO, Calif. – The U.S. Marine Corps has selected Raytheon’s APG-79(v)4 AESA [active electronically scanned array] radar to equip its F/A-18C/D Hornet fleet, the company said in a Jan. 15 release. Raytheon will begin delivering radars in 2020 and complete deliveries by 2022.

The APG-79(v)4 is a scaled version of the APG-79 AESA radar integrated on the U.S. Navy and Royal Australian Air Force’s Super Hornets and EA-18G Growlers. Along with improved targeting capabilities, crews gain an edge in crucial operations across the spectrum – including air dominance, maritime strike and air-to-surface missions.

“With AESA radars, fighter jet pilots and crews tip the scales in their favor over their adversaries,” said Eric Ditmars, vice president of Raytheon Secure Sensor Solutions. “Now that the APG-79(v)4 is slated to fly on the classic Hornet, Marine Corps pilots will be able to identify, track and engage more targets over a greater distance than ever before.”

Crews will see improved radar reliability, reducing

maintenance hours while increasing availability for flight. Because the APG-79(v)4 shares more than 90 percent commonality with the APG-79, the Marine Corps will benefit from the same global sustainment and upgrade path already in place for the system.

SPAWAR Awards First IWRP Contract

CHARLESTON, S.C. – Space and Naval Warfare Systems Command (SPAWAR) Systems Center (SSC) Atlantic awarded the first prototype project agreement (PPA) under the Other Transaction Agreement (OTA) for the Information Warfare Research Project (IWRP) on Jan. 8 for $1.3 million.

The focus of the prototype is for a new Low-Altitude Range Communication System (LARCS) for the U.S. Marine Corps.

The goal of the upgraded technology is to replace the current LARCS in order to meet the critical communication requirements for Marine training ranges. Once completed, the system is slated for installation at the Townsend Bombing Range at Marine Corps Air Station Beaufort, South Carolina, where the LARCS will undergo testing and field user evaluation in the final operational environment and configuration.

“This first award is a significant milestone for the IWRP,” said Pete Reddy, SSC Atlantic deputy executive director. “This effort will not only provide inherent value to the project sponsor and warfighting capability, but it also validates and sets into motion the awesome capability that IWRP is for the SPAWAR enterprise and entire naval research and development establishment.”

The IWRP consortium utilizes white papers for prototype proposals versus the traditional acquisition request for proposal process. The LARCS prototype whitepaper was submitted Sept. 11, and from concept to award took the team only 119 days to accomplish.

“The IWRP enabled us to quickly make our way to a prototype award that will rapidly provide a new capability to the warfighter,” said John Larson, project lead and Enterprise Systems and Services (ES2) team lead. “We learned a lot through collaboration with the IWRP consortium, and I anticipate that as IWRP matures it will only become quicker.”

The combined efforts from the IWRP team, Advanced Technology International (ATI) and contracting were instrumental in both the speed of awarding the first project and ensuring the level of quality in the technology.

“We view the IWRP as a critical tool that will enable SSC Atlantic to achieve ‘Pivot Speed’ in rapidly responding to emerging business IT and warfighter needs,” said Erik Gardner, E2S2 division head. “The IWRP, when combined with other tools, processes and environments, has proven to foster innovation and is a new way of thinking about our problems and their solutions.”

The project was awarded to ATI on behalf of Booz Allen Hamilton in collaboration with Intuitive Research Technology Corp. (IRTC). A significant portion of the work will be performed by IRTC, a non-traditional defense contractor, and is scheduled to be completed in 10 months.

“The collaboration and teamwork on this process allowed for a prototype to be awarded which has potential for more advanced technologies at a cheaper cost and a faster timeline than was expected,” said Don Sallee, SPAWAR IWRP program manager.

The management of the IWRP consortium was awarded by SPAWAR to ATI on June 26. The IWRP allows the use of an alternative

acquisition process, called an OTA, that works to streamline acquisition processes, develop prototypes, and rapidly provide advanced technologies to the fleet. Since opening the consortium, membership has grown to 219 and approximately 81 white papers have been submitted for review to address potential information warfare needs.

Effort Underway to Extend Service Life of Light Armored Vehicles

MARINE CORPS BASE QUANTICO, Va. – The fleet of Marine Corps Light Armored Vehicles (LAVs) will begin receiving a number of necessary upgrades under the terms of a $37.2 million contract awarded Jan. 4. General Dynamics Land Systems-Canada will perform the work, which includes the procurement of 60 hardware kits in support of the Light Armored Vehicle Reset Program. The enhancements are designed to extend the service life of the LAV into the 2030s.

Embedded in their original design, LAVs combine speed, maneuverability and firepower to perform a variety of functions, including security, command and control, reconnaissance and assault. The first LAVs were initially fielded in 1983.

The reset effort will focus on five key areas:

■ Modernized powerpack to improve reliability, cooling capacity and diagnostics with the added benefit of better fuel economy.

■ New drive train which will improve towing capability.

■ Steering dampener to improve road feel and usability.

■ Digitized drivers’ instrument panel.

■ LAV 25 slip rings – doubling power supply capability to the turret and modernized to handle additional channels for gigabit Ethernet, video and fiber optics.

“The Marine Corps is committed to ensuring this platform remains viable into the 2030s,” said Steve Myers, LAV program manager.

Active light armored reconnaissance battalions will be the first units to receive the upgraded vehicles, which will become LAV A3s.

The hardware kits will be installed at Marine Corps Depots, with initial operational capability targeted for the second quarter of fiscal 2021.

The contract was awarded through the Army Contracting Command in Warren, Michigan.