

## COMBAT SUPPORT AND COMBAT SERVICE SUPPORT

Under the Program Executive Office for Combat Support & Combat Service Support (PEO CS&CSS), project managers, together with their reporting product managers and product directors, are responsible for Army systems and some joint service programs across all phases of their life cycle.

Program phases fall into the areas of: pre-systems acquisition (concept refinement or technology development), generally consisting of R&D programs and prior to a Milestone B; systems acquisition (between Milestone B and full materiel release); systems after full materiel release (in production and fielding phases); and two types of sustainment (operations & support): systems that have completed fielding, are no longer in production and are managed directly by the PM and systems that have completed fielding, are no longer in production and are managed by an AMC commodity command, but for which the PM is the life-cycle manager.

PEO CS&CSS Project Managers include Project Manager Joint Combat Support Systems, Project Manager Force Projection and Project Manager Tactical Vehicles. A representative sampling of their programs follows.

The office of Project Manager Joint Combat Support Systems (PM JCSS), for example, includes both the Product Manager Joint Light Tactical Vehicles (PM JLTV) and Product Manager Sets, Kits, Outfits and Tools (PM SKOT), as well as Product Director Test, Measurement and Diagnostic Equipment (PD TMDE) and Product Director Horizontal Technology Insertion (PD HTI).

Product Manager Joint Light Tactical Ve-



*Joint EOD rapid response vehicle (JERRV)*

hicles (PM JLTV) is responsible for the Army's participation in the **Joint Light Tactical Vehicle (JLTV)**. The Army is the lead service in the joint Army/Marine Corps program, which consists of a family of vehicles (FoV) with companion trailers capable of performing multiple mission roles that will be designed to provide protected, sustained, networked mobility for personnel and payloads across the full range of military operations (traditional to irregular).

JLTV has been approved at Milestone A and is currently in the technology development phase. Industry proposals were submitted in mid-April 2008 for evaluation by the Source Selection Evaluation Board.

Product Manager Sets, Kits, Outfits and Tools responsibilities include diving equipment, sets, kits and outfits (stand-alone, shelter-mounted and mobile), and shop sets/support equipment.

Product Director Test, Measurement and Diagnostic Equipment (PD TMDE) is responsible for calibration sets (CALSETS), integrated family of test equipment (IFTE)

at-platform automatic test systems (AP-ATS) and off-platform automatic test sets (OPATS), and test equipment modernization (TEMOD).

The Product Director Horizontal Technology Insertion (PD HTI) is responsible for the Army's **Expedited Modernization Initiative Procedure (EMIP)**. As a "process" rather than a "product," EMIP represents a multiphased and continuous market research process. EMIP is primarily intended to suggest improvements to the current and future fleet of CS&CSS vehicles and other systems. The process seeks to identify industry's investments in proven, advanced, commercial technologies at the component and subsystem levels, at a technology readiness level 7 or better, with the goal of EMIP to educate government representatives about these technologies. Information developed as part of this market research will be shared within the PEO CS&CSS, other program executive offices and other services.

The **Project Manager Force Projection (PM FP)** encompasses Product Manager Assured Mobility Systems (PM AMS), Product Director Army Watercraft Systems (PD AWS), Product Manager Bridging, Product Manager Combat Engineer/Material Handling Equipment (PM CE/MHE), Product Manager Force Sustainment Systems (PM FSS), and Product Manager Petroleum and Water Systems (PM PAWS).

The **Product Manager Assured Mobility Systems (PM AMS)** is responsible for mine protected route clearance vehicles like the Buffalo mine protected clearance vehicle, joint EOD rapid response vehicle (JERRV), medium mine protected vehicle (RG-31), vehicle mounted mine detector (VMMD) and medium mine protected vehicle (MMPV) program of record.

The **Buffalo Mine Protected Clearance Vehicle**, for example, is a six-wheeled vehicle specifically designed to withstand encounters with mines/IEDs while pro-



*The Buffalo mine protected clearance vehicle (MPCV)*

tecting up to six soldiers inside. The Buffalo is used by engineer units during area and route clearance operations. It is blast-protected up to 30 pounds TNT for each wheel and 15 pounds TNT along the centerline. Armor provides ballistic protection against 7.62 mm ball. It has an arm that enables the operator to safely investigate suspicious locations.

Another representative example is the **Medium Mine Protected Vehicle (RG-31 MK3)**. The RG-31 MK3 APC is a four-wheel drive, armored personnel carrier intended for on- and off-road use. The vehicle is designed and constructed to protect occupants from small-arms fire and anti-tank mine detonations. Access to the vehicle is via a rear door. The vehicle is powered by a turbocharged six-cylinder, in-line, water-cooled diesel engine. The engine is directly coupled to an automatic gearbox, which is coupled directly to a transfer gearbox, with propeller shafts to the front and rear driving axles. The vehicle is equipped with conventional suspension but has sufficient ground clearance to negotiate rough roads and obstacles.

### Product Director Army Watercraft Systems (PD AWS)

With an understated motto of "Sail Army," the U.S. Army Program Manager for Army Watercraft Systems (PM AWS) is working to provide "a flexible and responsive fleet, projecting and sustaining America's forces through the 21st century." Responsibilities include the engineering, production, fielding, initial logistics support and modernization/modification of the U.S. Army fleet of watercraft and associated support equipment, which enable the warfighter to rapidly project the nation's armed forces.

The **Containerized Maintenance Facility (CMF)** is a transportable maintenance complex that is made up of a combination of five tactical rigid-wall expandable International Standards Organization (ISO) shelters and two ISO containers. The system is designed to be stand-alone and is equipped to provide intermediate support for deployment and sustainment of the full spectrum of Army watercraft in either a fixed port or joint logistics over-the-shore environment.

The **Large Tug (LT) 128'** is used for transoceanic/coastal towing operations and for assisting with the docking/undocking of large ships. The LT 128' is outfitted to provide salvage, rescue and firefighting assistance to other vessels and shore in-

stallations on a limited basis.

The **Landing Craft Utility (LCU) 2000** provides worldwide transport of combat vehicles and sustainment cargo. It also supports intratheater and tactical resupply.

The **Landing Craft Mechanized (LCM8)** is used in lighter and utility work. The Mod 2 program enhances vessel capabilities including command and control, personnel transfer and light salvage.

The **Theater Support Vessel (TSV)-Interim** is a critical step toward the definition and acquisition of the future TSV. There was a fiscal year 2001 contract award for an Army/Navy joint lease of HSV-X1 (*Joint Venture*) high-speed vessel. Together with TSV-1X (*Spearhead*), the platforms are part of a TSV interim program/investigations/experimentation and Office of the Secretary of Defense-approved advanced concepts technology demonstration.

The **Modular Causeway System** provides a means to move cargo from ship to shore across unimproved beaches in areas of the world where fixed port facilities are unavailable, denied or otherwise unacceptable.

The sections are made up of modular, ISO compatible modules. The four systems are configured from basic modules in various configurations: roll-on/roll-off discharge facility; causeway ferry; floating causeway (FC); and warping tug.

The **Command, Control, Communications, Computers and Intelligence (C4I) Installation Package** provides state-of-the-art communication (secure/nonsecure) equipment, navigational equipment and safety of life at sea electronics.

The **Barge Derrick (BD) Crane 115 Ton** is used primarily in discharging heavy loads beyond the capacity of the ship's gear and assisting in salvage operations.

The crane provides the lift and reach needed to discharge the heaviest of the projected Army cargo—the M1A2 main battle tank—from the centerline of the large, medium speed roll-on, roll-off (LMSR) ships.

The **Logistics Support Vessel (LSV)** provides worldwide transportation of combat vehicles and sustainment cargo. The 313-foot LSV class vessel, designed to carry more than 2,000 tons of deck cargo, has a beam of 60 feet and a molded depth of 19 feet. It provides intratheater movement to remote underdeveloped coastlines and inland waterways. The LSV is the primary logistics over-the-shore (LOTS)/JLOTS vessel. It also assists in unit deployment and relocation.

The **900 Class Small Tug** mission is moving logistical supplies and equipment in harbor and inland waterways. The small tug also provides the capability to assist larger tugs in docking and undocking all types of ships and watercraft and can be used in routine harbor utility work.

### Future Army Watercraft Systems

Army future watercraft programs include Theater Support Vessel (TSV)-Objective, rapidly installed breakwater system, Harbormaster command-and-control center and vessel bridge simulator.

The **Theater Support Vessel (TSV)-Objective** will provide high-speed intratheater transport of troops and cargo and represents the next-generation Army watercraft to support the Army's doctrinal intratheater lift mission.

Using commercial off-the-shelf technology, it will deploy to the theater of operations at speeds greater than 40 knots through sea state 5+ (winds of 21 knots or greater), while being capable of transport-



Logistics support vessel (LSV)



Dry support bridge (DSB)



ing more than 350 soldiers plus gear and up to 1,250 short tons of cargo.

Capable of operational maneuver from standoff distances and into five times as many ports, the TSV will provide rapid, intratheater lift for ready-to-fight combat forces together with their equipment. As a result, the TSV will minimize the need for large-scale reception, staging, onward movement and integration of soldiers, vehicles and equipment within the battlespace. It offers the joint force commander a multimodal and multipurpose platform to support joint operations that complement C-17 and C-130 airlift capabilities. Advantages of the TSV-Objective include: operational movement and repositioning; personnel and equipment moving together; en route mission planning and rehearsal; reduced AO LOG infrastructure; ability to bypass theater choke points; access to austere shallow draft ports; ability to perform multiple point entry; offset airlift shortages; and reduction of asymmetric threats.

The **Rapidly Installed Breakwater System (RIBS)** is a logistics over-the-shore (LOTS) enabler used in all phases of force projection including early entry and follow-on sustainment. The RIBS augments existing port facilities to enable greater throughput of equipment and supplies. The RIBS is designed to support discharge or retrograde LOTS operations by reducing sea state 3 conditions to sea state 2 or below.

The **Harbormaster Command and Control Center (HCCC)** will provide 24-hour real-time vessel tracking, in-transit visibility, movement tracking, full joint interoperability, secure and nonsecure communications, and real-time meteorological and bathymetric data. It will be fully digitized

to support the Future Force of the 21st century.

The **Vessel Bridge Simulator** will provide the mariner an advanced, interactive, full mission trainer that uses state-of-the-art computer-generated imagery. This trainer will replicate all Army watercraft and include vessel maneuvering and navigation as well as rehearsing missions in worldwide seaports to prepare for real-world deployments in any weather or lighting conditions.

### Product Manager Bridging

Product Manager Bridging interfaces with other defense organizations on a range of existing and emerging bridging systems including the Armored Vehicle Launched Bridge (AVLB), Improved Ribbon Bridge (IRB), Standard Ribbon Bridge (SRB), MK II-S Bridge Erection Boat Service Life Extension Program, Common Bridge Transporter (HEMTT), Rapidly Emplaced Bridge System (REBS), M18 Dry Support Bridge (DSB) System, M3 Medium Girder Bridge (MGB), Joint Assault Bridge (JAB), Assault Breacher Vehicle (ABV), Bailey Bridge, Improved Boat Cradle (IBC),



Improved ribbon bridge (IRB)

Bridge Adapter Pallet (BAP) and Maybey Johnson Bridge.

The M18 Dry Support Bridge (DSB) System and the Improved Ribbon Bridge (IRB) provide representative examples.

The **M18 Dry Support Bridge (DSB)** provides the Army with assault and support bridging for gaps of up to 40 meters. The DSB replaces the outdated, manpower- and time-intensive medium girder bridge (MGB) with a mechanical system capable of emplacing a 40-meter bridge with 14 soldiers in 90 minutes or less. In addition, the DSB will improve current bridge load-carrying capacity, moving it up to military load classification (MLC) 96 for wheeled traffic, such as an M1 tank up-loaded on a heavy equipment transporter. The DSB is designed for transportation as a palletized load by the CBT, PLS trailers or by service support units equipped with PLS trucks.

The **Improved Ribbon Bridge (IRB)**, which was fielded beginning in 2004, improves mobility by providing a continuous roadway or raft capable of crossing MLC 96 (wheeled)/80 (tracked) vehicles over nonfordable wet gaps.

The product office also has responsibility for the **M9 Armored Combat Earthmover (ACE)**, a highly mobile armored vehicle capable of performing mobility, countermobility and survivability tasks in support of light, medium or heavy forces on the integrated battlefield. First fielded in 1986, this multipurpose engineer vehicle provides the operator with armor protection for operation in the forward portion of the combat area. By raising the dozer blade and using its scraper blade, the M9 ACE can fill itself with ballast to improve dozing efficiency.

The Product Manager Combat Engineer/Material Handling Equipment (PM CE/MHE) coordinates and supports a wide range of compactors and rollers, construction plants and equipment, container handlers, cranes, dozers and combat earthmovers, excavators, forklifts, graders and scrapers, loaders and sectionalized equipment.

Program examples include systems like the High-Mobility Engineer Excavator and Engineer Mission Modules.

The **High-Mobility Engineer Excavator (HMEE)** replaces the small emplacement excavator (SEE), whose life cycle ended in FY 2005. Current plans are to replace the SEE with Type I (heavy) and Type II (light) vehicles for heavy and medium/light engineer units.

The **Interim High-Mobility Engineer Excavator (IHMEE)** is a self-deployable excavator system that fills the immediate and critical excavation needs of the Stryker brigades.

With its attachments, the IHMEE is capable of executing a variety of mobility,

Joint precision air drop system (JPADS)



survivability and countermobility missions, maintaining convoy speed, performing rapid excavation tasks and quickly self-deploying to the next mission site.

Weighing approximately 24,000 pounds, it can attain speeds exceeding 50 mph. The IHMEE can be transported by the C-130 and is one of two engineering construction systems in the Stryker brigade. The system chosen to fill this need is ADI's high-speed engineer vehicle. Up to 62 IHMEEs are being procured to support all Stryker brigades. The IHMEE began fielding to the Stryker brigades in the third quarter of FY 2003.

Another recently emerging activity with a broad range of engineering applications involves the development of **Engineer Mission Modules**. Permanently mounted on standard logistics flattracks, the modules are loaded via truck load-handling equipment, which allows drivers to configure their systems for a specific mission.

By using fewer trucks and more modules, the concept provides a cost-effective means of modernizing the fleet of engineer construction equipment. PLS flatrack configurations in production include the M5 bituminous distributor, which has a capacity of 2,800 gallons; the M6 concrete mobile mixer, which has a capacity of 5 cubic yards when used on the PLS truck or trailer and 8 cubic yards when used on the ground as a batch plant; and the M6 dump body, which has a capacity of 12 to 14 cubic yards. Currently under development are the XM9 2,000-gallon water distributor for use with the HEMTT-LHS truck and the XM10 3,000-gallon water distributor for use with the PLS truck.

Other modules being considered include a fuel module, a well-drilling system and a chemical decontamination unit.

## PM Force Sustainment Systems

The Product Manager Force Sustainment Systems (PM FSS) coordinates aerial delivery equipment, containerized systems, field feeding systems, field services products, force provider, heaters and environmental control, shelter systems and camouflage.

The **Joint Precision Air Drop System (JPADS)**, for example, is a family of systems—Joint Precision Air Drop System 2,400 pounds (JPADS 2K), Joint Precision Air Drop System 10,000 pounds (JPADS 10K) and Joint Precision Air Drop System 30,000 pounds (JPADS 30K)—that will allow conventional military aircraft to accurately drop sensors, munitions, and/or a huge range of supplies onto the battlefield while minimizing the risk to aircraft and the possibility of enemy detection of aircraft drop zones. The systems will use gliding parachute decelerators, GPS-based guidance, navigation and control, weather data assimilation and an air drop mission planning tool to deliver cargo with near pinpoint accuracy. The first combat JPADS cargo air drop took place at the end of August 2006.

An example of recently fielded shelter systems can be found in the **Soldier Crew Tent (SCT)**. Originally developed to provide environmental protection for the billeting of combat vehicle crews, the SCT is a lightweight, durable, single frame, single hub tent. The tent body is suspended from the frame in a canopy style. An over-cover lies on top of the frame to provide an air gap for added insulation. Two reversible over-covers are available in either a green/tan or green/white configuration. A cold weather cotton liner is also provided. The SCT is 53 inches high, weighs 75 pounds, and houses five soldiers in 120 square feet of floor space. Erect/strike is accomplished in less than five minutes. A mesh gear loft for storage is suspended over the sleeping area. A storage/transport cover is included as well as a field repair kit. A 4-inch stovepipe opening is included for use with a standard military heater.

The Product Manager Petroleum and Water Systems (PM PAWS) is responsible for a range of petroleum laboratories, petroleum storage and distribution systems, water purification and treatment systems, and water storage and distribution systems.

Offices within the Project Manager Tactical Vehicles (PM TV) include: Product Manager Light Tactical Vehicles (PM LTV), Product Manager Medium Tactical Vehicles (PM MTV) and Product Manager Heavy Tactical Vehicles (PM HTV).

The Product Manager Light Tactical Vehicles (PM LTV) is responsible for the Army's High-Mobility, Multipurpose Wheeled Vehicles (Humvee) family and light tactical trailers (LTT).

The versatile **High-Mobility, Multipurpose Wheeled Vehicle (Humvee)** provides a common, light tactical vehicle capability. The Humvee is the Army's primary light wheeled vehicle for combat support and combat service support missions. The Humvee replaced the quarter-ton jeep, M718A1 ambulance, half-ton Mule, 1.25-ton Gamma Goat and M792 ambulance when it began fielding in 1985. Humvees of all variants (including most up-armored Humvees) are currently deployed in support of operations in Iraq and Afghanistan.

The Humvee family of vehicles consists of multiple configurations built on a common chassis to support weapon systems, command-and-control systems and field ambulances, and to provide ammunition, troop and general cargo transport. It is equipped with a high-performance diesel engine, automatic transmission and four-wheel drive. It is air transportable and low-velocity air drop (LVAD) certified (except for the maxi ambulance variants). The Humvee can be equipped with a self-recovery hydraulic winch capable of up to 10,500-pound 1:1 ratio line pull capacity, and it can support payloads from 2,500 to 5,100 pounds (including crew and pintle loads), depending on the model.

The A1 model, which entered production in 1992, introduced upgraded drive-line components, heavy-duty rear springs, an improved brake system, a high-ratio transfer and 2.73:1 front and rear differentials.

The subsequent introduction of the A2 configuration brought with it a new 6.5-liter, naturally aspirated diesel engine; an electronically controlled, four-speed automatic transmission; and a redesigned emissions system that met 1995 U.S. Environmental Protection Agency standards. Other features focused on user comfort, vehicle maintainability and performance.

Further expansion of Humvee payload capacity has led to the development and introduction of the expanded capacity vehicle (ECV), M1113 and the M1114 up-armored Humvee (UAH). The ECV was produced in 1995 as a shelter carrier providing up to 5,100 pounds of payload. The M1114 UAH configuration provides protection for the driver and three crew members from small-arms fire, overhead fragmentation from artillery and mortar shells and underbody from antipersonnel/anti-tank mines. It has a rooftop weapon station which can accommodate an M60 machine gun, M2 machine gun, Mk 19 grenade launcher or the M240/M249 weapon. Kits are available to enhance internal sur-



vivability for the crew and gunner.

The newest variants of the Humvee family include the M1151, M1152 and M1165 series vehicles. Unlike some earlier models, the latest versions are designed for the application of additional armor packages over their base protection levels.

The **Light Tactical Trailer (LTT)** is the Humvee trailer. It has been tested and approved (materiel released) for use in accordance with the Humvee mission profile.

The LTT comes in three variants: M1101 (LTT-L), M1102 (LTT-H) and heavy chassis (LTT-HC).

### Product Manager Family of Medium Tactical Vehicles

The Product Manager Medium Tactical Vehicles (PM MTV) is responsible for the **Family of Medium Tactical Vehicles (FMTV)**, including light medium tactical vehicles (LMTV), medium tactical vehicles, FMTV specialty vehicles and FMTV trailers.

The medium truck fleet has historically accounted for more than half of the Army's single-lift payload capacity. In redefining this vital fleet, Army planners took the opportunity to focus on a family approach; that is, to combine both 2.5-ton and 5-ton payload classes into a single acquisition program that would yield a logistically significant degree of component commonality across all medium fleet variants.

The Army's requirement for medium trucks is now more than 83,000 vehicles. These vehicles are required across the entire spectrum of combat, combat support and combat service support units. They must perform roles such as unit mobility, field feeding, water distribution, local and line-haul transportation, maintenance platforms, engineer operations, communication systems, medical support and tow-

ing artillery pieces. All medium vehicles must be capable of operating worldwide on primary and secondary roads, as well as on trails, and cross-country in weather extremes from minus 50 to 120 degrees Fahrenheit.

The FMTV achieves extraordinary commonality by sharing many subsystems and components in the 4x4 (LMTV), 6x6 (MTV) and companion trailer configurations. The trucks share, for example, common engine assemblies (with different horsepower ratings), cooling systems, transmissions, intake and exhaust systems, front axles and suspension systems, tires and wheels, cab assembly, vehicle control gauges, self-recovery winches and much more. They differ primarily in number of axles (two versus three) and standard cargo bed size (12 feet versus 14 feet) to accommodate different payload ratings (2.5 tons versus 5 tons) and body styles.

The FMTV deviates from predecessor vehicle designs by having its tilt cab over the engine. This design approach contributes to the Army's goal of significantly improving the deployability of units, since a typical FMTV vehicle is some 40 inches shorter than the vehicle it replaces, requiring less space aboard deploying aircraft or surface shipping. This reduced length also contributes to a shorter turning radius and better off-road mobility. Off-road mobility is further enhanced by a standard central tire inflation system (CTIS) and state-of-the-art suspension.

LMTV systems include the M1078/A1 2.5-ton standard cargo, M1079/A1 2.5-ton van, M1080/A1 2.5-ton chassis, and M1081 2.5-ton standard cargo (LVAD) [low-velocity air drop capable].

MTV systems include the M1083/A1 5-ton standard cargo, M1084/A1 5-ton standard cargo with MHE, M1085/A1 5-ton long cargo, M1086/A1 5-ton long cargo



*Heavy equipment transporter system (HETS)*



with MHE (crane), M1088/A1 5-ton tractor, M1089/A1 5-ton wrecker, M1090/A1 5-ton dump, M1092/A1 5-ton chassis, M1093 5-ton standard cargo (LVAD), M1094 5-ton dump (LVAD) and M1096/A1 5-ton long chassis.

FMTV special vehicles include the M-1087A1 expandable van, XM1140 high-mobility artillery rocket system (HIMARS) carrier, XM1147 FMTV load handling system (LHS) trailer, XM1148 FMTV LHS

truck, XM1157 10-ton dump and XM 1160 medium extended air defense system (MEADS) carrier.

FMTV trailers include the M1082 trailer cargo 2.5 ton and M1095 trailer cargo 5 ton.

In addition, the office helps coordinate activities on M900 series 5-ton trucks, as well as the M200 and M1061 special cargo trailers.

The Product Manager Heavy Tactical

Vehicles (PM HTV) addresses programs including the heavy equipment transporter system, heavy expanded mobility tactical truck, palletized load system, flat-tracks, container handling and mission modules, M915 family of vehicles, fifth wheel trailers and special trailers.

The M1070/M1000 **Heavy Equipment Transporter System (HETS)** deploys, transports, recovers and evacuates combat-loaded M1 tanks and other vehicles of

*Heavy expanded mobility  
tactical truck (HEMTT)*

similar weight to and from the battlefield. More than 2,300 have been deployed in Operation Iraqi Freedom. The M1070 tractor and M1000 semitrailer replace the M911/M747 as the Army's latest model HETS.

The M1070/M1000 HETS was developed to accommodate the increased weight of the M1 Abrams family of main battle tanks. The M1070 provides line-haul, local-haul and maintenance evacuation on and off the road during tactical operations worldwide. Unlike previous HETS, the M1070 is designed to carry both the tank and its crew. Approximately 2,311 HETS have been fielded to date. Development design of full up-armored cabs for the HEMTT, PLS and HETS tractor is in progress.

The **Heavy Expanded Mobility Tactical Truck (HEMTT)** is the workhorse of Army combat divisions. C-130 transportable, it is the key combat service support enabler for the Stryker brigade combat team. The 11-ton, eight-wheel drive family of vehicles is designed to operate in any climatic condition.

There are six basic configurations of



the HEMTT-series trucks: the M977 cargo truck; M985 cargo truck with materiel-handling crane; the M978 2,500-gallon fuel tanker; the M983 tractor; the M984 wrecker; and the M1120 load-handling system (LHS). The HEMTT is used as a prime mover for the Patriot missile system, M7 forward repair system and tactical water purification system and as the chassis for the M1977 common bridge transporter, M11428 tactical firefighting truck and XM1158 HEMTT-based water tender. The HEMTT is also compatible with the PLS trailer. A self-recovery winch is available

on all models. An electronic controller for the engine and a new electronic transmission were put into production in April 2002.

The HEMTT is augmented by the M989-A1 heavy expanded munitions ammunition trailer (HEMAT) in the transport of multiple-launch rocket system family of munitions (MFOM). The HEMAT can transport four MFOM pods, each weighing approximately 5,400 pounds. The off-road capability of the HEMTT and HEMAT combination can transport eight MFOM pods. The M989A1 HEMAT is also required to trans-

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Palletized load system (PLS)

port six standard ammunition pallets (single stacked), two 600-gallon fuel pods or two 500-gallon fuel bladders.

Approximately 13,000 HEMTTs have been fielded to date. Of the total fleet size, approximately 2,150 are currently in OIF. HEMTT production is funded through fiscal year (FY) 2011.

The HEMTT was designated as one of the 10 original Army life-cycle pilot programs under Section 912c of the FY 1998 National Defense Authorization Act, intended to demonstrate reduced life-cycle costs through greater innovation throughout the product's life cycle. The Army approved the HEMTT recap program baseline in October 2001. The goal of recapitalization is the insertion of modern commercial technology to reduce operational and support costs, increase fleet readiness and meet regulatory requirements. As the benefits of these improvements are verified, they were phased into production and recap vehicles. The HEMTT recap program will recapitalize HEMTT vehicles to 0 miles/0 hours and to the A2 configuration, which consists of bumper-to-bumper recap of the entire truck with the following technology insertions: electronic engine, electronic transmission, air-ride seats, four-point seatbelts, bolt-together wheels, increased corrosion protection and an enhanced electrical package. The HEMTT recap program is also capable of converting excess M977 cargo versions into M1120 HEMTT-LHS versions to address current shortfalls. The HEMTT recap program is currently funded through FY 2020.

HEMTT A3 is an advanced technology insertion into the HEMTT vehicle that is under evaluation to optimize compatibility with C-130 aircraft capabilities and constraints.

Current HEMTT programs and activities include: M977/M985 HEMTT cargo truck, with materiel-handling crane, M978 HEMTT fuel tanker, 2500-gallon M983 HEMTT tractor, M984 HEMTT wrecker, M1120 HEMTT load handling system

(LHS) (mounts on standard M977/M978 or M985 chassis), M1977 common bridge transporter (CBT), tactical firefighting truck (TFFT), HEMTT recapitalization program and HEMTT A3.

The **Palletized Load System (PLS)** is the primary component of the maneuver-oriented ammunition distribution system. Roughly 1,000 PLSs are being used in OIF. It also performs local-haul, line-haul, unit resupply and other transportation missions in the tactical environment. In addition, it is used as the prime mover for the M7 forward repair system and various en-

gineer mission modules (M917 dump truck, M918 bituminous spreader and M919 concrete mixer). The PLS is also the host chassis for the dry support bridge launcher vehicle (M1975).

The PLS consists of a 16.5-ton payload tactical truck with a flatrack. It is a five-axle, 10-wheel drive vehicle with a 500-hp Detroit Diesel engine, an Allison automatic transmission and a CTIS. This combination provides a highly mobile system able to transport its payload in virtually any type of terrain or weather and maintain pace with the self-propelled artillery systems that it supports. The PLS comes in two mission-oriented configurations: the M1074 and the M1075.

The M1074 is equipped with a variable-reach materiel-handling crane (MHC) to support forward-deployed field artillery units. The M1075, without MHC, is used in conjunction with the M1076 trailer to support transportation line-haul missions. Of the 3,500 PLS trucks that have been fielded to date, approximately 1,000 are in OIF.

The M1076 PLS trailer is a three-axle,

## ARCIC/AUSA Writing Contest

# Winner

The Army Capabilities Integration Center (ARCIC) and AUSA's Institute of Land Warfare are proud to announce the winner of their 2009 writing contest:

***Proactive Self-Defense in Cyberspace***  
by Colonel Bruce D. Caulkins, USA

(published by AUSA as Land Warfare Paper 73, August 2009, available online at <http://www.ausa.org/publications/ilw>)




For more information, visit [www.arcic.army.mil](http://www.arcic.army.mil)



wagon-style trailer with a 16.5-ton payload capacity that is equipped with a flatrack that is interchangeable between truck and trailer. The combination of truck and trailer provides the combined payload capacity of 33 tons. The flatracks are lifted on and off the truck and trailer by a hydraulic-powered arm mounted on the truck, eliminating the need for additional materiel-handling equipment. The controls for the arm are located inside the cab, allowing the operator to load or unload the truck in less than one minute without leaving the cab of the truck. The trailer can be loaded or unloaded in less than five minutes using the remote-control arm.

The PLS can transport multiple cargo

configurations by using a variety of flatracks. The M1077 and M1077A1 flatracks are sideless and used to transport pallets of ammunition and other classes of supplies. The M1 flatrack carries identical classes of supplies. It is ISO/CSC certified and suitable for intermodal transport, including transport on container ships.

Ammunition can be loaded on the M1 at depots, transported via container ship to theater, picked up by the PLS truck and carried forward without using any materiel-handling equipment. The walls fold inward when empty to facilitate stacking for retrograde. The M3/M3A1 container roll-in/out platform is a flatrack that fits inside a 20-foot ISO container. The con-

tainer-handling unit is a kit installed on the PLS that allows the direct load, transport and unload of 20-foot ISO containers without an external flatrack.

### The M915 Family of Vehicles

The Army's **M915-Series Line-Haul Tractors** operate on highways and secondary roads to transport bulk supplies and fuel to U.S. forces. The Army's line-haul fleet consists of the M915, M915A1, M915A2, M915A3 and M915A4 vehicles. The latter three are based upon Freightliner's commercial FLD120 tractors and incorporate transport industry technologies for safety, fuel efficiency and low operating costs per mile.

The M915-series fleet of vehicles is found primarily in active and reserve component transportation units that are responsible for the rapid, efficient transport of bulk supplies from ocean ports to division support areas within a theater of operation.

They are used primarily to transport the M871 semitrailer (flatbed, 22.5 tons), M872 semitrailer (flatbed, 34 tons), M967/M969 semitrailer (5,000-gallon tanker) and M1062 semitrailer (7,500-gallon tanker). The M915-series has a maximum gross combined vehicle weight of 105,000 pounds when operating with the M872 semitrailer.

Current program activities include: M915A3 tractor, line haul, M915A4 tractor, line haul upgrade (glider), M916A3 truck tractor, light equipment transport, M917A2 dump truck 20-ton, and M915 logistics handling system.

The Product Director Armored Security Vehicle (PD ASV) has the mission to develop, produce, field and sustain the **M1117 Armored Security Vehicle** to an expeditionary force.

The M1117 ASV is a turreted, armored, all-wheel drive vehicle that supports military police missions—such as rear area security, law and order operations, convoy protection, battlefield circulation and enemy prisoner of war operations—over the entire spectrum of war and operations other than war.

The ASV provides protection to the crew compartment, gunner's station and the ammunition storage area. The turret is fully enclosed, with both an MK-19 40 mm grenade machine gun and a .50-caliber machine gun, and a multisalvo smoke grenade launcher. The ASV provides ballistic, blast and overhead protection for its four-person crew. With a payload of 3,600 pounds, its 400 miles-plus range, top speed of nearly 70 miles per hour and C-130 deployability ensure its value to the warfighter.

In addition, on the ASV chassis, the U.S. Army is developing the M1200 Armored Knight to provide improved survivability over the current M707 Knight (Humvee-based Knight). Used by U.S. Army field ar-

## Association of the United States Army 2010 Calendar of Events

*All dates and locations are tentative and subject to change.*

<b>January 5 – 7</b>	AUSA's ILW Army Aviation Symposium & Exposition Hyatt Regency Crystal City Arlington, VA
<b>February 24 – 26</b>	AUSA's ILW Winter Symposium & Exposition Greater Fort Lauderdale/Broward County Convention Center Fort Lauderdale, FL
<b>March 29 – April 1</b>	AUSA's ILW Army Installations Symposium & Exposition JW Marriott San Antonio Hill Country San Antonio, TX
<b>May 10 – 13</b>	SOFEX 2010 Special Operations Forces Exhibition and Conference King Abdullah I Airbase Amman, Jordan
<b>May 17 – 20</b>	AUSA's ILW Army Medical Symposium & Exposition Henry B. Gonzalez Convention Center San Antonio, TX
<b>June 14 – 18</b>	Eurosatory Paris-Nord Villepinte Paris, France
<b>June 22 – 24</b>	AUSA's ILW Army Logistics Symposium & Exposition Greater Richmond Convention Center Richmond, VA
<b>July 20 – 22</b>	AUSA's ILW Army Fires Symposium and Exposition Fort Worth Convention Center Fort Worth, TX
<b>October 25 – 27</b>	AUSA Annual Meeting & Exposition Walter E. Washington Convention Center Washington, DC

*M1117 armored security vehicle*



tillery combat observation lasing teams (COLTs) in both heavy and Infantry brigade combat teams, the Armored Knight will combine the proven armored security vehicle with the M707 Knight mission equipment package.

The resultant M1200 Armored Knight will provide COLTs with increased armor protection, payload and agility. Textron Marine and Land Systems is presently under contract with the U.S. Army for 107 modified ASVs to be used as the base vehicle for the M1200 Armored Knight production.