

ARMY **G-8**
30 October 2009



M1151A1 w/FK5 & OGPK

TWVHET

The Army Tactical Wheeled Vehicle Investment Strategy

FMTV LTAS 5-TON

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 30 OCT 2009		2. REPORT TYPE		3. DATES COVERED 00-00-2009 to 00-00-2009	
4. TITLE AND SUBTITLE The Army Tactical Wheeled Vehicle Investment Strategy				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Deputy Chief of Staff ,G-8 Plans and Policy Division, Washington, DC				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 29	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



EXECUTIVE SUMMARY

The purpose of this strategy is to provide the Army with a Tactical Wheeled Vehicle (TWV) Fleet Investment Strategy to synchronize all subordinate agencies' actions with regards to fleet procurement, integration, and management activities. This strategy is designed to provide specific fleet investment guidance to key agencies, which will serve as the basis for procurement and sustainment processes. It represents the Army position and will remain as the definitive document on which all fleet investment, integration, and management decisions will be based unless superseded by updates from the Department of the Army. As the Army staff transitions to support the establishment of the Materiel Enterprise, strategy documents such as this one will serve as the policy guidance upon which the Materiel Enterprise will base their Fleet Management Plans. This document, when implemented, will empower Program Executive Officer Combat Support and Combat Service Support, Program Manager Tactical Vehicles, and Tank-Automotive and Armaments Command Item Materiel Managers to execute fleet management to standard.

This investment strategy is organized to provide specific guidance for each of the commodity areas that comprise the TWV fleet. While the requirements and considerations that must be accounted for within each commodity area are different, the following basic tenets serve as the basis upon which the guidance this strategy provides was built:

- Prioritize funding for the modernization of the oldest variants of TWVs ahead of new procurement when it is feasible.
- Leverage, to fullest extent possible, the complete industrial base as a modernization tool to support the Army Force Generation cycle better.
- Maximize original equipment manufacturer and depot production flexibility to retain the capability to modify TWV production quantities and model mixes to meet senior leader guidance and react to changes in both operational and fiscal environments.
- Execute modifications to Supply Bulletin (SB) 700-20 - Army Adopted Items of Materiel and List of Reportable Items to correct, to the fullest extent possible, the imbalance in how specific variants are accounted for in readiness reports.
- Leverage the retrograde and repair of TWVs from the U.S. Army Central Command Area of Responsibility to maximize the modernization and balance the distribution of TWVs across all components. Doing so during transit will minimize impact on field commands.
- As new vehicles or variants are introduced, seek to distribute them in such a way as to maximize capabilities within key formations while ensuring that displaced vehicles are processed through sustainment level repair to modernize them to the fullest extent possible prior to re-issue.

The guidance contained within this strategy will serve as the basis upon which investment decisions for the fiscal year 2010-11 (FY10-11) Presidential Budget (Base) and Overseas Contingency Operations (OCO) funding will be executed. Furthermore, this strategy will serve as the bedrock upon which further OCO funding requests and the Program Objective Memorandum 12-17 plan will be developed. This strategy will enable the Army to synchronize its TWV programs to maximize the use of limited funding and position the Army for greater success in upcoming budget and fleet management discussions with other agencies.



INTRODUCTION

The overarching goal of any fleet investment strategy is to “balance (planning, analyzing, coordinating, and executing) the quantity, quality, and sustainment of Army equipment throughout its life cycle to meet combat, training, generating force, and homeland defense requirements with the appropriate capabilities.” As part of an effort to incorporate lessons learned from the current conflict, the Army is taking a new approach for managing the Tactical Wheeled Vehicle (TWV) fleet. There is a consensus amongst senior leaders that any effective investment strategy must embrace the complimentary concepts of new production and fleet recapitalization (RECAP) or reset if it is going to be implemented successfully. As part of this effort, this investment strategy will also recognize the fiscal and operational realities inherent to the current operational environment. To do this, the Army will find ways to manage its TWV fleet readiness that are both creative, as well as efficient. Additionally, the Army will move away from the pure-fleet unit-set-fielding prerogatives of the 1990s and consider more appropriate and efficient Army Force Generation (ARFORGEN)-based operational models. The 2008 Army Modernization Strategy states “the Army must concentrate its equipping and modernization efforts on two mutually supporting ends – restoring balance and achieving full-spectrum dominance.” This requires the Army to develop and execute a coordinated fleet investment strategy that is cognizant of the operational and fiscal realities that the Army faces today.

This investment strategy provides a balanced course of action that will enable the Army to integrate vehicles retrograded during Responsible Retrograde efficiently and effectively into the Army’s enduring force structure as well as ensuring that right equipment is delivered to the right organization at the right time. This investment strategy supports the guidance provided by the 2008 Army and U.S. Marine Corps (USMC) Joint TWV Strategy, the 2009 Army Equipping Strategy, and the 2008 Army Modernization Strategy. It takes into account the current Program Objective Memorandum (POM) position for the TWV fleet and works to incorporate any recent senior leader requirements.

BACKGROUND

The challenge the Army faces in effectively managing the TWV fleet is restoring balance among the twin levers of quantity and quality while ensuring that a complimentary and comprehensive sustainment plan is integrated into the strategy. A key task within this effort is to ensure that modernization occurs at a sustainable rate and is synchronized to the desired capabilities for that portion of the fleet. Modernizing and maintaining the TWV fleet consists of two distinct schools of thought.

First, the Army will always have an enduring requirement for large numbers of affordable unarmored utility vehicles. Historically, the evolution from horse-drawn wagons, to the ubiquitous Jeep, and later on to the High Mobility Multipurpose Wheeled Vehicle (HMMWV) has demonstrated the Army’s lasting need for an inexpensive (i.e., non-armor; Command, Control, Communications, Computers, and Intelligence equipped) Family of Vehicles (FoV) that can fill a number of roles at the squad and company level.



Second, in an era of constrained financial support and ever increasing materiel costs, the Army will work to control cost growth and variant complexity within the TWV fleet while ensuring that the fleet evolves at the same pace as the tactics and missions it supports. A classic example of this would be the fact that the Army will find itself in possession of a “mixed-fleet” of vehicles comprised of a uneven mix between the most modern (Joint Light Tactical Vehicle (JLTV) armor capable) and least modern (unarmored HMMWVs (High Mobility Multipurpose Wheeled Vehicle)). The Army cannot afford to replace all of the least modern HMMWVs with more modern ones in today’s fiscal environment.

The 2008 Army and USMC Joint TWV Strategy is based on the following four tenets:

- Take maximum advantage of existing platforms through RECAP, reset, and product improvement efforts
- Plan for the integration of the Mine Resistant Ambush Protected (MRAP) FoV into the fleet mix
- Emphasize a mixed fleet approach that spans the “Iron Triangle” of Protection, Payload, and Performance
- Move the Army to a fleet of TWVs that have scaleable protection (integrated A-kit cabs and Add-on-Armor (AoA) B-kits)

The overall intent for the strategy is to develop a tactical wheeled vehicle fleet that supports the myriad of missions the Army may be asked to execute and balances the need for protection, payload, and performance. The strategy recognizes that MRAPs are here to stay and plans for their long-term integration into the force. Additionally, the strategy recognizes that one vehicle currently is not able to provide all of the capabilities required by the range of possible missions the Army or USMC may have to carry out and seeks to leverage current technologies that offer scalable protection based on the needs of the mission. This investment strategy seeks to provide the guidance the Materiel Enterprise requires for them to execute the Joint TWV Strategy as envisioned.

The 2009 Army Equipping Strategy states: “The Army is out of balance. Our operational demands are stressing our force and while our Soldiers have rightly received much of the Army’s focus, the Army must also address how it will restore equipping balance.” For the past three years, the Army has enjoyed a period of increased fiscal support from the Nation’s leadership. This support was partly due in response to increased requirements in Iraq and Afghanistan as well as an acknowledgement that the Army was not funded adequately prior to 2001, rendering it unprepared for a future that consists of asymmetric threats amidst a persistent conflict. Unanticipated threats to TWVs resulted in interim survivability solutions (AoA), which subsequently compromised payload and performance to unacceptable levels. The resultant focus on fielding the newest and best TWVs to the deployed forces and simultaneous deployment of units with organic equipment (who later left the equipment behind in theater to create the theater provided equipment (TPE) sets) has led to a significant imbalance in the distribution of TWVs throughout the force. The Light Tactical Vehicle (LTV) fleet provides an illustrative example.



This fleet investment strategy is primarily focused on restoring balance by employing a number investment strategies designed to leverage new production, field and sustainment level repair (reset), and RECAP. This strategy will be designed to support the concept of cyclical readiness and modernization while ensuring that friction is managed as closely as possible. Lastly, for this document to remain relevant there must be decision point reviews to determine TWV investment guidance. This guidance must be conditioned on the current and projected operational environment, technology state, and available funding. This investment strategy seeks to provide a clear delineation of priorities for the Materiel Enterprise fleet management team to execute their duties as they conduct fleet management.

LIGHT TACTICAL VEHICLE FLEET INVESTMENT STRATEGY

The LTV fleet consists of the HMMWV FoV, the Commercial Utility Cargo Vehicle (CUCV) FoV, and the future JLTV FoV. Generally, LTVs are categorized by their gross vehicle weight (GVW) and cargo capacity. For the purposes of this strategy, LTVs are defined as any vehicle with a GVW equal to or less than 28,000 pounds and a cargo capacity equal to or less than 2.5-tons.

The LTV fleet is comprised of variants that support three specific mission sets. These are the light armored combat vehicle (armament carriers), command and control/casualty evacuation (shelter carrier/ground ambulance vehicles), and command and control/light cargo vehicles (light utility vehicles). In recognition that each mission set has specific requirements and considerations, both the Department of the Army and the Materiel Enterprise manage the LTV fleet by grouping the 27 variants of HMMWVs, CUCVs, and future JLTVs in line with the mission sets they support. Increment I variant buys for JLTV are Category B Fire Team Carrier, Category B Command and Control On-the-Move, Category B 2-litter ambulance, Category C Shelter Carrier, and Category A Utility.

ARMAMENT CARRIER INVESTMENT STRATEGY

The preeminent mission set for LTVs within the current operational environment has been that of the light armored combat vehicle (armament carrier). From 2001-2006, this role was primarily filled by the M1114 series of Up-Armored HMMWVs (UAHs). Beginning in 2007, improved UAHs capable of receiving scaleable and modular armor began to be fielded. Today, the UAH fleet is comprised of the M1114 (armament carrier), M1151A1 (armament carrier), M1152A1 (shelter carrier), and M1165A1 (command and control) variants.

As enemy tactics adapted to exploit the weaknesses in the UAH design, leaders sought out materiel solutions to counter them. This led to the submission of the MRAP Vehicle Joint Urgent Operational Need Statement (JUONS) in early 2006. The rapid development and fielding of the various variants of the MRAP vehicles led to a revolution in tactics, techniques, and procedures in the application of combat power in the complex operational environment found in the U.S. Central Command (USCENTCOM) area of responsibility (AOR). While a



bulk of the MRAPs have been fielded, in large part, to replace the UAHs within the CENTCOM AOR, they are filling direct engagement mission sets in the near- to mid-term that were previously executed from combat vehicles such as the M1 Abrams main battle tank or M2 Bradley fighting vehicles. They have also been used for logistical missions (moving troops and supplies) that were previously executed using medium TWVs. This leaves the Army with a capability gap for the LTV fleet that still has yet to be answered. As the Deputy Operations Officer for the Multi-National Corps-Iraq stated in November 2008, “The standards set within the JUONS still haven’t entirely been met; the MRAP vehicles didn’t get there.” The conventional wisdom within the CENTCOM AOR is that the deployed force is beginning to move away from the employment of UAHs in favor of vehicles that provide more effective underbody protection from Improvised Explosive Devices (IEDs) and general protection against explosively formed projectiles (EFPs), and greater payload and performance.

The following fleet investment guidance is designed to enable the Army to coordinate the procurement and sustainment of the LTV fleet more effectively:

- Support the development and fielding of JLTV Payload Category “B” Vehicles. The JLTV Payload Category “B” vehicles (Force Application) are the objective solution for this mission set. This payload category is the Army’s number one priority for development and fielding with the JLTV program. Continue to support Research, Development, Test, and Evaluation (RDTE) and procurement funding to meet fielding requirements as designated by U.S Training and Doctrine Command (TRADOC) and validated by Headquarters, Department of the Army (HQDA) G-3/5/7.
- Manage armament carriers as a system of systems. Fleet management strategies should be developed and executed utilizing a system of systems approach. The JLTV vehicles will be fielded in this manner and therefore the current armament carrier fleet should be managed in the same manner if the Army expects to utilize them to their full potential. An armament carrier cannot be fully employed in combat unless it has the armor and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) package envisioned for them. Field Commanders employ these vehicles as combat platforms and the Army should manage them in a similar manner.
- Amend SB 700-20 to allow all armor-capable models of HMMWV armament carriers to substitute for any unarmored HMMWV armament carriers or command and control variants. An example would be to ensure that armored M1114 and M1151s are authorized substitutes for unarmored M998, M1025, and M1026s. The desired effect of this action would be to enable Commanders to increase unit readiness by filling all Modified Table of Organization and Equipment (MTOE) “holes in the yard” with vehicles that present greater capabilities. To accomplish this, the following actions should be executed:
 - Fully apply all pending Basis of Issue Plans (BOIPs) for the M1151 UAH fleet
 - Plan to retrograde all M1114, M1151, M1152, M1165, and M1167 vehicles as they are declared excess
 - Amend SB 700-20 to allow for their use as substitutes for any UAH



- Prioritize the modernization of armor-capable armament carriers ahead of any other variant. Modernize, through the use of RECAP programs, M1114, M1151, M1152, M1165, and M1167 model vehicles when feasible. Furthermore, determine the feasibility of a RECAP program to turn M1113 expanded capacity vehicle (ECV) HMMWVs into M1152s. The Army should ensure that the Long Term Protection Strategy (LTPS) implementation is embedded in any RECAP/RESET plans for the fleet.
- Seek to replace all M966/M1121 unarmored Tube-launched Optically-tracked Wire-guided Missile (TOW) Carriers with M1167 armored TOW/Improved Target Acquisition System (ITAS) Carriers no later than FY15. Declare the M966/M1121 obsolete and divest the Army of them by FY12. While this will have no net impact on the Army's readiness (the Army is at 100 percent MTOE fill of M966s), this action will dramatically improve the Army's capabilities by providing a TOW/ITAS carrier that can receive Fragmentation Kits and be utilized within the current operational environment.
- Support U.S. Army Tank Automotive Research, Development, and Engineering Center (TARDEC) efforts to determine the feasibility of integrating the HMMWV Improvement Program (HIP) design innovations into the current LTV variants. Support the TARDEC effort to investigate the potential to integrate the HIP "Double-V" Hull into the current HMMWV fleet.
- Develop an "on ramp" for JLTV. Develop a scheduled date(s) within the TWV Modernization Strategy (to be developed) by which current/legacy LTV vehicles will no longer be procured and switch procurement focus to additional JLTV variant production.

SHELTER CARRIER AND GROUND AMBULANCE VEHICLE INVESTMENT STRATEGY

Other variants of HMMWVs that have a dramatic impact on the Army's readiness are the shelter carrier and ground ambulance vehicles. These vehicles generally have higher payload capacities and are designed to integrate various shelters to support data interchange requirements. The most common shelter carrier variant today is the M1113 ECV, which ceased production in 2005. Beginning in 2006, the M1152A1 became the replacement for the M1113 and is based on the M1113 chassis, with modular armor integrated into its design.

Over the past several years, data interchange programs have grown both in number and complexity. Currently, there are a total of 41 data interchange programs utilizing HMMWVs as their prime mover. Many of these programs provide key C4ISR enablers (Joint Network Node, Counter-Mortar Radar, Distributed Common Ground System, and Prophet) to Brigade Combat Teams (BCT). If the trends over the past three years are to provide any insight, the Army expects to see a growth in this number of between 25-30 percent in FY10-11. Of these programs, 22 require waivers from Tank-Automotive and Armaments Command (TACOM) for excess payload to receive safety confirmation from the Army Technical Evaluation Command (ATEC). This means that 54 percent of all data interchange programs technically require a vehicle with more payload capacity but cannot migrate to one due to cost, design, and timeline considerations.



In 2004, the Vice Chief of Staff of the Army directed the Army to cease procurement of any HMMWVs that were not “armor ready.” Subsequently, in 2005, the Army ceased production of the M997 HMMWV ground ambulance because the variant was based on a M1097 chassis and was not capable of receiving armor beyond level two AoA for the crew compartment. The Army has struggled since then to develop a design that provides the same level of protection for both the crew and patient compartments. The key limiting factor, until now, for the development of a replacement system was the excessive payload any armored patient compartment would bring to the already overloaded M1097 or M1113 chassis. In the interim, the requirements for HMMWV ground ambulances have increased since 2004, due to the Grow the Army initiatives as well as modularity. With no way to fill “the holes in the yard” the Army’s readiness has degraded to approximately 65 percent fill against the FY15 MTOE.

Both of these challenges have set the conditions for the development of a LTV shelter carrier and ground ambulance that can meet the payload, performance, and protection requirements of the current operating environment. Of the three categories of LTVs, the shelter carrier and ground ambulance variants are the only ones in which shortages significantly affect Army readiness. The shortage of a specific low-density Equipment Readiness Code (ERC) A (Primary Weapons and equipment, essential equipment for mission accomplishment, unit reportable) or P Line Item Number (LIN) (same as ERC A except ERC P items are ERC A equipment that are pacing items) affects the readiness reporting of any unit in a disproportionate manner due to the simple fact that if smaller quantities are authorized, every vehicle shortage drops the on hand percentage for that variant by a larger factor. Data interchange and ground ambulance variants are usually key capabilities required for the execution of most training and tactical missions, and therefore are the variants that the unit cannot do without. The objective materiel solution to meet this requirement will be the JLTV Payload Category “C” (focused logistics variant). The development of these vehicles is of paramount importance and should be given a high priority. In the interim, the Army can mitigate risk in the interim by acting on the recommendations listed within this strategy.

The following fleet investment decisions will allow the Army more effectively to coordinate the procurement, development, and sustainment of a more capable shelter carrier and ground ambulance vehicle fleet:

- Prioritize the development of the JLTV Payload Category “C.” Prioritize the JLTV Payload Category “C” variant development to provide the Army with the objective solution, in priority, for the ground ambulance and shelter carrier vehicles. In coordination with Joint Program Manager JLTV, develop the cost and feasibility of accelerating development of this variant and maximize procurement of the selected vehicles during the POM 12-17 timeframe. The intent is to maintain current schedules for other payload categories while accelerating Category “C.” The objective of this action is to procure the FY17 Total Army MTOE for the ground ambulance variant no later than the 4th quarter, FY17, and synchronize the fielding of shelter carrier vehicles to data interchange program requirements. Program this cost as a critical unfunded requirement during POM 12-17 development.



- Prioritize the development of the JLTV Payload Category “C.” Prioritize the JLTV Payload Category “C” variant development to provide the Army with the objective solution, in priority, for the ground ambulance and shelter carrier vehicles. In coordination with Joint Program Manager JLTV, develop the cost and feasibility of accelerating development of this variant and maximize procurement of the selected vehicles during the POM 12-17 timeframe. The intent is to maintain current schedules for other payload categories while accelerating Category “C.” The objective of this action is to procure the FY17 Total Army MTOE for the ground ambulance variant no later than the 4th quarter, FY17, and synchronize the fielding of shelter carrier vehicles to data interchange program requirements. Program this cost as a critical unfunded requirement during POM 12-17 development.
- Do not procure the ECV2. Current analysis of the ECV2 vehicle, offered by AM General, shows that the vehicle will have inadequate underbody IED protection and only 30 percent commonality of parts with the current HMMWV fleet. In the end, this vehicle will not represent the improvement in protection (it does improve on payload and performance) that the Army requires. With the advent of the MRAP, MRAP All-Terrain Vehicle, and JLTV programs it is possible to develop a shelter carrier/ambulance variant that more closely meets the Army’s requirements (payload, protection, performance) during the POM 12-17 timeframe.
- Support Army National Guard (ARNG) efforts to procure a M1152A1-based ground ambulance. This variant of HMMWV ground ambulance will be designated at the M997A3. It will be capable of supporting the same mission sets as the current M997 variant. It is designed to support Homeland Defense/Homeland Security (HLD/HLS) mission sets and is not suitable for deployment in support of OCOs. The objective of this procurement is, in conjunction with the transfer of M997s from the Active Component, to equip the ARNG to 100 percent FY15 MTOE and ensure the ARNG can meet HLD/HLS mission requirements.
- Explore alternative modernization solutions. In a parallel effort to the action above, encourage the Program Manager – Tactical Vehicles (PM TV) to explore alternative ways to modernize the current HMMWV fleet to improve their payloads and performance to the specifications needed by the data interchange programs. Furthermore, the Army should explore the potential of modernizing obsolete M966 and M1121 vehicles into shelter carriers.
- Determine the payload, performance, and protection (3-P) requirements for the ground ambulance variants of the LTV fleet in coordination with TRADOC, Office of Surgeon General, and Army Medical Center and School. Conventional wisdom shows that that the “3-P” requirements for armament carriers may not apply to the ground ambulance variant, as the mission-sets these vehicles employ can be drastically different. Within the current environment, these variants are not employed, off-Forward Operating Base (FOB), nor imbedded within the maneuver force. A suitably armored materiel solution is not currently available causing the Army’s



techniques, tactics, and procedures to evolve to the point where they are no longer (in the current operating environment) a requirement for off-FOB movement. It is wholly possible that of the “3-Ps”, payload and performance are far more important than protection for these specific mission requirements.

- Support Task Force 120 recommendations for the limited modification of specific variants of MRAP vehicles to provide protected ground ambulance capabilities to the Army. This action will enable the Army to place armored ground ambulances in key formations (Army Prepositioned Stock, Global Response Force, etc) in the near-term, pending fielding of the JLTV ambulance variant.

LIGHT UTILITY VEHICLE INVESTMENT STRATEGY

Simultaneous to the new production fielding effort, the Army established a depot-level RECAP program, in 2004, for the M998 and M1097 FoVs. In 2007, the RAND Corporation conducted a study of the LTV fleet determining that, at that time, there were approximately 55,000 M998/M1097s in the Army inventory that were beyond the expected end of useful life (EUL) of 20 years. The RECAP program was designed to bring older vehicles back to “zero miles/zero hours” status while applying key modernization and safety upgrades. Today, the Army has recapitalized approximately 30,000 M998/M1097s due to the generous wartime funding provided by the Nation’s leadership.

While the Army continues to develop the JLTV Payload Category “A” (Battlespace Awareness) variant to address the Army’s light utility vehicles requirements; it is obvious that one of the key consideration leaders must take when determining an investment strategy for these variants is to determine whether or not divesting the Army of over 108,000 legacy vehicles is affordable given the current fiscal environment. As stated earlier in this paper, some non-deployable formations may not need the capabilities an armored JLTV will bring the fight. They simply require an unsophisticated and inexpensive vehicle to execute their limited mission.

In coordination with the TRADOC Army Capabilities Integration Center (ARCIC)-led effort to reduce the overall fleet requirements, the Army must execute a more detailed analysis to develop an affordable fleet investment strategy for light utility vehicles. This may consist of reviewing quantities required for key formations, by Army Command and Army Service Component Command, ensuring that units are equipped to support the most probable contingencies based on their assignments to key mission sets under current operational plans (OPLANS). This concept supports the 2009 Army Equipping Strategy, which espouses an ARFOGEN-based equipping strategy. This analysis will show that, based on the unit’s position within ARFORGEN cycle, some organizations can maintain the fleet of legacy light utility HMMWVs, others should be equipped with the newer, armor-capable, ECV chassis HMMWVs, and key organizations would receive the most capable JLTV vehicles. This will not create an inequity in the force but rather implies that the Army has very carefully accepted risk in certain formations, based on the fact that the likelihood of that organization needing more advanced capabilities would be low. Simply put, the Army will ensure that Soldiers receive the right vehicles, with the right capabilities, at the right time.



The Army must also undertake an analysis, which determines how expensive it is to maintain this number of utility variants over the life cycle versus a pure fleet of a specific variant of UAH or Category A JLTV Utility variant.

The following fleet investment decisions will allow the Army more effectively to coordinate the procurement, development, and sustainment of a more capable light utility vehicle fleet:

- Support the development and fielding of JLTV Payload Category “A” Vehicles. The JLTV Payload Category “A” vehicles (Battlespace Awareness) are the objective solution for this mission set. Continue to support RDTE and procurement funding to meet fielding requirements as designated by TRADOC and validated by HQDA G-3/5/7.
- Continue to modernize the M998 fleet by recapitalizing them to M1097s. This requirement should be prioritized above the procurement of new light utility vehicles. If necessary, consider reprogramming new procurement funds to support this recapitalization requirement to sustain the fleet. To accomplish this, the Army should maximize the use of the highly successful HMMWV RECAP program. The products of this process are M1097R1 utility HMMWVs that have modernized power trains, improved cargo carrying capability, and C4ISR capabilities. These vehicles are “like-new” at the end of RECAP and will serve the Army for an additional 15 years. Utilizing the ARFORGEN-based fleet management model, these vehicles are perfectly suited to equip units in the “reset-train” pool. The M998 series of HMMWVs are the oldest and least capable light utility vehicle the Army possesses. The RAND Corporation, in November 2007, estimated that 69 percent of the on hand M998 series HMMWVs were beyond the useful life of 15 years. In fact, the average age of the M998 series HMMWVs is 19.4 years. Begun in 2004, the HMMWV RECAP program recapitalized approximately 30,000 vehicles at a cost of approximately 35 percent of the value of a new production light utility vehicle (M1152/M1165).
- Divest the Army of all Commercial Off-the-Shelf (COTS) light utility vehicles. Do not procure any COTS vehicles to fill the light utility vehicle mission set. The Army has gone down this route several times in its history with the latest being the Commercial Utility Cargo Vehicle (CUCV) program of the late 1970s to early 1980s. The CUCV Program was instituted to provide the United States military with a cheaper vehicle to augment the purpose-built, but expensive, Gama Goats and HMMWVs then coming into service. The CUCV program initially provided Dodge D Series and then Chevrolet C/Ks with several military modifications. All were phased out sooner than expected due to their inability to survive the hardships that the purpose-built vehicles could endure.
- Leverage the complete industrial base (sustainment level repair and original equipment manufacturer (OEM)) capabilities as a modernization tool to support sustainment. This translates to an opportunity for the sustainment level (depot) repair capabilities to focus on more extensive modernization programs designed to improve the oldest vehicles and extend their useful lives at a fraction of the cost of new



production. This approach does not preclude the use of vendors (OEMs) to execute these actions as a mitigation strategy to maintain a viable industrial base as new procurement tapers off.

- Use an ARFORGEN-based approach to sustain and modernize work-load programming and up-armored program management. Establish a combined HQDA G-4, HQDA G-8, Army Materiel Command (AMC)/Life Cycle Management Commands, TRADOC ARCIC, TRADOC Sustainment Center of Excellence (SCoE), and Program Executive Officer Combat Support and Combat Service Support (PEO CS&CSS) working group that will execute an integrated light vehicle fleet management strategy. The same working group could also develop a modernization path for the light vehicle fleet that provides the Army with the right vehicles, in the right configurations, at the right time. The responsibility for planning the fleet management strategy would reside with PEO CS&CSS and TACOM, and supported by the HQDA G-8; HQDA G-4; and AMC. The PM TV and PEO CS&CSS staff will manage the fleet life cycle management with HQDA support. The lead for the overall TWV Modernization Strategy and its updates for bi-annual decision point reviews will reside with HQDA G-3, HQDA G-8, and HQDA G-4; with TRADOC ARCIC, TRADOC SCoE, and PEO CS&CSS in support. If the Army has a coordinated fleet management plan, the modernization programming will essentially be integrated and working toward a common goal. Effective day-to-day management of these programs requires that the right agencies, with the right subject matter experts, be involved. The AMC must collect individual TWV usage and repair cost data and only recapitalize those TWVs with repair costs that are excessive.

MEDIUM TACTICAL VEHICLE FLEET INVESTMENT STRATEGY

The Family of Medium Tactical Vehicles (FMTV) is a FoV based on a common chassis, which varies by payload and mission requirements. The FMTV consists of TWVs based on a common truck cab, chassis, and internal components and two tactical trailers. The components are primarily non-developmental items integrated in rugged tactical configurations. The FMTVs, all using automatic transmissions, come in 14 variations of 2.5-ton cargo and van models and 5-ton cargo, tractor, van, wrecker, tanker, and dump-truck models. Eighty percent commonality of parts — same engines, transmissions, drivelines, power trains, tires, and cabs — in the trucks is expected to save the Army millions of dollars in maintenance costs. Lighter-weight construction will cut fuel costs dramatically. The vehicle's overall design provides a dramatic improvement in maneuverability over previous variants of medium tactical vehicles. require an unsophisticated and inexpensive vehicle to execute their limited mission.

The Medium Tactical Vehicle (MTV) Fleet is managed through the use of 87 different LINs, which delineate the various configurations used by Army formations. Many of these variations account for specialty requirements such as winches, expandable vans, wreckers, dump trucks, and materiel handling devices. Recently, new configurations that recognize the modular armor requirements have been added. While each variation has its own management considerations, a single unifying investment strategy can be applied to all of them.



The Army must address recent challenges in flexibility of the MTV contracts to adapt to changes in Army priorities and requirements. Product Manager MTV is now enacting year-to-year contracts rather than multi-year contracts. These changes will increase production and increase flexibility to adapt the model mix and quantities based on adjustments in senior leader guidance. This will improve testing and development programs to minimize the number of retrofits and safety recalls for the fleet.

The Army's fleet investment focus for the MTV Fleet is the divestiture of the Army's aging fleet of M35 2.5-ton vehicles, M809 series vehicles, and M939 series 5-ton vehicles. This is the Army's first priority in all MTV procurement and distribution decisions.

The Army's M35/M809/M939-series truck divestiture plan consists of three parts:

- The immediate turn-in and disposal of selected M35-series trucks.
- Replacement of M809-series trucks with Light Medium Tactical Vehicles (LMTV)/FMTVs as they are produced.
- Eventual replacement of M939-series trucks is dependent upon the availability of funding.

The M35-series vehicles are one of the most long-lived systems deployed by the Army. They were first fielded in the 1950s and continue to serve with various modifications in over two-dozen configurations. The most prevalent model is the M35A2 2.5-ton cargo truck which can carry 5,000 pounds cross-country or 10,000 pounds over roads. In late 2007, the HQDA G-4, directed that the ARNG immediately dispose of all M35A2 model vehicles. The Army will divest all M35-series vehicles by the end of FY11.

The M809-series vehicles were developed in the early 1970s when the U.S. Army contracted AM General to perform engineering development work on its 2.5- and 5-ton truck series. As part of an ongoing developmental effort, AM General designed the M809 series 5-ton truck. AM General produced over 92,000 5-ton trucks at its South Bend facility for distribution to the U.S. Armed Services and friendly overseas nations. Today, the most common versions of the M809 Series vehicles in service are the M813A1 Truck, Cargo, and Dropside, 6x6 and the M816 Truck, Wrecker. The Army will divest of all M809-series vehicles by the end of FY15.

The M939-series vehicles come in five body styles: cargo, dump, wrecker, van, and long wheel base cargo. The M939-series tactical trucks are 5-ton capacity, 6-wheel drive cargo truck used for transportation of all types of supplies. The M939-series trucks were introduced in 1983. It is a general-purpose military vehicle, primarily designed for tactical, off-road use, with a top speed of 65 mph and an automatic transmission. The M939-series augmented the older M809-series tactical truck. The Army received the first M939A2 in 1989. The Army plans to divest of all M939-series trucks by FY22, pending receipt of requested funding.

The following fleet investment decisions will allow the Army more effectively to coordinate the procurement, development, and sustainment of a more capable medium tactical vehicle fleet:



- Maximize production flexibility. The Army must retain the capability to modify its production quantities and model mixes from year to year to meet senior leader guidance and react to changes in both operational and fiscal environments.
- Divest M35-series vehicles prior to FY11 and M809-series vehicles prior to FY15. Divesting of these vehicles will ensure dramatically lower sustainment costs for the Army. These vehicles have long since passed their estimated EUL and are a burden on the Army's sustainment infrastructure. Furthermore, these vehicles cannot be modernized to accept AoA nor can they carry or tow the loads required by the twenty-first century Army.
- Cross-level all Low Signature Armored Cab (LSAC) capable (A1R) version LMTV/FMTVs to formations that will deploy first. As Combined Armed Services Command (CASCOM) completes the Army's LTPS, it is apparent that the requirement to maintain armor-ready fleets of MTVs within Army formations that retain a strategic deployment role is paramount to the Army's ability to meet deployment timelines. Aside from the LTPS version MTVs, the only other vehicles that can accept LSAC AoA are the A1R version LMTV/FMTVs. These vehicles are currently distributed across the force (all components) and cannot be redistributed and/or armored in a timely fashion.
- Develop retrofits that enable the application of LSAC to non-A1R version LMTV/FMTVs. As the fiscal environment becomes more constrained, it is not possible for the Army reasonably to expect support for funding to pure-fleet with Long Term Armor Strategy (LTAS) vehicles. The Army must develop a means by which it can apply LSAC armor to non-A1R version vehicles for the Army to meet the emerging requirement for a 100 percent armor-capable fleet. This can be accomplished by a combination of:
 - Recapitalize A0 version LMTV/FMTVs to armor-capable configurations
 - Reset all armored vehicles within the ARCENT AOR to standard unarmored configuration (retaining armor per HQDA G-4 policy) as they are retrograded
 - Accelerate the planned recapitalization program from FY15 to FY12 to synchronize with the responsible drawdown
- Maximize retrograde and repair of LMTV/FMTVs within the ARCENT AOR. Ensure that only the very worst LMTV/FMTVs are washed out within the ARCENT AOR. Increase the maximum expenditure limit on any LMTV/FMTV to as high as feasible and seek to repair and reissue any LMTV/FMTV that is currently serving within the ARCENT AOR. The reuse of these vehicles is a key to the success of the M35/M809-series vehicle divestiture plan and the ability of the Army to achieve a 100 percent armor-capable fleet.
- Maintain capability to sustain M939-series trucks through FY22. Ensure funding and capacity is available to sustain the M939-series truck fleet through FY22.
- Incorporate JLTV Requirements. Incorporate the JLTV Category D requirements into the FMTV operational requirement documents.



HEAVY TACTICAL VEHICLE FLEET INVESTMENT STRATEGY

The Army's Heavy Tactical Vehicle (HTV) fleet consists of the Heavy Expanded Mobility Tactical Truck (HEMTT) FoV, the Heavy Equipment Transporter System (HETS), Palletized Load System (PLS) FoV, M915-series FoV, and associated trailers and support systems.

The Army's fleet investment focus for the HTV fleet is to modernize the oldest variants to the current armor-capable configurations while reducing sustainment costs by divesting certain older variants of vehicles and trailers, as new production is fielded.

A key to the success of this strategy is to ensure that during responsible drawdown from Iraq, vehicles that meet serviceability criteria are cycled through national repair programs to bring them to the latest configuration and ensure that they are fully operational.

Another key tenet to this strategy will be to utilize the capability fully that the new production armor capable vehicles provide to the Army. The distribution and fielding strategy for new production vehicles will be to concentrate their distribution to high priority units, as approved by HQDA G-3, while cascading excess vehicles to fill shortages in lower priority units. If the excess vehicles meet induction criteria, they will be programmed into the national repair programs. This strategy will also reduce the logistics burden of the gaining units by limiting the number of dissimilar vehicles in the unit and improving the capabilities of key formations.

It should be noted that any efforts to modernize the current Line Haul fleet using a cascading approach with remaining FY09-FY12 production quantities for the M915, M916, M870, M871, M872, M967, and M969 will require additional funding that cannot be identified as this time without laying out a formal cascade effort. The success of this effort will rely heavily on resources being provided to address costs for New Equipment Training, additional Total Package Fielding (TPE) efforts, Tools, Manuals, and Second Destination Transportation.

The HEMTT has been the workhorse of the Army's heavy TWV fleet since the early 1980s. Manufactured by the Oshkosh Truck Corporation, the HEMTT FoV is a series of 10-ton, 8-wheel-drive vehicles designed to provide transport capabilities for resupply of combat vehicles and weapons systems. There are seven basic configurations of the HEMTT series trucks: M977 cargo truck with Material Handling Crane (MHC), M978 2500 gallon fuel tanker, M984 wrecker, M983 tractor, M983 Light Equipment Transporter (LET), M985 cargo truck with MHC, and the M1120 Load Handling System (LHS). There are a number of HEMTT based variants throughout the Army that include Tactical Fire Fighting Trucks, HEMTT based Water Tender, Common Bridge Transporter (CBT), HEMTT LET, and Theater High Altitude Air Defense Launcher. This vehicle family is rapidly deployable and is designed to operate in any climatic condition where military operations are expected to occur. The fleet investment strategy for this system will focus on the new procurement of those models that are short of the FY17 MTOE requirements. Recapitalization of the existing fleet will extend their service life and bring them into a modern armor ready configuration to support the LTPS.

The following fleet investment decisions will allow the Army more effectively to coordinate the procurement, development, and sustainment of a more capable HEMTT fleet:



- Balance the model mixes within the HEMTT series of trucks through adjustments to SB 700-20 and application of all pending BOIPs. Adjustments to SB 700-20 and application of pending BOIP changes will enhance Army readiness by consolidating the fleet to a minimal number of variants. The adjustments will also allow those HEMTTs with like-capabilities to be accounted for as authorized substitutes for other variants. An example will be the ability to substitute vehicles with winches for those without winches by consolidating the requirements for the cargo and tanker models of the fleet. This approach was successfully implemented with the PLS and LHS systems. The newest HEMTT A4 models are designed so a winch kit can be added at a later date, if a commander desires to have a winch on his vehicles. Consequently, there will no longer be a LIN for a HEMTT A4 with a winch and another for one without a winch. These modifications will now be made at the local level with winches being accounted for as a Common Table of Allowance item on the property books. Another example is the substitution of excess M985 HEMTTs to be applied against shortages of M977 HEMTTs.
- Modernize by focusing recapitalization programs on the oldest HEMTT variants. Focus recapitalization on inducting HEMTT A0 variants into the recapitalization program as funding permits. By establishing a goal of recapitalizing the entire fleet of 7,463 A0 variant vehicles prior to FY15, the annual recapitalization target would be 750 vehicles with annual cost of \$260M. This would bring the average fleet age from a current age of 20 years to 10 years by FY15.
- Apply the Force Feasibility Review (FFR) only to selected formations in support of the ARFORGEN-based equipping model. The Army, as a whole, is currently equipped to 90 percent of its FY15 MTOE, plus Table of Distribution and Allowance (TDA) requirements. With current production (on contract), the Total Army will be 100 percent fill by FY15. The FFR is simply no longer required for the Army as a whole, but can still be applied as a force management tool for specific formations depending on their placement within the ARFORGEN cycle.
- Modernize Engineer formations through the fielding of M983A4 LET and modernization of the CBT fleet. The most prevalent prime mover for Engineer formations is the M916 Line Haul Tractor versus the M983 LET Tractor. The M983A4 LET provides an off-road capability as well as enhanced survivability that the M916 Line Haul Tractor does not. The Army currently plans to procure 3,498 M983A4 Tractors prior to FY15 replacing 100 percent of the Engineer M916 Line Haul Tractors. The current M916 Line Haul Tractor severely limits the Engineer formations' ability to operate by restricting them to improved roads. Furthermore, the M916 Tractor lacks the survivability against IEDs of the M983A4 Tractor. The Army should support the Program Manager Force Projection efforts to develop a modernization path for the CBTs within Engineer formations. Then they should develop cost and timelines to meet their requirements and submit to HQDA G-8 for programming within the POM 12-17 plan.
- Emphasize the procurement of M1120 LHS. The Total Army is currently equipped to 95 percent of its FY15 MTOE, plus the TDA requirement for the M1120. By taking



into account pending Army BOIPs, the Army will require 319 vehicles to equip the Total Army fully to 100 percent of its FY15 MTOE, plus TDA requirements. These vehicles, which comprise approximately 37 percent of the total HEMTT fleet requirement, provide the Army with a substantial force multiplier by enabling preconfigured loads to be positioned on demountable cargo beds (flat racks) that allow for increased throughput of suppliers with fewer prime movers than standard hard mounted cargo trucks. It is in the Army's best interest to prioritize the procurement of this HEMTT variant to ensure its CSS formations are able to support the Army for years to come.

- Modernize the Heavy Expanded Mobility Ammunition Trailers (HEMAT) fleet by divesting the oldest variants and washing out any retrograded trailers requiring repair. The HEMAT Trailer is towed by the HEMTT Cargo Truck to provide ammunition resupply capability for combat vehicles, rotary wing aircraft, and missile system payloads up to 11-tons. The HEMAT is required for Army transformation in Light and Heavy BCT's, and to support modularity. Funded procurements of the current model M989A1 HEMAT Trailer total 3,921, which will equip the Total Army to 117 percent of its FY15 MTOE, plus TDA requirement by FY11. By divesting the entire A0 variant portion of the HEMAT trailer fleet and washing out any HEMAT trailers requiring repair during the ARCENT retrograde process, the Total Army will achieve approximately 108 percent fill, significantly lowering life cycle costs. The Army should not invest any further in the procurement of this fleet of trailers and they should execute these recommendations no later than end of FY11.
- Determine a strategy for the repair, retention, and fielding of retrograded HEMTTs that were procured in support of Operational Needs Statements in conjunction with HQDA G-3, HQDA G-4, HQDA G-8, and PEO CS&CSS. Certain variants within the HEMMT fleet will be above 100 percent fill for the FY17 MTOE (and Army Acquisition Objective) once they are retrograded from the CENTCOM AOR. The Army should determine a modernization path for the fleet by either readdressing BOIPs and/or divesting the oldest variants/vehicles as the newer armor-capable variants are retrograded.

The Heavy Equipment Transporter System (HETS) transports tanks and other heavy tracked and wheeled vehicles to and from the battlefield. The M1070 tractor and M1000 semi-trailer replaces the M911/M747 HET system 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-road during tactical operations worldwide. Unlike previous HETS, the M1070 is designed to carry both the tank and its crew. The HETS is required to transport, deploy, and evacuate 70-ton payloads, primarily M-1 tanks, on highways and unimproved roads and cross-country. The HETS consists of the M-1070 truck tractor and M-1000 semi-trailer. The HETS has automatically steerable axles and load-leveling hydraulic suspension. The tractor has front and rear axle steering with a Central Tire Inflation System (CTIS) and cab space for five crew members. The HETS first entered Army service in 1993, with new tractor production ending in 2003.



The following fleet investment decisions, if enacted, will allow the Army more effectively to coordinate the development and fielding of a more capable HETS fleet:

- Set the HETS (tractors and trailers) as an Automatic Reset Induction (ARI) item. Reset all HETS as they are retrograded from the ARCENT AOR. There is a requirement to sustain the HETS fleet that is currently in use within the ARCENT area of operations to ensure that each tractor is reset at depot level. The HET tractors are operating in an overload condition resulting from AoA protection on vehicles that were not designed to accommodate the additional weight. Approximately 27 percent of the HETS fleet (548 of 2,012 vehicles) are deployed, and are experiencing higher than planned Operating Tempo over rough convoy routes in extreme environments. The M1000 trailer performance in Southwest Asian (SWA) operations has been evaluated and found to meet the requirements as designed and fielded. The system is producible without design upgrade, and is a viable candidate for Operation and Maintenance, Army (OMA) RESET to refresh and extend the service life of the trailers used during the SWA operations with the HET tractors. To date, RESET has been used successfully on over 800 of the fielded trailer systems. A major update to the trailer would be required only if the system payload or other significant requirements change considerably in the future. A total of 274 M1000 Trailers have been procured using FY09 OCO funding, and would be an effective catalyst to displace fielded M1000 trailers, which could then be used as OMA RESET core assets.
- Develop a pilot project to evaluate the option to recapitalize HETS tractors from current models to HETS A1. The development of a pilot project would determine the feasibility of recapitalizing current HETS tractors to HETS A1 variants. If viable, this will ensure that the fleet is modernized to the most capable variants, while keeping costs to reasonable levels.
- Procure limited quantities of the HETS A1. Lessons learned from operations within the ARCENT area of operations show that changes to the HETS design are required to ensure that the HETS fleet can operate for extended periods of time in operational environments. The HETS A1 tractor is designed to carry the additional weight required under the LTPS protection level as well as when the EFP armor is added to the frame of the vehicle. Furthermore, design and application of modular and configurable armor packages, such as those found on other LTAS vehicles, is key to the ability of the Army to store and maintain armor (and swiftly install armor) as necessary to support OPLANS. Procuring the HETS A1 tractors, as funding permits, will allow the Army to upgrade the HETS fleet and ensure that it is available for future operations.

The PLS is composed of a prime mover truck with integral self loading and unloading transport capability, a 16.5-ton payload PLS-trailer, and demountable cargo beds (Container Roll On/Off Platform (CROP)/Flatracks). The vehicles can be equipped with materiel handling equipment, winches, or Container Handling Units (CHU). The PLS is a key transportation component of the ammunition distribution system and will perform long-range hauling, local hauling, and unit resupply of ammunition. The PLS tactical truck is a 5-axles 10-wheel drive vehicle equipped with an automatic transmission and CTIS. This



combination provides a highly mobile system capable of transporting its payload in virtually any type of terrain or weather, and can 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 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. The PLS first entered Army service in 1993.

The following fleet investment decisions, if enacted, will allow the Army more effectively to coordinate the development and fielding of a more capable PLS fleet:

- Continue procurement of PLS A1 (LTAS model) to meet FY15 MTOE and TDA requirements. The PLS A1 provides significant safety, performance, and survivability improvements over the basic PLS A0. An anti-lock brake system for safer braking, traction control, and air ride suspension for improved handling provides greater safety. Performance will increase with the 55 additional horsepower and cleaner Environmental Protection Agency-compliant 2004 on the road engine. The armor ready “A-Cab” and B-Kits maintain or improve on the established levels of protection of opaque armor and substantially improve on the transparent armor protection of the existing AoA kits.
- Modernize the PLS fleet by focusing procurement funding on recapitalizing older PLS trucks. Recapitalize the oldest PLS trucks into PLS A1s. These vehicles will share a common cab with the HEMTT FoV and will accept the same armor. Recapitalize the oldest PLS trucks into LTAS model M1075A1s. These vehicles will share a common cab with the HEMTT FoV and will accept the same armor. Focus recapitalization on inducting PLS A0 variants into the recapitalization program as funding permits. By establishing a goal to recapitalize the entire fleet of 5,121 basic variant vehicles over the course of 20 years, the annual recapitalization target would be 256 vehicles, with annual cost of \$77M. The PLS A1 RECAP program is scheduled to commence in FY10.
- Modernize PLS Trailers by focusing procurement funding on recapitalizing M1076 trailers to integrate the Container Transfer Enhancement onto the trailer. This effort modernizes the current PLS Trailer fleet through the improvement program which enables the trailers to haul International Organization for Standardization (ISO) containers without flat racks.
- Modernize Container Handling Units (CHU) with new procurement of the Enhanced Container Handling Unit (E-CHU). The E-CHU enables the PLS and HEMTT LHS to load 20-foot ISO containers without a flatrack. This capability is required to move ISO containers tactically within the battle space and supports modularity. The acquired E-CHUs would allow the HEMTT and PLS LHS systems to support container handling for Reception, Staging, Onward Movement, and Integration (RSO&I) and Sustainment operations in any theater. The standard CHU utilized on the HEMTT does not have an on board stowage capability. As HEMTT M1120s are cycled through the Recap



program, those vehicles with the old style CHU would be reissued with an E-CHU installed. The PLS version of the basic CHU can be refurbished and reissued when PLS trucks are cycled through RECAP.

- Modernize the CROP with new procurement. The CROP is a demountable cargo bed utilized with the PLS and HEMTT M1120 LHS. It is a consumable product and is the doctrinal replacement for the PLS flat rack (M1077A1), which is no longer in production. The CROP is stored within a container reducing shipping requirements to move material in and out of the Area of Operations. The CROPs acquired would allow the HEMTT and PLS LHS systems to support the future force RSO&I and sustainment operations in any theater.

The M915 Line-Haul Tractor FoV are used primarily in active and reserve component transportation units for the rapid and efficient transport of bulk supplies from ocean ports to division support areas within a theater of operation. The M915 FoV consists of the M915 Line Haul Tractor, M916 Light Equipment Tractor, M917 Dump Truck, and M920 variants. It first entered Army inventories in 1979. The EUL for the M915 FoV is 20 years. Currently, approximately 38 percent of the M915 fleet is beyond their EUL. As a result, the Army has experienced a significant increase in sustainment cost to maintain this FoV.

The following fleet investment decisions, if enacted, will allow the Army more effectively to coordinate the development and fielding of a more capable line haul fleet:

- Divest M915A0 and M915A1 variant vehicles no later than FY11 by replacing them with new production M915A5 Line Haul Tractors. The current planned production of the M915A5 variant vehicles, plus excess new production M915A3 vehicles (previously programmed for distribution to the ARCENT AOR), provides enough vehicles to replace all older variants (A0, A1, and 87 percent of A4 Glider Fleet, estimated at a total of 2,412 Trucks) prior to FY11. The Army should not invest in any significant repair or recapitalization programs for these older variants.
- Do not proceed with the Line Haul Replacement Tractor Program in the near-term as it is currently envisioned. The Army has invested significant capital to modernize the Line Haul fleet through the procurement of the M915A5 variant Line Haul Tractor. The current fiscal environment does not permit the Army the luxury of programming for a “new start” Line Haul program, nor does it permit the diversion of procurement dollars from other accounts to accommodate this endeavor. It is anticipated that with the remaining M915A2 fleet currently at its EUL, it will require modernization as well, but represents less than 10 percent (approximately 642) of the total fleet. Efforts to pursue new start should be reconsidered for the POM 14-19 plan.
- Do not procure or repair any additional M916s. Efforts are underway to gain approval of a BOIP change across engineering units designating the M916 as an in-lieu-of substitute for the M983A4. Army implementation of the new BOIP will generate a requirement for the M983A4 HEMTT LET and eliminate the requirement



for the M916 variant Line Haul Tractor. The Army's M916 inventory is over the 2015 MTOE by 23 percent, but 16 percent (approximately 546) of that inventory is over its EUL of 20 years.

- Support continued efforts to staff and provide program resources to establish a new acquisition for modernization of the current M917 20-Ton Dump Trucks. Currently 24 percent (approximately 263) of the M917 20-Ton Dump fleet is beyond its EUL of 20 years. Sustainment of these trucks is an issue and has required costly reverse engineering efforts to date. The Army's ongoing Capabilities Production Document (CPD) efforts will address attaining current commercial technology, as well as an integrated armor solution similar to the rest of the Line Haul FoVs.

The Line Haul Trailer fleet is comprised of the M870, M871, and M872 series trailers. The M870A3 40-Ton Trailer is a low-bed trailer used by Combat Engineer units to transport Engineer Construction Equipment and associated materials suitable for transport. The Army's M870 fleet is currently at 82 percent of its FY15 MTOE authorization. Approximately 22 percent of the fleet (605 M870s and M870 Basic) is beyond the EUL of 30 years. The M871A3, 22½-Ton Trailer is a tactical, dual purpose semi-trailer that transports break bulk cargo and 20-foot ISO Containers. The Army's M871 fleet has exceeded its FY15 MTOE authorization by 30 percent, but 29 percent of the fleet (2,480 M871s and M871A1s) are over the EUL of 25 years and should be divested from the Army's inventory. The M872A4 is a 34-Ton local line haul of break bulk and 20-Foot ISO containers. The Army's M872 fleet has exceeded its FY15 MTOE authorization by 334 Trailers, but approximately 24 percent (2,361 M872s) of the current fleet (M872 Basics) are 2 years beyond the EUL of 30 years. The funding for Line Haul Trailers does not exist after FY12.

The following fleet investment decisions, if enacted, will allow the Army more effectively to coordinate the modernization and fielding of a more capable Line Haul Trailer fleet:

- Cross-level and reduce inventory by ensuring all formations are filled to requirements and all excess unserviceable trailers are turned in for disposal. The TACOM item managers will take the lead on this effort, effective immediately.
- Ensure all M870 series trailers are listed as ARI items and repair any that are retrograded from the ARCENT AOR. The preponderance of these types of trailers is downrange within the ARCENT AOR supporting Engineer unit and Route Clearance Package operations. As these trailers are retrograded, ensure they are repaired and returned to the MTOE fleet.
- Coordinate efforts to divest the Army of those Trailers beyond their EUL across all three model mixes. The Army will seek to maintain funding for these trailers in FY10-12 across all three Trailer budget line identification numbers (BLINs) to ensure that procurement of M870 and M872 Trailers continues to fill the balance of the MTOE requirements, while divesting the trailers that exceed



their EUL. The TWV Capabilities Based Assessment process (Functional Area Analysis, dated May 24, 2005; Functional Needs Analysis, dated November 3, 2005; and Functional Solution Analysis, dated October 2009) yielded a new start procurement goal for the Medium and Heavy Trailer Fleets. The Army anticipates the establishment of a new program resource lines for additional Trailer variants to replace current M800 Series and other aged Trailers in the fleet currently managed by TACOM as a result of the ongoing Capabilities Development Document effort prior to the upcoming programming process.

The Fuel Tanker Trailer fleet is composed of the M967, M969, and M1062 series trailers. The M967A2 is a self-load/unload semi-trailer equipped for bulk transport and dispensing fuel; it is towed by a 5T or M915 tractor. The M969A3 is an automotive refueler towed by a 5T tractor. Funding for these Tankers does not exist after FY12. Both the M967 and M969 models are at their FY15 MTOE. Additionally, 17 percent (240 M967s) of the M967 fleet is beyond its EUL of 30 years and 6 percent of the M969 fleet (100 M969s) is beyond its EUL of 30 years. The M1062 is a bulk petroleum line haul semi-trailer with a 7,500-gallon capacity that provides bulk fuel hauling capacity throughout the area of operations. The M1062 7,500-gallon Tanker is 60 Tankers short of meeting its FY15 MTOE. The M1062 average fleet age is at 20 years with an EUL of 25 years.

The following fleet investment decisions, if enacted, will allow the Army more effectively to coordinate the modernization and fielding of a more capable Fuel Tanker fleet:

- Cross-level and reduce inventory by ensuring all formations are filled to requirements and all excess unserviceable trailers are turned in for disposal. The TACOM item managers will take the lead on this effort, effective immediately.
- Ensure all tanker trailers are listed as ARI items and repair any that are retrograded from the ARCENT AOR. As these trailers are retrograded, ensure they are repaired and returned to the MTOE fleet.
- Coordinate efforts to divest the Army of those Fuel Tankers beyond their EUL across all three model mixes. The FY10 funds should be protected to ensure that resources remain available to continue to procure M967 and M969 Tankers, while divesting those Tankers that exceed their EUL. The M1062 Semi-trailer Tanker is short of its FY15 MTOE and currently is not funded. The Army anticipates the establishment of a new BLIN for the 7,500-gallon Semi-trailer Tanker to replace the current fleet of M967 and M969 model 5,000- and 7,500-gallon Tankers upon completion of the ongoing CPD effort and associated efforts for both 5,000- and 7,500-gallon Tankers during the POM 12-17 process.



Fifth Wheel Towing Device (FWTD)

The FWTD is a self-contained towing device that utilizes the tractor fifth wheel to allow the tractor to lift and tow disabled vehicles. The FY15 MTOE for the Fifth Wheel Towing Device is 85. Currently, the inventory exceeds this MTOE by 184. The age of the fleet is approximately 7 years, with an EUL of 20 years. A modernization strategy is not required for this particular platform.

- The Army should not procure any additional FWTDs.

Interim Stryker Recovery System (ISRS)

The ISRS is a M983A2/A4 LET pulling a modified Fifth Wheel Towing Recovery Device (FWTRD) and a High Mobility Recovery Trailer (HMRT). The HMRT has a 30-ton payload carrying capacity, pulled by the FWTRD with a 16-ton lift capacity. This system is not a program of record and is being procured in accordance with a December 2006 Army Resource and Requirements Board (AR2B) decision. The AR2B approved requirement is for a system with the capability to lift, tow, and transport Strykers damaged beyond current Stryker BCT recovery capability. Further procurement of this system was authorized by the AR2B in February 2009 to support MRAP vehicle recovery within the ARCENT AOR. A modernization strategy is not required for this platform.

- Coordinate with TRADOC to document this system. Coordinate with TRADOC to ensure this vehicle is documented within the enduring Army force structure to determine future RESET and/or recapitalization requirements, as these vehicles are retrograded from the ARCENT AOR.

MTV/HTV ARMOR INVESTMENT STRATEGY

The modernization of the MTV and HTV fleets through the integration of newer variants incorporating LTAS technology is one of the central tenants of the Army's MTV and HTV fleet investment strategy.

As enemy tactics adapted to exploit the weaknesses in TWV designs, combat leaders and materiel developers sought out materiel solutions to counter them. This led first to the rapid development and fielding of various interim AoA solutions, which in turn, led to a developmental effort for an integrated armor solution for deployment to ARCENT area of operations. The development and fielding of the LTAS vehicles are the Army's objective solution to the Army's MTV armor requirements and will ensure that the Army realizes the goal of having a "armor-ready" fleet that can be swiftly armored and configured in support of Combatant Commander requirements. According to the draft CASCOM TWV LTPS, "the objective of the Tactical Wheeled Vehicle Long Term Protection Strategy is to enhance the survivability of TWV occupants by synchronizing a variety of complementary force protection and survivability initiatives in support of current operations, Army Transformation, and future modernization capabilities by optimizing strategies for procurement, deployment, recapitalization, and sustainment."



As part of overall tactical vehicle modernization efforts, MTV and HTVs are being introduced that are LTAS compliant in support of the emerging tactical vehicle LTPS. This concept utilizes an “A-Cab/B-Kit” methodology that applies the concept of modular armor that can be easily and swiftly applied to vehicles, as mission requirements dictate. This armor concept allows for the vehicles to be configured with or without armor without requiring depot level repairs during the process. As vehicular armor technology improves, this A-Cab/B-Kit concept allows for the application of improved armor designs without the need for major vehicular redesigns.

In support of the HQDA G-4-led TWV AoA Sustainment Policy, the following investment decisions are recommended:

- Determine a means to account for all TWV Armor (AoA or B-Kit) funding requirements separately from TWV funding requirements. Currently, armor is funded from the same funding lines as trucks. Each armor kit procured is an Active Component (COMPO 1) decrement that further detracts from the Army’s ability to reset the Active Component.
- Dispose of older AoA kits in accordance with the LTPS modernization strategy.
 - Remove and dispose of all Radian Armored Cab Kits and M939 series AoA cabs.
 - Remove and dispose of any Generation (Gen) 1 or 2 HEMTT replacement armor and any M915A0/A1 AoA.
- Retain modernized AoA kits in accordance with the LTPS modernization strategy.
 - Inventory, refurbish, store, and maintain all LSAC cabs for LMTV/FMTVs
 - Inventory, refurbish, store, and maintain any HEMTT Gen 3A/3B HEMTT armor
 - Inventory, refurbish, store, and maintain any Gen 3 PLS AoA with appliqué and any LTAS B-Kits
 - Inventory, refurbish, store, and maintain any M915A2 and above variant AoA
 - Inventory, refurbish, store, and maintain any HETS AoA or EFP kits
- Coordinate with HQDA G-4, AMC, and PEO CS&CSS for AoA and/or B Kit storage and maintenance requirements. Ensure that all armor is properly stored and maintained for future use, in accordance with the HQDA G-4-led TWV AoA Sustainment Policy.



CONCLUSION

This strategy examines a new approach to manage the Army's TWV fleets and describes the decision points that Army must make to achieve its near- and long-term fleet investment strategy objectives. This strategy explained the history of the Army's TWV fleets and how it has arrived at these decision points. Specifically, this strategy focuses primarily on approaches for applying new production, recapitalization, and reset actions to both maintain and modernize the respective fleets. After careful analysis, the Army concludes that an ARFORGEN-based approach will be successful to achieve two aims. One, it will sustain near-term missions, while transitioning from current legacy TWV fleet variants to modernized variants that incorporate the LTPS requirements. Two, the approach will implement a long-term modernized fleet with an appropriate mix of legacy and armor-capable models that undoubtedly will meet the mission demands set before the Army. To meet these aims more efficiently, the Army will execute the recommendations laid out in this strategy and support the development and publication of the PEO CS&CSS Fleet Management Plan. This plan will be designed to establish the detailed requirements necessary for the execution of this investment strategy. In doing so, the Army will ensure that it will retain the ability to protect forces and conduct combat and sustainment operations in any full-spectrum mission.



ACRONYM LIST

AMC	Army Materiel Command
ARFORGEN	Army Force Generation
ARNG	Army National Guard
ARCIC	Army Capabilities Integration Center
AoA	Add-on Armor
AOR	Area of Responsibility
AR2B	Army Requirements and Resourcing Board
ARCENT	Army Central
ARI	<u>Automatic Reset Induction</u>
BCT	Brigade Combat Team
BLIN	Budget Line Identification Numbers
BOIP	Basis of Issue Plan
C4	Command, Control, Communications and Computers
C4ISR	Command, Control, Communications and Computers and Intelligence, Surveillance and Reconnaissance
CASCOM	Combined Arms Support Command
CBT	Common Bridge Transporter
CDD	Capability Development Document
CENTCOM	U.S. Central Command
CHU	Container Handling Unit
COTS	Commercial Off-the-Shelf
CPD	Capability Production Document
CROP	Containerized Roll-in/Out Platform
CTIS	Central Tire Inflation System
CUCV	Commercial Utility Cargo Vehicle
CUFR	Critical Unfunded Requirement
ECV	Expanded Capacity Vehicle
EPA	Environmental Protection Agency
EFP	Explosively Formed Penetrator
ERC	Equipment Readiness Code
EUL	End of Useful Life
E-CHU	<u>Enhanced Container Handling Unit</u>
FFR	<u>Force Feasibility Review</u>
FHTV	Family of Heavy Tactical Vehicles
FOB	Forward Operating Base
FoV	Family of Vehicles
FMTV	Family of Medium Tactical Vehicles
FTTS	Future Tactical Truck Systems



FWTD	Fifth Wheel Towing Device
FWTRD	Fifth Wheel Towing Recovery Device
FY	Fiscal Year
G-3	Army Deputy Chief of Staff, G-3/5/7 (Plans and Operations)
G-4	Army Deputy Chief of Staff, G-4 (Logistics)
G-8	Army Deputy Chief of Staff, G-8 (Programs)
GVW	Gross Vehicle Weight
GWOT	Global War on Terrorism
HEMAT	Heavy Expanded Mobility Ammunition Trailer
HEMTT	Heavy Expanded Mobility Tactical Truck
HET	Heavy Equipment Transporter
HETS	Heavy Equipment Transporter System (tractor and trailer)
HIP	HMMWV Improvement Program
HIMARS	High-Mobility Artillery Rocket System
HLD/HLS	Homeland Defense/Homeland Security
HMMWV	High Mobility Multi-purpose Wheeled Vehicle
HMRT	High Mobility Recovery Trailer
HQDA	Headquarters, Department of the Army
HTV	Heavy Tactical Vehicles
IED	Improvised Explosive Device
IPT	Integrated Process/Product Team
ISRS	Interim Stryker Recovery System
ITAS	Improved Target Acquisition System
JCIDS	Joint Capabilities Integration and Development System
JLTV	Joint Light Tactical Vehicle
JUONS	Joint Urgent Operational Needs Statement
LET	Light Equipment Transporter
LHS	Load Handling System
LIN	Line Item Number
LMTV	Light Medium Tactical Vehicle
LSAC	Low Signature Armored Cab
LTAS	Long-term Armor Strategy
LTPS	Long Term Protection Strategy
LTT	Light Tactical Trailer
LTV	Light Tactical Vehicle
MHC	Material Handling Crane
MRAP	Mine Resistant Ambush Protected
MTOE	Modified Table of Equipment
MTV	Medium Tactical Vehicles



O&S	Operations & Support
OCO	Overseas Contingency Operations
OEF	Operation Enduring Freedom (Afghanistan)
OEM	Original Equipment Manufacturer
OIF	Operation Iraqi Freedom (Iraq)
OMA	Operation and Maintenance, Army (appropriation)
OPLANS	Operational Plans
OPTEMPO	Operational Tempo (unit activity level)
PEO CS&CSS	Program Executive Office, Combat Support & Combat Service Support
PIP	Product Improvement Program
PLS	Palletized Loading System
PLS-T Palletized	Palletized Loading System Trailer
PM TV	Program Manager – Tactical Vehicles
POM	Program Objective Memorandum
RDECOM	Research, Development and Engineering Command
RDTE	Research, Development, Test, and Evaluation
RECAP	Recapitalization
RSO&I	Reception, Staging, Onward Movement, and Integration
SBCT	Stryker Brigade Combat Team
SCoE	Sustainment Center of Excellence
TACOM	U.S. Army Tank-Automotive and Armaments Command
TARDEC	U.S. Army Tank Automotive Research, Development & Engineering Center
TDA	Table of Distribution and Allowances
TOW	Tube-launched Optically-tracked Wire-guided missile
TPE	Theater Provided Equipment
TRADOC	U.S. Army Training and Doctrine Command
TWV	Tactical Wheeled Vehicle
UA	Unit of Action
UAH	Up-Armored HMMWV
UE	Unit of Employment
UIC	Unit Identification Code
USARCENT	United States Army Central
UV	Utility Vehicle



For more information contact:
U.S. Army Deputy Chief of Staff G-8 Plans and Policy Division
700 Army Pentagon | Washington, D.C. 20310 | Operations Officer, G-8, FDL | 703.602.7555 | www.g8.army.mil