

ACQUISITION REFORM: DOES MRAP PROVIDE A MODEL?

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USAWC STRATEGY RESEARCH PROJECT

ACQUISITION REFORM: DOES MRAP PROVIDE A MODEL?

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ACQUISITION REFORM: DOES MRAP PROVIDE A MODEL?

The Department of Defense's conventional modernization programs seek a 99 percent solution over a period of years. Stability and counterinsurgency missions require 75 percent solutions over a period of months. The challenge is whether these two different paradigms can be made to coexist in the U.S. military's mindset and bureaucracy... Given the types of situations the United States is likely to face... it is time to think hard about how to institutionalize the procurement of [critical] capabilities and get them to the field quickly."¹

—Secretary of Defense, Robert Gates 2009

In many ways, the nature of the modern battlefield changed on September 11, 2001. The nation's response to these terrorists' attacks on the homeland resulted in the deployment of hundreds of thousands of troops to the Central Command (CENTCOM) area of operations to eliminate al-Qaeda and regimes that provided safe haven to terrorists. These forces deployed to Afghanistan supporting Operation Enduring Freedom, and to Kuwait and Iraq supporting Operation Iraqi Freedom, although support assets were disbursed throughout the region. Following a swift U.S.-led offensive to topple Saddam Hussein and his Baath Party regime in Iraq, the military found itself without proper training or equipment for effective Phase IV (stability operations) operations and unprepared for the resultant counter insurgency.² U.S. Forces faced an insurgency that created an asymmetric environment, employed irregular tactics, and quickly evolved its techniques to generate significant casualties to U.S. and Coalition Forces mainly with the employment of improvised explosive devices (IEDs). The response to this single threat caused the Department of Defense Acquisition Community to tailor the methods that it uses to acquire and field equipment to the force rapidly during combat operations. An analysis of rapid acquisition programs for items such as body armor, Counter Remote-Controlled Electronic Warfare (CREW) devices,

Un-manned Aerial Vehicles, Armored Tactical Wheeled Vehicles, Route Clearance equipment and other force protection equipment results in data that demonstrates acquisition teams performing herculean tasks to get capability to the field. The most significant program in terms of speed, scope, complexity and oversight was the procurement of Mine Resistant Ambush Protected (MRAP) vehicles. The MRAP rapid acquisition is the largest and fastest land combat system program since World War II.³ Does the Joint MRAP Vehicle Program (JMPV) provide a model for acquisition reform? This research will use the JMPV as a case study to examine how the program was able to move as rapidly as it did to fulfill an urgent operational need and address whether or not the MRAP acquisition provides a model for Acquisition Reform. If not, what lessons learned from the MRAP vehicle acquisition and fielding can apply to Acquisition Reform?

Evolving IED Threat

Following the march to Bagdad in the fall of 2003, insurgent's used asymmetric methods to exploit a Coalition forces weakness by using IEDs along the roads that Joint and Coalition forces traveled. No longer were armored vehicles required only on the front lines, all tactical wheeled vehicles operating off of forward operating bases needed armor. This created a capability gap in both configuration and quantity of vehicles. The Army and Marine Corps rapidly responded by providing a series of add-on-armor (AoA) kits and delivered thousands of Up-armored HMMWVs to better protect troops in the fight. By August 2004, Army requirements had increased to 8,105 Up-Armored HMMWVs (UAHs), 13,872 HMMWV AoA kits, 12,311 AoA kits for various other medium and heavy trucks in addition to 872 Armored Security Vehicles, and AoA kits for 734 M113 armored personnel carriers.⁴ The Marine requirements were 498 UAHs and 3955

AoA kits for their other tactical wheeled vehicles.⁵ These armor solutions tested well and provided good protection, but as MajGen (Select) William D. Catto, Commanding General Marine Corps System Command stated during testimony to the House Armed Services Committee in May 2005:

We are at war with a thinking, adaptive enemy. While there is no one absolute armor, technology, tactic, technique, or procedure that can counter these growing threats 100 percent of the time, we too are adapting, and are providing our warfighters' more and more effective solutions as the threat becomes larger and more severe.⁶

When adversaries no longer achieved their desired effects, they evolved their IEDs, making them larger with more sophisticated triggering devices that would overmatch our armor at frequent rates. Their techniques started achieving effects against Abrams Tanks, Bradley Fighting Vehicles, Stryker and Armored Security Vehicles, all of which resulted in the initiation of add-on-armor programs to provide greater protection for forces operating in Iraq.

The DoD acquisition community response to counter the IED threat made progress providing greater force protection to troops in multiple ways. In May 2005, BG(P) Jeffery A. Sorenson, Deputy for Acquisition and Systems Management Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology testified to the House Arms Services Committee:

In the Spring of 2004 nearly every attack from an improvised explosive device (IED) resulted in a coalition casualty. Today, through personal body armor, improved protection in vehicle up-armorings, electronic counter-measures, greater situational awareness, and better training and operational focus, we have drastically reduced this ratio to about one casualty for every four IED detonations, and we continue to drive down this ratio.⁷

Both the Army and the Marines had limited numbers of mine resistant vehicles in use in Iraq. These vehicles were Joint Explosive Ordnance Disposal Rapid Response

Vehicles (JERRV) and Buffalos both manufactured by Force Protection Industries, and RG-31s manufactured by BAE-OMC in South Africa under partnership with General Dynamics Land Systems-Canada. Both services used these vehicles in combat engineer formations to perform route clearance and explosive ordnance disposal missions with extremely positive results in mission execution while providing unmatched force protection. Each of these vehicles posed significant sustainment challenges. In fact, LTG Yakovac, Military Deputy to the Assistant Secretary of the Army for Acquisition Logistics, and Technology directed the transfer of management of the Army vehicles from PM Counter Mine, Program Executive Office (PEO) Ammunition to PEO Combat Support, Combat Service Support (CS&CSS) who manages the Army's Tactical Wheeled Vehicles and Engineer systems to address route clearance vehicle readiness rates that were falling below 70% operational readiness.⁸ Mine resistant vehicles were gaining popularity with commanders in Iraq as an extremely survivable platform travelling on the dangerous roads.

The Initial Requirement

U.S. joint forces' combat vehicles must be capable of sustained operations in chaotic, high threat, non-linear battle spaces. Joint forces are conducting long-term stability operations and are engaged in irregular warfare against an adaptive enemy combining aggressive tactics with an inexhaustible supply of low tech, highly lethal munitions that inflict fire, blast, ballistic, and fragmentation casualties. The CENTCOM Joint Urgent Operational Needs Statement (JUONS) of 26 October 2006 identified the urgent need for a protected vehicle capability that increased survivability and mobility of forces operating in a hazardous fire area against threats, including mines, Improvised Explosive Devices, and Small Arms Fire (SAF).⁹

Upon validation of the JUONS, the Marine Corps Systems Command (MARCORSYSCOM) awarded a sole-source Indefinite Delivery/Indefinite Quantity (ID/IQ) contract on 9 November 2006 to Force Protection Industries, Incorporated (FPII) based on market research and performance of their vehicles in the field with the USMC and Army for up to 280 vehicles, support services, training, and supplies. Concurrent with the sole source award to FPII, a Request for Proposal (RFP) was issued on 9 November 2006 to initiate a full and open competition for additional vehicles to meet the JUONS requirement. On 25 January 2007, the MARCORSYSCOM competitively awarded nine ID/IQ contracts for each contractor to deliver two vehicles of two different categories of vehicles for evaluation of performance, production, and sustainability. This multiple contract award and maximum quantity ceiling of 20,500 vehicles benefited the DoD by expanding the industrial base for the MRAP vehicles while reducing the risk associated with the program's rapid fielding objective. Unlike most large defense procurements that usually have a single or sole source supplier for a finite quantity of items, this acquisition strategy using ID/IQ contracts with multiple contract awards and a high ceiling quantity attracted several companies in the industrial base to quickly build MRAP vehicles.

Dr. Deloris Etter, Assistant Secretary of the Navy (Research, Development, and Acquisition) (ASN(RDA)), the Milestone Decision Authority (MDA), designated the JMVP an Acquisition Category (ACAT) II Program on 31 January 2007. The Department of the Navy became the executive agent, and the Commander, Marine Corps Systems Command (MARCORSYSCOM) functioned as the PEO. The JMVP office was formally established and the services and Special Operations Command

(SOCOM) began to assign more personnel to the Marine's core team to staff the Joint Program Office.¹⁰

On 10 May, the Joint Requirements Oversight Council (JROC) approved the original Capabilities Production Document (CPD) authorizing a combined total of 7,774 MRAP vehicles across the services and U.S. Special Operations Command (USSOCOM) and acknowledged a potential requirement of over 20,000 based on additional Army needs. This was a significant accomplishment because to write, staff and achieve JROC approval of a JCIDS document in 5 months is unusual in a process where 18 to 24 month timelines are common.

Speed is of the Essence

The background information discussed in detail so far is necessary because it frames the environment and sense of urgency that Secretary Gates faced to combat the increasingly significant counter IED problem. Although several successful counter IED and force protection acquisition efforts by the services were progressing in the form of AoA kits for fielded vehicles, delivering Up-armored HMMWVs in significant numbers, and fielding Armored Security Vehicles for convoy escort, IED casualties remained a problem. At the OSD level, the Joint Improvised Explosive Device Defeat Organization (JIEDDO) made significant contributions with counter remote controlled & electronic warfare (CREW) devices that effectively jammed electronic IED initiation devices. However, these systems failed to provide the lasting force protection needs for fighting forces due to the rapid cycle of measure/counter-measure/counter-counter-measure in this hybrid warfare operation. MRAP vehicles had the potential to provide persistent protection for our forces in response to the JUONS when Secretary Gates wrote a letter on the 2 May that included the following:

The MRAP program should be considered the highest priority Department of Defense acquisition program...any and all options to accelerate the production and fielding of this capability to the theater should be identified, assessed and applied where feasible... the urgency of the situation...requires that we thoroughly examine all options to put as much of this enhanced capability in the hands of our troops as rapidly as reasonably possible...Speed is of essence¹¹

The Defense Secretary released additional guidance in a 30 May 2007 letter directing a Department-wide task force be formed to integrate planning, analysis, and actions over the next year for the acquisition of as many MRAPs as was possible and prudent.¹² He then appointed John Young, the Director of Defense, Research & Engineering (DDR&E) as the Task Force Chairman.¹³ On 1 June 2007, the Secretary of Defense assigned the Joint MRAP Vehicle program a “DX” rating which is the highest rating under the Defense Priorities and Allocation System. Until then, DX ratings were only issued for important programs like the Presidential Helicopter and Trident ballistic missile submarine program.¹⁴ Secretary Gates set the conditions to procure as many MRAP vehicles as quickly as possible with full understanding that “in hybrid warfare, delays lead to loss of life on the battlefield as Soldiers wait for solutions to unanticipated threats.”¹⁵ As a final effort to set MRAP procurement in a rapid posture, the Defense Secretary went to Congress to gain support and approval for the transfer of available funds to this program. The reprogramming action gave the MRAP Joint Program Office \$5.4 billion to immediately put on contract in 2007 for MRAPs. This level of funding made MRAP the 3rd largest 2007 major defense acquisition program (MDAP), behind only missile defense and Joint Strike Fighter.¹⁶

Acquisition Streamlining

The MRAP Program Office and industry are moving extremely quickly to buy vehicles as fast as we can check only the key boxes: testing against IEDs, road test with Soldiers and Marines, and establishment of

production facilities and processes. We are not delaying manufacturing of these vehicles for documentation, extended testing or test reports. This is not a business-as-usual process.¹⁷

The JMVP was structured for speed with simple program objectives that drove all activities, to include the acquisition strategy, system specification, contracts, and test plan. These objectives were survivability, produceability, and price. As documented in the JMPV Acquisition Strategy/Acquisition Plan (AS/AP), demand to deliver as many MRAP to the field was extremely high with tremendous attention from Congress, CENTCOM, OSD and the Services. Weekly, the JPO briefed the Assistant Secretary of the Navy for Research, Development and Acquisition (ASN(RDA)) on progress, and conducted bi-weekly update briefings to the OSD Task Force who continually updated the Secretary of Defense. In addition, senior managers from the Joint Program Office (JPO) along with the JPEO briefed the House and Senate Appropriators and key Members on the Hill about every 3 weeks. Unlike typical programs, the JPO had streamlined access to decision makers and usually started coordination at the 3-star level with the Services and the Joint Staff. Ordinary programs follow a more deliberate process that requires a number of time-consuming pre-briefs and staffing requirements before briefing the principals. The JPO's access to senior leaders coupled with active, continuous decision maker involvement allowed quick reactions to threat changes and operational employment needs. Finally, senior leaders' deep understanding of the program enabled rapid resourcing of needs. With this top down understanding and focus to move rapidly, the JPO streamlined the acquisition process by executing tasks in parallel, accepting higher levels of risk than the traditional linear process. Due to the urgent requirement for MRAP capability in theater and a compressed program schedule, the MDA issued and the JPO executed Acquisition Decision Memorandums

(ADMs) for, a series of Low Rate Initial production (LRIP) procurements to produce and rapidly field vehicles from the multiple manufacturers to meet the Acquisition Objective (AO) requirement before all follow-on testing was complete.

To support the immediate and pressing need for MRAP, a single manufacturer was incapable of producing the vehicles in the quantities and on the schedule required.¹⁸ Multiple manufacturers, multiple production contracts, and multiple LRIP delivery orders were awarded to meet the requirement. The unusual and compelling urgency for MRAP vehicles prevented the DoD from limiting LRIP to 10% of the planned procurement prior to Initial Operational Test and Evaluation (IOT&E) as is standard practice. The risks of this pre-IOT&E or early testing were mitigated by the personal MDA oversight through incremental LRIP approvals. All LRIP approvals were based on limited testing and comprehensive OSD Task Force efforts to resolve management issues expeditiously.

The JPO pursued highly tailored and rapid acquisition strategies in order to meet aggressive schedule requirements while utilizing parameters set for vehicle performance and maintaining affordability. Specific examples include:¹⁹

- Streamlined decision processes and documentation to support early milestones.
- “Jump start” of production through limited use of a sole-source contract.
- Ramping up of industrial capacity through early LRIP orders of the most promising vehicle designs.

- Concurrent/incremental testing to ensure essential data required by decision makers was available as soon as possible.
- Multiple production vendors to increase vehicle production rate
- Rapid Integration of government furnished equipment through use of an experienced integrator.
- Funding tire and steel manufacturers to increase capacity.

Prior to delivery of initial vehicles, additional requirements for enhancements started to appear out of CENTCOM (such as protection against Explosively Formed Penetrator (EFP) IEDs.) The JPO pursued a tailored capabilities insertion strategy to rapidly acquire mature technologies for Warfighters. This evolutionary approach delivered capability in increments, recognizing upfront the need for future capability improvements to meet evolving threat challenges quickly. It also improved MRAP vehicle capabilities to meet survivability, force protection, mobility, transportability and materiel availability objectives.

Fielding and Sustainment Planning

Like all things in the JPO MRAP Vehicle Program, parallel processes were essential to the ability to move rapidly. The results from Secretary Gates' "Speed is of essence" letter, the engagement of the OSD MRAP Task Force and industry ramping up production capability, vehicles were soon ready to ship to theater by October, 2007. The JPO sent an advanced team, led by the Military Deputy Program Manager, to the CENTCOM AOR in July 2007 to conduct a site survey and coordinate fielding and sustainment operations for the 7,774 MRAP vehicles that were on order for CENTCOM.

Travelling to Kuwait first, the team conducted a theater in-brief with key general/flag officers in the region and their staffs to include the Deputy Commanding General (DCG), Coalition Forces Land Component Commander and the DCG, Multi-National Corps - Iraq.²⁰ Other than the few Buffalos, JERRVs, and RG-31s operating with some of the engineer units conducting route clearance and EOD missions in Iraq, few people in the room had ever seen an MRAP vehicle before or knew the characteristics of the new vehicle variants that were on contract, or when they were going to arrive. The JPO advance team explained the key aspects of the program as follows:

The JMVP Office procured an MRAP Family of Vehicles (FoV) that consisted of three categories capable of performing the following missions:

- CAT I – Small unit combat operations in urban or confined areas that include mounted patrols, reconnaissance, security, convoy protection, communications, command and control, EOD operations, and combat service support. Configurable into cargo versions, casualty evacuation (CASEVAC), and medical support variants. Carries up to seven personnel.
- CAT II – Ground logistics support operations that include convoy security, troop and cargo transport, limited combat engineering and EOD support, CASEVAC, and ambulance. Carries up to 11 personnel.
- CAT III – Mine/IED clearance operations that include route clearance. Carries up to six personnel.

As the program office procured vehicles, the Joint Staff J8 allocated them to the Services through a newly established Joint Allocation and Distribution Board (JADB) to achieve CENTCOM's priorities. The entire JROC validated requirement of 7,774 MRAP vehicles was on order and allocated by the JADB as follows: 3,700 USMC, 2,500 Army, 544, Navy, 697 USAF, and 333 SOCOM.²¹

The team briefed that manufacturers would deliver vehicles to the Space and Naval Warfare Systems Center (SPAWAR) in Charleston, South Carolina for the integration of Government Furnished Equipment (GFE) consisting of communications equipment, driver's viewer enhancements, jammers and other equipment. Charleston was in a strategic location as both a major air and sea hub for TRANSCOM to move vehicles to the CENTCOM AOR. The transportation concept at the time had three phases. Phase I – Fly all vehicles until production outpaces the capacity for air transport. Phase II – Send air and surface shipments simultaneously until there were adequate quantities of vehicles on the ground waiting fielding. Phase III– All surface. The advanced team then reviewed initial concepts for fielding and sustainment to refine follow-on site visits and coordination with commanders in Iraq. The team briefed a final concept for decision as a part of an exit brief at the end of the trip. After concluding with the general officer leadership in Kuwait, the team held several smaller meetings with key staff members with the goal of turning a concept into a plan.

In Iraq, the JPO advanced team made visits to MNC-I in Bagdad, Second Marine Expeditionary Force (MEF) in Fallujah, 2d Marine Logistics Group in Al-Taqadum, 402d Army Field Support Brigade, Special Operations Command and 3d Corps Support Command in Balad. At each location, the team conducted site surveys, received

feedback from commanders and units, and collected data to support building a fielding plan. Of most significance was the team's meeting with the DCG, MNC-I, his staff and sizable counter-IED organization. During the Kuwait in-brief, the DCG expressed no opposition to the JPO's concepts, but that changed. He informed the team that a 10,000 vehicle requirement increase for the Army was coming so they should plan for it. Subsequently, the JPO's concept of high volume centralized fieldings from two to three sites and "pure fleeting" (same type of vehicles) at Brigade Combat Team level was "dead on arrival." He provided rationale for his areas of concern, told the team to visit with commanders and units for a few days then come back and out-brief him with a refined concept, provide feedback on what was learned from his units and include what the JPO is doing to address the rising EFP threat. The JPO advanced team completed visits to subordinate units across Iraq, out-briefed the DCG, MNC-I then travelled back to Kuwait. A similar out-brief occurred with the DCG, ARCENT and senior leadership in Kuwait before returning to the States.

Extreme Makeover

Upon return from the CENTCOM AOR visit, the JPO leadership realized that a significant change was required to successfully field and, more importantly, sustain the MRAP vehicle fleet that was now in production. The original centralized concept that was drafted when the total vehicle procurement quantity was 1,185 containing 90-day parts blocks and 1 Field Service Representative (FSR) per 10 vehicles with non-standard Commercial-Off-The-Shelf (COTS) manuals would not adequately support the requirement. No longer was the JMVP fielding 7,774 vehicles of only a few different variants from one or two manufacturers to warfighters who had never used them in a few locations. The requirement for the entire joint logistics strategy was far more

complex than originally planned for due to the quantity and number of manufacturers producing vehicles.

The JPO Military DPM and logistics planners went to work after receiving the commander's intent for execution in theater and completely rebuilt the joint logistics strategy a few months before initial fieldings. There were three main categories of input that the team assessed in revising the strategy. The first was Warfighter feedback. The field wanted the operational flexibility to conduct multiple simultaneous fieldings at up to nine different locations in company unit sets. MNC-I would not commit to pure fleeting, or fielding all of the same type of vehicle at BCT level due to a decrease in operational flexibility. Both Army and USMC units wanted the ability to order spare parts using organic systems instead of a contractor proprietary new system that offered no visibility. Commanders wanted to use established parts distribution networks so parts were pushed to units thus reducing the need to put additional convoys on the roads for spare parts distribution. Finally, units wanted battle damage repair and component repair capabilities forward in Iraq in order to alleviate the need for additional convoys to evacuate vehicles to and from Kuwait for maintenance.

The second category of input for revised planning was lessons learned. In order to best capture these, the JPO logistics planners formulated an experienced team of logisticians from Tactical Vehicles, Armored Security Vehicles, Route Clearance, and PM Stryker to capture lessons learned to ensure that earlier mistakes were not repeated, and to optimize support for the field. Each of these programs had elements that were similar to MRAP, though none had the scope, size or senior level attention that the JMPV had at the time. The HMMWV Program, for example, experienced rapid

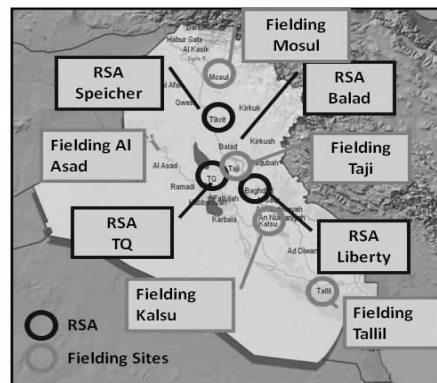
production ramp-up and delivery of UAHs, multiple field modifications such as AoA, gunner protection kits, safety modifications, and deployment of hundreds of contractors to apply them. Although low density, the Armored Security Vehicle and Route Clearance Vehicles fielded to Iraq were both non-Program of Record (POR) vehicles that soldiers had little or no training on before receipt in theater and were supported through contractor logistics support (CLS.) These programs provided valuable insights into in-theater NET (new equipment training) requirements, pre-deployment training gaps, and most importantly, battle damage repair and spare parts consumption factors. The Stryker program provided several lessons learned surrounding key infrastructure support requirements, and lessons learned with pure CLS to include an off-line contractor parts management system.

The final category of input for the plan revision was complexity. To address this issue, the JPO made the decision that a robust JPO management team, led by a senior field grade officer, positioned forward in theater was needed. Additionally there was a need to hire a contractor to perform as a Joint Logistics Integrator (JLI) to augment the staff of the Product Manager for Logistics and JPO Forward program manager. A contractor could respond quickly with the appropriate labor skill sets and provide a robust data collection function necessary to help command and control this task both in the United States and in theater. As the planners built the statement of work for this contract, it became obvious that the selected contractor would function best as an independent, third party contractor that didn't have business interests with any particular vehicle or sub-system contractor, therefore creating a non-competitive teaming environment. In addition, the JLI had to be able to lease facilities and acquire support

equipment when the government could not quickly provide them. Finally, due to urgency, the PEO agreed to a sole-source award with the agreement to compete the contract after a year.

The JMVP built a coordinated plan with commanders in the field to establish four Regional Support Activities (RSA) located at Balad, Liberty, TQ and Speicher, and five fielding sites located at Mosul, Al Asad, Kalsu, Taji, and Tallil as shown on the map below:

MRAP RSA & Fielding Sites



All of the sites conducted deprocessing and fielding operations, but the RSAs served as regional hubs with a robust maintenance capability to include battle damage repair. Although TRANSCOM delivered all initial MRAPs by air, surface shipments soon followed with the projected production rates generating the requirement for a facility in Kuwait to receive and move vehicles onward into Iraq. The JPO secured a large facility in Kuwait that was strategically located near the As Shuabah port with a high speed route to Kuwait City International Airport to process vehicles rapidly.

Each Service and SOCOM agreed to slightly different maintenance approaches for contractor FSRs in their battle space based on vehicle types, number of variants, numbers of organic mechanics, and footprint to support and secure the added personnel. For example, the Marines had all FPII vehicles and few organic mechanics assigned in their formations, therefore, they requested more contractor FSR mechanics. The Army had the largest challenge compared to the other services, because they had vehicles from four different manufacturers and planned to mix vehicle types within units. On the positive side, they had more organic wheeled mechanics in their formations than the other services thus requiring a means to train them and FSRs to support maintenance. Historically, original equipment manufacturers (OEMs) supported only their own company systems. If the JPO deployed enough support personnel to work only on their company systems given four companies, the personnel footprint for fielded forces would be prohibitive. At the senior level, the JPO negotiated an unprecedented agreement with the OEMs to enter a consortium to cross-train FSRs on all systems to deliver instruction and field services support. The benefits were tremendous, providing more flexibility, a smaller personnel footprint, greater support throughout the theater, and significant cost savings. The JPO agreed to embed depot wheeled mechanics for 60-days after fieldings and leave behind two Contractor FSRs per battalion to support units. The JPO would redeploy mechanics to theater if readiness fell, units sustained combat losses, or to support unit rotations as needed.

The tactical units agreed with a concept for parts supply where the JPO issued of a Prescribed Load List (PLL) set of parts at fielding to support a company unit set. The JPO also issued an Assigned Load List (ASL) to the supported units Supply Support

Activity (SSA) at the time of fielding or soon after. Units ordered replenishment parts using organic automated systems (Army=STAMIS; USMC=SASSY).

Building Logistics Capacity

Army Regulation 700-127 defines a deliberate process that the program manager uses to develop and integrate the support strategy into the systems engineering process to ensure that a design can be supported throughout its life cycle.²² The regulation defines the support strategy as either organic logistics support or contractor logistics support. Neither of these was the JMVP logistics support strategy, so the team adopted the term “hybrid” to best describe the approach. The hybrid strategy incorporated as many organic processes as possible, while utilizing both government and contractor personnel in supporting the fleet to serve as a bridge capability until full organic logistics support was possible. This resulted in a tailored approach to new equipment fielding, concept of maintenance, and supply operations as described in the prior “extreme makeover section.” In parallel, the JPO created a host of logistics initiatives in order to execute the overall strategy.

Building capacity, as required of the industrial base to produce MRAP vehicles, was also necessary for the logisticians to field and sustain MRAP vehicles. At the peak of operations, the fielding and support strategy required 2,200 personnel in Iraq alone. To generate the human resources necessary, the program developed trainers, mechanics, Field Service Representatives (FSRs) and support personnel. In order to supply accompanying materiel to support the vehicles, the program identified spare parts, special tools, training devices and support equipment needs to procure and provide. At the core of all capacity building activities was contracting, the most challenging activity to keep up with the pace of current operations. Listed below are

some of the additional capacity building logistics initiatives and brief descriptions of function:

- MRAP University: Provided an efficient means to cross-train FSRs, depot mechanics and logistics assistance representatives prior to deployment.
- Logistics Demo: Rapidly converted COTS manuals into operational formats, documented field-level maintenance procedures and identified special tools
- Supply Chain Management Integrated Process Team: Defined and developed processes for use with organic systems, executes rapid NSN assignment, STAMIS logic and software modifications
- Rapid Fielding Task Force: Micromanaged and executed initial fieldings
- Transportation Coordination Cell: Group of JPO LNOs located at every transportation node with TRANSCOM and CENTCOM Deployment, Distribution, and Operations Center (CDDOC)
- JPO Operations Center: Distributed coordination cell that synchronized planning and execution of operations throughout the JPO Enterprise in CONUS and in theater.

Maturation

The initial program requirement of 1,185 vehicles has expanded to today's requirement of 25,700 MRAP vehicles operating in two distinct theaters. The MRAP Family of Vehicles (FoV) now includes four categories of vehicles to support forces operating in flat terrain and improved road systems in Iraq and the primitive road system and mountainous terrain of Afghanistan. The initiatives from early program beginnings discussed in this paper continued to grow and mature to provide continuous support to joint forces. The JPO Team, with strong senior leader support and funding, managed an operation agile enough to deliver required capabilities such as EFP enhancements, re-mission vehicles from Iraq to Afghanistan, and acquire MRAP-All Terrain Vehicles to name a few.

The OSD MRAP Task Force decreased the frequency of meetings but utilized new senior level forums to synchronize critical program activity. Examples included the MRAP Absorption Tiger Team which was a GO/FO level team from U.S. Forces Afghanistan (USFOR-A), U.S. Transportation Command (USTRANSCOM), CENTCOM, the Joint Staff and other key organizations to provide weekly updates to the USD(AT&L) on accelerated MRAP deliveries in support of the force package build up in Afghanistan. To address logistics supply chain issues, the Assistant Secretary of Defense for Logistics and Materiel Readiness and Commanding General, Defense Logistics Agency co-hosted "MRAP Deep Dives" quarterly to examine the value stream for MRAP products from the factory to the battlefield with the JPO and senior logisticians in theater. While this level and amount of oversight is highly unlikely for most programs, in this case it proved essential to enabling rapid delivery of equipment and resolution of issues.

What Did We Learn

Examination of this MRAP case study demonstrates that our defense acquisition system can deliver responsive fulfillment of urgent operational need with the right support. To achieve this type of success, a program must have strong senior level support that is willing to commit necessary resources and unity of effort for the program to succeed. This must exist across the Defense Department to achieve a willingness to remove obstacles or tailor processes that are in the path of program. This was without question, the condition for the JMVP's procurement of MRAP vehicles, their fielding, modification, and sustainment activities to keep them in the fight.

This case study also shows the willingness by these same senior leaders to take reasonable risks in allowing the JMVP to move rapidly. The descriptions of the parallel actions the JMPV executed and decisions made to go forward with minimal testing by the MDA are far from the norm, in fact the concept of buying the complete acquisition objective with LRIP cannot be found in DoD policy. Although far from the norm, this program was not reckless by any means. The JPO and senior leaders converged on clear program objectives, centered on a set of mandatory minimum survivability requirements, produceability and price to satisfy an urgency of need rapidly. All JPO activities flowed from these objectives and Congress fully funded the program based on this same methodology.

Rapid acquisitions that deliver a 75 percent solution and then provide continuous product improvements create significant impacts on the total life cycle costs of a program. Historically, operating and sustainment costs make up the majority of a system's life cycle costs. In a recent study for the U.S. Air Force's Predator and Global Hawk UAV Programs, both capabilities rapidly fielded from the technical base under

Advanced Concept Technology Demonstration (ACTD) programs, the Rand Corporation examined the effects of rapid design and procurement realities on long-term support and operations.²³ The study claims that a system, regardless of operational capability must be either expendable (one time use) or maintainable. This can be done by keeping the cost of a capability low enough to keep it expendable, or designing the capability to be supportable and/or maintainable enough to make it reusable.²⁴ This is an important point as it pertains to MRAP vehicles because the long-term sustainment costs are unknown. As this case study points out, procurement decisions were made on survivability and produceability criteria, while reliability, maintainability, and availability testing was minimal. This point is not raised to question decisions to buy vehicles, rather to highlight an issue that will require the same level of senior level support expended to acquire the vehicles to help address the long-term sustainment issues that are coming.

Rapid acquisitions generate a large footprint for contractor support on the battle field. In Kuwait and Iraq, this was not a problem on most forward operating bases however, achieving government oversight to the standards expected by the DoD Inspector General is challenging.²⁵ Decision makers must consider this in future operations where security conditions and infrastructure may not be permissive enough for this level of contractor support.

The Defense Science Board Task Force on Fulfillment of Urgent Operational Needs concluded that in any wartime situation, it is clear that the first priority is to develop and deliver solutions to the warfighter in order to reduce casualties and improve mission success. In many cases, urgent needs demanded that new capabilities or

technologies be envisioned, developed, manufactured and shipped to units in the field without any testing or training. Such an approach is, however, only effective if testing and training are done in parallel in an expedited fashion.²⁶ Although this conclusion supports the MRAP model for rapid delivery, it should also address the implementation of creative logistics support strategies in parallel to provide a more complete assessment in fulfilling urgent needs.

Conclusions

General David Petraeus, the Commanding General U.S. CENTCOM stated, “The MRAP has been phenomenal. What has been equally impressive is the breathtaking speed with which the MRAP has been fielded. I can’t recall in my lifetime a major program that went from conception to fielding in light speed the way the MRAP has, and it has been a tremendous asset...If given a choice, soldiers always choose to travel in an MRAP.”²⁷

The procurement of MRAP is a tremendous success story, providing life saving capability to the field in record time, presenting a rare good news story for the defense acquisition community. Senior Defense Department official’s actions to remove obstacles, provide resources, and provide overall support were essential to the program’s success. The real-time access to commanders and their staffs in the field to plan fielding and sustainment execution was a return on investment for the time spent with the JPO Forward team.

Does MRAP provide a model for acquisition reform? In order to address that question, this paper used the Mine Resistant Ambush Protected (MRAP) vehicle rapid acquisition as a case study to demonstrate what was done to acquire, field and sustain MRAP vehicles to satisfy an urgent need during wartime. Although the JMVP met all

statutory and most regulatory requirements in the Defense Acquisition System, MRAP does not provide a model for acquisition reform. The amount of effort and risk acceptance required for this program would not be sustainable or affordable for normal programs and therefore is not suited for global application. In addition, force planners now struggle in the Army to build a strategy that integrates the finite number of multiple MRAP vehicle variants into the force structure post conflict and to understand all of the impacts to the defense enterprise that follow. Under the current acquisition model, concepts for training, identification or modification to military occupation specialties, facilities requirements, depot maintenance support plans, and all the other support requirements are planned and approved before buying equipment. Many of these tasks are not suitable to begin after an acquisition is made and in several cases will cost much more to execute after the fact.

Dr. Jacques Gansler, Chairman of The Defense Science Board Task Force on the Fulfillment of Urgent Operational Needs (and former USD(AT&L)) concludes that the Secretary of Defense should formalize a dual acquisition path that separates “rapid” and “deliberate” acquisitions...rapid for mature technologies delivering in less than 24 months...deliberate for complex needs that require a development effort.”²⁸ Some argue that the MRAP program operated outside the normal defense acquisition system. This case study does not support that argument, but clearly shows the extraordinary effort by the Defense Department to tailor processes and manage the program were required. The JMVP was one of several programs examined by the Defense Science Board in formulating this recommendation. Although MRAP does not provide a model for

acquisition reform, the program highlights areas where reform is needed. Perhaps the dual-path for rapid acquisitions that Dr. Gansler suggests is a good starting point.

Endnotes

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