



*Project paper*

## **Mine Resistant Ambush Protected Vehicle (MRAP) Program and the DoD AT&L Reform Policy**

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**Abstract-** This report assesses the compliance of the Mine-Resistant Ambush-Protected (MRAP) vehicle program of the US DoD with the Reform Policy declared with the issuance of a guidance memorandum by Under Secretary of Defense for Acquisition, Technology and Logistics (DoD AT&L) in 2010. A thorough evaluation of the program reveals that the MRAP program displayed successful examples at achieving reform objectives such as making time a key parameter, incentivizing productivity and innovation in the industry, and reducing non-productive processes and bureaucracy. However, some practices are subject to criticism such as failures in mandating affordability as a requirement, eliminating redundancy within warfighter portfolios, limiting the use of time-and-materials contracts and promoting real competition for services.

**Keywords-** Mine-Resistant Ambush-Protected (MRAP) program; acquisition reform; rapid acquisition, tailored acquisition

### **1. Introduction**

The purpose of this project is to research and analyze the impact of the application of DoD AT&L Reform policy in the context of the Mine-Resistant Ambush-Protected (MRAP) vehicle program.

The resources used for this project include federal and agency regulations, GAO, DOD IG and CRS reports and media sources.

The approach taken in aligning the program facts with the reform measures has two sides. First, identifying program actions that align with the reform measures would help the MRAP program serve as an example for similar cases. Second, identifying program failures would help taking appropriate reform measures retroactively for future programs in a lessons learned mechanism.

The reasons why MRAP program is chosen as a case for this project are its size, its importance as being DoD's number one acquisition priority (Feickert, 2007) and its richness in material from an Acquisition Reform standpoint.

### **2. Program Background**

#### *2.1. Mission*

The MRAP vehicles are specifically designed for providing armor protection to warfighters against IED and ambush threats which accounted for the 75 percent of casualties in Iraq and Afghanistan theatres (Sullivan, 2009).

#### *2.2. Background*

In 2007, the DoD initiated the MRAP program to replace most up-armored High Mobility Multipurpose Wheeled Vehicles (HMMWVs) in Iraq with Mine-Resistant, Ambush-Protected (MRAP) vehicles (Feickert, 2007). MRAPs are known to have a V-shaped armored hull and a thick armor plating that protects the crew against the effects, particularly of roadside land mines and improvised explosive devices (IEDs). Initially, DOD had approved the acquisition plan of 25,700 vehicles, of which 8,100 were "the newer Military-All-Terrain Vehicle (M-ATV) version, designed to

meet the challenges of Afghanistan's rugged terrain" (Feickert, 2011). DOD officials had indicated that this total could be increased depending on operational needs in Afghanistan. In fact, the program ended up with the fielding of 27,740 vehicles 870 of which have been sold to foreign militaries and another 700 being on order for allies (Sisk, 2012). The Army officials had said that Army would begin development of a different version of the MRAP—the "Ultra-Lite MRAP"—which raised questions about possible future redundancies. The Marines, although stating endorsement for the M-ATV program, reequipped a number of MRAPs with enhanced suspension systems and reportedly are satisfied with the outcome. The claimed success of this step raised the question of not only if the Marines need all of the M-ATVs planned for them by DOD but also if the Marines' new suspension system might also be a more preferable alternative for the other services as well.

### 2.3. Requirements

The basic expected specifications from an MRAP vehicle are as follows: (Blakeman et al., 2008)

- Gas: Diesel (JP-8).
- Transmission: Automatic, 4WD.
- Passenger capacity: Four to eight passengers + driver + vehicle commander.
- Air conditioning: Heating and cooling, NBC over-pressure and filter protection.
- Hard-bottom fording depth (min.): 36 inches.
- Tires: Run-flat, central tire inflation system.
- Airlift: Transportable by C-17 Starlifter and the C-5 Galaxy transport aircraft.
- Protection: V-shaped hull, heavy armor encapsulating the crew and passenger compartments.
- Driver vision: All-around coverage, multi-strike resistant glass.

### 2.4. Funding

Thanks to the high congressional and public support to the program with the expectation of decreasing casualties due to the IED threat, funding had never been an issue for the MRAP

program initially. Below are the MRAP funding until program closure, in billions: (Feickert, 2011)

- FY 2006 and prior: \$0.173
- FY 2007: \$5.411
- FY2008: \$16.838
- FY2009: \$6.243
- FY2010: \$7.404
- FY2011: \$7.307 (OSD, 2011)
- FY2012: \$3.195 requested (OSD,2011)

In FY2010, Congress appropriated \$34.95 billion for the acquisition of all MRAP versions. DOD transferred an additional amount of \$3.9 billion from the Overseas Contingency Operations fund for MRAP procurement in March 2010. Another \$1.2 billion in the FY2010 Supplemental Appropriations Act was approved by Congress for MRAP procurement. The cumulative FY2011 DOD budget request for the MRAP Vehicle Fund was \$3.4 billion and it was authorized by the Ike Skelton National Defense Authorization Act for FY2011. "The Senate Appropriations Committee approved the \$3.4 billion budget request, and the House Appropriations Committee has not yet released its report" (Feickert, 2011).

### 2.5. Current Program Process

After the fielding of first MRAP vehicles, another mission need was defined by the users: off-road and all-terrain capability with a reduced weight. Consequently, the new MRAP-All Terrain Vehicles (M-ATV) variant was introduced to satisfy the need of better traffic ability on the rugged Afghani terrain (Sanchez, 2009). Through FY2012, the total program costs reached about \$47.3 billion. As being the DoD's largest program in 2011, MRAP program was able to ensure the production of 27,740 vehicles and is estimated to have saved about 40,000 lives while being criticized for its high cost compared to more affordable vehicles of similar kind such as Humvees. (Tadjdeh, 2012). On 1 October 2012, the DoD announced the ending of the acquisition program (Sisk, 2012).

## 3. Analysis

### 3.1. Reform Issues – Good Practice

### 3.1.1. *Incentivize Productivity & Innovation in Industry* (Carter, 2010a)

The MRAP acquisition strategy pursued three primary program objectives: fielding survivable, mission capable MRAP vehicles, doing so as rapidly as possible and growing the industrial base simultaneously (Blakeman et al., 2008). The MRAP Joint Program Office (JPO) started by awarding a sole-source contract to FPII and leveraging its existing, active production line for the proven Cougar variant of the firm. The JPO simultaneously released a RFP to industry in order to get as many offers as possible and mobilize the industrial base. The fact that different designs would be accepted as long as they met the requirements encouraged innovation. After JPO received bids from ten manufacturers, it assigned different risk levels to them and their designs which resulted from technical reviews. Nine out of ten were awarded IDIQ contracts for immediate production of test vehicles. The five lowest risk manufacturers were also given Low Rate Initial Production (LRIP) orders with greater quantities. Moreover, JPO offered a \$100,000 incentive per vehicle for early delivery of test vehicles to motivate the industry. Contractors were also informed that follow-on production orders would be awarded to “those vendors with the highest production capability combined with proven survivability and performance assessment from government testing –those who could provide “the fastest and the mostest” would gain priority for production funding” (Miller, 2010). This approach was proven successful by the outcome of aggressive industry respond with high internal capital investment at risk along with teaming and partnerships among industry in order to expand the production capability in the shortest term possible.

### 3.1.2. *Make Time a Key Performance Parameter* (Carter, 2010a)

Due to the urgency of the need to field as many MRAPs to the Iraq and Afghanistan theatres as possible, time was definitely regarded as a key performance parameter within the MRAP program. As described above, fast delivery of vehicles were incentivized.

### 3.1.3. *Reduce Non-Productive Processes and Bureaucracy*

Upon announcing the MRAP as the highest priority program in DoD in May 2007 (Feickert, 2007), Secretary of Defense Robert Gates established an MRAP task force in order to integrate Army and Marines’ MRAP acquisition. “An unspoken reason behind establishing the task force was to bypass the normal Pentagon acquisition bureaucracy, which Gates viewed as too slow to react to urgent war requirements” (Miller, 2010).

The MRAP program is also known to be one of the best examples of both what is known as “Rapid Defense Acquisitions” and “Tailored Acquisition Strategy”. One of the most characteristic features of the MRAP acquisition strategy was concurrency. For example, normally sequential phases such as developmental testing, operational testing, production, integration, fielding, disposal and requirements refining were all simultaneously at some point of the program. Some procurement actions were taken prior to approval of an Acquisition Program Baseline Agreement (APBA) (Blakeman et al., 2008). The rapid acquisition efforts came along with the risk associated with the chance of rework or fielding a non-sustainable vehicle. For example, the PM assumed a significant risk by awarding production orders prior to threshold and user testing.

### 3.2. *Reform Issues – Bad Practice*

#### 3.2.1. *Mandate Affordability as a Requirement* (Carter, 2010b)

The initial launch of the program was not adequately discussed in terms of affordability due to the widely accepted urgency of the need and the cost of not satisfying it in casualties. However, the acquisition of different variants of different vehicle from multiple vendors is expected to complicate maintenance and support of the vehicles in the future. The contract did not mandate vehicle component commonality among vehicle types. As a result, the total life cycle cost of the vehicles will remain under the pressure of long-term sustainment costs. Moreover, the effect of evolving

threat is expected to put the MRAP vehicles under continuous upgrades which will, again, contribute to the life-cycle cost of the vehicles. These facts are likely to cause more solid budgetary pressures in the future when they turn into reality from assumptions.

### 3.2.2. *Limit the use of time and materials and award fee contracts for services* (Carter, 2010a)

In 2009, The Army TACOM Contracting Center (TCC) awarded a sole-source time-and-materials contract to TJ FIG for instructional services (Inspector General, U.S. DoD, 2011). TCC officials stated that the work performed under the contract could not be established in advance due to the fact that the number of vehicles and soldiers involved in the training was too difficult to predict. However, TJ FIG had been providing the same type of services as a subcontractor to FPII under firm-fixed-price contract line item numbers (CLINs) for 17 months. DOD IG criticized the use of high-risk time-and-materials contract in such a case where knowledge obtained from previous subcontract could have been used to determine the parameters of the work in advance.

### 3.2.3. *Promote Real Competition* (Carter, 2010a)

The fact that there were several variants of the MRAP vehicles manufactured by five different contractors resulted in a high reliance on civilian contracted instructors for the in-theater-training of the users in Afghanistan and Iraq. Although the contacts for the vehicles themselves were highly competitive with the exception of justifiable sole-source award to FPII for immediate utilization of their active production lines, DOD IG criticized the awarding of a sole-source time-and-material contract for Instructor Services at \$55.5 million, stating that “a competitive, fixed price contract was a better alternative” (Inspector General, U.S. DoD, 2011). DOD IG found the use of urgent and compelling need to circumvent competition inappropriate for this case.

### 3.2.4. *Eliminate Redundancy within Warfighter Portfolios* (Carter, 2010a)

As described above, the early variants of the MRAP vehicles were considered wide and heavy for use in the rugged Afghanistan terrain. As a consequence, many older MRAPs were reported to be out of use due to their limited efficiency (Feickert, 2011). This is a negative consequence of the rapid acquisition strategy used to field as many MRAPs as possible to the theater even without performing thorough user tests. Pentagon has been loaning some of the idle MRAPs to other coalition partners to partially recover the cost of this current redundancy. However, the decision of whether to leave the vehicles in Afghanistan after the eventual departure or to consider a better use of them after bringing back is not made yet.

## 3.3. *Stakeholders' Perspectives*

### 3.3.1. *Program*

Initially, time was the number one priority for the program office. The MRAP JPO assumed high risk to rapidly field as many vehicles as possible. Overall, most steps taken by the JPO was in comply with the essence of the Acquisition Reform, particularly in terms of reducing bureaucracy, incentivizing productivity and innovation in the industry and promoting competition. However, there were associated side effects of the high risk assumed such as procurement of some vehicles that were not able to field, therefore increasing redundancy.

### 3.3.2. *Congressional*

Congress played a supportive role in the MRAP program. Funds were authorized with no significant debate and decisions of the DoD were usually backed up.

### 3.3.3. *General public*

The key driver of the congressional support was the general public opinion that the U.S. soldiers immediately needed MRAP vehicles to avoid casualties from increasing IED threat. General public did not keep a questioning oversight on the program even at the hardest times of U.S. history from the budgetary perspective.

#### 4. Conclusion

This report can potentially contribute to acquisition literature in two ways. First, identifying program actions that align with the reform measures would help the MRAP program serve as an example for similar cases. Second, identifying program failures would help taking appropriate reform measures retroactively for future programs in a lessons learned mechanism.

The MRAP program displayed successful examples at achieving reform objectives such as making time a key parameter, incentivizing productivity and innovation in the industry, and reducing non-productive processes and bureaucracy. However, some practices are subject to criticizing such as failures in mandating affordability as a requirement, eliminating redundancy within warfighter portfolios, limiting the use of time-and-materials contracts and promoting real competition for services.

Overall, we have the chance of having an objective and quantitative tool to inquire whether or not the program has yielded the expected outcomes for the MRAP case: the casualties due to IEDs. According to the reports, the answer is yes. Compared to HMMWVs 80% fatality rate, attacks against MRAP vehicles from January 2009 through the end of July 2010 resulted in 15% fatalities. The estimated reduction in overall casualties attributed to the fielding of MRAPs over that period is 30% (Feickert, 2011). As a result, the MRAP program has been achieving its initially intended purpose. Yet, the cost-benefit analysis of this outcome is subject to further research.

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