



# Mine-Resistant, Ambush-Protected (MRAP) Vehicles: Background and Issues for Congress

**Andrew Feickert**  
Specialist in Military Ground Forces

January 18, 2011

Congressional Research Service

7-5700

[www.crs.gov](http://www.crs.gov)

RS22707

## Summary

Congress has played a central role in the MRAP program by suggesting to defense and service officials that MRAPs would provide far superior protection for troops than did the up-armored High Mobility, Multi-Wheeled Vehicles (HMMWVs). Congressional support for MRAPs, as well as fully funding the program, has been credited with getting these vehicles to Iraq and Afghanistan in a relatively short timeframe, thereby helping to reduce casualties. Congress may likely continue to be interested in the MRAP program to ensure that the appropriate types and numbers of these vehicles are fielded, as well as to monitor the post-conflict disposition of these vehicles, as they represent a significant investment.

In 2007, the Department of Defense (DOD) launched a major procurement initiative to replace most up-armored HMMWVs in Iraq with Mine-Resistant, Ambush-Protected (MRAP) vehicles. MRAPs have been described as providing significantly more protection against Improvised Explosive Devices (IEDs) than up-armored HMMWVs. Currently, DOD has approved an acquisition objective of 25,700 vehicles, of which 8,100 are the newer Military-All-Terrain Vehicle (M-ATV) version, designed to meet the challenges of Afghanistan's rugged terrain. DOD officials have indicated that this total may be increased depending on operational needs in Afghanistan. DOD reports that as of January 6, 2011, 13,624 MRAPs had been delivered to Afghanistan, including more than 6,500 M-ATVs. The Army has recently said that it will begin development of yet another MRAP version—the “Ultra-Lite MRAP”—which raises questions about possible vehicle redundancies. The Marines, although voicing support for the M-ATV program, have retrofitted a number of MRAPs with new suspension systems and reportedly are satisfied with the results. This apparent success calls into question not only if the Marines need all of the M-ATVs allocated to them by DOD but also if the Marines' retrofitted suspension system might be a more cost-effective alternative for the other services.

Through FY2010, Congress appropriated \$34.95 billion for all versions of the MRAP. In March 2010, DOD reprogrammed an additional \$3.9 billion from the Overseas Contingency Operations fund to MRAP procurement. Congress approved an additional \$1.2 billion for MRAP procurement, included in the FY2010 Supplemental Appropriations Act (P.L. 111-212). The full FY2011 DOD budget request of \$3.4 billion for the MRAP Vehicle Fund has been authorized by the Ike Skelton National Defense Authorization Act for FY2011 (P.L. 111-383).

Among potential issues for congressional consideration are the status of older, unused MRAPs in Afghanistan that are reportedly not being used because of their size and weight; possible redundancies with the MRAP, M-ATV, and the Joint Light Tactical Vehicle (JLTV) programs; and actual Marine M-ATV requirements.

## **Contents**

Background .....	1
DOD’s MRAP Requirement .....	1
MRAPs Deployment and Disposition .....	1
MRAPS Credited with Reducing IED Deaths in Afghanistan.....	2
A New MRAP Version for Afghanistan: The M-ATV .....	2
Marines May Not Want All of the M-ATVs Allocated to Them.....	3
Status of M-ATV Effort.....	3
MRAP Funding.....	3
Potential Issues for Congress.....	4
Status of Unused MRAPs in Afghanistan.....	4
Are the M-ATV, Ultra-Lite MRAP, and JLTV Redundant Programs? .....	4
The Marines and the M-ATV.....	5

## **Contacts**

Author Contact Information .....	5
----------------------------------	---

## Background

Mine-Resistant, Ambush-Protected (MRAP) vehicles are a family of vehicles produced by a variety of domestic and international companies. They generally incorporate a “V”-shaped hull and armor plating designed to provide protection against mines and improvised explosive devices (IEDs). DOD originally intended to procure three types of MRAPs.<sup>1</sup> These included Category I vehicles, capable of carrying up to 7 personnel and intended for urban operations; Category II vehicles, capable of carrying up to 11 personnel and intended for a variety of missions such as supporting security, convoy escort, troop or cargo transport, medical, explosive ordnance disposal, or combat engineer operations; and Category III vehicles, intended to be used primarily to clear mines and IEDs, capable of carrying up to 13 personnel. The Army and Marines first employed MRAPs in limited numbers in Iraq and Afghanistan in 2003, primarily for route clearance and explosive ordnance disposal (EOD) operations. These route clearance MRAPs quickly gained a reputation for providing superior protection for their crews, and some suggested that MRAPs might be a better alternative for transporting troops in combat than up-armored HMMWVs. DOD officials have stated that the casualty rate for MRAPs is 6%, making it “the most survivable vehicle we have in our arsenal.” By comparison, the M-1 Abrams main battle tank was said to have a casualty rate of 15%, and the up-armored HMMWV, a 22% casualty rate.<sup>2</sup>

### DOD’s MRAP Requirement<sup>3</sup>

Ashton Carter, Under Secretary of Defense for Acquisition, Technology, and Logistics, has approved an acquisition objective<sup>4</sup> of 25,700 MRAP vehicles for all services. Of this total, 8,100 will be the new MRAP-All Terrain Vehicle (M-ATV) designed to better handle the rugged terrain of Afghanistan. DOD officials have indicated that this requirement may increase depending upon the operational needs in Afghanistan. Reports in September 2010 suggested that DOD was actively discussing a new follow-on contract for additional M-ATVs over and above the original 8,100 and that new variants might also be developed.<sup>5</sup>

### MRAPs Deployment and Disposition

According to DOD, as of January 6, 2011, 13,624 MRAPs had been delivered to Afghanistan, including more than 6,500 M-ATVs.<sup>6</sup> Reports suggest that many of the older model MRAPs deployed to Afghanistan are not used, as they are considered too large and bulky for tactical missions.<sup>7</sup>

---

<sup>1</sup> U.S. Government Accountability Office (GAO) Report, Subject: Rapid Acquisition of Mine Resistant Ambush Protected Vehicles, July 15, 2008.

<sup>2</sup> Information in this section is taken from DOD Press Transcripts, “DOD News Briefing with Geoff Morrell,” May 15, 2008.

<sup>3</sup> “DOD Spends Nearly \$1.1 Billion on More MRAPs,” *Inside the Army*, February 22, 2010.

<sup>4</sup> An acquisition objective is a Department of Defense approved total number of vehicles/systems/items of equipment that are to be produced as part of a program.

<sup>5</sup> Tony Bertuca, “M-ATV Follow-On Contract, New Variants Under Discussion,” *InsideDefense.com*, September 22, 2010.

<sup>6</sup> Information provided to CRS by DOD on January 10, 2011.

<sup>7</sup> Tony Bertuca, “Officials Look to Future of MRAPs as M-ATVs Are Deployed to Afghanistan,” *InsideDefense.com*, (continued...)

As U.S. forces began drawing down in Iraq, the Army and Marines had planned to put the majority of the earlier versions of the MRAPs into prepositioned stocks at various overseas locations, ship a number back to the United States for training, and place a number into logistics and route clearance units. However, with the increase of U.S. forces deploying to Afghanistan and Secretary of Defense requirements to make better use of MRAPs, these plans have been adjusted. Currently, of the almost 15,000 Army MRAPs, according to a June 2010 Army briefing, about 5,750 will be assigned to infantry brigade combat teams, 1,700 to heavy brigade combat teams, and about 165 to Stryker brigades.<sup>8</sup> Support units will be assigned about 5,350 vehicles, about 1,000 MRAPs will be used for home station and institutional training, and approximately 1,000 MRAPs will be assigned to war reserve stocks and be used to replace damaged or destroyed MRAPs.<sup>9</sup> The Marines are reportedly still developing their ground vehicle strategy and have previously suggested that MRAPs have deployability limitations under the concept of a sea-based, expeditionary Marine force.<sup>10</sup>

In June 2010, DOD announced that it would shift about \$20 million into Army research accounts to develop an “ultra-lite prototype” MRAP.<sup>11</sup> If successful, an ultra-lite MRAP version could undermine DOD’s Joint Light Tactical Vehicle (JLTV)<sup>12</sup> program, which could be worth tens of billions of dollars and is intended to replace the HMMWV.

## **MRAPS Credited with Reducing IED Deaths in Afghanistan<sup>13</sup>**

Reports maintain that MRAPs have significantly reduced troop deaths from roadside bombings in Afghanistan even as insurgents have stepped up their use of IEDs against coalition forces. Military officials note that almost 80% of roadside attacks against HMMWVs from January 2009 through the end of July 2010 killed vehicle occupants. Attacks against MRAP vehicles during that same period resulted in 15% fatalities. Military officials estimate that MRAPs have reduced injuries and deaths over that period by 30%, perhaps saving dozens of lives each month.

## **A New MRAP Version for Afghanistan: The M-ATV**

In the summer of 2008, DOD began to examine the possibility of developing and procuring a lighter-weight, all-terrain capable MRAP variant to address the poor roads and extreme terrain of Afghanistan. This new vehicle—designated the MRAP-All-Terrain Vehicle (M-ATV)—weighs 12

---

(...continued)

June 28, 2010.

<sup>8</sup> Information in this section is taken from an Army Briefing given to CRS, “Operational Adaptability Through Affordable Force Modernization,” June 17, 2010.

<sup>9</sup> Ibid.

<sup>10</sup> Kate Brannen, “Mobility vs. Survivability,” *Defense News*, June 7, 2010.

<sup>11</sup> Jason Sherman, “DOD Boosts Army FY-10 Research Accounts in Bid to Develop “Ultra-Lite” MRAP Prototype,” *InsideDefense.com*, July 6, 2010.

<sup>12</sup> For information on the JLTV see CRS Report RS22942, *Joint Light Tactical Vehicle (JLTV): Background and Issues for Congress*, by Andrew Feickert.

<sup>13</sup> Information in this section is taken from Vanden Brook, “Armored Vehicles Cut IED Deaths,” *USA Today*, September 7, 2010.

tons (as opposed to the 14 to 24 tons of the earlier MRAP variants) and has better off-road mobility, while providing adequate armor protection.<sup>14</sup>

## **Marines May Not Want All of the M-ATVs Allocated to Them<sup>15</sup>**

Marine Corps leadership has indicated that they are not willing to wait for M-ATVs and have instead taken measures to retro-fit Category I and II MRAPs that they already have with a new suspension system at a fraction of the cost of newer M-ATVs. The Marines are apparently satisfied with the performance of these retro-fitted MRAPs and are considering procuring fewer M-ATVs as a result. The Marines have said that “we’re going to get it [retrofitted MRAPs] there faster than waiting for the development of the MRAP series designated for Afghan use [M-ATVs] and we’re going to do it at a fraction of the price.”<sup>16</sup> Because of the Marines’ statements regarding their acquisition of M-ATVs, the recent JROC allocation of M-ATVs might not accurately represent actual Marine Corps needs.

## **Status of M-ATV Effort**

In January 2009, Navistar, a Force Protection and Michigan-based General Dynamics Land Systems (GDLS) team, Oshkosh, General Dynamics Land Systems-Canada (GDLS-C), and BAE Systems were said to have submitted written bids and armor samples. In late February 2009, prototypes were delivered to Aberdeen Proving Grounds for evaluation with a contract award scheduled for June 2009. On March 30, 2009, Navistar filed a protest citing an “unspecified technicality in the government’s evaluation of its proposal” and GDLS-C announced that they were dropping out of the M-ATV competition.<sup>17</sup> Navistar withdrew its protest in early April after the contract was amended by program officials, and sole-source contracts have since been awarded to Oshkosh Defense. Oshkosh was awarded \$1 billion to develop up to 10,000 M-ATVs.<sup>18</sup>

## **MRAP Funding**

Prior year MRAP funding, including wartime supplemental and reprogramming, in billions:

- FY2006 and prior: \$0.173
- FY2007: \$5.411
- FY2008: \$16.838
- FY2009: \$6.243

---

<sup>14</sup> “M-ATV: MRAP All-Terrain Vehicle,” Oshkosh Defense, August 2009.

<sup>15</sup> Emelie Rutherford, “Conway: Marine Corps May Buy Limited Number of M-ATVs,” *Defense Daily*, June 3, 2009, and Bettina H. Chavanne, “U.S. Marine Corps Reconsiders JLTV,” *Aerospace Daily & Defense Report*, April 30, 2009.

<sup>16</sup> Michael Bruno, “U.S. Marine Commandant Promises Osprey, MRAP Developments,” *Aerospace Daily & Defense Report*, June 12, 2009.

<sup>17</sup> Marjorie Censer, “Navistar Files Protest in MRAP ATV Competition; GDLS-C Out,” *InsideDefense.com*, April 2, 2009.

<sup>18</sup> Dan Lamothe, “Engine, Door-Handle Problems Continue to Plague M-ATVs,” *Marine Corps Times*, May 31, 2010, p. 20.

- FY2010: \$6.281
- TOTAL: \$34.946

Through FY2010, Congress appropriated \$34.95 billion for all versions of the MRAP. In March 2010, DOD reprogrammed an additional \$3.9 billion from the Overseas Contingency Operations fund to MRAP procurement. Congress approved an additional \$1.2 billion for MRAP procurement included in the FY2010 Supplemental Appropriations Act (P.L. 111-212). The full FY2011 DOD budget request of \$3.4 billion for the MRAP Vehicle Fund has been authorized by the Ike Skelton National Defense Authorization Act for FY2011 (P.L. 111-383). The Senate Appropriations Committee approved the \$3.4 billion budget request (S.Rept. 111-295), and the House Appropriations Committee has not yet released its report.

## Potential Issues for Congress

### Status of Unused MRAPs in Afghanistan

As previously noted, many older MRAPs shipped to Afghanistan are reportedly not being used because their size and weight severely limit their effectiveness.<sup>19</sup> If a large number of MRAPs are, in fact, not being used then a fundamental question is, why were they shipped to Afghanistan in the first place? Were these vehicles shipped to Afghanistan, as some say, for symbolic as opposed to operational reasons and, if so, what is the total cost for these unused vehicles to be shipped and maintained in theater? If these vehicles are not being used, is there a better use for them elsewhere or are they to be left in country after the eventual departure of U.S. forces?

It was reported in December 2010 that Pentagon has agreed to loan 300 MRAPs in Afghanistan for one year to 15 allied nations currently fighting in Afghanistan.<sup>20</sup> Approximately 85 MRAPs are already out on loan to Poland, Romania, Georgia, and the Czech Republic. All countries that are loaned MRAPs can request an extension on the loan and the borrowing countries are responsible for the costs associated with maintaining these vehicles. Loaning unused MRAPs to coalition partners could not only help to reduce allied casualties but can also help to recoup some of the associated procurement costs of these vehicles.

### Are the M-ATV, Ultra-Lite MRAP, and JLTV Redundant Programs?

In August 2009 briefings to the House Armed Services Committee Air and Land Forces, and Seapower and Expeditionary Forces Subcommittees, the Government Accountability Office (GAO) noted that “the introduction of MRAP, M-ATV and eventually the JLTV creates a potential risk of unplanned overlap in capabilities; a risk that needs to be managed.”<sup>21</sup> Defense officials have also been asked if there is a need for the MRAP/M-ATV and JLTV programs, as

---

<sup>19</sup> Tony Bertuca, “Officials Look to Future of MRAPs as M-ATVs Are Deployed to Afghanistan,” *InsideDefense.com*, June 28, 2010.

<sup>20</sup> Tony Bertuca, “Pentagon Loaning 300 MRAPs to 15 Coalition Partners in Afghanistan,” *InsideDefense.com*, December 20, 2010.

<sup>21</sup> GAO Briefing to the House Armed Services Committee Air and Land Forces, and Seapower and Expeditionary Forces Subcommittees, “Status of DOD Tactical Wheeled Vehicle Strategy,” August 13, 2009, p. 3.

these programs share as many as 250 requirements.<sup>22</sup> While DOD leadership notes that there are 450 additional requirements that the MRAPs and M-ATVs cannot meet, thereby justifying the JLTV program,<sup>23</sup> the Army's intent to develop a fourth type of vehicle—the Ultra-Lite MRAP—calls into question all four programs. Despite calls from Congress for DOD and the services to develop comprehensive tactical wheeled vehicle strategies, it appears that with the emergence of the Ultra-Lite MRAP initiative, there is no consensus on what types of vehicles are needed. If the services continue to look for “the next best thing” in terms of tactical wheeled vehicles instead of committing to the M-ATV and JLTV programs, they could run the risk of significant redundancies and not being able to afford recapitalizing and replacing the HMMWV fleet.

## **The Marines and the M-ATV**

The Marines appear to be aggressively pursuing the retrofitting of Category I and II MRAPs with an enhanced suspension system in lieu of a large-scale M-ATV acquisition. The Marines claim that this is also a more cost-effective approach (reportedly \$160,000 per vehicle<sup>24</sup>) to the operational need for lighter and more maneuverable MRAPs for Afghanistan. The Marines' approach raises a number of questions for possible consideration. What are the cost savings associated with the Marines' retrofitting effort? Given retrofitting, do the Marines require the JROC-mandated 1,565 M-ATVs, or do the Marines actually require fewer vehicles? Have the other services—particularly the Army—considered the Marine approach to retrofitting Class I and II MRAPs? If the other services have examined the Marines' approach and rejected it, what was their operational rationale for doing so?

## **Author Contact Information**

Andrew Feickert  
Specialist in Military Ground Forces  
afeickert@crs.loc.gov, 7-7673

---

<sup>22</sup> Cid Standifer, “Taylor: JLTV Absolutely Needed, Regardless of MRAP and M-ATV,” *Inside the Navy*, November 9, 2009.

<sup>23</sup> *Ibid.*

<sup>24</sup> Scott Calvert, “Aberdeen Tests Military's Cougar,” *Baltimore Sun*, July 12, 2009.