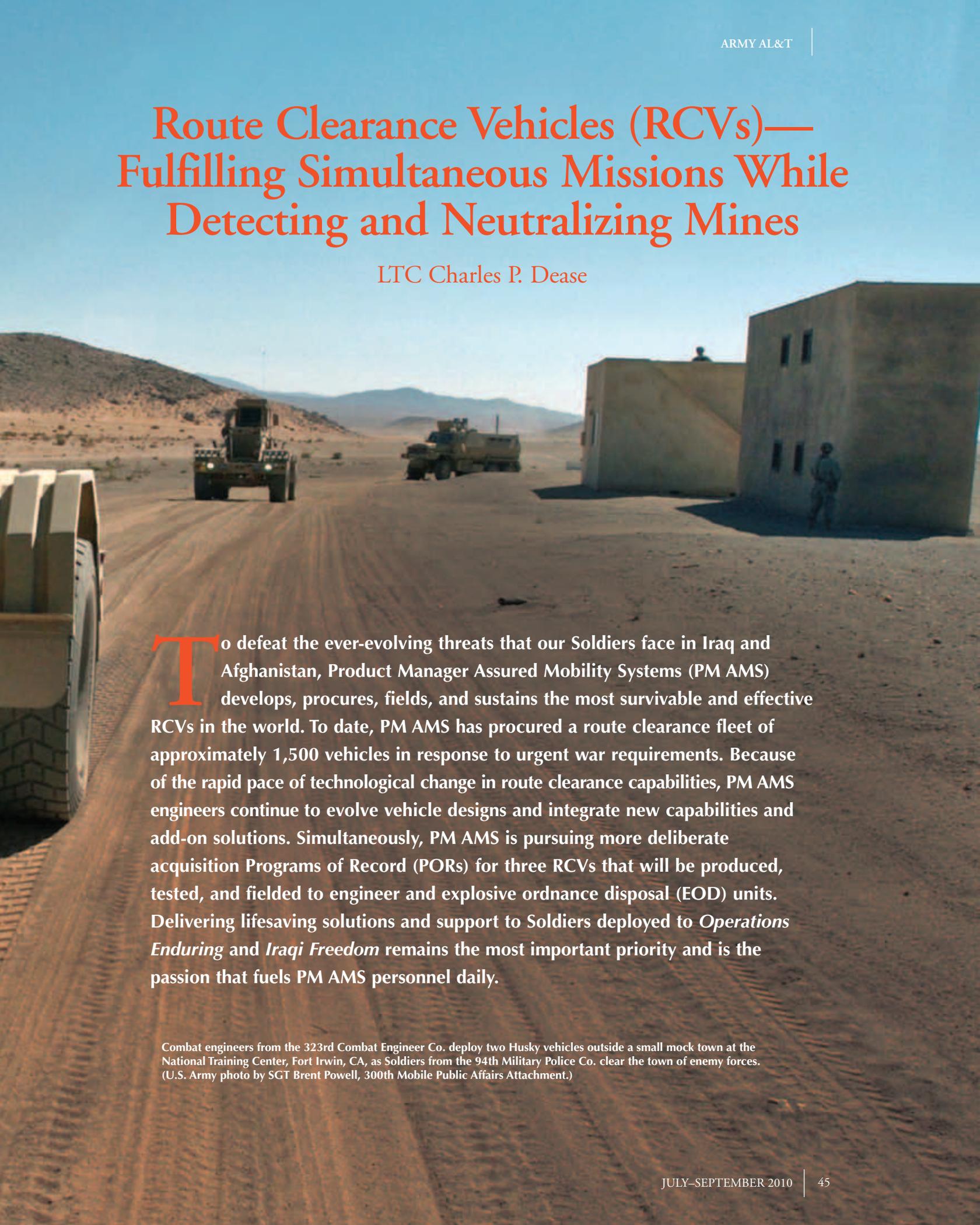




Route Clearance Vehicles (RCVs)— Fulfilling Simultaneous Missions While Detecting and Neutralizing Mines

LTC Charles P. Dease

A wide-angle photograph of a desert training area. In the foreground, the rear of a large military vehicle is visible on the left. A dirt road leads into the distance where two more military vehicles are parked. To the right, there are several simple, rectangular concrete buildings. A person in military uniform is standing near one of the buildings. The background shows rolling hills under a clear blue sky.

To defeat the ever-evolving threats that our Soldiers face in Iraq and Afghanistan, Product Manager Assured Mobility Systems (PM AMS) develops, procures, fields, and sustains the most survivable and effective RCVs in the world. To date, PM AMS has procured a route clearance fleet of approximately 1,500 vehicles in response to urgent war requirements. Because of the rapid pace of technological change in route clearance capabilities, PM AMS engineers continue to evolve vehicle designs and integrate new capabilities and add-on solutions. Simultaneously, PM AMS is pursuing more deliberate acquisition Programs of Record (PORs) for three RCVs that will be produced, tested, and fielded to engineer and explosive ordnance disposal (EOD) units. Delivering lifesaving solutions and support to Soldiers deployed to *Operations Enduring* and *Iraqi Freedom* remains the most important priority and is the passion that fuels PM AMS personnel daily.

Combat engineers from the 323rd Combat Engineer Co. deploy two Husky vehicles outside a small mock town at the National Training Center, Fort Irwin, CA, as Soldiers from the 94th Military Police Co. clear the town of enemy forces. (U.S. Army photo by SGT Brent Powell, 300th Mobile Public Affairs Attachment.)

Route Clearance an Urgent Need in Theater

As insurgencies took root in Iraq and Afghanistan, the use and lethality of mines and improvised explosive devices (IEDs) dramatically increased. Enemy employment tactics continue to evolve, and these explosive hazards have created an urgent need for RCVs, associated mine detection equipment, and other related capabilities to protect warfighters. PM AMS has always attempted to collaborate with other organizations, such as the Joint IED Defeat Organization, Army PM IED Defeat/Protect Force, and PM Countermine and EOD, while striving to field add-on capabilities.

In 2002, four Buffalo Mine Protected Clearance Vehicles were in operation clearing Bagram Airfield in Afghanistan. The vehicle's success at clearing mines made it the logical choice when IEDs emerged as a threat in Iraq. The Army rushed its sparse route clearance equipment to Iraq early in the war. To manage the work required to build a new automotive fleet, Dennis Haag, former Deputy PM AMS, led the effort in early 2005 to create the office that eventually became PM AMS under the Program Executive Office Combat Support and Combat Service Support.



The Panther is a command and control vehicle that is also designed to neutralize or defeat explosive hazards. (U.S. Army photo.)

Developing RCVs for Modern Threats

With a small, handpicked team, Haag set to work on the daunting task of developing new vehicles to meet urgent needs for route clearance capabilities in the midst of fighting two wars. The team often worked 16 hours a day, 6–7 days a week, to deliver capabilities to deployed Soldiers needing route clearance capabilities.

In December 2005, the PM AMS team repeatedly traveled to Iraq to see the vehicles, ask Soldiers how they were using them during operations, and take notes of Soldier responses. The Soldiers quickly realized that the PM AMS team could deliver a vehicle tailored to their requirements and fed them a stream of useful suggestions. Copious notes taken by Haag and his team were used to develop vehicles procured to support urgent war requirements and influenced POR vehicle requirements that were in development.

Significant Survivability Upgrades in Theater

PM AMS' initial fleet contained only a handful of vehicles, so deploying every newly procured vehicle was a priority to meet the growing theater need. As a result, PM AMS engineers designed, fabricated, and tested vehicle upgrade prototypes and rushed to equip the RCV fleet with crew survivability upgrades. These included improved seats and seat belts, fire suppression systems, gunner platforms,



An Army Buffalo, a specialized mine-clearing/anti-IED vehicle, conducts a route clearance mission. (U.S. Army photo by SGT Teddy Wade, 55th Signal Co.)

gunner restraint systems, objective gunner protection kits, mine/IED rollers, rocket-propelled grenade and explosively formed penetrator protection kits, transparent armor (glass), and remote weapon stations. They also integrated command, control, communications, computer, intelligence, surveillance, and reconnaissance upgrades, such as situational awareness cameras, light kits, driver's vision enhancement, and Blue Force Tracker, to increase RCVs' capabilities and effectiveness.

Sustainment in the Battlefield

The RCV fleet and its subsystems are new pieces of equipment fielded to theater to support Operational Needs Statement (ONS) requirements. The Army's logistics and sustainment infrastructure does not yet support the new equipment; therefore, to sustain the RCV fleet in theater, PM AMS covers the support gap with a refined Contractor Logistic Support (CLS) concept. CLS provides logistics, training, maintenance, and repair operations at a number of battlefield repair locations in Iraq and Afghanistan.

As requirements evolve, more Soldiers deploy to more locations, and the need for additional RCVs expands. This expansion, in concert with shifting

priorities from one theater to another, increases the organization's complexity. At present, PM AMS is responsible for life-cycle management of five different systems or vehicles and their variants, as follows:

- Husky Vehicle Mounted Mine Detection Systems—4 variants.
- Buffalo Mine Protected Clearance Vehicle—3 models.
- Panther Medium Mine Protected Vehicle—2 variants.
- Joint EOD Rapid Response Vehicle—2 variants.
- RG-31 Mine Protected Vehicle (Route Clearance Variant)—6 models.

While PM AMS continues supporting RCVs procured to support war requirements, it also works with U.S. Army Training and Doctrine Command proponents to develop the requirements for the three RCV systems: the Huskies, Buffalos, and Panthers. PM AMS has begun procuring and testing the three RCVs and has already fielded those that are POR-configured—albeit under urgent materiel release criteria—in support of current operations.

The Husky is extremely accurate in identifying a buried threat. It drives in front of convoys to detect suspected explosive hazards and marks them. The

Buffalo is a specialized mine-clearing/anti-IED vehicle equipped with a distinctive hydraulic arm that interrogates suspected explosive hazards and clears them when necessary. The Panther is a command and control vehicle that is also designed to neutralize or defeat explosive hazards when necessary. Equipped with PackBot or Talon robots, route clearance or EOD teams can remotely deploy and operate them from a workstation protected under armor inside the Panther.

Balancing ONS Requirements

As PM AMS continues to respond to ONS requirements, the organization has had to alter its schedules. In the midst of development or testing, ONS requirements continue to come in, requiring the organization to readjust accordingly. Originally, PM AMS' goal was to acquire and test all three vehicle systems at the same time and field the vehicles as a total package. However, this goal was modified to support operational needs and constantly changing requirements. One benefit to this revised goal is that problems within the ONS vehicles are being recognized and, in most cases, corrected before the vehicles are procured, tested, and fielded to Soldiers.

PM AMS' Objectives

As the pace and intensity of PM AMS' three acquisition POR efforts increases, PM AMS must continue to provide multifaceted war requirements support to Soldiers performing route clearance missions in Iraq and Afghanistan. For example, as the Army draws down in Iraq, PM AMS is supporting this mission by removing select RCVs from the Iraq theater as requirements decrease, while concurrently surging

route clearance and EOD vehicle assets into Afghanistan operations.

To acquire the number of RCV platforms needed to meet Army requirements in Afghanistan in a cost-effective manner, PM AMS initiated a harvesting program. The program removes ONS-procured RCVs and RG-33+ Mine Resistant Ambush Protected (MRAP) vehicles from operations. It then repairs and upgrades the RCVs to meet POR specifications and returns them to the RCV fleet. Additionally, PM AMS is simultaneously working to complete testing and all full materiel release requirements, which allows for fielding RCVs to units outside the two war theaters. The goal is to have all three programs begin fielding RCVs by 2011, a very aggressive schedule given all the requirements PM AMS must complete.

Though PM AMS' mission requirements are continually evolving to meet combatant commanders' needs and Army requirements, the organization's highest priority is providing deployed Soldiers with the lifesaving capabilities and support they need and deserve. The overarching goal is to balance the demands of fielding, repairing, and sustaining the RCV fleet. PM AMS' passion and commitment is to support warfighters and develop and integrate more effective equipment to detect and neutralize IEDs and other explosive threats.

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Army RG-31 MRAP vehicles are used on a mission to evaluate the progress of road construction. (U.S. Army photo by SGT Teddy Wade, 55th Signal Co.)