The Ground Combat Vehicle

by Darrell W. Barden

Lessons-learned from the current operating environment highlight that the current fleet of combat vehicles does not adequately counter the current threat, and the vehicles lack capabilities. Therefore, they do not perform the operational requirements of future warfighting concepts or threats effectively. The asymmetric environments of Operation Enduring Freedom and Operation Iraqi Freedom reveal capability gaps within the Army's current ground-combat fleet. Though an array of appliqués addresses these gaps to varying degrees, these solutions push Army combat vehicles to or past their size, weight and power limits.

In the Iraq conflict, for example, the Abrams, Bradley and Stryker received various modifications to make them more survivable in non-contiguous warfare. The modifications (and the mine-resistant, ambush-protected vehicles) resulted in more capability gaps to other functions like mobility, reliability and operational flexibility.

Moreover, the intent for the Infantry Fighting Vehicle variant is to mitigate the gap created by the Bradley IFV; it "breaks up squad integrity and does not provide for rapid egress and ingress of all the squad members with mission-essential equipment." The Ground Combat Vehicle requirement for Force Management-Soldier Capacity states that the vehicle must provide seating for 12. This number includes the three-man crew and a nine-man infantry squad with their organic weapons, personal protective equipment and mission-essential equipment.

The Ground Combat Vehicle intends to address these gaps for the 2017-2050 force. The first increment of the GCV effort is an IFV designed to provide the infantry squad with highly mobile and protected transport to the decisive locations on the battlefield. In addition, the IFV will provide both destructive fires against threat armored vehicles and direct-fire support for the squad during dismounted assaults. The new IFV also increases the infantry's tactical mobility, survivability and lethality against light and heavy armored threats.

The GCV program is presently in the first of a three-phase development effort: technology development. During TD, the GCV Project Management Office is executing a three-pronged acquisition strategy that uses contractor-developed, best-value designs, technical and operational studies of existing vehicle platforms and continued analysis of existing alternatives to assess GCV requirements against costs and schedule. Then the program will move into production.

In December 2010, as part of the assessment of existing vehicle platforms, the Maneuver Center of Excellence Maneuver Battle Lab and the U.S. Army Training and Doctrine Command's Analysis Center conducted an experiment with the GCV. The experiment determined if the requirement to carry a crew plus nine Soldiers provides enough operational advantages to retain the requirement in the GCV capabilities-development document.

The experiment considered two alternatives: a GCV with a seven-man carrying capacity and a GCV with a nine-man carrying capacity. The experimental design employed two mechanized-infantry platoons. One platoon consisted of soldiers from Company A, 1-29th Infantry Regiment – the TRADOC experimental force. The second platoon was a composite of Soldiers from the 121st, 48th Infantry Brigade Combat Team, Georgia Army National Guard. Data collection included direct assessment/observation of Soldiers conducting standard infantry missions and tasks, surveys, video capture of operations and end-of-mission after-action reviews. The assessment found that missions conducted with the nine-man capacity were more operationally effective than missions conducted with the seven-man capacity. This finding validated the GCV CDD nine-man capacity requirement.[1]

The Program Executive Office for Ground Combat Systems requested that the MCoE support these efforts, with specific emphasis on the operational assessments of select non-developmental combat vehicles (Israeli Namer, Swedish CV9035, double-V hull Stryker, turret-less Bradley and M2A3 Bradley). The insights and data from these assessments will inform the Milestone B AoA dynamic update, with specific uses in the modeling and simulation support to the AoA.

Over the past 12 months, the MBL coordinated the efforts of 14 organizations and conducted assessments on three continents to ensure the Army gets its GCV requirements right. The operational assessments were conducted in parallel with the technical analysis within the non-developmental vehicle Combat Vehicle Analysis Strategy to provide data to TRAC in support of the GCV dynamic AoA. There were two phases of operational assessment. The first phase focused on the Namer and took place in Israel Jan. 10-Feb. 9, 2012. The EXFOR received one week of new-equipment training before the OA and then began assessing the Namer to address gaps identified in the GCV initial-capabilities document as well as meet requirements in the draft GCV CDD within the host country.

The OA focused on vehicle attributes that address GCV requirements. The OA team conducted a front-end analysis to determine which CDD requirements (key performance parameter, key system attributes and additional system attributes) will most likely be impacted by the Namer's characteristics. The OA was designed to assess the Namer employed throughout the full range of military operations. The EXFOR employed the vehicle against a TRADOC Intelligence Support Agency-trained opposing force that reflected IFV-like projected threat.

Before Phase II, 15 EXFOR Soldiers, comprising five crews, deployed to Denmark March 5-30, 2012, for NET on the Royal Danish Army CV-9035 IFV. The training EXFOR crews received prepared them to operate the vehicle safely and proficiently during the May 2012 assessment at Fort Bliss, TX. The MBL and TRAC team conducted an analysis of Study Issue 1 (GCV CDD refinement) concurrent to the EXFOR conducting crew NET to inform the requirements for the GCV CDD and AoA. The EXFOR also received Stryker NET at home station April 9-20, 2012, to ensure their proficiency with that vehicle.

The second OA phase consisted of the EXFOR crews receiving CV-9035, Namer, Stryker DVH, turret-less Bradley and M2A3 Bradley refresher training before conducting the OA May 16-23, 2012, at Fort Bliss. Phase II was conducted at the platform level using static assessments and situation-training-exercise lanes. Data-collection efforts focused on quantitative data during the static assessments and qualitative data during the STX lanes. The Soldiers were engaged in multiple day and night operations with the five vehicles across open desert and urban terrain in dynamic, demanding scenarios. The evaluation for each

vehicle included durability, capacity, modularity, lethality, interior space and operational capability.

At Fort Bliss, the MBL led a Phase II session that was instrumental in informing Army leaders about eventual requirements for a new IFV to ensure mission success. The Army leadership will use the data collected from this assessment to determine what characteristics and capabilities best define what we want to see in a future IFV.

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Notes

[1] "GCV Soldier-Carrying Capacity Experiment Analytic Results Briefing" to MCoE commanding general, March 14, 2011.

Acronym Quick-Scan

AoA – analysis of alternatives
CDD – capabilities-development document
DVH – double-V hull
EXFOR – experimental force
GCV – Ground Combat Vehicle
IFV – Infantry Fighting Vehicle
MBL – Maneuver Battle Lab
MCoE – Maneuver Center of Excellence
NET – new-equipment training
OA – operational assessment
STX – situational-training exercise
TD – technology development
TRAC – TRADOC analysis center
TRADOC – (U.S. Army) Training and Doctrine Command

Figure 1. BAE Systems illustration of the Ground Combat Vehicle. *(Courtesy BAE Systems)*