



The Army's Ground Combat Vehicle (GCV) Program: Background and Issues for Congress

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Summary

In April 2009, then-Secretary of Defense Gates announced he intended to significantly restructure the Army's Future Combat System (FCS) program. The FCS was a multiyear, multibillion dollar program that had been underway since 2000 and was at the heart of the Army's transformation efforts. In lieu of the cancelled FCS manned ground vehicle (MGV), the Army was directed to develop a ground combat vehicle (GCV) that would be relevant across the entire spectrum of Army operations and would incorporate combat lessons from Iraq and Afghanistan.

The Army reissued a request for proposal (RFP) for the GCV on November 30, 2010, and plans to begin fielding the GCV by 2015-2017. On August 17, 2011, the GCV program was approved to enter the Technology Development Phase of the acquisition process, and a day later, the Army awarded two technology development contracts: \$439.7 million to the General Dynamics-led team and a second contract for \$449.9 million to the BAE Systems-Northrop Grumman team.

Starting in May and running through June 2012, the Army tested a number of foreign candidates during a Network Integration Exercise. This test informed the Army's Analysis of Alternatives (AoA), which is a requirement before the GCV program can progress to the next developmental phase. The AoA reportedly found no suitable existing, less expensive combat vehicles that could meet the Army's GCV requirements. In addition, the Army is said to be considering including an active protection system (APS)—perhaps the Israeli Trophy system—for inclusion on the GCV but past experiences in terms of technical feasibility and cost will likely play a factor in any decision to initially field the GCV with an APS capability. On January 16, 2013, the Department of Defense (DOD) initiated a series of major GCV program changes which, while slipping the program schedule to the right and going to a single competitor during Engineering and Manufacturing Development, could save over \$ 4 billion from FY2014 to FY2019.

The Administration's January 26, 2012, Major Budget Decision Briefing not only introduced a new Asia-Pacific strategic focus, but also delayed the GCV program for a year due to the SAIC-Boeing protest. While some might consider this a setback, it can also be viewed as an endorsement of the GCV program by the DOD. The FY2013 budget request for the GCV was \$639.874 million for Research, Development, Test and Evaluation (RDT&E), reflecting a one-year delay in the program and a \$1.7 billion program cut. The FY2013 National Defense Authorization Act fully funds the Administration's FY2013 GCV Budget Request. The enactment of sequestration and the adoption of a continuing resolution for FY2013 funded the GCV at the FY2013 request level but is subject to an unspecified percentage of reduction based on the sequester. The Administration's FY2014 GCV Budget Request was \$592.2 million in RDT&E funding.

Potential issues for Congress include the role and need for the GCV in a downsized Army that will likely have fewer armored brigade combat teams (ABCTs). The Administration's announcement of a strategic shift to the Asia-Pacific region presents questions as to the necessity for ABCTs and, by association, the GCV. DOD's January 16, 2013 GCV program changes might also have long-term overall program cost considerations as a result of "stretching out the program" as well as "less than efficient buy size." Congress might also consider the possibility that a Congressional Budget Office (CBO) report on GCV Alternatives might be revised using more current data provided by the Army. This report will be updated.

Contents

Introduction.....	1
GCV Program	1
Background: Secretary of Defense Gates's April 2009 FCS Restructuring Decision	1
The GCV Concept	2
The Initial GCV Request for Proposal (RFP).....	2
Army Ground Combat Vehicle Request for Proposal Released	3
Preliminary GCV Criticisms	3
Programmatic	3
Vehicle Weight	4
Reliance on Immature Technologies	5
Selected Program Activities.....	5
Potential GCV Vendors.....	5
Army Cancels the RFP	5
Why the RFP Was Cancelled.....	6
Revised GCV RFP Issued.....	6
Defense Industry Concerns with the Revised RFP.....	7
Defense Acquisition Board Approves GCV Entrance into Technology Development Phase.....	7
Army Awards Technology Development (TD) Contracts	8
SAIC-Boeing Team Files Protest Over GCV TD Contract Award.....	8
GAO Denies SAIC-Boeing Team Protest	8
Reported Reasons Why the SAIC-Boeing Team Was Not Selected	9
Current Program Activities	9
Analysis of Alternatives (AoA).....	9
Active Protection System (APS) and the GCV	10
Potential GCV Budgetary Issues	10
DOD Initiates Major GCV Program Changes	11
FY2013 Legislative Activity.....	12
January 26, 2012, Administration Major Budget Decision Briefing	12
FY2013 GCV Budget Request and Program Changes	12
FY2013 National Defense Authorization Act (NDAA) (H.R. 4310)	13
Enactment of Sequestration and a Continuing Resolution for FY2013.....	13
FY2014 Legislative Activity.....	13
FY2014 Budget Request.....	13
Congressional Budget Office (CBO) Report on GCV Alternatives.....	14
Criticisms of the CBO Study	15
Potential Issues for Congress.....	15
The GCV and a Downsized Army	15
DOD's Major Changes to the GCV Program and Overall Program Cost.....	16
Current GCV Data and CBO's GCV Alternatives Study.....	17

Tables

Table 1. Estimated Cost of CBO GCV Alternatives 14

Contacts

Author Contact Information..... 17

Introduction

In April 2009, then Secretary of Defense Robert Gates announced he intended to significantly restructure the Army's Future Combat System (FCS) program. The FCS was a multiyear, multibillion dollar program that had been underway since 2000 and was at the heart of the Army's transformation efforts. It was to be the Army's major research, development, and acquisition program, consisting of 18 manned and unmanned systems tied together by an extensive communications and information network.

Among other things, Secretary Gates recommended cancelling the manned ground vehicle (MGV) component of the FCS program, which was intended to field eight separate tracked combat vehicle variants built on a common chassis that would eventually replace combat vehicles such as the M-1 Abrams tank, the M-2 Bradley infantry fighting vehicle, and the M-109 Paladin self-propelled artillery system. As part of this restructuring, the Army was directed to develop a ground combat vehicle (GCV) that would be relevant across the entire spectrum of Army operations and would incorporate combat lessons learned in Iraq and Afghanistan.

Congressional interest in this program has been significant, as the GCV is intended to equip the Army's armored brigade combat teams (ABCT).¹ The GCV also represents the only "new start" for a ground weapon systems program and, because of the Army's history of failed weapon systems programs, current and future budget constraints, the program has been subject to a great deal of scrutiny.

GCV Program

Background: Secretary of Defense Gates's April 2009

FCS Restructuring Decision

On April 6, 2009, then Secretary of Defense Gates announced he intended to significantly restructure the FCS program.² The Department of Defense (DOD) planned to accelerate the spin out of selected FCS technologies to BCTs, but recommended cancelling the MGV component of the program. Secretary Gates was concerned there were significant unanswered questions in the FCS vehicle design strategy and, despite some adjustments to the MGVs, it did not adequately reflect the lessons of counterinsurgency and close quarters combat in Iraq and Afghanistan. After reevaluating requirements, technology, and approach, DOD would then re-launch the Army's vehicle modernization program, including a competitive bidding process. In addition, the acquisition decision memorandum reaffirmed the establishment of a new ground combat vehicle acquisition program in 2010.

¹ Armored Brigade Combat Teams (ABCTs) were formerly referred to as Heavy Brigade Combat Teams (HBCTs) by the Army.

² Information in this section is taken from a transcript of Secretary of Defense Robert M. Gates Budget Press Briefing, Arlington, VA, April 6, 2009.

The GCV Concept³

The Army's 2009 Modernization Strategy focused on quickly developing a new GCV in a technologically versatile approach. This approach, termed the Incremental Development Approach, features a modular design intended to accommodate vehicle growth in size, weight, power, and cooling requirements so that as technologies matured, they could be incorporated into new versions of the GCV with little or no modification to the basic vehicle.

The original GCV concept, in short, was to

- field the GCV by 2015-2017;
- design the platform with sufficient margin for future capabilities;
- incorporate only mature technologies for vehicle integration;
- maintain a continuous armor development; and
- design the vehicle to accept current and future network capabilities (for example, radios, sensors, and jammers).⁴

Army leadership had indicated the GCV could be either a tracked or wheeled vehicle. The Army had also suggested it saw “a lot of value in common chassis in terms of logistics support,” and that it might pursue a common chassis for GCV variants.⁵ Other possible GCV features discussed by the Army included a V-shaped hull and side armor to protect against improvised explosive devices (IEDs).⁶ The Army also suggested the GCV would be fuel efficient.⁷ The air transportability of the GCV has been discussed as a key design consideration, and the Army had said the GCV must be able to fit on C-17 transports.⁸ In order for the GCV to be a “full spectrum” combat vehicle, the Army reportedly had required non-lethal weapon systems be incorporated into vehicle design. While the GCV is to have some military equipment directed by the Army, such as radios and chemical protection systems, Army officials are leaving most of the specific solutions to industry recommendations.⁹

The Initial GCV Request for Proposal (RFP)¹⁰

On February 25, 2010, the Army released the RFP for the GCV as described in the following DOD press release:

³ Information in this section is from the Army Capabilities Integration Center, *The Ground Combat Vehicle Strategy: Optimizing for the Future*, October 2009, available at <http://www.g8.army.mil>.

⁴ Department of the Army, *2009 Army Modernization White Paper*, p. 5.

⁵ Emelie Rutherford, “Army Casting Wide Net for Post-FCS Vehicles Coming in Five to Seven Years,” *Defense Daily*, May 13, 2009.

⁶ *Ibid.*

⁷ John T. Bennett, “Carter: FCS Successor Effort Could Have Many Primes,” *Defense News*, May 18, 2009.

⁸ Marjorie Censer and Kate Brannen, “Army Assessing Brigade Combat Modernization in Plan Due to OSD,” *InsideDefense.com*, May 18, 2009.

⁹ Daniel Wasserbly, “Testing Pushed Back to Next Summer: Army to Reprogram Funding in FY 08, FY 09 for FCS Spin Out 1 Changes,” *InsideDefense.com*, June 30, 2008.

¹⁰ DOD defines Request for Proposal (RFP) as a solicitation used in negotiated acquisition to communicate government requirements to prospective contractor and to solicit proposals.

Army Ground Combat Vehicle Request for Proposal Released¹¹

The Army released last Thursday a RFP for the technology development phase¹² of the Infantry Fighting Vehicle being developed under the GCV effort. The Army has worked extensively with the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics to develop this program. The GCV acquisition program will follow DOD best acquisition practices and be a competitive program with up to three contract awards. The GCV development effort will consist of three phases: technology development, engineering and manufacturing design and low rate initial production. The Army anticipates awarding the first contracts for the technology development phase in the fourth-quarter of fiscal 2010.

The technology development phase involves risk reduction, identification of technology demonstrations, competitive prototyping activities, and planned technical reviews. Industry will have 60 days to submit proposals to the Army for this development effort.

The Ground Combat Vehicle effort is part of a holistic Army plan to modernize its combat vehicle fleet. This includes incorporating Mine-Resistant Ambush Protected (MRAP) vehicles into the fleet while modernizing current vehicle fleets including Stryker. The first GCV will be an Infantry Fighting Vehicle offering a highly-survivable platform for delivering a nine-man infantry squad to the battlefield. The GCV is the first vehicle that will be designed from the ground up to operate in an IED environment. It is envisioned to have greater lethality and ballistic protection than a Bradley, greater IED and mine protection than an MRAP, and the cross country mobility of an Abrams tank. The GCV will be highly survivable, mobile and versatile, but the Army has not set specific requirements such as weight, instead allowing industry to propose the best solution to meet the requirements.

Prior to the release of the RFP, the Army engaged with industry through a series of industry days to inform them of the government's intent for GCV development and gain their feedback from potential contractors about GCV requirements and emerging performance specifications. In response to these initiatives the Army received significant feedback and insights on requirements, growth, training, test and the program at large thereby informing the requirements process and indicating the potential for a competitive contracting environment.

Preliminary GCV Criticisms

After the release of the RFP and subsequent program-related briefings and discussions, a number of criticisms emerged as analysts began to examine the GCV RFP and program in greater detail. These criticisms are categorized as follows:

Programmatic

In order to avoid past criticisms of events outpacing relevancy and decades-long acquisition programs, Army leadership stipulated the first GCVs would be delivered seven years after the program was initiated. While this decision was relatively well-received, in order to achieve this

¹¹ DOD News Release, "Army Ground Combat Vehicle Request for Proposal Released," No. 161-10, March, 2, 2010.

¹² From the November 2009 Defense Acquisition University Glossary of Defense Acquisition Acronyms & Terms, the Technology Development (TD) Phase is the second phase of the Defense Acquisition Management System and the purpose of this phase is to reduce technology risk and to determine the appropriate set of technologies to be integrated into the full system.

ambitious timeline, modifications to the traditional acquisition process were required. One criticism was the Army chose to issue the RFP prior to the completion of the Analysis of Alternatives¹³ phase of the defense acquisition process.¹⁴ In response to this criticism, DOD and Army officials maintained running the Analysis of Alternatives phase during the RFP phase would give the Army more time to consider industry's proposals and evaluate alternatives to a new vehicle. Traditionally, the Analysis of Alternatives occurs before an RFP is initiated. Another concern was the Army chose to use a cost-plus and not a fixed price contract during the Technology Development phase of the program. The Administration is said to have favored fixed price contracts, as critics of cost-plus contracts say that they "invite abuse because they allow companies to charge the government costs plus a fixed profit, no matter how poor their performance."¹⁵ The Army, on the other hand, defended its use of cost-plus contracts during the technology phase, as it allowed for more innovation and risk-taking.¹⁶ The use of cost-plus contracts as well as constantly changing requirements were both points of contention in the FCS program.

Vehicle Weight

The Army has made soldier survivability the most important performance requirement for the GCV. Because the Army has also left it up to industry to determine the GCV design, there are no specific vehicle weight constraints. In May 2010, senior Army leaders reportedly stated estimates projected the GCV could weigh up to 70 tons, making it the world's heaviest infantry fighting vehicle.¹⁷ The then-Chief of Staff of the Army, General George Casey, remarked he believed the GCV must be much lighter, noting that "soldiers who have served in Iraq and Afghanistan have told him that big, heavy vehicles just aren't practical in urban combat" and that the Army "stopped using tanks and Bradleys on the streets of Baghdad just because of the size."¹⁸ One expert suggests "given what transports, supply lines, and bridges in developing countries can bear, an optimal weight for a vehicle in an irregular warfare environment is 40 to 45 tons."¹⁹ A counterargument contends the irregular warfare environment has become so lethal only 70 ton vehicles can survive.²⁰ In addition to operational considerations, a 70 ton GCV weight would also have an impact on how the vehicle is transported by air and, therefore, how quickly it could be deployed in the event of a conflict.

¹³ From the November 2009 Defense Acquisition University Glossary of Defense Acquisition Acronyms & Terms, The Analysis of Alternatives (AoA) is defined as follows: "The AoA assesses potential materiel solutions to satisfy the capability need documented in the approved Initial Capabilities Document (ICD). It focuses on identification and analysis of alternatives, measures of effectiveness (MOEs), cost, schedule, concepts of operations, and overall risk, including the sensitivity of each alternative to possible changes in key assumptions or variables. The AoA is normally conducted during the Materiel Solution Analysis (MSA) phase of the Defense Acquisition Management System (DAMS), is a key input to the Capability Development Document (CDD), and supports the materiel solution decision at Milestone A."

¹⁴ Unless otherwise noted, information in this section is taken from Kate Brannen, "Army Launches Ground Combat Vehicle Contest," *Army Times*, February 26, 2010. For additional information on the defense acquisition process see CRS Report RL34026, *Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process*, by Moshe Schwartz.

¹⁵ Ross Colvin, "Obama Takes Aim at Costly U.S. Defense Contracts," *Reuters*, March 4, 2009.

¹⁶ Kate Brannen, "Army Launches Ground Combat Vehicle Contest," *Army Times*, February 26, 2010.

¹⁷ Matthew Cox, "U.S. Army Chief Casey: Make GCV Lighter," *DefenseNews*, June 14, 2010, p. 16.

¹⁸ Sydney J. Freedberg, Jr., "Army Tries Again for a New Tank," *National Journal*, August 7, 2010.

¹⁹ *Ibid.*

²⁰ *Ibid.*

Reliance on Immature Technologies

Some critics noted the initial GCV RFP contained provisions that the GCV would have requirements for a hit-avoidance system²¹ as well as an active protection system²² that were problematic developmental sub-systems of the cancelled FCS MGV program.²³ Critics of these programs maintained by employing these systems on armored fighting vehicles, the Army was sacrificing armored crew protection for an over-reliance on technologically questionable systems. The Army noted if these systems could be developed, it would result in lighter, more fuel-efficient vehicles. Another criticism of these systems was they would drive up the per-vehicle cost—an important factor in determining the overall affordability of the program.

Selected Program Activities

Potential GCV Vendors²⁴

In response to the Army's February 2010 RFP, three industry teams submitted technology development proposals to the Army. The first team included BAE Systems and Northrop Grumman; the second consisted of General Dynamics, Lockheed Martin, Raytheon, and MTU Detroit Diesel; and the third team, SAIC, Boeing, and the German firms of Krauss-Maffei Wegmann (KMW), and Rheinmetall Defence. All three teams also had a number of other firms as part of their teams. The BAE Systems-led team design was an original design, with the team claiming that its design would exceed the survivability of the MRAP and would have enhanced mobility capabilities to allow it to operate in both urban and cross country environments. The General Dynamics team provided no details on its technical approach but stated its chosen design focused on soldier survivability and operational effectiveness and would incorporate mature technologies. The SAIC-led team stated its design would be based on the German tracked Puma IFV that was developed based on lessons learned from Iraq and Afghanistan. SAIC also emphasized all work, including production, would take place in the United States.

Army Cancels the RFP

When the Army released the RFP for the GCV Technology Development (TD) phase in February 2010, it anticipated awarding the first TD phase contracts in the fourth quarter of FY2010.²⁵ On August 25, 2010, while the Army was reportedly in the process of selecting the winners of the TD RFP, the Army's new Assistant Secretary of the Army for Acquisition, Logistics and Technology [ASA(ALT)], Malcolm O'Neil, cancelled the RFP in order to provide more time for technology integration as well to insure the Army would use mature technologies in order to develop the

²¹ A hit avoidance system is intended to use a variety of sensors and information technology to detect the presence of mines, IEDs, and enemy forces so that these threats can be avoided.

²² An active protection system is a vehicle-mounted system which is intended to first detect incoming enemy anti-tank or anti-vehicle missiles and/or grenades and then engage and destroy these threats by means of a kinetic device.

²³ Sebastian Sprenger and Tony Bertuca, "Some Officials See FCS's Long Shadow in Army's Move to Revisit GCV," *InsideDefense.com*, August 31, 2010.

²⁴ Information in this section is taken from Defense Professionals, "Three Competing Teams to Submit Proposal for Technology Development Phase," *Defpro.com*, May 26, 2010.

²⁵ DOD Press Release, "Army Ground Combat Vehicle Request for Proposal Released," March 2, 2010.

GCV within the established seven year time frame.²⁶ The Army reportedly planned to reissue the RFP within 60 days of the cancellation.²⁷ It was expected the original industry teams would submit new proposals and other companies might also submit proposals.

Why the RFP Was Cancelled

The Army, in conjunction with the Pentagon's acquisition office, conducted a Red Team²⁸ review of the GCV program in order to "review GCV core elements including acquisition strategy, vehicle capabilities, operational needs, program schedule, cost performance, and technological specifications."²⁹ This review found the GCV had too many performance requirements and too many capabilities to make it affordable³⁰ and relied on too many immature technologies. In response, the Army pledged the new GCV RFP would "dial back the number of capabilities the new system must have—as well as significantly reworking the acquisition strategy by focusing on early technology maturity and setting firm cost targets."³¹ In particular the Army reportedly planned to set a \$10 million per vehicle cost limit in response to reports that initial estimates projected that the GCV would cost more than \$20 million per vehicle.

Revised GCV RFP Issued

On November 30, 2010, the Army issued a revised GCV RFP.³² Under this proposal, industry had until January 21, 2011, to submit proposals and the proposed vehicle could be tracked or wheeled. The Army included affordability targets of per unit cost for the vehicle between \$9 million and \$10.5 million and an operational sustainment cost of \$200 per operational mile, with both affordability targets being in FY2010 dollars. In addition, the Army will require the GCV fit on a C-17 transport but not on a C-130. The Army was expected to award technology development contracts to three contractors by April 2011, and the Technology Development (TD) Phase is planned to last 24 months. An early prototype vehicle is expected by the middle of FY2014 and the first full-up prototype is expected by the beginning of FY2016. The Army planned for 1,874 GCVs initially, with the first production vehicle rolling off the assembly line in early April 2018 and the first unit should be equipped with GCVs in 2019.

²⁶ Kate Brannen, "Interview: Malcolm O'Neil, Acquisition Executive, U.S. Army," *Defense News*, September 6, 2010, p. 22; and Daniel Wasserbly, "U.S. Army Amends Approach to GCV Programme," *Jane's Defence Weekly*, September 1, 2010, p. 9.

²⁷ Daniel Wasserbly, "U.S. Army Amends Approach to GCV Programme," *Jane's Defence Weekly*, September 1, 2010, p. 9.

²⁸ The Army defines Red Teaming as a "structured, iterative process executed by trained, educated and practiced team members that provides commanders an independent capability to continuously challenge plans, operations, concepts, organizations and capabilities in the context of the operational environment and from our partners' and adversaries' perspectives." Taken from Office of the Chief of Public Affairs, U.S. Army Training and Doctrine Command, "Army Approves Plan to Create School for Red Teaming," July 13, 2005.

²⁹ Roxana Trion, "Army to Re-Start Bidding Process for New \$40B Ground Combat Vehicle Program," *The Hill*, August 25, 2010.

³⁰ Kate Brannen, "Ground Combat Vehicle Delayed; Effort Called Too Ambitious," *Army Times*, September 6, 2010.

³¹ Jason Sherman, "Army to Mandate Technology Maturity Levels, \$10 Million Price Target for GCV," *InsideDefense.com*, September 16, 2010.

³² Unless otherwise noted, information in this section is taken from C. Todd Lopez, "Army Issues RFP for Ground Combat Vehicle," *Army News Service*, December 2, 2010.

The new RFP is a fixed price incentive fee contract versus the cost-plus fixed fee contract of the previous RFP.³³ The new contract has a ceiling of \$450 million per contractor for the TD Phase. An incentive fee would split 80% to the government if the cost comes in under the negotiated \$450 million ceiling cap, with 20% going to the contractor. If the cost comes in over the cap, the contractor assumes 100% of the additional cost.

Defense Industry Concerns with the Revised RFP³⁴

Reports suggest defense industry had a number of concerns with the revised RFP. According to one report “industry still doesn’t get what the Army is looking for,”³⁵ suggesting many of the technical specifications the contractors expected the Army to spell out were left open-ended and industry would have to propose many of the vehicle’s technologies and features. Another concern was industry was not clear on how many vehicles the Army intended to build and questioned whether the Army could afford the production in the long run. According to the Army, the GCV is intended to replace infantry fighting vehicles in ABCTs, which would be 50% of the Bradleys in the ABCT. Some analysts suggest the GCV’s price tag per vehicle could make it vulnerable to future budget cuts, with one analyst noting the cost was so high “the program is sure to be politically controversial and therefore suffer much the same fate the Marine Corps Expeditionary Fighting Vehicle (EFV) has.”³⁶

Because of concerns the GCV program would not make it to production, issues regarding sustaining the industrial base have been raised. Analysts contend there are very few new combat vehicles currently in production, noting that Bradley A3 production ends in 2012; the last Stryker armored personnel carrier in 2013; and the M-1 Abrams tank remanufacturing program was slated to an end after 2014, leaving the improved Paladin self-propelled howitzer in production until the GCV starts production in 2017. Even though congressional action will keep the Abrams production line open, some defense industry analysts are concerned that with so few opportunities to develop and manufacture armored fighting vehicles, some long-standing U.S. defense firms might drop out of the business, thereby limiting bidding on any future armored fighting vehicle programs to foreign manufacturers.

Defense Acquisition Board Approves GCV Entrance into Technology Development Phase³⁷

On August 17, 2011, then Pentagon acquisition chief Ashton Carter signed an acquisition decision memorandum authorizing the Army to award technology demonstration contracts for the GCV program. Secretary Carter also directed the Army to conduct a “dynamic update” of the GCV’s

³³ Information in this section is taken from Ann Roosevelt, “New Ground Combat Vehicle RFP Offers Affordability Targets,” *Defense Daily*, December 1, 2010.

³⁴ Information in this section is taken from Kate Brannen, “U.S. Army: Budgets Allow \$9 – 10.5 Million GCV,” *Defense News*, December 13, 2010; and Grace V. Jean, “Army’s Ground Combat Vehicle Stirs Confusion in Industry,” *National Defense*, January 2011 edition.

³⁵ Kate Brannen, “U.S. Army: Budgets Allow \$9 – 10.5 Million GCV.” Ibid.

³⁶ Ibid. For additional information on the Expeditionary Fighting Vehicle see CRS Report RS22947, *The Marines’ Expeditionary Fighting Vehicle (EFV): Background and Issues for Congress*, by Andrew Feickert.

³⁷ Memorandum, Ground Combat Vehicle (GCV) Infantry Fighting Vehicle (IFV) Milestone (MS) A Acquisition Decision Memorandum, August 17, 2011.

Analysis of Alternatives (AoA) which had been criticized by some as being inadequate. Secretary Carter also stipulated:

- The GCV average procurement unit cost (APUC) would be less than or equal to \$13 million (expressed in FY2011 constant dollars);
- Combined cost of replenishment spares and repair parts less than or equal to \$200 per mile (expressed in FY2011 constant dollars); and
- Seven years from technology development contract award to first production vehicle.

Army Awards Technology Development (TD) Contracts³⁸

On August 18, 2011—a day after Secretary Carter issued his acquisition decision memorandum—the Army awarded two technology development contracts. The first contract for \$439.7 million went to the General Dynamics-led team and the second contract for \$449.9 million went to the BAE Systems-Northrop Grumman team. The technology development phase is expected to last 24 months (not counting the period the contract was under protest).

SAIC-Boeing Team Files Protest Over GCV TD Contract Award³⁹

On August 23, 2011, the third team vying for the GCV TD contract, SAIC-Boeing, filed a protest with the Government Accountability Office (GAO) contending there were errors in the evaluation process, claiming the government relied on evaluation criteria outside the published request for proposal and aspects of the team's bid were discounted because of a lack of familiarity with the German Puma infantry fighting vehicle that forms the basis of the SAIC-Boeing vehicle. Because of the protest, the General Dynamics and BAE Systems-Northrop Grumman teams were required to stop work until the protest was adjudicated.

GAO Denies SAIC-Boeing Team Protest⁴⁰

On December 5, 2011, GAO denied the SAIC-Boeing GCV protest, stating the Army's award of only two TD contracts was reasonable and consistent with the stated evaluation criteria and did not improperly favor the other two teams in the competition. On December 6, 2011, the Army lifted the stop-work order that had been placed on the General Dynamics and BAE Systems-Northrop Grumman teams so work could resume on the GCV.

³⁸ Ann Roosevelt, "Army GCV Program Kicks Off – Emphasizes Affordability, Capability," *Defense Daily*, August 22, 2011.

³⁹ Sebastian Sprenger, "SAIC-Boeing Team Files Protest Over Ground Combat Vehicle Award," *InsideDefense.com*, August 26, 2011, and Tony Bertuca, "Army Stops Work on GCV Due to Protest," *InsideDefense.com*, August 30, 2011.

⁴⁰ Brendan McGarry and Danielle Ivory, "SAIC Loses Bid Protest for U.S. Army Ground Combat Vehicle," *Bloomberg.com*, December 5, 2011, and GAO Decision, Scientific Applications International Corporation, B-405612; B-405612.2; B-405612.3, December 5, 2011, <http://www.gao.gov/assets/590/587607.pdf>.

Reported Reasons Why the SAIC-Boeing Team Was Not Selected⁴¹

Reports suggest that the SAIC-Boeing GCV proposal was rejected by the Army primarily due to concerns over the vehicle's proposed force protection features. The Army's primary concern appeared to have been the vehicle's proposed active protection system⁴² and the underbody armor designed to protect crewmembers from IEDs. As part of GAO's examination of the protest, it was noted that the Army:

Identified 20 significant weaknesses and informed SAIC that it was "of utmost importance" for the firm to address them, and that a failure to do so adequately would result in SAIC's proposal being found ineligible for award.⁴³

When the Army asked SAIC to provide more information on underbody armor, SAIC responded the information was classified and was the property of the German Ministry of Defense (MOD). While SAIC and the German MOD offered potential solutions, the Army judged these as inadequate to address its concerns. There were also additional Army concerns—such as insufficient head clearance for crew members, problems with vehicle occupant seating, a risk of toxic fumes in the crew compartment due to battery pack location, and various hazards affecting a soldier's ability to exit the rear of the GCV—that played a role in GAO's denial of SAIC's protest.

Current Program Activities

Analysis of Alternatives (AoA)⁴⁴

Reports suggest the Army's AoA for the GCV did not identify an existing, less expensive combat vehicle that would meet the Army's requirement. The vehicles considered by the Army during AoA were the Bradley M2A3; a turretless Bradley; A Stryker Double V-Hull Infantry Carrier; the Swedish CV9035; the German-made Puma; and the Israeli Namer. The AoA is an important step in the Defense Acquisition Process and is required to be conducted before major investment decisions as well as before each decision milestone.

⁴¹ Information in this section is from Sebastian Sprenger, "GAO: Force Protection Features Cost SAIC-Boeing in GCV Competition," *InsideDefense.com*, January 13, 2012; Tony Bertuca, "OSD to Brief Congress on Active Protection Systems Testing in March," *InsideDefense.com*, January 20, 2012; and GAO Decision, Scientific Applications International Corporation, B-405612; B-405612.2; B-405612.3, December 5, 2011, <http://www.gao.gov/assets/590/587607.pdf>.

⁴² In this context, an active protective system or APS is a system which will automatically detect and engage incoming rocket-propelled grenades and anti-tank guided and unguided missiles.

⁴³ GAO Decision, Scientific Applications International Corporation, B-405612; B-405612.2; B-405612.3, December 5, 2011, <http://www.gao.gov/assets/590/587607.pdf>, pp. 5-6.

⁴⁴ Information in this section is taken from Tony Bertuca, "Army Says GCV Analysis of Alternatives Found no Suitable Options," *InsideDefense.com*, November 16, 2012.

Active Protection System (APS) and the GCV⁴⁵

The Army is reportedly considering the Israeli-made Trophy APS system for inclusion in the GCV. Previously, the Army had considered the Trophy APS as part of the now-cancelled FCS program, but there were a number of technical and safety challenges as well as cost considerations that precluded the adoption of the Trophy system. Army officials noted the Trophy is an “option” and allegedly both General Dynamics and BAE Systems have both offered APS solutions as part of their GCV technology development work, but not much is publically known about these technologies.

Potential GCV Budgetary Issues⁴⁶

A report suggests DOD plans to cut \$150 million from the Army’s \$1.4 billion FY2014 GCV Budget Request, and additional cuts between \$600 million and \$700 million annually between FY2014 and FY2018 are also under consideration. These significant proposed cuts would likely have a major impact on the GCV program, and the Army is reportedly “reviewing the GCV acquisition strategy.”⁴⁷ The Army is also reportedly negotiating final GCV numbers with DOD and supposedly has asked that funds eliminated from the GCV program be redirected to other Army modernization efforts. The Army and DOD have also examined other program cost saving measures such as allowing only a single EMD competitor or extending the EMD period to allow for smaller contract awards over time. Unnamed congressional officials reportedly noted that they would keep an “open mind” on any GCV changes, especially those changes intended to reduce costs or requirements, but cautioned that “too many changes could put the program in jeopardy.”⁴⁸

The Army reportedly predicts that due to automatic sequester cuts and a continuing resolution, the Army would likely continue to “trade away” requirements in order to keep the GCV program alive.⁴⁹ In order to keep the GCV program affordable, it was suggested protection requirements for the vehicle might be lowered and protection instead achieved with specialized, add-on armor kits, much like what is being planned for the Joint Light Tactical Vehicle (JLTV).⁵⁰ The Army supposedly might also opt for a man-accessible turret in lieu of a remote-controlled version and plans for an Active Protection System (APS) might also be deferred.⁵¹ Given concern by some in Congress about “too many changes” to the GCV, it is not known how receptive some Members might be to possible trade-offs to achieve vehicle affordability goals. As capabilities are traded off or modified to keep vehicle costs down, the Army runs the risk of “dumbing down” the GCV to

⁴⁵ Information in this section is taken from Tony Bertuca, “Army Mulls Options in Ground Combat Vehicle Active Protection Systems,” *InsideDefense.com*, November 16, 2012.

⁴⁶ Information in this section is taken from Tony Bertuca, “Massive GCV Cuts on the Table as Army Reviews Program,” *InsideDefense.com*, December 5, 2012.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Tony Bertuca, “Army Acquisition Official Predicts More Trades in Ground Combat Vehicle,” *InsideDefense.com*, March 8, 2013.

⁵⁰ For additional information on the JLTV see CRS Report RS22942, *Joint Light Tactical Vehicle (JLTV): Background and Issues for Congress*, by Andrew Feickert.

⁵¹ Ibid.

the point where its capabilities are not that much different than the Bradley-series of infantry fighting vehicles currently in service, thereby calling into question the need for the GCV.

DOD Initiates Major GCV Program Changes⁵²

On January 16, 2013, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD AT&L) Frank Kendall issued an Acquisition Decision Memorandum and an accompanying information memorandum detailing major changes to the GCV program to “enable a more affordable and executable program.” These changes include the following:

- The Technology Demonstration (TD) phase is extended for six months to enable contractors the ability to modify their designs in support of the requirement modifications to the Capability Development Document (CDD). While the contracts for the original 24 month TD were firm fixed price, the parallel work during this phase from the Analysis of Alternatives, Non Developmental Item (NDI) evaluations, and trade space evaluations with the contractors have provided opportunities to modify the requirements for a more affordable and executable GCV design. The additional six months in TD enables the contractors to complete preliminary designs that represent what we really want to produce.
- The Engineering and Manufacturing Development (EMD) plan is to award both EMD and production options to a single vendor. This single change saves the Department nearly \$ 2.5 B in RDT&E resources. Milestone B will remain as a full and open competition for the EMD phase of the GCV Infantry Fighting Vehicle Program and allows other vendors (including non U.S. NDI product based vendors) to propose modified NDI vehicles.
- In support of full and open competition resulting in a single award for EMD, the Army’s previously planned procurement of long lead materials for test rigs and production prototypes is not authorized at this time. This decision eliminates spending scarce resources on incomplete designs and is consistent with our full and open competitive intent.
- Lastly, in support of the schedule risk associated with the integration during EMD and the six month TD extension, I have directed Milestone C to move from FY18 to FY19 and the associated re-phasing of procurement dollars. I will drive this program to hold this schedule to the maximum extent possible; this shift is both more affordable and executable.
- All of these changes, when supported with the approval of the requirements changes for the CDD under review, will save a total of \$4+ Billion over the FYDP [Future Year Defense Plan – FY2014-FY2019].⁵³

⁵² Unless otherwise noted, information in this section is taken from Frank Kendall, Under Secretary of Defense for Acquisition, Technology, and Logistics (AT&L), Ground Combat Vehicle Infantry Fighting Vehicle Acquisition Decision Memorandum and Information Memorandum: Ground Combat Vehicle Program both issued on January 16, 2013.

⁵³ Quoted directly from USD (AT&L) Information Memorandum: Ground Combat Vehicle Program, January 16, 2013.

The major changes include extended the current TD phase by six months, permitting only a single contractor to proceed to the GCV's EMD phase and postponing the program's Milestone C production decision until FY2019, almost a year longer than the previously planned early FY2018 Milestone C decision. There have been concerns expressed by some that designating only one EMD contractor will eliminate cost savings from competition and extending the TD phase by six months and the Milestone C decision by up to a year will add cost to the program.⁵⁴

FY2013 Legislative Activity

January 26, 2012, Administration Major Budget Decision Briefing⁵⁵

On January 26, 2012, senior DOD leadership unveiled a new defense strategy, based on a review of the current defense strategy and budgetary constraints. This new strategy envisions, among other things,

- a smaller, leaner military that is agile, flexible, rapidly-deployable, and technologically-advanced; and
- rebalancing global posture and presence, emphasizing where potential problems are likely to arise, to Asia-Pacific and the Middle East.

As part of these major strategy and budgetary decisions, the GCV program was restructured, due largely to program delays resulting from the SAIC-Boeing protest. This restructuring was essentially moving the overall GCV program timeline out one year to reflect developmental time lost due to the SAIC-Boeing protest adjudication process. This restructuring, in addition to an overall program delay of one year, also reflects a \$1.7 billion cut to the program over a five-year period.⁵⁶ It is suggested that the loss of these funds would not have a significant impact on the GCV program, as these funds could not be used because of the protest delay and these funds would be requested at a later date.⁵⁷

FY2013 GCV Budget Request and Program Changes

The FY2013 Budget Request for the GCV was \$639.874 million for Research, Development, Test and Evaluation (RDT&E).⁵⁸ This request reflected the aforementioned one-year delay and \$1.7

⁵⁴ Tony Bertuca, "Pentagon Affirms Major GCV Program Changes for Billions in Savings," *InsideDefense.com*, January 17, 2013 and Ann Roosevelt, "Fiscal Pressures to Stretch Army GCV Technology Development by Six Months," *Defense Daily*, January 18, 2013.

⁵⁵ Information in this section is taken from U.S. Department of Defense News Transcript, "Major Budget Decisions Briefing from the Pentagon," presented by Secretary of Defense Leon E. Panetta and Chairman of the Joints Chiefs of Staff General Martin E. Dempsey, January 26, 2012; U.S. Department of Defense News Transcript, "Major Budget Decisions Briefing from the Pentagon," presented by Deputy Secretary of Defense Ashton B. Carter and Vice Chairman of the Joint Chiefs of Staff Admiral James A. Winnefeld Jr., January 26, 2012; and U.S. Department of Defense Publication, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012.

⁵⁶ Transcripts, Army Chief of Staff General Raymond Odierno briefing "Budget Impact to the Army," January 27, 2012.

⁵⁷ Tony Bertuca, "Odierno Says Bid Protest Delay Cost GCV One Year and \$1.7 Billion," *InsideDefense.com*, January 27, 2012.

⁵⁸ The Army Budget Request - Fiscal Year 2013, Justification Book Volume 5B, Research, Development, Test and (continued...)

billion program cut. Based on the one-year delay, the Army adjusted the GCVs program schedule as follows:

- Due to the protest, the 24-month Technology Development Phase began December 6, 2011.
- Following Milestone B planned for the first quarter FY2014, the Army plans to award two competitively selected 48-month contracts for the Engineering and Manufacturing Development (EMD) phase.
- During EMD, each contractor will continue to refine designs and deliver prototypes to support engineering development, risk mitigation, and technical and operational tests.
- Milestone C is planned for first quarter, FY2018, and will immediately be followed by the award of a Low Rate Initial Production (LRIP) contract to a single contractor.⁵⁹

FY2013 National Defense Authorization Act (NDAA) (H.R. 4310)

The FY2013 NDAA fully funds the Administration's FY2013 GCV Budget Request.⁶⁰

Enactment of Sequestration and a Continuing Resolution for FY2013

The Budget Control Act of 2011 (P.L. 112-25) required Congress to establish discretionary spending limits for FY2012-FY2021. Congress did not meet its January 15, 2012, deadline to do so, and automatic spending cuts were triggered. On March 1, 2013, President Obama signed the sequestration order. On March 26, 2013, H.R. 933, the Consolidated and Further Appropriations Act, 2013, was signed into law (P.L. 113-6) providing funding through the end of FY2013. GCV funding for FY2013 is expected to be at the FY2013 Budget Request level but subject to an unspecified percentage of reduction based on the sequester.

FY2014 Legislative Activity

FY2014 Budget Request⁶¹

The FY2014 Budget Request for the GCV was \$592.2 million for Research, Development, Test and Evaluation (RDT&E).

(...continued)

Evaluation, Army, February 2012, p. 869.

⁵⁹ Ibid., p. 870.

⁶⁰ Senate Armed Services Committee Completes Conference of National Defense Authorization Act for Fiscal Year 2013, December 18, 2012.

⁶¹ Assistant Secretary of the Army (Financial Manager and Comptroller), U.S. Army FY 2014 President's Budget Highlights, April 2013.

Congressional Budget Office (CBO) Report on GCV Alternatives⁶²

On April 2, 2013, CBO released a report titled “The Army’s Ground Combat Vehicle Program and Alternatives.” This report was prepared at the request of the former Chairman and former Ranking Member of the Tactical Air and Land Forces Subcommittee of the House Armed Services Committee and compares the Army’s plan for the GCV with four alternatives that the Army could choose to pursue instead.

CBO estimated the GCV program would cost \$29 billion (in FY2013 dollars) over the 2014-2030 period. CBO noted none of its four recommended alternatives meets all of the Army’s GCV requirements but all are likely to be less costly and less risky (in terms of unanticipated cost increases and program delays) than the GCV program. The four alternatives CBO examined were:

- purchase the Israeli Namer Armored Personnel Carrier (APC);
- upgrade the Bradley Infantry Fighting Vehicle (IFV);
- purchase the German Puma IFV; and
- cancel the GCV and Recondition Bradley IFVs.

CBO estimated its four alternatives would cost:

Table I. Estimated Cost of CBO GCV Alternatives

CBO Alternatives	Total Cost (2014-2030) Billions of 2013 dollars
Current GCV Program	28.8
1. Purchase Israeli Namer APC	19.5
2. Upgrade Bradley IFV	19.5
3. Purchase German Puma IFV	14.5
4. Recondition Current Bradley IFVs	4.6

Source: Congressional Budget Office, “The Army’s Ground Combat Vehicle Program and Alternatives,” April 2013.

Based on two sets of metrics—the first being improvements in protection of soldiers and survivability of the vehicle in combat, lethality, mobility, and capacity, and the second set being weighted toward vehicles that could carry an entire nine-soldier squad—CBO recommended that Alternative 3: the Puma would be the most capable vehicle and both the Puma and the upgraded Bradley (Alternative 2) would be significantly more capable than the GCV. CBO’s study notes, however, if the Army opted to acquire the Puma, it would need to buy five Pumas for every four of its currently Bradley IFVs due to the Puma’s six-man seating capability. CBO also suggested

⁶² Information in this section, unless otherwise noted, is taken from Congressional Budget Office, “The Army’s Ground Combat Vehicle Program and Alternatives,” April 2013.

the Army's stated urgency to acquire the GCV is "undercut by the reality that the Army would be unable to widely field it [GCV] until 2032."⁶³

Criticisms of the CBO Study⁶⁴

General Dynamics and BAE, GCV Technology Develop (TD) phase developers reportedly have raised opposition to CBO's report suggesting CBO evaluated vehicle requirements that have changed since March 2011 and did not take into account significant program changes since then. According to General Dynamics and BAE, their respective vehicle designs have evolved significantly since early 2011, noting, for example, the current requirement for the GCV's main armament is a 30 mm gun, whereas in the CBO study, they evaluated a 25 mm gun. Another criticism levied against CBO's report was CBO did not factor in other critical GCV requirements, such as the vehicle's ability to accommodate current and future communications technologies, the vehicle's ability to incrementally accept improvements, and long-term sustainability.

CBO acknowledges in the report that data used in the analysis was provided by the Army in 2010 and it did not have current data available. It is not known why more up to date requirement data was not available. The Army is not known to have said anything formally about the CBO report or if efforts had been made to ensure CBO had access to the most current requirements and capability data.

Potential Issues for Congress

The GCV and a Downsized Army

The GCV is intended to replace M-2 Bradley infantry fighting vehicles in the Army's 16 Active and 8 National Guard ABCTs. Under FY2013 strategic and budget plans, the Active Army will downsize by 80,000 soldiers, but most defense analysts expect even deeper cuts in end strength. In addition, DOD has stated the Army will cut at least eight Active BCTs from current force structure and two European-based ABCTs would be eliminated from Army force structure (as part of the eight BCT reduction).⁶⁵

Many experts believe the Army will cut anywhere from 10 to 15 BCTs and a portion of these will be ABCTs.⁶⁶ In addition, it was reported former Chief of Staff of the Army, Chairman of the Joint Chiefs of Staff General Martin Dempsey, suggested a number of remaining active ABCTs could

⁶³ Tony Bertuca, "CBO: GCV Alternatives Safer, More Affordable, Less Risky," *InsideDefense.com*, April 2, 2013.

⁶⁴ Unless otherwise noted, information in this section is taken from Paul McLeary, "GCV Competitors Pan Critical U.S. Government Report," *Defense News*, April 8, 2013 and Tony Bertuca, "Army Contractors Come Out Swinging at CBO Report Questioning GCV," *InsideDefense.com*, April 5, 2013.

⁶⁵ Information in this section is taken from U.S. Department of Defense News Transcript, "Major Budget Decisions Briefing from the Pentagon," presented by Secretary of Defense Leon E. Panetta and Chairman of the Joints Chiefs of Staff General Martin E. Dempsey, January 26, 2012; U.S. Department of Defense News Transcript, "Major Budget Decisions Briefing from the Pentagon," presented by Deputy Secretary of Defense Ashton B. Carter and Vice Chairman of the Joint Chiefs of Staff Admiral James A. Winnefeld Jr., January 26, 2012; and U.S. Department of Defense Publication, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012.

⁶⁶ Michael Hoffman, "U.S. Army May Cut 22 Percent of Brigades," *Defense News*, October 24, 2011, and Michael Hoffman, "In U.S., Guard Battles Active Duty for Missions," *Defense News*, December 12, 2011.

be moved into the Army National Guard.⁶⁷ This suggests there could be less emphasis placed on ABCTs in the future, which could serve to lessen the overall requirement for GCVs, and the Army might not need all of the GCVs it currently plans to acquire.

Aside from the potential for fewer BCTs, some are also questioning the role ground forces, and, by default, the GCV will play in the future.⁶⁸ The Administration's January 2102 decision that the United States will shift strategic emphasis to the Asia-Pacific Region has led some to suggest that under this strategy, it would be highly unlikely that the United States would ever deploy significant numbers of U.S. ground forces in this region. This change in emphasis has led to some analysts calling for fewer ground forces so air and naval forces can be increased to deal with potential future threats in Asia and the Pacific. Army leadership, however, has stated they expect few reductions to Army units stationed in the Pacific region.⁶⁹

In light of questions about the number of ABCTs the Army intends to field and the role of heavy ground forces in the future U.S. strategic construct, Congress might decide to require the Army to re-evaluate the GCV program in terms of numbers of vehicles required and the utility of ABCTs in the new Asia-Pacific strategic plan.

DOD's Major Changes to the GCV Program and Overall Program Cost

While DOD's January 16, 2013, decision to change various aspects of the GCV program could result in over \$4 billion in savings from FY2014 to FY2019, there are other cost-related issues that Congress might wish to consider. While there might be a \$ 4 billion-plus cost savings from FY2014 to FY2019, will extending the TD phase by six months and delaying the Milestone C decision by up to a year add additional post-FY2019 program costs? Furthermore, will going from two to one competitors during the EMD phase (even though the Acquisition Decision Memorandum would permit other vendors from proposing non-U.S. NDI GCV versions) eliminate cost savings associated with competition between vendors?

Another potential factor in overall program costs is if the Army decides to procure less than 1,874 GCV infantry variants due to likely ABCT force structure cuts. From a historical perspective, it was noted in 1981 by the Congressional Budget Office (CBO):

A second factor in weapons cost growth is inefficient purchasing or "stretching out" of particular weapon systems. Generally this results from a budget squeeze due in part to an underestimation of inflation. Budget constraints, when combined with an unwillingness to cancel a program or the desire to stretch it out to accommodate other systems, can result in substantial cost growth. An example of this can be seen in recent Administration budget proposals. The 1982 budget submitted in March proposed to buy 60 A-10 aircraft for \$9.1

⁶⁷ Michael Hoffman, "In U.S., Guard Battles Active Duty for Missions," *Defense News*, December 12, 2011.

⁶⁸ Information in this section is taken from David W. Barno, Nora Bensahel, and Travis Sharp, "Hard Choices for Ground Forces," *Defense News*, October 17, 2011, and Sebastian Sprenger, "Army Faces Renewed Questions Over GCV Amid Strategy Review," *InsideDefense.com*, November 11, 2011.

⁶⁹ William Cole, "Army Won't Shrink Force Level in Pacific Region, General Says," *Honolulu Star-Advertiser*, January 18, 2012; Phil Stewart, "U.S. Army Chief at Ease with Smaller Force, Eyes Asia," *Reuters.com*, January 25, 2012; and Daniel Wasserbly, "U.S. Army Chief Says Ground Forces Will Play Vital-Role in Asia-Pacific Strategy," *Jane's Defence Weekly*, February 1, 2012.

million each. The October revision proposes to buy 20 A-10s for \$13.4 million each—a 47 percent increase in the cost of each aircraft due primarily to the less efficient buy size. Other examples of higher costs resulting from slipping the scheduled delivery of weapon systems or stretching out programs can be seen in the December 1980 SAR [Selected Acquisition Report], which showed increased program costs of \$673 million (14 percent) for the AH-64 helicopter, \$856 million (21 percent) for the DIVAD gun, \$907 million (4 percent) for the F/A-18 aircraft, and \$1,063 million (8 percent) for the F-16 fighter aircraft—all of them due to schedule changes.⁷⁰

In this regard, Congress might wish to examine if procuring fewer than 1,874 GCVs constitutes a “less efficient buy size” and a resultant per unit cost increase, which, combined with “stretching out” of the GCV program could result in overall increased program costs.

Current GCV Data and CBO’s GCV Alternatives Study

Given claims by some that CBO’s GCV Alternatives Study does not reflect current GCV requirements and newly developed capabilities, as well as CBO’s acknowledgement it only had access to 2010 information provided by the Army, Congress might opt to explore the possibility that CBO could revise its study using current data provided by the Army. Such a revision, in addition to providing a more up-to-date analysis, might also serve the purpose of showing how the GCV development has progressed, relative to the other vehicles studied, since 2010.

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⁷⁰ Statement of Patrick L. Renehan, Chief, Defense Cost Estimate Unit, Congressional Budget Office before the Special Panel on Defense Procurement Procedures, House Armed Services Committee, October 22, 1981.