



United States Government Accountability Office  
Washington, DC 20548

July 2, 2010

The Honorable Norman D. Dicks  
Chairman  
Subcommittee on Defense  
Committee on Appropriations  
House of Representatives

Subject: *Expeditionary Fighting Vehicle (EFV) Program Faces Cost, Schedule, and Performance Risks*

This letter formally transmits the attached briefing (see encl. I) in response to your May 4, 2009, request that we review the EFV program. We provided your staff a draft copy of this briefing in meeting with them on June 9, 2010. We provided the same draft to the Department of Defense (DOD) for comments. A summary of DOD's comments with our evaluation are also attached (see encl. II), as well as a reprinted copy of DOD's written comments (see encl. III).

We are sending copies of this report to the appropriate congressional committees. We are also sending copies to the Secretary of Defense; the Under Secretary of Defense for Acquisition, Technology and Logistics; the Secretary of the Navy; and the Commandant of the Marine Corps. This report will also be available at no charge on the GAO Web site at <http://www.gao.gov>.

Should you or your staff have any questions concerning this report, please contact me at (202) 512-4841 or [sullivanm@gao.gov](mailto:sullivanm@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report.

Key contributors to this report include Bruce Thomas, Assistant Director; Jerry Clark, Analyst-in-Charge; Nicholas Alexander; Jenny Hwang; and Robert Swierczek.

Michael J. Sullivan  
Director  
Acquisition and Sourcing Management

Enclosures

# Enclosure I: Briefing Slides



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## **Expeditionary Fighting Vehicle (EFV) Program Faces Cost, Schedule, and Performance Risks**

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**Briefing for the Subcommittee on Defense,  
Committee on Appropriations,  
House of Representatives**

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Figure 1: Expeditionary Fighting Vehicle



Source: EFV Program Office.



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## Introduction and Objectives

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- Given the Expeditionary Fighting Vehicle (EFV) development's cost, schedule, and less-than-expected performance during its initial operational assessment and other issues, we were asked to review the EFV program.
- This briefing provides the results of our review. It examines performance, schedule, and cost risks facing the program following the program's 2007 Nunn-McCurdy breach and restructuring.<sup>1</sup>
- In conducting our review, we reviewed a range of program and other Department of Defense (DOD) documents and data, interviewed program and other officials, and observed EFV testing. More details on our approach can be found on slides 23 and 24. We conducted our work from June 2009 to July 2010 in accordance with generally accepted government auditing standards.

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<sup>1</sup>10 U.S.C. § 2433 establishes the requirement for DOD to prepare unit cost reports on major defense acquisition programs. If a program exceeds cost growth thresholds specified in the law, known as a Nunn-McCurdy breach, DOD is required to report the breaches to Congress and in certain circumstances DOD must reassess the program and submit a certification to Congress in order to continue the program, in accordance with 10 U.S.C. § 2433a.



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## Background

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- The EFV is the successor to the Marine Corps' existing amphibious assault vehicle (AAV), and is intended to transport troops from ships offshore to their inland destinations at higher speeds and from farther distances than the legacy AAV.
    - Desire for ability to launch from farther offshore is driven by the growing range of shore-to-ship threats.
  - Two variants are being developed: A troop carrier for 17 combat-equipped Marines and a crew of three, and a command vehicle to manage combat operations in the field.
  - The system has a reliability Key Performance Parameter requirement of 43.5 hours Mean Time Between Operational Mission Failure (MTBOMF).
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# Background

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## Prior GAO Review

In 2006 we reviewed the EFV program to determine how it was performing against its business case and reported that the program faced significant risks including that two key performance parameters—reliability and interoperability—were not scheduled to be demonstrated until Initial Operational Test and Evaluation (IOT&E) in fiscal year 2010—4 years after low-rate initial production (LRIP) was to have begun.<sup>2</sup>

We recommended that the Secretary of Defense ensure that:

- EFV design, production, and mature software development capabilities are demonstrated before the Milestone C decision to enter LRIP;
- adequate resources were available to cover such demonstration and provide for risks; and
- the business case for EFV still warrants continued investment.

DOD concurred with our recommendations.

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<sup>2</sup> GAO, *Defense Acquisitions: The Expeditionary Fighting Vehicle Encountered Difficulties in Design Demonstration and Faces Future Risks*, GAO-06-349 (Washington, D.C.: May 1, 2006).



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## Background

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- Our body of work on best practices has shown that an executable business case is one that provides demonstrated evidence that (1) the warfighter's needs are valid and can best be met with the chosen concept; and (2) the chosen concept can be developed and produced within existing resources—that is, proven technologies, design knowledge, adequate funding, people (including an adequate technical, management, and acquisition workforce), and sufficient time to deliver the product.
  - In 2006 and 2007, the EFV business case broke down.
    - In 2006, the first operational assessment of the EFV (OA-1) demonstrated significant reliability problems; in February 2007, the EFV program reported a critical Nunn-McCurdy (10 U.S.C. § 2433) unit cost breach.
  - The program was restructured in June 2007.
    - System development was extended with a second System Development and Demonstration (SDD) effort (SDD-2) to redesign the system to address reliability problems identified in OA-1.
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# Summary

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**Findings:**

- Reliability growth approach and other performance issues present significant challenges and risks
- Current nature of development, test, and procurement schedules add unnecessary risk to program
- Costs could increase due to concurrency, redesign effort, and final procurement quantity

**Conclusions:** Program's history of cost growth, schedule slips and performance failures and the current challenges (including changing threats) raise the question of whether the business case for the EFV program (in terms of cost, schedule, and performance) is still sound.

**Recommendations:**

- A reevaluation be performed to confirm the EFV remains a required asset and the preferred approach.

If the EFV business case is confirmed,

- ensure that certain knowledge is gained prior to the start of OA-2, and
- add another OA to verify progress along an acceptable reliability growth curve.

To ensure a more informed production decision and minimize investment risk,

- delay the production decision until the added OA and a design projected to provide the required reliability are completed, and
- reduce LRIP quantities to the minimum necessary and document the rationale for the quantity if it is in excess of 10 percent of the total planned buy.



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# Objective 1: Performance Risks

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## Reliability Is an Area of Significant Program Risk

- Failed to achieve reliability goal during first operational assessment (OA-1) in 2006.
  - Anticipated 17 hours of MTBOMF reliability, but by Marine Corps Test and Evaluation Agency's (MCOTEA) measure achieved 4.5 hours
- Program initiated investment to address reliability problem.
  - As part of the 2007 restructure the program hired engineers, enlisted experts from the Army Materiel Systems Analysis Activity (AMSAA), and set up a restructured development effort based on testing redesigned components on existing prototypes while building seven new prototypes for 2<sup>nd</sup> OA and future reliability growth efforts.

## Post OA-1 Testing Has Demonstrated Improved Performance, but Issues Remain

- Limited operational tests in 2007 and 2008 using first SDD phase prototypes demonstrated some improved performance, but also identified continued performance issues and need for further redesigns.
    - Efforts to address significant high-speed water steering issues resulted in revised design that improved steering in single vehicle testing. Further refinement needed to allow multivehicle formations.
    - Significant ice buildup during cold weather testing interfered with communication systems and severely limited visibility.
    - Cold water testing did not demonstrate needed cold start capabilities—EFVs started in a heated (60 degree) building.
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# Objective 1: Performance Risks

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## EFV May Not Be on a Growth Curve That Will Result in Its Achieving the Required Reliability by IOT&E

- The program may be proceeding under an assumed reliability growth curve that overestimates the rate with which increases in design reliability will be realized.
    - The complexity of EFV is now seen by program management, AMSAA, and an Independent Expert Review Team as more analogous to helicopters rather than legacy AAV or other ground systems on which the current EFV projected reliability growth rate is based.
      - AMSAA concedes that neither of the Army systems nor the AAV that have been used as comparables involve the same level of complexity as the EFV and its high-speed amphibian requirements.
  - The actual nature of the reliability growth rate may not become fully apparent until IOT&E.
    - Prior to IOT&E, program has only one OA (OA-2) scheduled for SDD-2 effort to demonstrate EFV is on reliability growth curve.
      - Historically, demonstrated reliability in operational testing tends to be lower than predicted based on developmental testing. As such, the actual reliability growth curve can be better determined with more than one OA.
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# Objective 1: Performance Risks

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## Other Risks Might Prevent the Program from Achieving Required Reliability by IOT&E

- The program may not be able to complete all required test hours on schedule and under operational conditions.
  - Results of OA-2 tests will impact nature and magnitude of subsequent test events.
    - Current estimates of test hours required are uncertain, and range from 5,500 to 11,500 test hours.
- Risk exists that the EFV program has not identified all reliability degraders.
  - Program assessed the gun system the main concern for low reliability based on OA-1; however, the Command Variant (which does not have the gun system) experienced low reliability also.
  - Independent Navy review identified the hydraulic systems as a significant contributor to reliability problems.
  - DOT&E is concerned that lack of test time during OA-1 caused by the frequent breakdowns means unknown vehicle deficiencies are likely to remain.



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# Objective 1: Performance Risks

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## The EFV program Has Worked to Provide Improved Protection Against Improvised Explosive Devices (IED) and Other Threats, but Risks Remain

- Current design is projected to have a level of protection generally comparable to the AAV with its armor appliqué.
- New aluminum alloys and welding processes introduced on production vehicles are expected to provide additional protection.
- Some design changes to improve protection have been considered but found not practical as they would impact the ability to perform as required (e.g. use of a V-shaped hull).
- One design change, adding underbody aluminum appliqué, is being developed that could be added to the system when operating ashore—however, it would impact amphibious capability while applied.
- Other threats that the EFV might encounter on the battlefield will require additional postproduction modifications.



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# Objective 1: Performance Risks

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## Space and Weight Challenges

- The EFV can carry 17 troops with 1 day's supply of provisions. However, 3 days of provisions are considered standard load-out.
- Due to its internal configuration (large engine in middle of troop compartment and gun turret), the EFV will have less logistics capacity than legacy AAVs.
  - Options considered that would address this loss in logistics capability include a mixed fleet of EFVs and the legacy AAVs or the Marine's Light Armor Vehicle (LAV).
- Difficulties meeting vehicle weight requirement resulted in:
  - reduction in high-speed transit sea state capability from 3 ft to 2 ft significant wave height;
  - proposed removal of integrated Nuclear, Biological, and Chemical protection; and
  - reduction in required vehicle land range following amphibious landing.
- Desire for ability to launch from farther offshore driven by range, accuracy and proliferation of shore-to-ship threats.
  - The range, accuracy, and proliferation of those threats have continued to grow.



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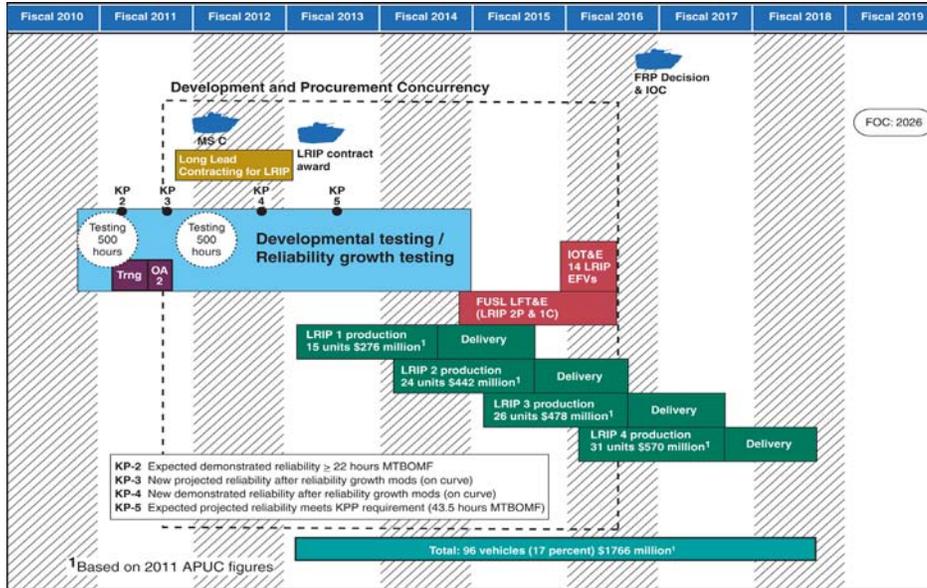
## Objective 2: Schedule Risks

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### The EFV Program's Schedule Involves Significant Overlap of Development and Production Efforts

- Program would make the decision to enter LRIP (4 lots planned to acquire 96 vehicles at a cost of approximately \$1.8 billion) based on OA-2 test with requirement to demonstrate at least 50 percent of required reliability.
- Program has maintained scheduled December 2011 production decision (Milestone C) even though the actual start of production has slipped by one year due to OSD delay of funding.
- Slipped production to start about five months before program schedule indicates achievement of a design projected to meet threshold reliability.
- Concurrency of development and production and plan to maintain production decision date despite one year slip in production start represent lost opportunities to learn more from tests and better influence LRIP design prior to production and make more informed production decision.

# Objective 2: Schedule Risks



Source: GAO analysis of EVF Program Office data.



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## Objective 2: Schedule Risks

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### Concurrent Schedule Risk Exacerbated by High Number of LRIP Vehicles to Be Acquired

- DOD Instruction 5000.02 states that LRIP quantities should be minimized and requires documentation of a rationale for quantities exceeding 10 percent of the total production planned at the start of development.
- Planned LRIP quantity of 101 vehicles was just under 10 percent of total planned production at the start of development in 2001, but planned LRIP of 96 vehicles is now 17 percent of total planned production of 574 vehicles.
- According to program officials, 59 LRIP vehicles are needed for LFT&E, IOT&E, and to provide defined Initial Operating Capability.
- The acquisition of a large number of LRIP vehicles prior to completion of IOT&E and the validation of reliability risks a significant investment in the acquisition of vehicles that may prove to be unsatisfactory and may require costly retrofits.



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## Objective 2: Schedule Risks

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### Development Delays Have Compressed Test Schedules and Increased Program Risk

- To assure success in OA-2 AMSAA recommended that:
  - sufficient amounts of test time need to be scheduled to surface failure modes associated with quality and integration issues of the new prototypes prior to OA-2, and
  - adequate calendar time be allowed so that corrective actions with early failure may be physically implemented on the vehicles prior to OA-2.
- Developmental tests and operational assessments using limited upgrades to SDD-1 prototypes have slipped due to late delivery of modified SDD-1 vehicles.
  - Testing of modified SDD-1 prototypes was to demonstrate approximately 40 modifications addressing performance and reliability shortfalls prior to OA-2.
- Delivery of SDD-2 prototypes has slipped due to delays in redesign and production efforts.
  - SDD-2 prototypes will enter OA-2 (unless it is slipped) without conducting all planned tests and with compressed development test time.
    - Program management has stated that the delayed tests do not impact the readiness of the EFV for OA-2.
- A MCOTEA official recommended delaying OA-2 to:
  - allow for further design maturation,
  - address schedule compression from ongoing design and vehicle delivery delays, and
  - allow time to conduct training for Marines involved in OA-2.



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## Objective 2: Schedule Risks

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### Upgrades Being Made to Current AAVs Could Reduce the Risks of Further Delays in Fielding EFVs

- Marine Corps plans to call for the AAV to continue to serve as its primary platform until at least 2015 and remain in service until 2025.
- The 1,063 AAVs have been “Rebuilt to Standard” to improve reliability, availability, and maintainability.
- New upgrade programs for AAVs are being considered to integrate improvements in the areas of Survivability, C4I, and Environment/Habitability, and improvements in its weapons system.



## Objective 3: Cost Risks

- While the EFV program has experienced substantial historical cost growth, the vast majority of this growth occurred prior to the program’s 2007 Nunn-McCurdy (10 U.S.C. § 2433) breach.

**Table 1: EFV Cost and Quantity Changes**

	December 2000 (Development start)	President’s Budget 2011	% Change
<b>Cost estimates (fiscal year 2011 dollars in millions)</b>			
Development	\$1,625.2	\$3,781.4	132.7%
Procurement	\$7,299.8	\$10,549.4	44.5%
Total program acquisition	\$9,018.7	\$14,429.4	60.0%
<b>Unit cost estimates (fiscal year 2011 dollars in millions)</b>			
Program unit cost	\$8.8	\$24.3	176.5%
Average procurement	\$7.2	\$18.4	155.1%
<b>Quantities</b>			
Development quantity	12	19	
Procurement quantity	1013	574	
Planned annual full rate production rate	200	55	



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## Objective 3: Cost Risks

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### While Development and Procurement Costs Have Risen Only 2.5% and 3.5% Respectively Since The Program Was Restructured in 2007, Risks Exist That Could Drive Those Costs Higher

- Increased funding is needed for material and labor to build SDD-2 prototypes and address significant software defect identified during 90 mile break-in run.
- Future tests will likely identify additional deficiencies that need to be addressed.
- The current EFV acquisition strategy reflects increased procurement risk as it calls for LRIP lots to be structured as cost plus incentive fee/award fee procurements due to uncertainties inherent in the concurrent testing and production programs-- a change from the initial fixed priced incentive strategy.
- Already identified needed design changes and additional design changes that may be identified throughout the remainder of the SDD-2 effort could drive costs higher.
- In February 2010, the EFV program manager anticipated a reduction of 106 EFVs based on the elimination of Navy Marine Preposition Ships, which was addressed in the QDR report.
  - While the program manager feels this is now less likely, if such a reduction occurs it would result in an acquisition program baseline (APB) breach for program acquisition unit cost (PAUC) and could potentially breach average unit procurement cost (APUC).



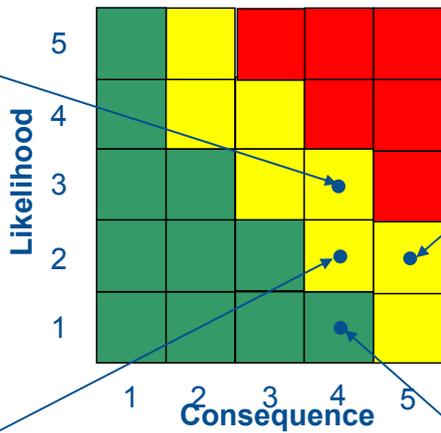
# The EFV Program Recognizes Continued Risks

**Performance**

- Risk: EFV LRIP design will not meet its weight requirement.
- Driver: Reliability growth initiatives will increase weight beyond threshold requirement. Potential redefinition of Infantry load requirements by MCCDC will increase embarked weight.
- Mitigation: Aggressive weight management throughout SDD-2 and LRIP. PM working with MCCDC on load requirements.

**Schedule**

- Risk: Schedule to MS C will not be maintained.
- Driver: Potential I&A and Acceptance testing delays along with a tight Developmental Test III schedule may delay start of OA-2.
- Mitigation: Providing additional resources to vehicle build and software development to recover schedule. Reviewing developmental test plans to optimize vehicle usage.



**Performance**

- Risk: Reliability KPP will not be met at IOT&E.
- Driver: Lower than expected reliability during previous OA. Design changes flowing from Design For Reliability will not be significant enough to provide needed improvement in reliability growth potential.
- Mitigation: Achieve KP-2 using SDD-2 vehicles.

**Cost**

- Risk: Redesign of the EFV will result in increased unit costs and increased O&S costs.
- Driver: Extension of development for redesign effort. Design For Reliability effort may generate cost growth over that planned.
- Mitigation: Challenge contractor to meet specific development cost targets through contract incentive fee provisions (no fee if government projects APBA cost deviation).

Source: EFV Program Office



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## Conclusions

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- The EFV program was restructured around a new business case in 2007 that included significant cost increases, cuts in quantities, and a schedule delayed by several years, to address significant performance problems—particularly regarding reliability—discovered during testing.
- While cost growth since then has not been material, the EFV faces risks that could reopen questions about its business case. Reliability and other performance issues have not been resolved. The schedules for completing development and testing are compressed and overlap with production. Resolving known design problems, coupled with the potential for discovering new ones in testing that overlaps production, puts the current schedule for delivering EFVs at risk.
- At the same time, substantial investments have been made to improve and extend the life of the existing amphibious assault vehicle. In light of these developments, this is the time to revisit the EFV business case to see if it is likely to yield the result the Marine Corps needs and can afford.



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## Recommendations for Executive Action

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In light of the current EFV schedule and reliability concerns, changing threats, and developments in other capabilities, we recommend that prior to the start of procurement the Secretary of Defense reevaluate the EFV business case and confirm that the EFV remains a required asset and is the preferred approach to providing the desired amphibious assault capabilities.

If it is determined that the program should continue, we recommend that the Secretary of Defense direct the Marine Corps to:

- Ensure that knowledge is gained from the following prior to the start of OA-2:
  - delivery and testing of Mod 100 prototype vehicles;
  - delivery and developmental testing of SDD-2 prototypes and training of OA-2 operational crews;
  - completion of qualification testing and modifications of SDD-2 prototypes; and
  - availability of armor appliqué for OA-2 testing.
- Add another operational assessment to better verify that the EFV effort is in fact progressing along a reliability growth curve that should result in the EFV's demonstrating required reliability during its initial operational test and evaluation.
- Delay the EFV production decision (Milestone C) until the recommended additional operational assessment and a design projected to provide the minimum required reliability are completed.
- Reduce LRIP quantities to the minimum necessary and if in excess of 10 percent of the current total planned buy have the acquisition executive approve the rationale for the higher LRIP quantity.



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## Scope and Methodology

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To conduct our work, we:

- Reviewed laws, regulations, and relevant external reports (e.g., GAO's prior report on the EFV program).
  - Reviewed EFV program documents including the program acquisition strategy, program schedules, and test plans.
  - Determined the current status of the legacy AAV by interviewing program officials.
  - Analyzed EFV survivability assessments and how EFV survivability compares to the legacy AAV, the Mine Resistant Ambush Protected (MRAP), and other vehicles against the evolving shore-to-ship missile and IED threats, and actions being taken to improve EFV survivability against these threats.
  - Obtained and analyzed past, present, and projected data on original baseline estimates and current forecast data from the program office and independent defense entities and met with key stakeholders of the EFV program to obtain information on contingency plans and their impact on the program's cost, schedule, and performance.
  - Observed live fire tests and analyzed reports of these events to quantify the EFV's current protection from IEDs and understand its potential survivability and performance.
  - Visited the EFV production facility in Lima, Ohio.
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## Scope and Methodology

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- Met with program officials, the Program Executive Officer for Land Systems, and officials of the Marine Corps Combat Development Command (MCCDC) and from other defense organizations—the Marine Corps Operational Test and Evaluation Agency (MCOTEA), the office of the Department of Defense (DOD) Director for Operational Test and Evaluation (DOT&E), and the U.S. Army Materiel Systems Analysis Activity (AMSAA).
- For each of our objectives, we assessed the reliability of the data we analyzed by reviewing existing documentation related to the data sources and interviewing knowledgeable agency officials about the data that we used. We found the data sufficiently reliable for the purposes of this review.
- We conducted this performance audit from June 2009 to May 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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# Enclosure II: Agency Comments and Our Evaluation

DOD provided us with written comments on a draft of this report. The comments appear in enclosure II.

DOD concurred with our recommendation for a reevaluation of the EFV business case prior to the start of procurement to confirm that the EFV remains a required asset and the EFV acquisition is the preferred approach to providing the desired amphibious assault capabilities. They also concurred with our recommendation to ensure that certain knowledge is gained prior to the start of the next operational assessment, OA-2.

DOD partially concurred with our recommendation to add an additional operational assessment after OA-2, if needed, stating that it was premature at this time to direct an additional operational assessment. Rather, it stated that results from near term tests including the reliability testing to the operational mission profile and the OA-2 will be used to assess whether an additional operational test will be needed. If needed, it stated that the current program schedule has two limited post OA-2 operational events, the scope of one or both of which can be modified to examine any significant areas of concern from the OA-2.

DOD substantially agreed with our recommendations concerning delaying the EFV Milestone C (MS C) production decision and reducing the quantity of low-rate initial production (LRIP) vehicles to match the current procurement total. DOD stated that it plans to better align the MS C decision with the new production funding profile in which Long Lead LRIP funding was delayed due to fiscal considerations as part of the 2011 President's budget decision. We note that, based on their position, the Milestone C decision should be delayed until at least the beginning of fiscal 2013 to be consistent with the production profile that existed prior to the Long Lead LRIP delay. However, a delay of an additional few months would result in that decision being made after program's defined knowledge point five—the point when the program expects to project whether the minimum reliability metric will be met during the initial operational test and evaluation of the system.

In partially concurring with our recommendation to reduce the low-rate initial production (LRIP) quantity, DOD stated it would evaluate the LRIP quantities in support of the decision to enter LRIP and that any changes would be based on quantities required to support testing and to ramp up for full-rate production. We note however, that the LRIP quantity is not consistent with lower full-rate annual production rate that is currently planned. When the total production quantity for the program was reduced from 1013 to 574 vehicles, the annual full-rate production rate was reduced from 120 to 55 vehicles per year. However, while the total acquisition and annual full rate productions quantities were reduced, the LRIP quantity was not. Keeping the LRIP quantity at almost 100 vehicles is not consistent with the lower annual production rate now planned. Furthermore, lowering LRIP would also avoid the risk of having to retrofit a larger number of production articles later in order to make them work properly, should that be needed.

# Enclosure III: Agency Comments



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE  
3000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3000

JUL -1 2010

Mr. Michael J. Sullivan  
Director, Acquisition and Sourcing Management  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Mr. Sullivan:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-10-758R, "DEFENSE ACQUISITIONS: Expeditionary Fighting Vehicle (EFV) Program Faces Cost, Schedule, and Performance Risks," dated May 27, 2010 (GAO Code 120842).

The report recommends the Secretary of Defense reevaluate the EFV business case and confirm the EFV remains a required asset prior to the start of procurement. The department concurs with this recommendation. The decision to procure the EFV will be informed by an assessment of the EFV acquisition strategy (business case) as well as a review of the EFV capability to confirm that the EFV remains a required asset and the EFV acquisition is the preferred approach to providing the desired amphibious assault capabilities.

The Department concurs with the recommendation to ensure knowledge is gained from the following, prior to the start of the next operational assessment (OA-2): delivery and testing of Mod 100 prototype vehicles, delivery and developmental testing of SDD-2 prototypes and training of OA-2 operational crews, completion of qualification testing and modifications of SDD-2 prototypes; and availability of armor appliqué for OA-2 testing. The report also recommends adding an additional operational assessment and recommends delaying the EFV production decision (Milestone C) until that assessment and a design projected to provide the minimum required reliability are completed. The Department partially concurs with those recommendations. We support delaying the Milestone C decision not in order to do an additional Operational Assessment, but to better align the program schedule with the program's new production funding profile.

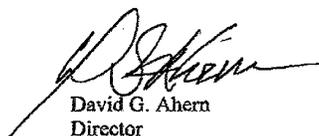
The Department partially concurs with the final recommendation to reduce the Low-Rate Initial Production (LRIP) quantities to the minimum necessary. Any changes to the approved LRIP quantities will be based on an updated evaluation of quantities

Enclosure III: Agency Comments

required to support testing and the ramp up for full-rate production that will support the Milestone C LRIP decision. Our comments on each recommendation are enclosed.

It is unclear from the report format that the GAO analysts had the opportunity to gain a full understanding of the EFV acquisition in terms of system engineering and reliability. I have a significantly different understanding of the effectiveness of the design and build efforts that have been the focus of the EFV acquisition program since the Nunn-McCurdy restructure in June 2007 than is apparent in the report. That restructure initiated an extensive rework of the EFV design with a focused emphasis on system engineering and design for reliability. I would welcome the opportunity to discuss your team's conclusions regarding status of the EFV development at the earliest opportunity.

Sincerely,



David G. Ahern  
Director  
Portfolio Systems Acquisition

Enclosure:  
As stated

GAO DRAFT REPORT DATED MAY 27, 2010  
GAO-10-758R (GAO CODE 120842)

**“DEFENSE ACQUISITIONS: EXPEDITIONARY FIGHTING VEHICLE (EFV)  
PROGRAM FACES COST, SCHEDULE, AND PERFORMANCE RISKS”**

**DEPARTMENT OF DEFENSE COMMENTS  
TO THE GAO RECOMMENDATIONS**

**RECOMMENDATION 1:** The GAO recommends that prior to the start of procurement that the Secretary of Defense reevaluate the Expeditionary Fighting Vehicle (EFV) business case and confirm that the EFV remains a required asset and is the preferred approach to providing amphibious assault capabilities desired.

**DoD RESPONSE:** Concur. The decision to procure the EFV will be informed by an assessment of the EFV acquisition strategy (business case) as well as a review of the EFV capability to confirm that the EFV remains a required asset and the EFV acquisition is the preferred approach to providing the desired amphibious assault capabilities.

**RECOMMENDATION 2:** If it is determined that the program should continue, we recommend that the Secretary of Defense direct the Marine Corps to ensure that knowledge is gained from the following prior to the start of OA-2:

- a) delivery and testing of the Mod 100 prototype vehicles;
- b) delivery and developmental testing of SDD-2 prototypes and training of OA-2 operational crews;
- c) completion of qualification testing and modifications of SDD-2 prototypes; and
- d) availability of armor appliqué for OA-2 testing.

**DoD RESPONSE:** Concur.

**RECOMMENDATION 3:** If it is determined that the program should continue, the GAO recommends that the Secretary of Defense add another operational assessment to better verify that the EFV effort is in fact progressing along a reliability growth curve that should result in the EFV's demonstrating required reliability during its initial operational test and evaluation.

**DoD RESPONSE:** Partially concur. It is premature at this time to direct an additional operational assessment, however the current Test and Evaluation Master Plan provides for additional opportunities for subsequent operational assessments. When the program was restructured in 2007, operational and developmental testing events were laid out to support confirming the reliability growth needed for a successful IOT&E. Results from the near-term test events, including the reliability testing to the operational mission

profile and the OA-2 will help inform us if additional operational testing is required. If OA-2 findings indicate that additional testing is needed; there are two post-OA-2 operational assessments specified in the approved Test and Evaluation Master Plan that can be used for this purpose. Although these two operational assessments are currently intended to examine SDD-2 vehicle performance in hot and cold environments, respectively, the scope of the one or both can be modified to examine any significant areas of concern from the OA-2, including vehicle reliability.

**RECOMMENDATION 4:** If it is determined that the program should continue, the GAO recommends that the Secretary of Defense to delay the EFV production decision (Milestone C) until the recommended additional operational assessment and a design projected to provide the minimum required reliability are completed.

**DoD RESPONSE:** Partially concur. The EFV Program continues to successfully execute to the schedule established as a result of the Nunn-McCurdy program restructure, and will continue to do so through the Operational Assessment (OA-2). However, we support delaying the MS C Decision not in order to do an additional Operational Assessment, but to better align the program schedule with the program's new production funding profile which was modified due to fiscal considerations as part of the 2011 President's Budget submission. We plan to further evaluate program progress against the current MS C exit criteria at the LRIP Long Lead DAB, which will be similarly delayed to better align it with the new President's Budget funding profile. We do not concur with the need with the need for an additional operational assessment.

**RECOMMENDATION 5:** If it is determined that the program should continue, the GAO recommends that the Secretary of Defense to reduce the low-rate initial production (LRIP) quantities to the minimum necessary and if in excess of 10 percent of the current total planned buy have the acquisition executive approve the rationale for the higher LRIP quantity.

**DoD RESPONSE:** Partially concur. Any changes (reductions or increases) to the approved LRIP quantities by the acquisition executive will be based on the evaluation of the LRIP quantities needed to support testing and an orderly ramp to full-rate production quantities. This evaluation will support the MS C decision.

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