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BY THE HOUSE ARMED SERVICES COMMITTEE

STATEMENT
OF
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AND

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BEFORE THE

SUBCOMMITTEE ON SEAPOWER AND EXPEDITIONARY FORCES OF THE
HOUSE ARMED SERVICES COMMITTEE

ON

MARINE CORPS'
EXPEDITIONARY FIGHTING VEHICLE PROGRAM

June 26, 2007

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Mr. Chairman, distinguished members of the Subcommittee, thank you for the opportunity to appear before you and discuss the current status of the Expeditionary Fighting Vehicle (EFV) program, its restructuring following the Nunn McCurdy Certification process and the way ahead for the program.

INTRODUCTION

As requested by this subcommittee, the Navy is providing testimony regarding the programmatic and technological factors that led to the EFV's reliability issues in 2006; the outcome of the Nunn-McCurdy certification process and the management initiatives the Department is pursuing to avoid similar major acquisition program challenges.

The Expeditionary Fighting Vehicle (EFV) is a top priority program for the Marine Corps. The EFV will provide the capability for the Marine Corps to perform its Title 10 mission of projecting combat power from the sea in increasingly anti-access security environments. With its ability to move at speeds in excess of 25 miles per hour in the water, combined with its superior land mobility, lethality and survivability, the EFV will provide both over-the-horizon amphibious capability and significantly greater warfighting capability on land than the current Amphibious Assault Vehicle.

The EFV is a keystone for both the Marine Corps Expeditionary Maneuver Warfare and Ship-to-Objective Maneuver warfighting concepts. Its over-the-horizon forced entry capability is critical to the success of the Marine Air-Ground Task Force (MAGTF) in supporting the missions of Combatant Commanders.

The EFV offers enhanced survivability for the embarked Marine rifle squad with its lightweight modular armor, mine-blast protected seating, and collective Nuclear, Chemical and Biological protection. It also provides superior lethality with its stabilized, day/night capable MK46 Weapon Station**.**

RELIABILITY

During the fall of 2006, the Assistant Secretary of the Navy, Research, Development and Acquisition (ASN (RDA)) chartered an Independent Expert Program Review to examine the EFV program, system and processes in order to find the root causes of the reliability shortfall and recommend a path forward for the EFV Program. The panel reported that the root causes of poor reliability were: 1) insufficient funding in early System Development & Demonstration (SDD) that led to inadequate systems engineering rigor in design for reliability; 2) focus on the high water speed requirement, which drove weight and complexity at the expense of reliability, and; 3) overconfident program advocacy. The panel also cited shortcomings in program organization and management, oversight and test and evaluation as contributing factors.

The EFV was scheduled to enter Low Rate Initial Production (LRIP) in January 2007. In preparation for the LRIP decision, Marine Corps Operational Test and Evaluation Activity

conducted an Operational Assessment (OA) of the system's capabilities. While the EFV demonstrated that it can perform all of its required mission essential functions: (move on water, move on land; carry and protect 17 combat-equipped Marines, fire accurately and communicate on the move), it showed lower than projected reliability. Because reliability did not meet projections, we determined that the EFV was not ready for LRIP.

During this period, The Defense Department's Strategic Planning Guidance directed the Marine Corps to look at its entire mix of vehicles for providing mobility across the spectrum of conflict. As a result, the EFV production quantities were reduced from 1,013 vehicles to 573 vehicles to allow the Marine Corps larger procurement quantities of other vehicles and provide protected ground mobility to the greatest possible portion of the MAGTF.

Following submission of the FY08 President's Budget in early February, the Secretary of the Navy (Dr. Winter) provided notification to Congress that the EFV was in critical breach of Nunn-McCurdy thresholds for both Program Acquisition Unit Cost and Average Procurement Unit Cost. Unit cost estimates for the vehicle increased beyond Nunn-McCurdy thresholds as a result of cost estimation changes, the quantity reduction, industrial base issues, and the need to extend development.

After extensive reviews by independent expert panels chartered by the Navy and OSD, as well as comprehensive review during the Nunn-McCurdy certification process, the program has been restructured to extend SDD until Fiscal Year 2011 in order to improve reliability.

NUNN-MCCURDY CERTIFICATION PROCESS

As a result of the Nunn-McCurdy breach, in February 2007, the EFV Program completed a comprehensive reliability design review using Fault Tree Analysis: to understand the true reliability requirement of each subsystem in the vehicle, compare demonstrated reliability to required reliability throughout the system, determine whether the reliability requirement was attainable, and identify subsystems in need of redesign. The analysis was reviewed and confirmed by an independent team led by the Army's PEO Ground Combat Systems. The analysis indicated that the EFV reliability requirement is realistically achievable. It highlighted the need for redesign in the hydraulics and vehicle electronics systems as well as in the power transfer module subsystem, selected turret subsystems (auxiliary sight, feed, link ejection, and structure) and selected transmission subsystems (braking subsystem, transmission electronic control unit subsystem and transmission control software).

Following that five-month review, The Secretary of Defense (responsibility delegated to USD (AT&L)) [Mr. Kenneth Krieg], certified on June 5, 2007, to Congress with respect to the restructured EFV program that:

- such acquisition program is essential to the national security;
- there are no alternatives to such acquisition program which will provide equal or greater military capability at less cost;

- the new estimates of the program acquisition cost or procurement unit cost for such program are reasonable; and

- the management structure for such acquisition program is adequate to manage and control program acquisition unit cost or procurement unit cost.

Thus, EFV will undergo a certified restructured program that extends SDD to allow subsystem and component redesign for reliability, fabrication and test of a second set of EFV prototypes, with Milestone C (MS C) in 2011. The restructured program delivers Initial Operational Capability in 2015 and Full Operational Capability in 2025.

PROGRAM RESTRUCTURING

The restructure includes (1) Design for Reliability phase through FY08 to redesign major subsystems including the turret, hydraulics, software, and electrical, electronic and C4I systems; (2) Fabrication and developmental test of seven new SDD prototype vehicles; and (3) Additional OA of the new prototype vehicles in FY11. Three additional USD (AT&L) decision points have been added to the program before Milestone C to assess program readiness and provide "off-ramps" if necessary -- before (1) awarding a new contract; (2) proceeding beyond Critical Design Review; and (3) before long lead material can be procured for LRIP.

WATER MOBILITY KEY PERFORMANCE PARAMETER

In May 2007, in conjunction with the EFV Nunn-McCurdy Process, the Joint Requirements Oversight Council reviewed the EFV Key Performance Parameters documented in the 2006 EFV Capabilities Production Document. All Key Performance Parameters were revalidated with a slight change made to the High Water Speed Key Performance Parameter.

The High Water Speed Key Performance Parameter operating envelop was reduced from a significant wave height of three-feet to a significant wave height of two-feet (fully developed sea state) to provide the program a thousand pound weight margin for use in improving system reliability without compromising mission effectiveness or combat capability while conducting Ship-to-Objective Maneuver with the EFV.[1]

Prior to the OA conducted in January 2006 for the anticipated LRIP, the EFV program strategy had been to increase reliability through the reliability growth process. The mission reliability demonstrated at OA, however, showed that this process was insufficient to generate reliability growth necessary in time to meet the requirement at Initial Operational Test and Evaluation.

[1] A worldwide wave and surf statistics binder was developed in 1997 by Neptune Sciences, Inc., under contract from Naval Research Laboratory, which captured surf model runs relevant to the Marine Corps. The analysis related dominant meteorological, oceanographic, and geographic coastal features to Ship-to-Objective Maneuver.

Therefore, a Design for Reliability (DFR) effort was initiated to generate significant improvement to reliability. The DFR effort currently underway includes the overarching systems engineering processes to mature the EFV design and vehicle reliability growth as well as the detailed planning, redesign and validation efforts for EFV components and subcomponents to meet their reliability allocations.

Upon completion of the DFR process, we will build and test new prototypes to validate the results of the DFR effort and verify the Reliability Key Performance Parameter can be achieved prior to an LRIP decision.

NEW PROTOTYPES AND TESTING

The current SDD prototype vehicles have been vigorously tested and they have now reached the wear and tear equivalent of a 20-year service life, which is adversely impacting the ability to distinguish inherent vehicle reliability performance from age-induced failures. To continue growing reliability, new test assets are necessary to verify new design changes. The contract for the newer prototypes has not yet been awarded. Seven (7) new SDD vehicle assets are expected to be built during FY08-10 and undergo developmental and operational testing in FY10/11. The new prototypes will be built in Lima, Ohio. The FY08 President's Budget is estimated to cover the FY08 requirements, and the FY09 funding will be requested in conjunction with the FY09 budget cycle.

MANAGEMENT AND OVERSIGHT INITIATIVES

Minimizing risk in acquiring the defined capability within the proposed timeframe and available resources is paramount.

To minimize risk, changes in the acquisition reporting structure have been enacted. On February 5, 2007, ASN RDA established a Program Executive Office (PEO) for Marine Corps Land Systems (LS); this PEO reports directly to the ASN RDA. The former Program manager for the MV-22 Osprey program, Colonel Bill Taylor, was selected as the Program Executive Officer (LS). The establishment of PEO LS enables the focal concentration of premier acquisition management capabilities on our major Marine Corps programs. In effect, we've formed a center of excellence under Colonel Taylor's experienced leadership and the efforts of his expert staff with the sole purpose of devoting full-time attention to its programs' acquisition and life cycle management responsibilities. PEO LS is chartered to directly supervise management of assigned programs with particular emphasis on maintaining oversight of cost, schedule, and performance. Establishment of the PEO also promises to maximize and optimally leverage the contributing capabilities of the Marine Corps Systems Command, which serves as the host systems command and provides vital support to the PEO.

The EFV is one of eight programs assigned to the PEO at present. A few of the highlights of what the PEO brings to the EFV Program oversight include: an incisive understanding of the need for a comprehensive and integrated approach conceptualizing and applying effective systems engineering best practices; a concentration of expertise on reliability issues at the system

and subsystem level; and a significantly increased level of vigilance and competency in professional risk management.

As part of the EFV Program's Certification, for example, PEO LS is establishing an EFV Senior Executive Review Board (SERB) to provide oversight to the EFV Program. The SERB will provide a significant depth of knowledge and experience in the key functional and program management competencies to assess and monitor program health and recommend corrective actions where needed. This board of veteran acquisition and associated professionals will provide the intensified and comprehensive oversight necessary for the EFV Program's success.

PROGRAM OFFICE REORGANIZATION

The EFV Program Manager restructured the program office on May 18, 2007. The restructure created a product-based organization in which senior personnel are assigned responsibility for major product groups. Each product group lead is responsible for making decisions regarding engineering, design, reliability, cost, build and life cycle support aspects of his designated subsystems within the parameters that have been allocated through the systems engineering process. A Systems Engineering Directorate has been created to ensure sound systems engineering procedures drive continued development. The new Senior Systems Engineer reports directly to the EFV PM and oversees integration of the total EFV system.

The contractor management structure has also recently changed to align with an integrated program management philosophy and to bring the necessary expertise to the program.

The EFV Program Manager, along with the contractor, will be required to provide quarterly briefings to ASN RDA, the Secretary of the Navy, and USD (AT&L) to determine whether the program is progressing adequately and risks are being mitigated.

GENERAL RISK REDUCTION INITIATIVES

Early findings emanating from with the Navy's investigation into Littoral Combat Ship cost overruns has resulted in the establishment of recurring, detailed ASN RDA reviews of all major Navy acquisition programs and the implementation of specific, robust initiatives aimed at early risk detection and mitigation. Some of those specific initiatives that the EFV Program has benefited from as well, include:

- A complete review of program staffing levels and skill sets.
- Thorough analysis and identification of program design / build concurrency levels.
- A mandatory day long program management lessons learned workshop.

CONCLUSION

The Joint Requirements Oversight Committee (JROC) has affirmed the need for a high-speed amphibious assault capability. The Department of Navy and The Marine Corps are committed to ensuring the restructured program meets cost, schedule and performance objectives.

The Navy has postured the EFV Program for future success. However, it is critical that the program as restructured and supported by the CAIG estimate be fully funded at the $288 million requested in the (RDT&E,N account) FY 2008 President's Budget.

Mr. Chairman, I would like to conclude my opening statement by quoting The Commandant of the Marine Corps, General James Conway, who has said, "until the EFV comes online, the Marine Corps is in a period of risk".