PROJECT PROFILE

Case—The Expeditionary Fighting Vehicle

One of the most complex and difficult congressional budget decisions in years finally came due: the determination of the fate of the Marine Corps' Expeditionary Fighting Vehicle (EFV). Given the numerous delays, tests, conditional approvals, and retests, the EFV had been no stranger to controversy. Although the EFV was loudly defended by senior officers in the Pentagon, a growing army of critics cited the vehicle's poor test performance, and costs continued to balloon. As one reporter noted, "After 10 years and $1.7 billion, this is what the Marine Corps got for its investment in a new amphibious vehicle: A craft that breaks down about an average of once every 4½ hours, leaks, and sometimes veers off course." The biggest question is: How did things get to that point with what was viewed, for many years, as one of the Marine's highest priority acquisition programs?

The EFV program began more than 20 years ago when this armored amphibious vehicle was designed to replace the 1970s-era Amphibious Assault Vehicle. The purpose of vehicles such as the EFV is to provide armored support for the early stages of amphibious assault onto enemy shores. The EFV was designed to roll off a Navy assault ship, move under its own power at 20 mph on the water's surface for distances up to 25 miles while transporting a Marine rifle squad (up to 17 Marines), cross hostile beaches, and operate on shore. The EVF was moderately armored and carried a 30-mm cannon in a turret for offensive firepower. The EVF often was described as a Marine Corps variant of the Bradley Fighting Vehicle.

The EFV began as a state-of-the-art acquisition program for the Department of Defense (DoD). Following a concept exploration phase to determine the viability of the project that began in 1988, the project entered a program definition and risk reduction phase during which it was considered "a model defense acquisition program," winning two DoD awards for successful cost and technology management. The original contract was awarded to General Dynamics Corporation in June 1996 for full engineering and design work, and that corporation was awarded a subsequent contract for the system development and demonstration (SDD) phase of the program in July 2001. It is during this critical stage that all the complex engineering, systems development, and functionality of the program must be successfully demonstrated. Perhaps unwisely, General Dynamics budgeted only 27 months for total testing and system verification.

This far-too-ambitious schedule soon became a problem for General Dynamics and the EFV as a series of technical problems began to surface. Two additional years were added to the SDD phase as it became apparent that the EFV concept was beset with numerous unforeseen problems. In December 2004, tests of EFV prototypes demonstrated further problems. The tests showed severe failure in the vehicle's main computer system, causing the vehicle's steering to freeze. The hydraulic systems powering the vehicle's bow-flap, installed to make the EFV more seaworthy, began leaking and failing. The EFV was originally intended to operate for an average of 70 hours between mission failure breakdowns, but because of the numerous reliability problems, the Marines reduced this figure to 43.5 hours. Following these prototype tests, an additional two years were added to the program development schedule.

The year 2006 was not a good one for the Expeditionary Fighting Vehicle. The EFV was put through a critical operational assessment, which is a series of tests to demonstrate that it could meet performance requirements and was ready for production. The EFV performed abysmally, experiencing numerous system failures, breakdowns, and failure in its reliability assessment. During the tests, the vehicles were able to operate on average for only 4.5 hours between breakdowns, and it took nearly 3.5 hours of corrective maintenance for every hour of operation. Poor reliability resulted in 117 mission failures and 645 acts of unscheduled maintenance during the tests. The EFV's reliability was so poor that it successfully completed only 2 of 11 attempted amphibious tests, 1 of 10 gunnery tests, and none of the 3 land mobility tests. Other problems included the fact that the prototypes were nearly one ton overweight, suffered from limited visibility, and were so noisy that the driver was advised to wear ear

(*continued*)

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FIGURE 5.1 The Expeditionary Fighting Vehicle

plugs while in the driver's chair, despite the fact that doing so would make it nearly impossible to communicate with the EFV's commander. In fact, so poorly did the EFV fare during the operational assessment that the Marines announced they were going back to the drawing board with the design, aiming to complete a new SDD phase by 2011, eight years behind the original schedule.

Meanwhile, the program's costs just kept rising. When the EFV was first conceived, the Marines planned to purchase 1,025 of them at a total cost of $8.5 billion. Subsequently, a DoD estimate put the program's cost at upwards of $14 billion dollars, while the Marines had trimmed their order to 573 vehicles. In effect, even assuming those final figures were to hold, the cost of the EFV had risen from $8.3 million per vehicle to slightly more than $23 million. Overall, the Pentagon estimated it had spent $2.9 billion on the program in R&D and testing costs before buying a single vehicle.

Wrong Weapon for the Wrong War?

The ongoing litany of failures associated with the EFV's development gave rise to some more fundamental questions about the purpose behind developing the vehicle. Critics argued that the EFV simply did not serve a meaningful role in the modern Marine Corps' mission. Among their concerns were the following points:

- Modern warfare does not offer options for "storming the beaches," as the old Marine Corps model envisions. Low-level, regional, or urban conflicts make the need for amphibious assault an anachronism in the modern

day. As Laura Peterson, a defense analyst with Taxpayers for Common Sense, suggested, "This thing isn't just fighting the last war, it's fighting last century's wars."

- The advance in cruise missile technology makes the "25 mile offshore" model obsolete. When the EFV was envisioned, it was believed that the Navy could protect its ships by remaining just over the horizon, disembarking EFVs from that distance to assault enemy shores. Critics contended that new cruise missiles have a range of over 100 miles, making the EFVs or the Navy's ships vulnerable to attack if they were to follow the original model.
- The flat bottom of the EFV, necessary for ship-to-shore transportation, makes them extremely vulnerable to the shaped charges from improvised explosive devices (IEDs), used so effectively in Iraq and Afghanistan. General Dynamics argued that redesigning the bottom of the vehicle would alter its amphibious characteristics.

A number of senior Pentagon officials, including the Commandant of the Marine Corps, stood by the EFV, arguing that the Marine's "expeditionary" mission will remain alive and in effect into the foreseeable future. The EFV, they believed, was a critical element in the deployment and striking capability of the Marines. However, other high-ranking government officials, including the Secretary of Defense, gave only tepid and qualified support for the continued development and deployment of the EFV.

Final rounds of funding began to limit additional money for the EFV and to tie continued support to the ability of General Dynamics and the Marines to demonstrate much improved reliability and overall system effectiveness. For example, in 2010 the Senate Appropriations Committee authorized $38 million for one more round of tests and set aside $184 million to shut the program down in the event the vehicle failed the tests again. The axe finally fell at the start of 2011, when Secretary Gates sent his preliminary budget to Congress. Among the casualties of the cost-cutting knife was the EFV program. The program had long been teetering on the brink, so in a world of smaller Pentagon budgets and more aggressive program oversight, perhaps it was inevitable that the EFV would finally slip over the edge.[1]