



# VH-71 Presidential Helicopter Program: Background and Issues for Congress

**Ronald O'Rourke**  
Specialist in Naval Affairs

July 13, 2009

Congressional Research Service

7-5700

[www.crs.gov](http://www.crs.gov)

RS22103

## Summary

The VH-71 program is intended provide 23 new presidential helicopters to replace the current fleet of 19 aging presidential helicopters. As part of its proposed FY2010 Department of Defense (DOD) budget, the Administration is proposing to terminate the VH-71 program in response to substantial cost growth and schedule delays in the program. As a successor to the VH-71 program, the Administration is proposing to begin a new presidential helicopter program in FY2010 called the VXX Presidential Helicopter Program.

The Administration's proposed FY2010 budget requests \$85.2 million in Navy research and development funding for the VH-71 program. Of this total, \$55.2 million is for terminating the VH-71 program and \$30 million is for initial studies on the proposed successor VXX program.

The issue for Congress is whether to approve the Administration's proposal to terminate the VH-71 program and initiate a successor VXX program, or pursue another course, such as continuing the VH-71 program in some restructured form. Congress's decision on the issue could affect DOD funding requirements, the schedule for replacing the 19 older helicopters, and the helicopter industrial base. This report will be updated as events warrant.

The House and Senate Armed Services Committees, in their markups of the FY2010 defense authorization bill (H.R. 2647/S. 1390), both recommended approving the Administration's FY2010 funding request for the VH-71 program. The House Armed Services Committee, in its report (H.Rept. 111-166 of June 18, 2009) on H.R. 2647, stated: "The committee supports a new acquisition plan which may incorporate more than a one platform solution to the needs of the President. The committee notes that [this CRS report] cites Navy estimates that a new acquisition program would cost \$10.0 to \$17.0 billion. Therefore, the committee strongly suggests that the Department of Defense consider continuing procurement of the current 'increment 1' helicopter for use as the normal transport for the President, and study other alternatives for Presidential transport in other situations. The committee notes that this approach will leverage on the investment already made by the taxpayer in developing a helicopter that would meet all normal requirements of the President."

# Contents

Introduction .....	1
Background .....	1
Mission of Presidential Helicopters .....	1
Existing Presidential Helicopters .....	2
VH-71 Program .....	2
Program Origin .....	2
Lead Service .....	2
Competition and Contract Award.....	3
Contractors .....	3
Increment I and II Helicopters .....	3
Program Funding .....	4
Growth in Estimated Total Acquisition Cost and Nunn-McCurdy Breach.....	5
Schedule Delays.....	5
Status of Increment I Aircraft .....	6
March 2009 GAO Report .....	6
Proposed Cancellation of VH-71 Program .....	8
February 23 Remarks by President Obama .....	8
April 6 Announcement by Secretary Gates .....	9
FY2010 Budget Submission.....	10
May 15 Termination Memorandum and Navy Stop-Work Order .....	10
May 20 Statement On Possibility of Two Designs .....	11
June 1 Announcement of Intent to Terminate.....	11
Estimated Cancellation and Termination Costs .....	12
Proposed VXX Successor Program .....	12
Potential Alternatives to Administration's Proposed Course.....	13
Continue With VH-71 Program In More or Less Current Form.....	13
Restructure VH-71 Program To One That Provides 23 Increment I Aircraft .....	13
Restructure VH-71 Program to One That Provides 19 Increment I Aircraft .....	14
Upgrade and Extend Lives of Existing Helicopters; No Acquisition Program.....	14
Issue For Congress .....	15
Factors to Consider .....	15
Potential Costs and IOC/FOC Dates .....	15
Degree of Urgency for Replacing 19 Existing Helicopters .....	15
Potential Adequacy of Increment I Aircraft.....	16
Program Requirements .....	18
Industrial Base .....	18
Notional Arguments Regarding Options .....	18
Legislative Activity in 2009 .....	20
FY2010 Defense Authorization Bill (H.R. 2647/S. 1390) .....	20
Funding Request .....	20
House .....	20
Senate .....	21
FY2009 Supplemental Appropriations Act (H.R. 2346/P.L. 111-32).....	21
House .....	21
Senate .....	21
Conference.....	21

## **Appendixes**

Appendix. May 19, 2009, Hearing on FY2010 Navy Aviation Programs.....	22
---	----

## **Contacts**

Author Contact Information .....	27
----------------------------------	----

## Introduction

The VH-71 program is intended provide 23 new presidential helicopters to replace the current fleet of 19 aging presidential helicopters. As part of its proposed FY2010 Department of Defense (DOD) budget, the Administration is proposing to terminate the VH-71 program in response to substantial cost growth and schedule delays in the program. As a successor to the VH-71 program, the Administration is proposing to begin a new presidential helicopter program in FY2010 called the VXX Presidential Helicopter Program.

On May 15, 2009, Ashton Carter, the DOD acquisition executive,<sup>1</sup> issued an internal DOD memorandum directing that the VH-71 program be cancelled. The Navy announced the same day that it had issued a stop-work order on the VH-71 program. On June 1, 2009, the Navy announced that it would terminate the main contract for the program, called the System Development and Design (SDD) contract.

The Administration's proposed termination of the VH-71 program is one of the higher-profile program cancellations or reductions in the proposed FY2010 DOD budget, and has emerged as an item of discussion in the debate on FY2010 defense funding.<sup>2</sup>

The issue for Congress is whether to approve the Administration's proposal to terminate the VH-71 program and initiate a successor VXX program, or pursue another course, such as continuing the VH-71 program in some restructured form. Congress's decision on the issue could affect DOD funding requirements, the schedule for replacing the 19 older helicopters, and the helicopter industrial base.

## Background

### Mission of Presidential Helicopters

Presidential helicopters are operated by the Marine Corps in a squadron called Marine Helicopter Squadron One (HMX-1). DOD states that HMX-1 "is required to provide safe and timely transportation for the President and Vice President of the United States, heads of state and others as directed by the White House Military Office (WHMO)."<sup>3</sup> In addition to providing the president and others with safe and timely transportation, presidential helicopters are equipped with specialized self-defense features and specialized communications equipment that permits the president to carry out critical command functions while aboard. Presidential helicopters need to

---

<sup>1</sup> The formal title for the DOD acquisition executive is the Under Secretary of Defense (Acquisition, Technology and Logistics (USD [ATL].)

<sup>2</sup> See, for example, Bettina H. Chavanne and Andy Nativi, "Congressional, Trans-Atlantic Objections To VH-71 Cancellation Grow Louder," *Aerospace Daily & Defense Report*, June 5, 2009: 1-2; and Rebekah Gordon, "Murtha to Navy: Find a Way to Leverage \$3.2 Billion Already Spent on VH-71," *InsideDefense.com (DefenseAlert-DailyNews)*, June 3, 2009.

<sup>3</sup> *Department of the Navy Fiscal Year (FY) Budget Estimates, Justification of Estimates, May 2009, Research, Development, Test & Evaluation, Navy, Budget Activity 5, Exhibit R-2, DRT&E Budget Item Justification for Program Element (PE) 0604273N, VH71A Executive Helo Development*, page 1 of 23 (overall page 351 of 1037).

be large enough to carry a certain number of passengers and mission equipment, but small enough to operate from the White House lawn.

## **Existing Presidential Helicopters**

The existing presidential helicopter fleet of 19 helicopters includes 11 VH-3D helicopters that achieved Initial Operational Capability (IOC) in 1975, and 8 VH-60N helicopters that achieved IOC in 1989. The helicopters have had their services lives extended and have been regularly upgraded over time. Examples of upgrades include new and more effective main rotor blades, improved communications, and better cockpit displays.<sup>4</sup>

## **VH-71 Program<sup>5</sup>**

### **Program Origin**

The VH-71 program traces back to the late-1990s, but was formally started earlier in this decade. HMX-1 submitted a Fleet Operational Needs document in March 1998. A Mission Needs Statement (MNS) was approved in September 1999. In November 2002, a White House memorandum stated a need to accelerate the effort. The Center for Naval Analyses (CNA) completed a presidential helicopter Analysis of Alternatives (AOA), meaning a comparison of acquisition alternatives, in July 2003. An Operational Requirements Document (ORD) was approved by DOD's Joint Requirements Oversight Council (JROC) in December 2003, and a DOD Acquisition Decision Memorandum (ADM) that same month directed a program that would provide replacement helicopters with an IOC of the first quarter of FY2009. The program received Milestone B/C approval—its initial milestone approval—on January 27, 2005.

The VH-71 program was established with a sense of urgency. DOD officials argued at the time that in light of security issues raised by the terrorist attacks of September 11, 2001, replacing the existing presidential helicopter was an urgent matter. It was reported that White House officials repeatedly urged DOD to accelerate the VH-71 program, proposing an IOC by 2007.<sup>6</sup> Numerous VH-71 program documents and statements by DOD officials referred to the “urgent need” to field a new presidential helicopter.

### **Lead Service**

The Navy is the lead service for the VH-71 acquisition program. The Navy and Marine Corps are organized under the Department of the Navy, and Marine Corps aircraft are acquired through the Navy's research and development and aircraft procurement appropriation accounts.

---

<sup>4</sup> “News Breaks.” *Aviation Week & Space Technology*. May 29, 2006. Bettina Chavanne. “Lockheed Martin Watching, Waiting As VH-71 Rhetoric Escalates.” *Aerospace Daily & Defense Report*. February 26, 2009.

<sup>5</sup> Principal sources for this section include justification materials for the FY2010 budget and DOD and Navy information papers and briefing slides for Congress on the VH-71 program.

<sup>6</sup> Christopher Castelli, “Facing Criticism From Christie, Young Defends Rapid VXX Schedule,” *Inside the Navy*, February 7, 2005.

## **Competition and Contract Award**

The Navy conducted a competition for the VH-71 program, which was earlier called the VXX program (not to be confused with the successor VXX program that the Administration is now proposing to initiate). The competitors for the program were industry teams led by Sikorsky and Lockheed Martin. Sikorsky, a leading U.S. helicopter manufacturer and the maker of the existing VH-3D and VH-60N presidential helicopters, submitted a bid based on Sikorsky's S-92 helicopter. Lockheed Martin submitted a bid based on the EH-101, a somewhat larger helicopter made by AugustaWestland, an Anglo-Italian helicopter manufacturer. The competition was closely followed by various observers, in part because of the prestige of being the maker of the helicopter used by the U.S. president, and also because the competition pitted a U.S. helicopter design against a European helicopter design.

On January 28, 2005 (three days after the program received Milestone B/C approval), John Young, the Navy's acquisition executive,<sup>7</sup> announced that the Lockheed-led team had won the competition. Navy representatives stated the Lockheed bid was chosen over the Sikorsky bid in part because the EH-101 was deemed more likely to be able to meet the program's operational requirements on time and at a lower cost. Some observer's criticized the Navy's award decision, in part because the winning team included foreign companies.

## **Contractors**

The prime contractor for the VH-71 program is Lockheed Martin System Integration (LMSI) of Owego, NY. Lockheed's contract for the program, called a System Development and Design (SDD) contract, is a Cost Plus Award Fee (CPAF) contract. Major VH-71 program subcontractors include AugustaWestland of the UK and Italy, which is responsible for production of the basic VH-71 helicopter, and Bell Helicopter of Fort Worth, TX, which is responsible for VH-71 final assembly and logistics.

Prime contractors for the existing fleet of VH-3D and VH-60N helicopters include Sikorsky of Stratford, CT, which manufactured the helicopters and operates a rework facility for them, and Rockwell Collins of Cedar Rapids, IA, which is responsible for VH-60N Cockpit Upgrade Program (CUP) avionics integration.

General Electric of Lynn, MA, is a major subcontractor responsible for engines on both the VH-71 helicopter and the existing VH-3D and VH-60N helicopters.

## **Increment I and II Helicopters**

The goal of the VH-71 program is to provide 23 new presidential helicopters to replace the 19 existing presidential helicopters. The VH-71 program is divided into Increment I and Increment II helicopters. Increment I helicopters, which meet some but not all of the operational requirements in the VH-71 ORD, were to enter service first as near-term replacements for some of the existing presidential helicopters. Increment II helicopters, which were to fully meet the requirements in the VH-71 ORD, were to enter service later.

---

<sup>7</sup> The formal title of the Navy's acquisition executive is Assistant Secretary of the Navy (Research, Development and Acquisition).

The numbers of Increment I and Increment II helicopters to be acquired through the VH-71 program have changed over the life of the program. Just prior to the submission of the proposed FY2010 budget, the program included eight government-funded Increment I helicopters and 26 government-funded Increment II helicopters, for a total of government-funded 34 helicopters. The eight Increment I helicopters include three test aircraft not intended to enter operational service, and five pilot production aircraft intended to enter operational service as interim replacements for some of the existing presidential helicopters. The 26 Increment II helicopters include three test aircraft not intended to enter operational service, and 23 production aircraft intended to enter operational service.

The VH-71 program as of early-2009 also included a fourth Increment I test aircraft that was funded by industry, and a fourth Increment II test aircraft that would be funded by industry. Including these two industry-funded test aircraft would make for a total of 36 industry- and government-funded aircraft, including nine Increment I aircraft and 27 Increment II aircraft.

At an earlier stage in the VH-71 program, four of the five pilot production Increment I helicopters were to be retrofitted to the Increment II standard (the fifth is to be used for live-fire testing), and 19 additional Increment II helicopters were to be procured, making for a total of 23 new and retrofitted Increment II helicopters. The program was subsequently changed to drop the plan for retrofitting four pilot production Increment I helicopters and to purchase 23 new Increment II helicopters instead.

## **Program Funding**

### ***Location in Budget***

The VH-71 program has been funded through the Navy's research and development appropriation account, known formally as the Research, Development, Test & Evaluation, Navy (RDT&EN) account. The funding is contained in Program Element (or PE, meaning line item) 0604273N in the RDT&EN account, entitled VH-71A Executive Helo (i.e., helicopter) Development. The program was to be funded in future fiscal years through both the RDT&EN account and the Navy's aircraft procurement appropriation account, known formally as the Aircraft Procurement, Navy (APN) account. There is also some military construction (MilCon) funding associated with the VH-71 program for the construction of VH-71-related facilities.

### ***FY2009 and FY2010 Funding***

The Navy requested a total of \$1,047.8 million for the VH-71 program in FY2009. Congress appropriated \$835.0 million—a reduction of \$212.8 million from the request. The reduction came from \$312.8 million that was requested for the Increment II portion of the program, leaving \$100 million for Increment I. Following enactment of the FY2009 defense budget, DOD adjusted the appropriated figure of \$835 million downward to \$831.8 million.

The Navy's proposed FY2010 budget requests \$85.2 million for the VH-71 program, all of which is in PE0604273N of the RDT&EN account. Of this total, \$55.2 million is for Increment I, for use in terminating the program, none is for Increment II, and \$30 million is for initial studies on the proposed successor VXX program.



### ***Obligations and Expenditures of Prior-Year Funding***

As of April 10, 2009, about \$3.3 billion in funding had been obligated for the VH-71 program (including about \$3.1 billion in RDT&E funding and about \$179 million in MilCon funding), and about \$2.9 billion had been expended (including about \$2.7 billion in RDT&E funding and \$171 million in MilCon funding). Of the \$831.8 million in FY2009 funding for the program, the Navy as of May 12, 2009, had obligated \$709.2 million and expended \$288.2 million.

### **Growth in Estimated Total Acquisition Cost and Nunn-McCurdy Breach**

The estimated total acquisition (i.e., development plus procurement) cost of the VH-71 has grown considerably over time. In January 2005, the program's total acquisition cost was estimated at about \$6.5 billion in then-year dollars. In January 2008, it was estimated at about \$11.2 billion in then-year dollars. In December 2008, it was estimated at about \$13.0 billion in then-year dollars—twice the January 2005 estimate. The figure of about \$13.0 billion in then-year dollars translates into about \$11.9 billion in constant FY2009 dollars.<sup>8</sup>

Of the total estimated acquisition cost of \$13.0 billion in then-year dollars, about \$9.9 is RDT&EN funding, \$2.9 billion in APN funding, and about \$200 million in MilCon funding. Of the \$9.9 billion in RDT&EN funding, about \$4.6 billion is for Increment I and about \$5.3 billion is for Increment II. The total estimated cost of the Increment II aircraft would appear to be about \$8.2 billion (this includes the \$2.9 billion in APN funding, which appears to be for Increment II aircraft only, plus the \$5.3 billion in RDT&EN funding for Increment II).

The growth in the program's estimated total acquisition cost led to what is known as a Nunn-McCurdy breach, meaning a growth in cost sufficient to trigger the Nunn-McCurdy provision (10 USC 2433), which requires DOD to notify Congress whenever a major defense acquisition program breaches an established cost overrun threshold. Programs that experience a Nunn-McCurdy breach face cancellation unless they are certified for continuation by the Secretary of Defense.<sup>9</sup> DOD notified Congress of the program's Nunn-McCurdy breach in late-January 2009.<sup>10</sup>

### **Schedule Delays**

The VH-71 program has experienced significant schedule delays, and estimated dates for having VH-71s enter operational service are now years beyond what was originally planned. Under the original program milestones for the VH-71 program, the Increment I helicopters were to achieve IOC at the start of FY2009, the Increment II helicopters were to achieve IOC toward the end of

<sup>8</sup> The Navy states that the December 2008 estimated total acquisition cost of \$12,999 million in then-year dollars equates to \$10,358 million in calendar year (CY) 2003 dollars—a sum that equates to about \$11.9 billion in constant FY2009 dollars.

<sup>9</sup> Under the Nunn-McCurdy provision, a significant cost breach occurs when the Program Acquisition Unit Cost (PUAC) increases 15% or more over the current baseline estimate or 30% or more over the original baseline estimate. A critical breach occurs when the PUAC increases 25% or more over the current baseline estimate or 50% or more over the original baseline estimate. Source: Defense Acquisition Reform. Written Statement of Moshe Schwartz, Analyst in Defense Acquisition Congressional Research Service. Submitted to Senate Armed Services Committee, March 3, 2009.

<sup>10</sup> Zachary M. Peterson, "Navy: New VH-71 Presidential Helicopter Breached Cost Threshold," *Inside the Navy*, February 2, 2009.

FY2011, and the VH-71 fleet was to achieve full operational capability (FOC) in mid-FY2015. As of early 2009, the date for Increment I IOC had slipped to mid-FY2012 (a delay of about three and a half years), the date for Increment II IOC had slipped to late-FY2019 (a delay of almost eight years), and the FOC date had slipped to late FY2021 (a delay of more than six years).

Some observers believe that cost growth and schedule delays in the VH-71 program were made likely by the program's aggressive original schedule, which in turn reflected the view that there was an urgent need to replace the 19 existing presidential helicopters.

### **Status of Increment I Aircraft<sup>11</sup>**

The nine Increment I aircraft include four test vehicles (TVs), one of which was industry-funded and the others government-funded, and five pilot production (PP) aircraft, all of which were government-funded. As of June 17, 2009, the status of these nine aircraft was as follows:

- TV-4—the industry-funded test vehicle—was complete and about 75% missionized (i.e., equipped with mission-related systems).
- TV-3 was located at the Naval Air System Command's facility at Patuxent River, MD. It was complete and 100% missionized.
- TV-2 and TV-5 were also located at Patuxent and were being used as air-quality trainers, meaning that they flew for purposes such as vibration testing and evaluation of handling characteristics. They were complete as aircraft, but were not missionized.
- PP-2 and PP-5 were located at Patuxent and were being used for test flights. They were complete as aircraft, but were not missionized.
- PP-1, PP-3, and PP-4 were located at Owego, NY. They were in various stages of disassembly for the purpose of being missionized, but no missionization had been accomplished.

### **March 2009 GAO Report**

A March 2009 Government Accountability Office (GAO) report on the status of various DOD major weapon acquisition programs stated the following in its entry on the VH-71 program:

#### **Technology Maturity and Design Maturity**

Increment I of the VH-71 program is nearing technology maturity and design stability. A January 2004 Technology Readiness Assessment concluded that there are no critical technologies on the program. One of the two critical technologies originally identified by the program—the Communication and Subsystem Processing Embedded Resource Communication Controller—has been tested in a laboratory setting, but not demonstrated in a realistic environment. As of May 2008, about 90 percent of expected Increment I engineering drawings were released.

---

<sup>11</sup> Source for this section: Information provided to CRS program office by VH-71 program office on June 17, 2009.

For Increment II, no critical technologies have been identified. Program officials estimate roughly 50 percent of the Increment I and II designs will be common. The most significant differences will be a new engine, transmission, and main rotor blade. The Increment II blade will be larger than Increment I, and will employ a new design, which has been implemented on another aircraft but must be scaled up by 30 percent.

### **Production Maturity**

Increment I production is underway, but concurrent design, production, and testing continues to drive program risk. Although VH-71 officials have identified metrics to evaluate production, they said that they have not been able to set specific targets for these measures because of continued design iterations. Program officials reported some quality concerns with the initial aircraft, including foreign object debris, but DCMA officials noted that these issues are of concern only because of the rigorous standards of a presidential aircraft, and would not otherwise be seen as problems. The program office is flight testing two Increment I aircraft. Delivery of the first missionized test article is expected in April 2009, which will allow testing of the aircraft's integrated systems.

### **Other Program Issues**

The VH-71 program began with a compressed schedule dictated by White House needs stemming from the September 11, 2001, terrorist attacks. According to the program manager, this aggressive acquisition strategy included a source selection process that was shorter than desired and contributed to confusion regarding specifications between the program office and the contractor and concurrent design, testing, and production that resulted in increased program risk, an unsustainable schedule, and inaccurate cost estimates. As a result of continued cost growth, program officials expect to initiate the certification process for a critical Nunn-McCurdy breach in January 2009.

Increment II is being restructured and the VH-71 program office recently requested a proposal from Lockheed Martin to modify its existing contract to reflect the restructured program. The program faces significant challenges due to funding instability. Fiscal year 2008 budget reductions slowed program progress, and a stop work order has been in place for Increment II since December 2007. In addition, the joint statement accompanying the 2009 Defense Appropriation Act recommended \$212 million less funding than requested for Increment II. According to program officials, this will prevent any Increment II work during fiscal year 2009 and result in a further 18-month delay in Increment II initial operating capability beyond the fiscal year 2017 date anticipated in the proposed restructured schedule. Officials also said the shortfall would cause about \$640 million in cost growth above the \$11.2 billion estimated total program cost.

Increment I aircraft will have a short service life of 1,500 hours compared to the 10,000-hour service life of Increment II aircraft. The program manager estimated that remedies to extend use of Increment I aircraft would take about 4 years to implement, making this approach of limited use to address delays in Increment II availability. According to program officials, the short service life is in part because Increment I lacks some redundant fail-safe design elements. Program officials have requested funding for a fatigue test article, but they stated that it would take 2 years to assess fatigue problems and another 2 years to develop remedies.

### **Program Office Comments**

In commenting on a draft of this assessment, the Navy stated that the program is executing an accelerated schedule driven by an urgent need to replace existing aging assets. Concurrency in development, design, and production was necessary to meet the accelerated

schedule, but Increment II will follow a more typical acquisition approach. The Navy reported that significant production maturity has been demonstrated for Increment I, including the first flights of two pilot production aircraft.<sup>12</sup>

## Proposed Cancellation of VH-71 Program

### February 23 Remarks by President Obama

On January 23, 2009, President Obama stated that he thought the VH-71 program was “an example of the procurement process gone amuck.”<sup>13</sup> Obama’s comments led some observers to speculate that the Administration might propose the termination of the program as part of its FY2010 budget submission.<sup>14</sup>

<sup>12</sup> Government Accountability Office, *Defense Acquisitions[:] Assessments of Selected Weapon Programs*, GAO-09-326SP, March 2009. p. 144.

<sup>13</sup> The president made the remark as part of a question-and-answer session in the Dwight D. Eisenhower Executive Office Building at the closing of an administration event called the Fiscal Responsibility Summit. The president’s remark was made as part of an exchange with Senator John McCain, who was one of those in attendance at the question-and-answer session. The text of the exchange between Senator McCain and the president is as follows:

SENATOR MCCAIN: Just one area that I wanted to mention that I think consumed a lot of our conversation on procurement was the issue of cost overruns in the Defense Department. We all know how large the defense budget is. We all know that the cost overruns—your helicopter is now going to cost as much as Air Force One. I don’t think that there’s any more graphic demonstration of how good ideas have cost taxpayers an enormous amount of money.

So we will—and I know that you’ve already made plans to try to curb some of the excesses in procurement. We really have to do that. We’re going to have to pay for Afghanistan, as you well know, and we’re not done in Iraq. But most importantly, we have to make some tough decisions—you, Mr. President, have to make some tough decisions about not only what we procure, but how we procure it.

And I thank you for the opportunity and sharing your thoughts with a lot of very smart people.

THE PRESIDENT: Well, John, let me—this is going to be one of our highest priorities. By the way, I’ve already talked to Gates about a thorough review of the helicopter situation. The helicopter I have now seems perfectly adequate to me. (Laughter.) Of course, I’ve never had a helicopter before—(laughter)—maybe I’ve been deprived and I didn’t know it. (Laughter.)

But I think it is a—it is a—an example of the procurement process gone amuck. And we’re going to have to fix it. Our hope is, is that you, Senator Levin, and others, can really take some leadership on this.

And one of the promising things is I think Secretary Gates shares our concern and he recognizes that simply adding more and more does not necessarily mean better and better, or safer and more secure. Those two things are not—they don’t always move in parallel tracks, and we’ve got to think that through.

(Source: Transcript of session, available online at [http://www.whitehouse.gov/the\\_press\\_office/Remarks-by-the-President-in-QandA-session-at-closing-of-Fiscal-Responsibility-Summ/](http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-in-QandA-session-at-closing-of-Fiscal-Responsibility-Summ/))

<sup>14</sup> See, for example, R. Jeffrey Smith, “Marine One Upgrade Now Looks Less Likely,” *Washington Post*, February 24, 2009: 5; Zachary M. Peterson, “Sources: Presidential Helicopter Strands Little Chance of Survival,” *Inside the Navy*, March 2, 2009; and Christopher P. Cavas, “Renewed Verbal Assaults Put VH-71 on Shaky Ground,” *Defense News*, March 2, 2009: 7.

## **April 6 Announcement by Secretary Gates**

On April 6, 2009, Secretary of Defense Robert Gates announced a series of recommendations he was making to the president regarding the Administration's proposed FY2010 defense budget. Among these, he said, was a recommendation to terminate the VH-71 program. In his announcement, Secretary Gates stated that:

In today's environment, maintaining our technological and conventional edge requires a dramatic change in the way we acquire military equipment. I believe this needed reform requires three fundamental steps.

First, this department must consistently demonstrate the commitment and leadership to stop programs that significantly exceed their budget or which spend limited tax dollars to buy more capability than the nation needs....

Second, we must ensure that requirements are reasonable and technology is adequately mature to allow the department to successfully execute the programs. Again, my decisions act on this principle by terminating a number of programs where the requirements were truly in the "exquisite" category and the technologies required were not reasonably available to affordably meet the programs' cost or schedule goals.

Third, realistically estimate program costs, provide budget stability for the programs we initiate, adequately staff the government acquisition team, and provide disciplined and constant oversight.

We must constantly guard against so-called "requirements creep," validate the maturity of technology at milestones, fund programs to independent cost estimates, and demand stricter contract terms and conditions. I am confident that if we stick to these steps, we will significantly improve the performance of our defense acquisition programs. But it takes more than mere pronouncements or fancy studies or reports. It takes acting on these principles by making tough decisions and sticking to them going forward....

Fully reforming defense acquisition also requires recognizing the challenges of today's battlefield and constantly changing adversary. This requires an acquisition system that can perform with greater urgency and agility. We need greater funding flexibility and the ability to streamline our requirements and acquisition execution procedures.

The perennial procurement and contracting cycle—going back many decades—of adding layer upon layer of cost and complexity onto fewer and fewer platforms that take longer and longer to build must come to an end. There is broad agreement on the need for acquisition and contracting reform in the Department of Defense. There have been enough studies. Enough hand-wringing. Enough rhetoric. Now is the time for action.

First, I recommend that we terminate the VH-71 presidential helicopter:

- This program was originally designed to provide 23 helicopters to support the president at a cost of \$6.5 billion. Today, the program is estimated to cost over \$13 billion, has fallen six years behind schedule, and runs the risk of not delivering the requested capability.
- Some have suggested that we should adjust the program by buying only the lower capability "increment one" option. I believe this is neither advisable nor affordable. Increment One helicopters do not meet requirements and are estimated to have only a five- to 10-year useful life. This compares to the current VH-3 presidential helicopters that are 30 to 40 years old.

- We will promptly develop options for an FY11 follow-on [presidential helicopter] program.<sup>15</sup>

## FY2010 Budget Submission

The Administration's proposed FY2010 budget, with its proposal to terminate the VH-71 program and initiate a successor VXX program, was submitted to Congress in early May 2009. The Administration's FY2010 budget submission includes a document summarizing program terminations, reductions, and savings. The document's entry on the VH-71 program stated:

The VH-71 program is six years behind schedule, and its cost has grown from \$6.5 billion to over \$13 billion. Over \$3.2 billion has already been spent on this program with no operational aircraft delivered. The Government Accountability Office has warned that future costs of the VH-71 are unknown, and the Congressional Research Service has raised the question if the current program should be cancelled.<sup>16</sup> These high costs and schedule slippage have occurred because of challenging program requirements and an ambitious schedule. Instead of continuing to pursue the current program, the Administration proposes to cancel it, review requirements, and establish a new program. A new Presidential Helicopter replacement program will allow the Administration to take advantage of new technologies and develop a helicopter that is fiscally responsible while still meeting the President's requirements.

Funding in 2010 will cover termination costs, Government efforts to develop options for a Presidential Helicopter replacement program, and service life extensions for the current Presidential Helicopter fleet.<sup>17</sup>

## May 15 Termination Memorandum and Navy Stop-Work Order

On May 15, 2009, Ashton Carter, the DOD acquisition executive, issued an Acquisition Decision memorandum (ADM)—an internal DOD memorandum—directing that the VH-71 program be cancelled.<sup>18</sup> The Navy announced the same day that it had issued a stop-work order for both Increment I and Increment II of the VH-71 program. A press report on the Navy's announcement stated:

"The Naval Air Systems Command Contracting Office directed stop-work on all activities associated with VH-71 Systems Design and Demonstration requirements, with the exception of security requirements and protection of government property, information and equipment during the orderly transition of these functions to the government," Navy spokesman Lt. Clay Doss said in a statement.

---

<sup>15</sup> Source: Defense Budget Recommendation Statement (Arlington, VA), [Text] As Prepared for Delivery by Secretary of Defense Robert M. Gates, Arlington, VA, Monday, April 06, 2009, available online at <http://www.defenselink.mil/speeches/speech.aspx?speechid=1341>.

<sup>16</sup> The document at this point cites the March 5, 2009, version of this CRS report, which stated that "the key question facing the 111<sup>th</sup> Congress is whether to cancel or to restructure the program."

<sup>17</sup> Office of Management and Budget, *Terminations, Reductions, and Savings, Budget of the U.S. Government, Fiscal Year 2010*, Washington, 2009. p. 50.

<sup>18</sup> See, for example, Christopher Drew, "Work Halted On Helicopter For President," *New York Times*, May 16, 2009: B1.



The order allows the government to reduce program expenditures and secure property and equities for future decisions on the presidential helicopter program, Doss said.

He attributed the cancellation to cost growth that breached thresholds set by the Nunn-McCurdy act. A comprehensive program review that took place during the development of the fiscal year 2010 president's budget submission led to its cancellation.

"The Navy will begin to develop options for a presidential helicopter replacement program and present these to the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics within 30 days," Doss' statement reads.

He added that the FY-10 budget submission, released earlier this month, includes money for service life extensions of legacy presidential helicopters and to develop options for the presidential helicopter replacement program.

"The Navy continues to review a range of options regarding for already-built VH-71 aircraft to include sales to interested parties, contractor buy-back or potential applications to other [Pentagon] needs," Doss said.<sup>19</sup>

## May 20 Statement On Possibility of Two Designs

At a May 20, 2009 hearing before the Defense subcommittee of the House Appropriations Committee on the proposed FY2010 DOD budget, Secretary Gates stated that the VH-71 program was "a poster child for an acquisition process gone seriously wrong," and that one idea "worth pursuing" would be to procure two different presidential helicopters—"one that the president basically uses here in town to go to Andrews [Air Force Base] and on regular trips here in the United States and things like that, and an escape helicopter that has different kinds of capabilities and that could perhaps be a modified kind of helicopter that we use now in combat." Gates stated that "All of the [performance] requirements that are being placed on this helicopter may not be feasible in a single helicopter and maybe we look at one for escape and one for regular everyday use."<sup>20</sup>

## June 1 Announcement of Intent to Terminate

On June 1, 2009, the Navy announced that it would terminate the main contract for the VH-71 program, called the System Development and Design (SDD) contract. A news report on the announcement from the Navy's news service stated:

The Navy announced June 1 that it will terminate the VH-71 System Development and Demonstration (SDD) program contract. The announcement follows a Department of Defense (DoD) decision to cancel the existing presidential helicopter replacement program.

The VH-71 was intended to replace both the VH-3D and VH-60N aircraft currently used to conduct presidential support missions.

---

<sup>19</sup> Dan Taylor, "Navy Issues Stop-Work Order On VH-71 Presidential Helo," *InsideDefense.com (DefenseAlert—Daily News)*, May 15, 2009. Bracketed material as in the original.

<sup>20</sup> As quoted in Emelie Rutherford, "Gates Floats Idea of Two Pres Helos As Lawmakers Call For Salvaging VH-71," *Defense Daily*, May 21, 2009: 4-5. See also Andrea Shalal-Esa, "Pentagon Eyes Two Presidential Helicopter Models," *Reuters.com*, May 20, 2009.

Navy contract N00019-05-C-0030 and associated work with Lockheed Martin Systems Integration—Owego (LMSI-O), Owego, N.Y., awarded Jan. 28, 2005, for the SDD of the VH-71 program, has been terminated for the convenience of the government.

The under secretary of defense for acquisition, technology and logistics issued a VH-71 program acquisition decision memorandum May 15, 2009, which directed the program be cancelled, to include both Increment 1 and Increment 2.<sup>21</sup>

### **Estimated Cancellation and Termination Costs**

The Navy in February 2009 estimated the liability costs for terminating the VH-71 program at \$555 million, including \$405 million for Increment I and \$150 million for Increment II. The Navy further stated that program-cancellation costs beyond these estimated termination liability costs had not yet been determined.<sup>22</sup> The Navy stated in May 2009 that all prior-year funding available for the VH-71 program would be needed to cover costs associated with terminating the program.<sup>23</sup> The \$55.2 million in FY2010 funding requested for Increment I is also requested to cover costs associated with terminating the program.

### **Proposed VXX Successor Program<sup>24</sup>**

The Administration's proposed successor VXX Presidential Helicopter Program is not yet defined. One possibility would be a program that maintained a competition between two contractors (e.g., Lockheed and Sikorsky) through the preliminary design review (PDR) stage, and that included the procurement of 27 aircraft—four test aircraft not intended to enter operational service, and 23 production aircraft. Under such an approach, the Navy estimates that the production aircraft might achieve IOC around FY2024, and FOC around FY2026. The production aircraft would presumably be intended to meet all of the operational requirements established for the new program, which might equate to something less than, equal to, or greater than the operational requirements in the VH-71 ORD.

The Navy estimates the acquisition cost of such a program at \$10 billion to \$17 billion, depending on the operational requirements that are established for the program, and not including sunk costs of the VH-71 program of more than \$3 billion. This estimate includes the cost of reviewing operational requirements and conducting a new AOA, and of maintaining two contractors through PDR. It does not include costs to keep the 19 existing presidential helicopters in operation until they are replaced by new helicopters.

---

<sup>21</sup> "Navy Terminates Contract For VH-71 Presidential Helicopter," *Navy News Service (NNS)*, June 2, 2009. See also August Cole, "Navy Ends Lockheed's Copter Pact," *Wall Street Journal*, June 2, 2009; and Bettina H. Chavanne, "Navy Officially Terminates VH-71 Presidential Helo," *Aerospace Daily & Defense Report*, June 3, 2009: 2.

<sup>22</sup> Source: February 23, 2009, Navy information paper to Congress on VH-71 program. See also Andrea Shalal-Esa, "Navy Sees \$555 Million To Cancel President's Copter," *Reuters.com*, May 19, 2009.

<sup>23</sup> Source: May 12, 2009, Navy information paper to Congress on VH-71 program.

<sup>24</sup> This section is based on information provided in Navy briefing slides provided to the House Armed Services Committee in May 2009.



## Potential Alternatives to Administration's Proposed Course<sup>25</sup>

Potential alternatives to the Administration's proposed course of action include but are not limited to the following:

- continuing with the VH-71 program in more or less its current form—with program restructuring (e.g., schedule adjustments) as required to take recent program developments into account—and procuring 23 Increment II aircraft;
- restructuring the VH-71 program to one that would provide a total of 23 Increment I aircraft, including the five pilot production Increment I aircraft already procured, plus 18 additional Increment I aircraft;
- restructuring the VH-71 program to one that would provide a total of 19 Increment I aircraft (providing a one-for-one replacement of the current force of 19 existing presidential helicopters), including five pilot production Increment I aircraft already procured, plus 14 additional Increment I aircraft; and
- upgrading and extending the service life of the 19 existing presidential helicopters, and pursue no new presidential helicopter program of any kind, at least for the next several years.<sup>26</sup>

Each of these options is outlined briefly below.

### Continue With VH-71 Program In More or Less Current Form

Under this option, a 23 Increment II aircraft would be procured. The Navy estimates that the aircraft might achieve IOC in late FY2019, and FOC in late FY2021. The aircraft would be intended to fully meet the operational requirements in the VH-71 ORD. The Navy estimates the acquisition cost of this option at \$13 billion (or more), including sunk costs on the VH-71 program of more than \$3 billion, leaving a potential net cost going forward of about \$10 billion (or more). This estimate does not include costs of keeping the 19 existing presidential helicopters in operation until they are replaced by new helicopters, the cost of taking steps to reduce the weight of the Increment I pilot production aircraft so as to make them more effective during the time that they are in operation pending the delivery of Increment II aircraft, additional support costs for Increment I aircraft, and the effects on total program cost resulting from recent decisions regarding the VH-71 program, such as the May 15, 2009, stop-work order.

### Restructure VH-71 Program To One That Provides 23 Increment I Aircraft

Under this option, 18 Increment I aircraft would be procured. These 18 aircraft, plus the five pilot production Increment I aircraft, would make for a total fleet of 23 Increment I aircraft. The Navy estimates that the aircraft might achieve IOC in mid-2012, and FOC in late FY2019. The aircraft would meet some but not all of the operational requirements in the VH-71 ORD. The Navy

<sup>25</sup> This section is based on information provided in Navy briefing slides provided to the House Armed Services Committee in May 2009.

<sup>26</sup> In addition to the four options listed here, other possible alternatives, at least in theory, include procuring additional VH-70Ns or procuring helicopters derived from an existing design, as the CH-53K heavy-lift helicopter or the V-22 tilt-rotor aircraft.

estimates the acquisition cost of this option at \$9.4 billion, including Increment II termination costs and sunk costs on the VH-71 program of more than \$3 billion, leaving a potential net cost going forward of less than \$6.4 billion. The estimate does not include costs of keeping the 19 existing presidential helicopters in operation until they are replaced by new helicopters, the cost of a potential follow-on program to eventually replace the Increment I helicopters with new helicopters, and performance modifications to Increment I helicopters.<sup>27</sup>

### **Restructure VH-71 Program to One That Provides 19 Increment I Aircraft**

This option is similar to the previous one except that under this option, 14 rather than 18 additional Increment I aircraft would be procured. The acquisition cost of this option would be hundreds of millions of dollars less than that of the previous option due to the avoidance of costs associated with procuring four Increment I aircraft. The resulting fleet would have four fewer aircraft than under the previous option, but would have the same number of helicopters as the current presidential helicopter fleet.<sup>28</sup>

### **Upgrade and Extend Lives of Existing Helicopters; No Acquisition Program**

Under this option, the 19 existing presidential helicopters would be upgraded and their service lives would be extended. The VH-60Ns would have their service lives extended from 10,000

<sup>27</sup>For examples of press reports providing industry comments proposing or supporting this option, see Christopher J. Castelli, "Amid Soaring Costs, Lockheed Suggests Scaled-Back VH-71 Program," *Inside the Pentagon*, March 12, 2009; Tom Kington, "VH-71 Maker: U.S. Will Pare Requirements," *Defense News*, March 16, 2009: 4; and "[Interview with] Pierfrancesco Guarguaglini," *DefenseNews.com*, June 10, 2009.

<sup>28</sup> On June 5, 2009, *InsideDefense.com*, a subscription website, posted a two-page document supporting the procurement of 19 Increment I VH-71s ([http://www.insidedefense.com/secure/defense\\_extra.asp](http://www.insidedefense.com/secure/defense_extra.asp)). *InsideDefense.com* described the document as a "May 2009 white paper, prepared by Lockheed Martin." The document, however, is undated, and although the text of the document mentions that Lockheed Martin was awarded the contract for the VH-71 program in 2005, the document does not contain an explicit statement of its author. The document is entitled "On-Budget Option for Presidential Helicopter Fleet Replacement." The document asserts that a program for 19 Increment I helicopters would have a total cost of about \$6.8 billion, including \$3.0 billion in sunk costs on the VH-71 program, leaving a potential net cost going forward of about \$3.8 billion. (It also asserts that a program for 23 Increment I helicopters would have a total cost of about \$7.3 billion, including \$3.0 billion in sunk costs on the VH-71 program, leaving a potential net cost going forward of about \$4.3 billion.) The document makes several arguments in favor of procuring 19 Increment I VH-71s. It argues, for example, that "It is impossible to meet the urgent replacement schedule [for replacing the existing presidential helicopters] by standing up a new program. The VH-71A Increment I program is on schedule to reach Initial Operational Capability in April 2011. The development of the VH-71A is near completion and the entire [existing presidential helicopter] fleet could be replaced with [19] VH-71A aircraft by 2017...." The document argues that the VH-71 "is faster, safer, [and] can travel farther [than the existing presidential helicopters], possesses state of the art avionics, navigation, and communication systems, and allows for more passengers than [the existing presidential helicopters]. The VH-71A meets all key performance parameters including reliability, maintainability, and availability." The document argues that "A fleet of VH-71A aircraft is a low risk and cost effective solution. All four test aircraft and five production aircraft are built. Three dedicated Systems Integration Laboratories have been established and development of mission system software is 99% complete. The overall program is over two-thirds complete and the first missionized aircraft will enter flight test in May 2009, building on the more than 800 flight hours already accomplished by VH-71 test vehicles. The current achievements of the program could be leveraged to replace the existing fleet in the time required and with low risk to schedule and budget." The document argues that "The VH-71A also has room for growth with a low-cost, low-risk upgrade to use existing higher-performance main rotor blades to provide additional range and payload capability. This upgrade could be integrated into the current development program or provided in a spiral upgrade at a later time."

For a press article discussing this option, see Geoff Fein and Emelie Rutherford, "Rep. Bartlett Says VH-71 Contractor Wants To Build 14 Aircraft Under Fixed Price Contract," *Defense Daily*, June 5, 2009: 4-6.

flight hours to 12,000 flight hours, providing another 6.9 years of operation, and the VH-3Ds would have their service lives extended from 14,000 hours to 16,000 hours, providing another 6.7 years of operation. No new acquisition program for presidential helicopters would be pursued, at least for the next several years. The 19 existing aircraft would not meet at least some, and perhaps many, of the operational requirements in the VH-71 ORD.

The Navy estimates the cost of this option at \$4.4 billion, including VH-71 program termination costs and sunk costs on the VH-71 program more than \$3 billion, leaving a net cost going forward of less than \$1.4 billion. This option does not include the cost of a potential follow-on program to eventually replace the 19 existing helicopters with new helicopters.

## **Issue For Congress**

The issue for Congress is whether to approve the Administration's proposal to terminate the VH-71 program and initiate a successor program, or pursue another course, such as one of the potential alternatives outlined in the previous section.

## **Factors to Consider**

In assessing the Administration's proposed course of action and potential alternatives to it, general factors to consider include but are not limited to those briefly discussed below.

### **Potential Costs and IOC/FOC Dates**

Two factors that Congress may consider are the potential costs and IOC/FOC dates of the Administration's proposed course of action (i.e., the proposed successor VXX program) and potential alternatives to it. Navy estimates of such potential costs and IOC/FOC dates are summarized above.

### **Degree of Urgency for Replacing 19 Existing Helicopters**

Another factor that Congress may consider is the degree of urgency for replacing the 19 existing helicopters, which is not clear. The VH-71 program was initiated to meet what was described at the time as an urgent need to replace the 19 existing helicopters, and the structure of the VH-71 program reflected this urgency. Since the potential IOC and FOC dates of the Administration's proposed VXX helicopter program are later than the potential IOC and FOC dates of Increment II helicopters that would be procured under the option of continuing the VH-71 program, it would appear that the Obama Administration may view the replacement of the 19 existing helicopters as a less-urgent matter than others did years ago, when the VH-71 program was initiated. Key questions for Congress include the following:

- What are the potential technical risks of extending the service lives of the VH-60N and VH-3D airframes by various amounts of time?
- How much ability do the 19 existing helicopters have to accommodate additional mission-related upgrades in coming years? How might the resulting capabilities of the 19 helicopters compare to the operational requirements in the VH-71 ORD or those that might be established for the Administration's proposed VXX

program? What would be the operational risks of continuing to operate 19 existing helicopters that do not meet those requirements?

## Potential Adequacy of Increment I Aircraft

Another factor that Congress may consider concerns the potential adequacy of Increment I aircraft in meeting the need for aircraft to replace the 19 existing helicopters. Key variables to consider include the potential service life of Increment I aircraft; the degree to which Increment I aircraft would meet the operational requirements in the VH-71 ORD or those that might be established for a successor VXX program; and the potential for upgrading the Increment I design. Key questions for Congress include the following:

- What would be the service life of Increment I aircraft procured in lieu of Increment II or VXX aircraft?<sup>29</sup>

<sup>29</sup> Some reports have stated that Increment I aircraft might have a service life of 1,500 hours, which would be sufficient for only a few years of operation. Supporters of procuring Increment I aircraft have argued that this figure is an artifact of the Navy's original plan to use Increment I aircraft as interim aircraft pending the entry into service of Increment II aircraft. In light of this plan, supporters of procuring Increment I aircraft argue, the Navy did not fund the service life testing that would be needed to certify the Increment I design for more than 1,500 hours. Supporters of procuring Increment I aircraft argue that the EH-101 helicopter on which the VH-71 is based has a service life of 10,000 hours, and that the VH-71 could be certified for a similarly long service life if the Navy were to fund the requisite service life testing. A March 30, 2009, Navy information paper to Congress on the VH-71 program stated the following regarding the service life of Increment I aircraft:

**[CONGRESSIONAL] REQUEST:** Why is the VH-71 Increment 1 limited to only 1,500 flight hours? LM [Lockheed Martin] has stated that the aircraft has a service life up to 10,000 hours based on the EH-101.

**[NAVY] RESPONSE:** The VH-71 acquisition strategy is based on Increment 1 aircraft being an interim solution only until introduction of the Increment 2 aircraft. For this reason, the program office did not pursue a full 10,000 hour fatigue life certification for Increment 1; and therefore, service life was restricted to 1,500 hours. The ability of an aircraft to be airworthy over the course of a full 30 year (10,000 hour) service life depends upon a number of variables, but three key factors stand out for VH-71: 1) airframe fatigue life, 2) power available and growth margin, and 3) fail safety. The acquisition strategy played a key role in the Navy limiting the Increment 1 aircraft to 1,500 flight hours since the fatigue article was not procured and the aircraft at the proposed operating weight is not of a Fail Safe design. In deliberating whether Increment 1 becomes the end vice the interim solution, each of the above issues must be considered. The ability of the Increment 1 aircraft to perform its mission safely over a 30 year period (or 10,000 hours) is problematic, at best unless significant requirements compromises are made. A detailed discussion of each of the three issues is provided below.

### Airframe Fatigue Life

Increment 1 is designed for 10,000 flight hours but the program cut the airframe certification fatigue test to save cost. Standard practice in the absence of test data is to set the fatigue life at ~10% of design fatigue life. A service life of 1,500 hours was deemed adequate given the acquisition strategy. It is now apparent that Increment 1 aircraft will be in service longer than originally planned, and the program office has bought back the airframe fatigue life certification test in fiscal year 2009. The program will use a combination of fatigue testing, flight testing, post-test analysis, and more than likely, aircraft modifications to achieve additional fatigue life hours. An Increment 1 fatigue life over a potential 30 year/ 10,000 flight hour service life is viable through the above described process.

### Power Margin and Growth Margin

The Increment 1 aircraft is underpowered compared to the Increment 2 requirement. The operational requirement to Hover Out of Ground Effect (HOGE) with full mission payload under operational day conditions (3,000' feet, 95 degree day) was deferred to Increment 2 aircraft because Increment 1 provides significant capability above the legacy fleet and because it was acceptable to

(continued...)

- How would the capabilities of Increment I aircraft compare to the operational requirements in the VH-71 ORD or those that might be established for the Administration's proposed VXX successor program? What would be the operational risks of operating Increment I aircraft that do not fully meet those requirements?
- To what degree could Increment I aircraft be upgraded (either during original construction or at a later point) to meet more of the operational requirements in the VH-71 ORD or those that might be established for a successor VXX program? What would be the cost of such upgrading?

---

(...continued)

the White House Military Office. While the VH-71 Increment 2 aircraft includes all the design features (engine, transmission and blade upgrades) necessary to perform all Operational Requirements Document (ORD) missions over a 30 year service life, Increment 1 aircraft cannot because it lacks power margin.

Over the course of a 30 year service life, aircraft are typically modified to accommodate emerging technologies to deal with new requirements and threats. Over time aircraft grow in weight, and there ultimately reaches a point when no new capability can be added because the aircraft is too heavy. Operational risk management techniques, such as off loading fuel and passengers, become necessary to continue to perform the mission.

#### Fail Safety

Fail safety is a design standard widely employed since the 1970's. It prevents the loss of an aircraft in the event of a single point failure because of the incorporation of redundant structural load paths. For example, a fail safe design would require that the main rotor gearbox remain attached to the airframe in flight in the event that one of several gearbox-to-airframe attachments is severed. This design philosophy accounts for fatigue cracks that will likely occur over the course of a 30 year service life in an unexpected manner due to latent manufacturing flaws, damage accidentally induced during maintenance, or for loading anomalies not considered nor discovered by fatigue test certification.

After four years of study the VH-71A airframe design includes some areas which are not fail safe. Since the acquisition strategy was to field Increment 1 for an interim period only the fail safe risk was acknowledged and accepted. A fail safe design was deferred to Increment 2 since the transmission, engine and blade improvements were to be replaced anyway to achieve the required HOGS and range performance. Fail safety will come with these improvements at little additional cost.

Although Lockheed Martin Systems Integration, Owego is in work, again, on an Increment 1 fail safe study, at this time there is not a clear, cost effective, path to full fail safe capability. The current VH-3D and VH-60N Presidential Helicopter platforms are fully fail safe. These aircraft have experienced cracks on critical load bearing structure without catastrophic consequences. Fail safe design features prevented at least one cracking incidence on the Presidential VH-60N from being a catastrophic event. Fail safe design also prevented the MH-60S fleet from being grounded when cracks were discovered in critical load bearing structure.

#### Summary

Although it appears a viable path is available to certify Increment 1 fatigue life to 30 years/10,000 flight hours, the actual useful service life will be determined by the results of the fatigue test article as well as the power / growth margin measured against the approved requirements or possibly reduced requirements. Regardless of fatigue life, the risk associated with the lack of fail safety will grow over time with accumulation of flight hours. The sum of these factors makes the viability of the VH-71 Increment 1 aircraft problematic, at best, as a long term solution for the Presidential Helicopter Transport Mission and would require significant mitigations if it was deemed the final solution.

See also John M. Donnelly, "Pared-Down Helicopters Cost Less, But Navy Fears They Won't Last Long," *CQ Today*, March 20, 2009.



## **Program Requirements**

Another factor that Congress may consider concerns operational requirements for future presidential helicopters, which can affect assessments concerning the operational risks of continuing to operate the 19 existing presidential helicopters, the operational risks of procuring Increment I helicopters in lieu of Increment II helicopters, the need for 23 (rather than 19) new helicopters, and the potential requirements (and thus cost) of a successor VXX presidential helicopter program.

Owing to the unique security concerns surrounding an aircraft designed to carry the president, the specific technical and operational requirements for presidential helicopters are not fully discussed in public, which can make it difficult for outside observers to fully evaluate this issue.

One question that might be posed is why the VH-71 program includes a total of 23 Increment II helicopters, rather than 19. The VH-71 ORD stated a need for 23 helicopters but gave no indication that there is some shortcoming in the force of 19 existing helicopters that needs to be redressed with more aircraft. One potential question is whether an operational force of 19 new and more capable helicopters could replace an existing force of 19 old and less capable helicopters.

A second issue pertains to apparent growth in required VH-71 capabilities. The VH-71 ORD outlined the operational deficiencies of the 19 existing helicopters and described the more advanced capabilities required in the new helicopter. It was widely reported, however, that additional requirements were added to the Increment II helicopter after the VXX contract was awarded to Lockheed.<sup>30</sup> Some observers suggest that these additional capabilities are more than what is really required.<sup>31</sup> To what degree did these additional capabilities drive VH-71 program cost increases and schedule delays? If these capabilities were added to the VH-71 program after the VXX ORD was approved, are they valid requirements? If they were added to the VH-71 program after contract award, could that be viewed as a breach of good business practices, and would that be fair to Sikorsky?

## **Industrial Base**

Another factor that Congress may consider concerns the industrial-base implications of potential decisions regarding presidential helicopters. Issues to consider include potential numbers and locations of jobs created or sustained, the future health and competitiveness of helicopter manufacturing firms and their suppliers, and the U.S.-European trade in defense goods.

## **Notional Arguments Regarding Options**

Supporters of the Administration's proposed course of action could argue the following:

---

<sup>30</sup> See, for example: Geoff Fein. "VH-71 On Track to Meet October '09 IOC, Navy Says." *Defense Daily*. May 25, 2007. John Bennett. "Boeing Gripes Are Latest Charges of Pentagon Ignoring Requirements." *Defense News*. March 17, 2008.

<sup>31</sup> Michael Fabey. "Navy sticking with US101 for presidential helo; more costly mods expected." *Aerospace Daily & Defense Report*. January 17, 2008.

- Terminating the VH-71 program would improve future DOD acquisition practices by sending a signal to both the services and industry that programs that experience significant cost growth and schedule delays will be subject to termination.
- A successor VXX program could be structured to incorporate best practices in acquisition, including reasonable rather than overly aggressive program goals and the use of mature technologies.
- Establishing a new VXX program would provide an opportunity to review operational requirements for presidential helicopters, eliminating excessive requirements, and permit the use of competition between industry teams to identify the most cost-effective solution.
- Increment I helicopters would not fully meet the operational requirements for future presidential helicopters, creating operational risk, could have limited service lives (meaning that a program for new replacement helicopters would still be needed), could pose significant supportability challenges, and would have limited or no capacity to accept future upgrades.
- The past history of upgrades and service life extensions of the 19 existing presidential helicopters suggests that these helicopters can continue to be upgraded and extended until they are replaced by new VXX helicopters.

Supporters of potential alternatives to the Administration's proposed course of action could argue one or more of the following:

- Terminating the VH-71 program would waste more than \$3 billion in sunk VH-71 costs, including five pilot production Increment I aircraft that are built and were scheduled to enter operational service.
- Continuing the VH-71 program and procuring Increment II aircraft is the option that offers the lowest technical and schedule risk for procuring new helicopters that fully meet the operational requirements in the VH-71 ORD. A new VXX program could cost as much, if not more, than continuing the VH-71 program, and new VXX helicopters would enter service later than Increment II (or additional Increment I) helicopters, requiring the 19 existing presidential helicopters, which do not meet requirements for future presidential helicopters, to be kept in service longer.
- The ability of the 19 existing presidential helicopters to accept future upgrades is not certain, since some of those upgrades are not yet fully defined, and there may be unknown technical risks associated with attempting to extend their service lives until they would be replaced by VXX aircraft.
- A review of operational requirements for presidential helicopters is unlikely to lead to major changes from operational requirements in the VH-71 ORD, meaning that a new VXX helicopter would be very similar to a VH-71, except that its IOC and FOC could occur years later.
- Increment I helicopters could be certified for substantial service lives if funding is provided for the necessary testing and certification, and while Increment I helicopters would not fully meet operational requirements in the VH-71 ORD, they could meet enough of them to represent a cost-effective compromise

between desired performance and affordable procurement. Increment I helicopters could also be upgraded (either during original construction or at a later point) to meet more of the operational requirements in the VH-71 ORD.

## **Legislative Activity in 2009**

### **FY2010 Defense Authorization Bill (H.R. 2647/S. 1390)**

#### **Funding Request**

The Navy's proposed FY2010 budget requests \$85.2 million for the VH-71 program, all of which is in PE0604273N of the RDT&EN account. Of this total, \$55.2 million is for Increment I, for use in terminating the program; none is for Increment II; and \$30 million is for initial studies on the proposed successor VXX program.

#### **House**

The House Armed Services Committee, in its report (H.Rept. 111-166 of June 18, 2009) on H.R. 2647, recommends approving the Administration's request for \$85.2 million in FY2010 RDT&E funding for the VH-71 program (page 167). The committee's report states:

The budget request contained \$85.2 million for cancellation costs of the VH-71 Presidential helicopter recapitalization program recently terminated by the Secretary of Defense.

The committee understands that the Secretary of Defense announced on April 6, 2009 the cancellation of the VH-71 program based on excessive cost growth and schedule delays. The committee is disappointed that the Navy has invested \$3.3 billion in this program to date. The committee is also disappointed that the Navy's acquisition system was not provided adequate support, resources, and authority by the Office of the Secretary of Defense (OSD) and the White House Military Office (WHMO) to execute a successful acquisition program. The committee understands that despite the many warnings and expert advice from the Government Accountability Office, Navy acquisition officials were directed by OSD and WHMO to execute a schedule-driven program and were unable to adequately synchronize and adhere to prudent acquisition practices.

The committee supports a new acquisition plan which may incorporate more than a one platform solution to the needs of the President. The committee notes that a June 5, 2009 Congressional Research Service (CRS) report<sup>32</sup> cites Navy estimates that a new acquisition program would cost \$10.0 to \$17.0 billion. Therefore, the committee strongly suggests that the Department of Defense consider continuing procurement of the current "increment 1" helicopter for use as the normal transport for the President, and study other alternatives for Presidential transport in other situations. The committee notes that this approach will leverage on the investment already made by the taxpayer in developing a helicopter that would meet all normal requirements of the President. (Pages 182-183)

---

<sup>32</sup> This is a reference to the June 5, 2009 version of this CRS report.



## **Senate**

Division D (Section 4001) of S. 1390 as reported by the Senate Armed Services Committee (S.Rept. 111-35 of July 2, 2009) contains the detailed line-item funding tables that in past years have been included in the committee's report on the defense authorization bill. Section 4001 recommends approving the Administration's request for \$85.2 million in FY2010 RDT&E funding for the VH-71 program (page 677 of the printed bill).

## **FY2009 Supplemental Appropriations Act (H.R. 2346/P.L. 111-32)**

### **House**

Section 10012 of H.R. 2346 as passed by the House would rescind, among other things, \$30.51 million in FY2009 RDT&EN funding and \$5 million in FY2008 RDT&EN funding, but the House Appropriation Committee's report on H.R. 2346 (H.Rept. 111-105 of May 12, 2009, page 32) states that these rescissions are for fuel and for a classified program, respectively, rather than for the VH-71 program.

### **Senate**

Section 308 of H.R. 2346 as passed by the Senate would rescind, among other things, \$270.26 million in FY2009 funding for the Research, Development, Test and Evaluation, Navy (RDT&EN) appropriation account. This provision is also present in S. 1054 as reported by the Senate Appropriations Committee. The committee's report on S. 1054 (S.Rept. 111-20 of May 14, 2009, page 55) states that the \$270.26 million includes a rescission of \$47 million in FY2009 funding for the VH-71 program.

### **Conference**

Section 309 of H.R. 2346/P.L. 111-32 of June 24, 2009, rescinds \$217.06 million in FY2009 and FY2010 RDT&EN funding. The conference report on H.R. 2346 (H.Rept. 111-151 of June 12, 2009) states that this sum includes \$47 million in FY2009 RDT&E funding for the VH-71 program (page 106).

## Appendix. May 19, 2009, Hearing on FY2010 Navy Aviation Programs

This appendix presents excerpts from a May 19, 2009, hearing on FY2010 Navy aviation programs before the Seapower and Expeditionary Forces subcommittee of the House Armed Services Committee.

### Chairman's Opening Statement

In his opening remarks for the hearing, the chairman of the subcommittee, Representative Gene Taylor, stated the following:

Briefly I would like to address the VH 71 program. The Navy invested over \$3.2 billion dollars, received nine test and pilot-production aircraft, yet was unable to successfully execute this program that ultimately was cancelled by Secretary Gates. I would like to understand what the plan is for the current aircraft assets that have already been delivered, what the plan is going forward, and how the mistakes of the original program will be prevented from happening in the next program?<sup>33</sup>

### Question-and-Answer Portion<sup>34</sup>

During the question-and-answer portion of the hearing, the following exchanges took place regarding the VH-71 program:

COURTNEY: <sup>35</sup>

In Mr. Taylor's opening statement, he sort of walked through a number of issues that he was asking for some responses from the witnesses. I think the last item was on the presidential helicopter. You've referenced the fact, obviously, that Secretary Gates, on Friday, announced the cancellation of the program. And I was just following on his comments. I don't know which witness would be appropriate to respond. But what do you sort of see as the next steps in the way forward? Obviously, we need a new helicopter.

TRAUTMAN (?):<sup>36</sup>

Congressman Courtney, let me start and I'll turn it over to anyone else. You're correct. Secretary Gates did announce—recommend cancellation. And his basis to that was the original \$6 billion program which was headed towards \$13 billion, six years overdue; does not meet the requirements of the White House. And (inaudible) in fact was the long way to meet that requirement. So this has been an extremely challenging requirement in this program, complicated and exacerbated by us trying to bring this program to meet a need earlier, when we hadn't really defined what we needed to do. There were mistakes that were made. We drove significant developmental efforts forward at time when we weren't certain

---

<sup>33</sup> Source: Text of Representative Taylor's opening remarks.

<sup>34</sup> Source: Transcript of hearing.

<sup>35</sup> Representative Joe Courtney.

<sup>36</sup> Lieutenant General George J. Trautman III, USMC, Deputy Commandant for Aviation.

what those impacts would be. And we grossly underestimated the cost and schedule required to deliver this.

As a result of that, Undersecretary Defense Carter directed the cancellation of the program to Mr. Stackley (ph).<sup>37</sup> We are taking those initiatives now to cancel that program, and bring it to a resolution. the path forward is within 30 days, we will come forward with a high level plan of what we will—how will we anticipate going forward in the future. That’s not all the details that go with every facet of the program to understand, but it is a high level, if you will, plan of action, how we’re going to go forward to meet the direction; also to have a program developed so we can do the presidential replacement helicopter program.

So in this case, I believe, what we need to do now is we need to meet the requirements. We need to understand what those requirements are going to be. Understand the impacts of those requirements. Begin with requirements, take them through to the impacts of that, and do the due rigor we needed to do—we need to do an executable program, sir. And I’ll turn it over for other comments.

ARCHITZEL:<sup>38</sup>

Well, then let add then, sir. Two things come to my mind. First is: Are the legacy VH-3s and VH-60s preserved and remain safe for carrying our president? And the answer to that is “yes.” And this budget includes requested dollars to make that a reality. The second is: These airplanes are going to need to be replaced. The VH-3 is 40 years old by 2017 even with the service life extension programs that we are assessing now. They are near the end of their life. I am very anxious to get back into the requirements generation process. Work with the White House military office to decide what requirements they will lay out, and then help move those requirements to the joint requirements oversight council into the acquisition community so that we can each start on a new replacement for the VH-3 and the VH-60.

COURTNEY:

I realize you said 30 days from now, you’ll come out with a new position or a new plan. And I don’t want to get ahead of that. But one argument that’s been out there—“The New York Times” had a column about it the other day—about—that we shouldn’t cancel because there’s so much sunk cost already into the VH-71. I guess—I was wondering—I was thinking that through. The Navy is not going to just sort of walk away from the research and the development and the investment that’s already taken place. I mean, there’s some ways to recoup some of what’s already been paid for. I mean, is that a safe assumption to make so that the taxpayers won’t feel like it was just completely thrown away?

TRAUTMAN (?):

Congressman Courtney, if I could, let me begin—I know you want my colleagues to comment. But, first off, what I mentioned to you was a high level comeback, if you will, or a plan to go forward. But we have to—simultaneous with that, we have another course of action we have to follow. Following the cancellation program, we have to bring about what we do with this program, and how we bring it to closure. So the first thing that was done was this, for example, this stop work due, which allows us to—the contracting officer to issue actions, that then would result in us being able to—as I said, bring the thing to closure.

---

<sup>37</sup> This is a reference to Sean Stackley, the Assistant Secretary of the Navy (Research, Development and Acquisition) (i.e., the Navy’s acquisition executive).

<sup>38</sup> Vice Admiral David Architzel, USN, Principal Military Deputy, Research, Development and Acquisition.

That involves understanding all that we have invested, and where we are, and be able to close out the books; be able to make sure we understand where we are in funding, be it '09 or '10 funding, et cetera, and what we need to do to follow through that once the contracting officer takes actions on the termination. So understanding what we want to do in the future, obviously, we will take advantage of anything we can from a technology standpoint that would go into future helicopter programs or other programs of similar nature.

Again, as we start back in this program, we have to understand the requirements—that to begin with requirements—understand what they mean and what we have to meet those missions that are set in front of us. That was fundamental to it. Now, to your point: The investments that were made—understanding the technology investments that were ongoing—certainly, we'll take advantage of that going forward.

Thank you, Mr. Chairman.

TAYLOR:

Chair thanks the gentleman.

Chair now recognizes the gentleman from Maryland, Mr. Bartlett.

BARTLETT:<sup>39</sup>

Thank you very much. You know, you would think from the discussion we've been having that we hadn't spent \$3.2 billion and a number of years building the 71. And the original requirements document for the VH-71 program, the Navy gave a litany of reasons why the legacy fleet was in urgent need of replacement—so urgent that we were working around some of the usual procedures to get a plane more quickly so the president could have it.

They—the planes, Navy said, was overweight. They lack all weather capability. They have extremely limited range, speed and payload. And I quote from the document, “The legacy aircraft is no longer capable of implementing upgrades for mission requirements.”

And now, we're told that the current fleet is OK. It can, indeed, be upgraded and the cost of doing so will likely—might be enormous. We already spent \$3.2 billion to produce the nine increment one helicopters. They neither exceed their performance requirement. They're always intended to fly the president. Why isn't it reasonable that Congress would expect the Navy to field these aircraft to meet the highly urgent need we have been briefed on for years?

But instead, congressmen are given a list of reasons why flying the 35-year-old legacy fleet for another decade is preferable to fielding a modern V8-71 [sic: VH-71] helicopters we have already paid to produce.

For instance, we're told that increment one only has a five year service life, even though the committee knows that it was designed for a minimum of 30 years that the Navy has not even performed a basic airframe fatigue testing to make a sound determination. We need real answers as we consider the budget request.

Frankly, Congress has been ignored for too long on this critical program. And I'm concerned that in the stop-work order, we're now being ignored.

---

<sup>39</sup> Representative Roscoe Bartlett.

The Navy said that we needed a new aircraft to fly the president. We bought that. We asked the Navy to build that aircraft and now, without coming back to Congress for consultation, the Navy has issued a stop work order.

This very limits our options because there will be costs involved with a stop work order. If we decide that we really ought to continue building these planes then there's additional cost involved in making the line hot again.

First, what is the estimated cost of extending and maintaining the current legacy fleet, if the VH-71 is terminated? How much will it cost to provide service life extension for the current fleet? What kind of new improvements will be made and at what cost?

We were previously told that we really couldn't make the necessary improvements, which is why we needed a plane so urgently that we were bypassing some of the usual procurement procedures.

And second, are you telling this committee the Increment 1 helicopters did not in fact provide a better overall capability than the current VH-3? General Trautman, you have flown the VH-71, would you not agree that on its own it represents a more capable, modern and safer aircraft?

TRAUTMAN:

Yes, sir, let me start—I've flown the VH-3 and the VH-71 Increment 1 aircraft recently and there's no doubt that the VH- 71 increment three—Increment 1 aircraft is a better aircraft than the VH-3.

The challenge has been, sir, that the VH-71 Increment 1 aircraft does not meet the requirements that were passed to us by the White House military office and the requirements...

BARTLETT:

General,...

(CROSSTALK)

BARTLETT:

...if you would let me comment for just a moment...

TRAUTMAN:

Yes, sir.

BARTLETT:

...we know that. We know that the Increment 1 was designed to provide what we were told was essential transportation for the president, while Increment 2 was being developed.

We know that Increment 1 is deficient in—a little deficient in payload capability, in speed and in how far it can go, in range, but the essential reason we were told for moving away from the current fleet was to have better communication capabilities we understand the VH-71 provides, the Increment 1.

If the gentleman's got just a moment, I'd like to go through some numbers that I think are absolutely compelling that we ought to continue.

We've now invested \$3.2 billion. If we now shut down, it's going to cost about half a billion in the industry to shut down. It's going to cost about a tenth of a billion in the Navy to shut down and for another \$1.3 billion, we could make ready five of the nine planes so that the president could use them.

And I am told by the manufacturer that for roughly \$100 million each, which comes well under the original figure of \$6.8 billion, that they will enter into a firm, fixed price contract to deliver another 14, which would mean we would have a total fleet then of 19 planes.

You—the additional cost to provide nineteen planes is small compared to the investment we've already made. Why isn't it in the taxpayers' and the president's best interest to go ahead and provide these extra planes? We'll have essentially nothing if we simply terminate and shut down.

TAYLOR:

If the General would answer the question, please.

TRAUTMAN:

Congressman Bartlett, if I could, the—part of what your discussion is on the Increment 1. As I mentioned before, this VH-71 is an extremely challenging requirement. There are significant developmental efforts that were grossly underestimated. On top of that, we went to a two increment approach in an effort to deliver near-term as well as long-term solutions.

Sir, we are not delivering on the capability with Increment 1. The program does not meet the requirements, and that was what the recommendation for cancellation was for.

BARTLETT:

But, sir, if I might interrupt for just a moment. It was going to be sufficiently superior to the present fleet, that it was deemed desirable to spend the money to produce it and use it for five years while we produced Increment 2. Why isn't that analysis still valid?

TRAUTMAN:

Sir, the second estimate—you're referring to numbers. In terms of operational use and, quite frankly, the VH-71 Increment 1, the additional weight was the—that has to do with the aircraft itself would be a different aircraft than the one you're talking to, when you're talking 30 years aircraft life.

That's another factor in the Increment 1, in terms of its not being able to make more than approximately, estimates now, 1,500 hour life. But the overarching consideration was not making the requirements needed for the helicopter and the decision to cancel Increment 1 and 2 from Secretary Gates, sir.

BARTLETT:

Thank you. Mr. Chairman, I think that the original five year life was not what the plane was expected could do. It was just that, well, they only needed it for five years until they had

Increment 2, but nobody doubts that this plane is built as well as other helicopters and it should have the usual 30, 35, 40 year life, should it not?

TRAUTMAN:

Our understanding is that systems command would have to inspect the airplane and go through a rigorous service life extension program seeking hot spots and areas of interest, similar to the discussion we had previously [at this hearing] about the F/A-18A through D [strike fighters].<sup>40</sup> That work has not been done yet.

## **Author Contact Information**

Ronald O'Rourke  
Specialist in Naval Affairs  
rorourke@crs.loc.gov, 7-7610

---

<sup>40</sup> For discussion of the service life issue on F/A-18 strike fighters, see CRS Report RL30624, *Navy F/A-18E/F and EA-18G Aircraft Procurement and Strike Fighter Shortfall: Background and Issues for Congress*, by Ronald O'Rourke.