Report No. DODIG-2013-088 June 10, 2013

# Inspector General
## United States Department of Defense

# The Navy P-8A Poseidon Aircraft Needs Additional Critical Testing Before the Full-Rate Production Decision



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## Acronyms

| | |
|---|---|
| ASUW | Anti-Surface Warfare |
| ASW | Anti-Submarine Warfare |
| COMOPTEVFOR | Commander, Operational Test and Evaluation Force |
| DOT&E | Director, Operational Test and Evaluation |
| FOT&E | Follow-on Operational Test and Evaluation |
| FRP | Full-Rate Production |
| IOT&E | Initial Operational Test and Evaluation |
| ISR | Intelligence, Surveillance, and Reconnaissance |
| JITC | Joint Interoperability Test Command |
| LRIP | Low-Rate Initial Production |
| NAVAIR | Naval Air Systems Command |
| PEO | Program Executive Officer |

INSPECTOR GENERAL
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4800 MARK CENTER DRIVE
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June 10, 2013

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS
NAVAL INSPECTOR GENERAL

SUBJECT: The Navy P-8A *Poseidon* Aircraft Needs Additional Critical Testing Before the Full-Rate Production Decision (Report No. DODIG-2013-088)

We are providing this report for review and comment. The Navy will use the P-8A *Poseidon* aircraft to replace the P-3C *Orion* aircraft, which provides capabilities for anti-submarine and anti-surface warfare and for intelligence, surveillance, and reconnaissance in both maritime and littoral operations. We determined that the Navy had addressed testing concerns the Director, Operational Test and Evaluation raised at the low-rate initial production decision for the P-8A *Poseidon* in August 2010. However, critical shortfalls remain in test planning that need to be addressed before the full-rate production decision planned for July 2013.

We considered comments on a draft of this report. DoD Directive 7650.3 requires that recommendations be resolved promptly. Comments from the Under Secretary of Defense for Acquisition, Technology, and Logistics were nonresponsive. Therefore, we request additional comments on the recommendation by July 10, 2013.

Please provide comments that conform to the requirements of DoD Directive 7650.3. If possible, send a Microsoft Word (.doc) file and portable document format (.pdf) file containing your comments to audacm@dodig.mil. Copies of management comments must have the actual signature of the authorizing official. We are unable to accept the /Signed/ symbol in place of the actual signature. If you arrange to send classified comments electronically, you must send them over the SECRET Internet Protocol Router Network (SIPRNET).

We appreciate the courtesies extended to the staff. Please direct questions to me at (703) 604-9077 (DSN 664-9077).

Jacqueline L. Wicecarver
Assistant Inspector General
Acquisition and Contract Management

Report No. DODIG-2013-088 (Project No. D2012-D000AE-0176.000) June 10, 2013

# Results in Brief: The Navy P-8A *Poseidon* Aircraft Needs Additional Critical Testing Before the Full-Rate Production Decision

## What We Did

We evaluated whether the Navy addressed potential risks and increased its flight hours to fully assess system reliability as the Director, Operational Test and Evaluation (DOT&E) advised at the low-rate initial production (LRIP) decision in August 2010. The overall expected cost for developing and procuring the P-8A *Poseidon* is $33.5 billion.

## What We Found

The program manager for Maritime Surveillance Aircraft (the program manager) effectively addressed the potential risks and flight hour concerns of the DOT&E at the LRIP. However, as discussed below, additional critical testing should be completed before the full-rate production (FRP) decision.

The program manager planned the FRP decision review to occur in July 2013, before testers complete testing needed to demonstrate that the P-8A *Poseidon* airframe can meet life expectancy requirements. The program manager delayed life expectancy testing in reaction to funding constraints and testing priorities. The program manager also did not correct known system deficiencies, about which the DOT&E and Joint Interoperability Test Command officials had expressed concern, before conducting Initial Operational Test and Evaluation (IOT&E). This occurred because the Chief of Naval Operations accepted the risk of granting the program manager temporary waivers from correcting the deficiencies to allow the program to enter into IOT&E, while not having to fully correct the deficiencies until after the FRP decision. Finally, the program manager deferred completing mission testing in response to fleet commander concerns regarding maintaining on-time delivery of the P-8A *Poseidon* aircraft.

A decision by the Under Secretary of Defense for Acquisition, Technology, and Logistics to acquire the first FRP lot of 13 P-8A *Poseidon* aircraft (at an estimated cost of $2.6 billion) based on incomplete test results could result in costly retrofits to meet lifespan and mission and system performance requirements.

## What We Recommend

We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics award an additional low-rate initial production lot for the P-8A *Poseidon* aircraft in July 2013 and defer the full-rate production decision for the P-8A *Poseidon* program until the program manager for Maritime Surveillance Aircraft demonstrates: the airframe can achieve the required 25-year lifespan without succumbing to structural fatigue; testing has resolved mission limited deficiencies; and the aircraft can perform its primary missions, including anti-surface warfare.

## Management Comments and Our Response

The Under Secretary of Defense for Acquisition, Technology, and Logistics comments did not agree or disagree with the recommendation. Therefore, we request the Under Secretary provide additional comments by July 10, 2013. We also received unsolicited comments from the Department of the Navy. Please see the recommendation table on the back of this page.

# Recommendation Table

| Management | Recommendation Requires Comment | No Additional Comment Required |
|---|---|---|
| Under Secretary of Defense for Acquisition, Technology, and Logistics | Yes | |

**Please provide comments by July 10, 2013.**

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# Introduction

## Objectives

The overall audit objective was to determine whether the Navy effectively prepared the P-8A *Poseidon* program for the full-rate production (FRP) decision. Specifically, we evaluated whether the Navy addressed system shortfalls and increased its flight hours to fully assess system reliability as the Director, Operational Test and Evaluation (DOT&E) advised after the low-rate initial production (LRIP) decision in August 2010. See Appendix A for a discussion of the audit scope and methodology. The definition of technical terms is contained in the glossary after the last appendix.

## Background

The P-8A *Poseidon* is an Acquisition Category ID major defense acquisition program that is in the production and deployment phase of the acquisition process. The Navy established the P-8A *Poseidon* as an acquisition program in June 4, 2004, to replace the aging P-3C *Orion* aircraft. As of January 2013, the Navy had spent $13.0 billion, which included $7.4 billion in research, development, test, and evaluation funds and $5.6 billion in procurement funds. The Navy is developing and producing the P-8A *Poseidon* in preparation for the FRP decision planned for July 2013. As the Defense Acquisition Executive, the Under Secretary of Defense for Acquisition, Technology, and Logistics is the milestone decision authority for the P-8A *Poseidon* FRP decision.

### *Program Management*

The Program Executive Office (PEO) for Air Anti-Submarine Warfare, Assault, and Special Mission Programs and the Program Manager for Maritime Surveillance Aircraft (the program manager) are responsible for program management of the P-8A *Poseidon* aircraft (the P-8A *Poseidon*), to include conducting system specific test and evaluation. The Commanding Officer of Air Test and Evaluation Squadron Two Zero (VX-20) is responsible for providing the program manager with pilots for developmental flight testing and test reporting.

The Commander, Operational Test and Evaluation Force (COMOPTEVFOR) is responsible for providing an independent and objective evaluation of the operational effectiveness and suitability of the P-8A *Poseidon*. The Joint Interoperability Test Command (JITC) is responsible for testing, operationally evaluating, and certifying the *Poseidon* aircraft's information technology capabilities for joint interoperability.

### *Funding and Contracting Data*

As of January 2013, the Navy's budget to develop and procure the P-8A *Poseidon* aircraft totaled $33.5 billion for 122 aircraft.[1] On June 14, 2004, the Navy awarded Boeing a $3.9 billion contract to develop the P-8A *Poseidon*. As of January 10, 2013, the

[1] The budget included $8.1 billion in research, development, test, and evaluation funds for 5 testing aircraft and $25.4 billion in procurement funds for 117 production aircraft.

contract was valued at $6.8 billion. On April 13, 2009, the Navy awarded Boeing a $109.1 million contract to begin LRIP of the P-8A *Poseidon*. As of January 3, 2013, the LRIP contract was valued at $5.5 billion, and included procurement of 24 aircraft. The Navy expects the first FRP lot will include the procurement of 13 P-8A *Poseidon* aircraft at an estimated cost of $2.6 billion.

## *Mission and System Description*

As explained in the "Capability Production Document for the United States Navy P-8A *Poseidon* Multi-mission Maritime Aircraft (MMA) Increment 1" (the Capability Production Document), June 22, 2009, the Navy designed the P-8A *Poseidon* to replace the P-3C *Orion* aircraft. The P-3C *Orion* provides capabilities for three principal missions: anti-submarine warfare (ASW), anti-surface warfare (ASUW), and intelligence, surveillance, and reconnaissance (ISR) in maritime operations. The Capability Production Document states that the ASW mission, which includes detecting, tracking, and destroying or neutralizing hostile submarines, was the primary reason the Navy is investing in the P-8A *Poseidon.* The ASUW mission includes providing maritime superiority against surface vessels and a common sea surface picture. The ISR mission includes providing a flexible and responsive intelligence gathering capability in support of Joint, Naval, and National interests. The P-8A *Poseidon* will use multiple mission systems to achieve these capabilities, including sensors to detect hostile submarine and surface operations, and weapons that can detect or defeat hostile activity or relay intelligence to Joint Forces. The Navy designed the P-8A *Poseidon* using an upgraded and strengthened Boeing 737-800 airframe. Appendix B describes the individual systems that the P-8A *Poseidon* will use to accomplish its missions. The following figure shows the P-8A *Poseidon* in flight.

**Figure. P-8A *Poseidon***


Source: Naval Air System Command

# P-3C *Orion* Aircraft Nears End of Service Life

According to the "Broad Area Maritime and Littoral Armed ISR Analysis of Alternatives: Final Report (Vol. 1: Main Report)," May 2002, the CNA Corporation performed an analysis of alternatives to help the Navy identify alternatives for replacing the P-3C *Orion*. The P-3C aircraft inventory began to reach the end of its planned life in FY 2002. The Navy therefore has sought to expedite procuring and deploying its replacement, the P-8A *Poseidon*. As discussed below, the Navy was successful with extending the P-3C *Orion*'s service life to support an orderly transition to the P-8A *Poseidon*.

## *Extending P-3C Orion's Service Life*

In the mid-1990s, the Navy identified concerns with airframe corrosion on P-3C *Orion* aircraft and initiated the Service Life Assessment Program to identify and quantify service life extension requirements. In 2003, the Navy completed the Service Life Assessment Program and determined that all P-3C *Orion* aircraft required varying degrees of fatigue inspections and repairs at periodic intervals throughout their service lives. The Navy initially undertook a three-tiered approach to address fatigue-critical areas on the P-3C *Orion* aircraft that included structural inspections. The first tier included structural inspection, including fatigue inspection, and any subsequent repairs necessary to ensure safety of flight until maintenance crews could perform more comprehensive maintenance. The second and third tiers included enhanced special structural inspections and special structural inspection kits to provide preemptive modification and replacement of critical airframe structural components to enable the airframe to reach its required service life. The Navy's objective in performing this effort was to minimize the investment required to safely sustain the P-3C *Orion* fleet until it could field the P-8A *Poseidon* aircraft.

In December 2007, the Navy grounded 39 of 148 P-3C *Orion* aircraft as a result of ongoing fatigue life inspections, which revealed that the aft lower surface of the outer-wing (designated as Zone 5) experienced fatigue at higher levels than previously estimated. In January 2008, the Chief of Naval Operations approved the P-3C *Orion* Recovery Plan, which included modifying the outer-wings structurally, to return grounded aircraft back to the fleet. This modification approach encompassed targeted Zone 5 modifications, which included limited replacement of outer-wing components, as well as the manufacturing and installation of new outer-wing assemblies. The Navy continues to evaluate P-3C *Orion* fatigue and material condition. While P-3C *Orion* fatigue has remained a persistent risk, the Navy has inspection, repair, and modification efforts in place to sustain the P-3C *Orion* fleet until the P-8A *Poseidon* starts replacing the P-3C *Orion* in 2013.

## *Transitioning from the P-3C Orion to the P-8A Poseidon*

The program manager plans to transition from the P-3C *Orion* to the P-8A *Poseidon* aircraft over the next 8 years by decreasing the number of P-3C *Orion* aircraft to zero while increasing the inventory of the P-8A *Poseidon* to 117 aircraft by FY 2020. The P-8A team lead stated that the program office developed a fleet transition schedule to

transition the fleet from 141 P-3 *Orion* aircraft to 117 P-8A *Poseidon* aircraft. The team lead also stated that once a squadron transitions to P-8A *Poseidon*, the team will evaluate the structural integrity of the P-3C *Orion* aircraft assigned to that squadron and determine whether the aircraft should be retired or transferred to other squadrons to replace older P-3C *Orion* aircraft.

## Review of Internal Controls

DoD Instruction 5010.40, "Managers' Internal Control Program (MICP) Procedures," July 29, 2010, requires DoD organizations to implement a system of internal controls that provides reasonable assurance that programs are operating as intended and to evaluate the effectiveness of the controls. The Navy's internal controls over system requirements, acquisition strategy, systems engineering, and test and evaluation were effective as applied to the audit objectives.

# Finding A. Program Manager Addressed Director, Operational Test and Evaluation Concerns from Low-Rate Initial Production Decision

The program manager has worked to address the potential risks and to increase the flight hours needed to fully assess system reliability for the P-8A *Poseidon*, as the DOT&E and COMOPTEVFOR advised before and after the LRIP decision in August 2010.

## Navy Addressed Director, Operational Test and Evaluation Concerns on Potential Risks Identified at Low-Rate Initial Production Decision

The DOT&E, in his "FY 2010 Annual Report," December 2010, advised that the Navy needed to address the 74 potential risks described in the COMOPTEVFOR's "P-8A *Poseidon* Operational Test Agency Milestone C Assessment Report," May 3, 2010 (the COMOPTEVFOR Assessment). The 74 potential risks COMOPTEVFOR identified resulted from pre-LRIP laboratory testing conducted before test aircraft were available for flight testing. After the COMOPTEVFOR Assessment, and after the DOT&E issued the "FY 2010 Annual Report," the program manager completed additional testing needed to address the potential risks COMOPTEVFOR identified. Specific examples of potential risks addressed included:

- Tactical Flight Path Generation for ASW Missions—the computer-generated flight path could not be used as a functional means to guide the aircraft due to inconsistent and incorrect guidance.
- Accurate Safety of Flight Map Data Not Displayed to the Flight Deck—the map display function was limited and did not include displaying terrain or minimum safe operating altitude, thereby limiting situational awareness and safety of flight.

On October 5, 2012, the P-8A *Poseidon* Operational Test Coordinator at COMOPTEVFOR stated that the program manager had made "extremely good progress" since the COMOPTEVFOR Assessment in 2010 and that all 2010 potential risks were addressed.

## Test Flight Hours Increased to Assess System Reliability

In the "FY 2010 Annual Report," December 2010, the DOT&E advised the Navy that although *Poseidon* reliability was tracked, the number of test flight hours compiled before the LRIP decision was too low to fully assess whether the P-8A *Poseidon* would meet its reliability, maintainability, and sustainment requirements. Subsequently, in the "DT/OT Transition Report," August 22, 2012 (the DT/OT Report), prepared by the Naval Air Warfare Center Aircraft Division, reported a total of 3,024 test flight hours had been accomplished for the P-8A *Poseidon* before Initial Operational Test and Evaluation (IOT&E)—a substantial increase from the 170.8 test flight hours completed before the

LRIP decision as cited in the DOT&E "FY 2010 Annual Report." Additionally, the program manager reported that the P-8A *Poseidon* had met the threshold requirement of 60 percent for operational availability.[2] The Deputy Assistant Secretary of Defense for Development Test and Evaluation reported the same level of demonstrated operational availability in his memorandum "Assessment of Operational Test Readiness for the *Poseidon* Aircraft," August 24, 2012. As a caveat, DOT&E staff stated that because nearly all hours flown used interim (not final) developmental hardware and software configurations, the Deputy Assistant Secretary's statement in regard to meeting the 60 percent threshold should be considered a prediction rather than a conclusion. The Capability Production Document mandated this threshold as a condition for the program to begin IOT&E[3] in support of the FRP decision.

## *Poseidon* Critical Operational Issues that Related to Potential System Risks

Test areas included aspects of track management, acoustic performance, sonobuoy and weapons deployment, flight planning, and interoperability with onboard sensors. Table 1 shows the 74 potential risks that the program manager addressed related to 13 critical operational issues for the P-8A *Poseidon*. Critical operational issues are operational effectiveness or suitability issues that affect a system's mission capability.

**Table 1. *Poseidon* Critical Operational Issues Related to Potential Risks Identified by COMOPTEVFOR and Addressed by the Program Manager**

| Critical Operational Issues | Number of Potential Risks Addressed |
|---|---|
| Command, Control, and Communications | 3 |
| Safety | 4 |
| Documentation | 3 |
| Training | 2 |
| ASW | 19 |
| ASUW | 10 |
| Command and Control Warfare | 5 |
| Other Missions | 3 |
| Reliability | 2 |
| Intelligence Collection | 9 |
| Human Factors | 12 |
| Survivability | 1 |
| Interoperability | 1 |
| **Total Number of Risks** | **74** |

[2] Operational availability is the degree to which one can expect a piece of equipment or weapon system to work properly when it is required; that is, the percent of time the equipment or weapon system is available for use.

[3] IOT&E is a dedicated Operational Test and Evaluation conducted on production, or production representative articles, to determine whether systems are operationally effective and suitable to support a FRP decision.

# Additional Critical Testing Needed to Support the Full-Rate Production Decision

While the program manager effectively addressed DOT&E concerns from the Milestone C Assessment Report, the program manager still needs to perform additional critical testing to demonstrate that the P-8A *Poseidon* airframe can meet life expectancy requirements and that the aircraft can fully and successfully perform all primary missions before the FRP decision planned for July 2013. The need for additional critical testing is discussed in Finding B.

# Department of the Navy Comments on the Finding and Our Response

## *Navy Comments on the Finding*

Although not required to comment, the Deputy Assistant Secretary of the Navy for Air Programs provided comments on the finding. A summary of the Deputy Assistant Secretary's comments, along with our response, follows below. For the full text of the comments, see the Management Comments section of the report.

The Deputy Assistant Secretary agreed with the finding and stated that the P-8A *Poseidon* program manager addressed DOT&E concerns by extending developmental test and evaluation beyond the August 2012 Operational Test Readiness Review. The Deputy Assistant Secretary further stated the program continued without pause into phase 2 of program increment 1 and into engineering change proposal 1 of program increment 2, while simultaneously addressing deficiencies found in the first phase of developmental test and evaluation. He stated that the emerging results indicate that there is a low risk of major retrofits after LRIP lot 4.

## *Our Response*

As of May 2, 2013, the Under Secretary of Defense for Acquisition, Technology, and Logistics had authorized, and the Navy had awarded, three LRIP lots. In reference to LRIP 4, the Deputy Assistant Secretary stated, in response to Finding B, that the Navy agreed with our recommendation to defer the FRP decision until Follow-on Operational Test and Evaluation (FOT&E) has resolved mission-limiting deficiencies and demonstrated that the aircraft can perform its primary missions, including anti-surface warfare. This would reduce the risk of proceeding with FRP.

# Finding B. Additional Testing Needed to Support the Full-Rate Production Decision

The program manager planned the FRP decision review to occur in July 2013, before test completion to demonstrate that the P-8A *Poseidon* airframe can meet life expectancy requirements, despite DoD guidance stating that this testing should be completed before the LRIP. The program manager delayed life expectancy testing in reaction to funding constraints and testing priorities. Additionally, the program manager did not correct known system deficiencies, about which the DOT&E and Joint Interoperability Test Command officials had expressed concern, before conducting IOT&E to support the FRP review. This occurred because the Chief of Naval Operations, after participating with the PEO in the Operational Test Readiness Review, accepted the risk of granting the program manager temporary waivers from correcting the deficiencies to allow the program to enter into IOT&E, while not having to fully correct the deficiencies until after the FRP decision.

Furthermore, the program manager deferred completing mission testing to show that the aircraft can fully and successfully perform the armed ASUW mission in response to fleet commander concerns regarding maintaining on-time delivery of the P-8A *Poseidon* and meeting the scheduled December 2013 first deployment of the *Poseidon*. With incomplete test results, the Navy lacks critical information necessary to make an informed decision about whether the P-8A *Poseidon* will fully meet all of its operational requirements related to armed ASUW missions.

As a result, the Under Secretary of Defense for Acquisition, Technology, and Logistics could, with incomplete test results, make the decision to acquire 13 P-8A *Poseidon* aircraft (first FRP lot), at an estimated cost of $2.6 billion, that could require costly retrofits to meet lifespan or mission and system performance requirements. Scheduling the FRP decision for September 2013 or immediately after the completion of scheduled testing would allow the contractor and the Navy to verify that the airframe met structural fatigue requirements during the first simulated 25-year lifespan; resolve system deficiencies; and demonstrate that the *Poseidon* aircraft can perform the armed ASUW mission.

## Delayed Life Expectancy Testing

The program manager planned the FRP decision review to occur in July 2013, before contractor (Boeing) testers complete life expectancy testing, to determine whether the airframe can meet life expectancy requirements. On July 27, 2012, we met with the PEO, Air Anti-Submarine Warfare, Assault, and Special Mission Programs and the program office staff to discuss our comparison of the master program schedules for the P-8A *Poseidon* dated June 26, 2009, and March 13, 2012. In both of the master schedules, life expectancy testing consisted of a first life test—to verify the airframe fatigue life by simulating 21,695 hours of average fleet usage—followed by a second life test simulating an additional 21,695 hours of average fleet usage. Our analysis showed that the program manager had delayed planned life expectancy testing from completing before the FRP

decision. Specifically, the 2012 master program schedule showed the first lifetime of airframe fatigue testing ending 2 months after the FRP decision; second lifetime testing ending 14 months after the FRP decision; and final airframe inspection ending 19 months after the FRP decision. See Appendix C for a timeline of the life expectancy testing events.

DoD Manual 4245.7-M, "Transition from Development to Production," September 1985, states that when program managers perform life tests after the start of production, costly engineering change proposals and retrofit programs may be initiated in an attempt to "get well" with less than optimum design solutions. When the audit team cited this guidance on the timing of life testing, the program office staff responded that the DoD Manual is advisory in nature and that it is left up to the users of the document to determine how early or how late a particular activity is done and that such determination is influenced best by the judgment of experienced Government and industry personnel. The program office staff stated that one of the judgment factors for the P-8A *Poseidon* was that the aircraft was based on the commercial Boeing 737-800 and was not a new development effort.

The P-8A *Poseidon* program did start with a commercial airframe; however, the program office staff stated that the contractor modified the airframe during engineering and manufacturing development "…for a severe mission usage and loads spectrum to meet the design service life requirement." Specifically, the contractor had to upgrade and strengthen the commercial airframe to meet the Navy's more rigorous usage. Program office documentation detailing differences between the P-8A *Poseidon* airframe and the Boeing 737-800 airframe showed design upgrades to the P-8A airframe that included:

- generally strengthened overall fuselage structure (including floors);
- strengthened wing and tail assembly for increased loads;
- wing to body fairing modifications to accommodate *Poseidon* mission systems and mechanical subsystem installations; and
- new main landing gear with strengthened gear beam and beam supports.

Based on the scope of the design changes to the airframe and the more demanding service life requirements of the Navy, we believe that judgmental application of the guidance in DoD Manual 4245.7M should include (at minimum) the completion of the first lifetime of airframe fatigue testing before holding the FRP decision.

## *Funding Constraints and Testing Priorities Delayed Life Expectancy Testing*

The program manager decided in March 2010 to prioritize funding for conducting static testing because this testing was required to achieve an airworthiness certification and avoid a delay in planned flight testing. On August 30, 2012, program office staff stated that they delayed life expectancy testing for the P-8A *Poseidon* after the prime contractor stated that it needed additional funding to complete planned static testing on the aircraft.

However, delaying fatigue tests[4] would not delay flight testing. While the program office did not perform a formal risk assessment to determine the effects of a 20-month delay in planned airframe fatigue life testing on the P-8A *Poseidon* program, staff stated that they did evaluate risks. As part of their risk evaluation, program office staff and engineers from the Naval Air Systems Command (NAVAIR) identified 13 weaknesses on airframe components that could cause the aircraft not to pass the life expectancy testing.

### *Reducing Risk in the Delayed Life Expectancy Testing*

The program manager had taken some actions to reduce the risk of delaying the life expectancy testing. Specifically, on November 1, 2012, the program office staff stated that they completed reassessments and design changes to correct 11 of 13 known weaknesses on airframe components that may develop cracks and therefore not pass the life expectancy testing. The program office staff stated further that the remaining two airframe components were within 12 percent of achieving design goals.

The program manager's actions to improve known weaknesses on airframe components reduced the risk resulting from the delay in conducting life expectancy testing. However, we determined that additional risk reduction is both advisable and achievable based upon the contractor's schedule for fatigue testing. Specifically in August 2012, the contractor planned to conduct a structural integrity inspection of the airframe after completing the first lifetime test in September 2013. Subsequently, in February 2013, Defense Contract Management Agency staff stated that the contractor had started conducting life and structural integrity testing in January 2013 and planned to complete testing in December 2013, 5 months after the scheduled FRP decision. On May 2, 2013, in response to the draft report, the Deputy Assistant Secretary of the Navy for Air Programs stated that the *Poseidon* aircraft was expected to finish its first lifetime fatigue testing in October 2013, just 3 months after the scheduled FRP decision. Holding the FRP decision after the contractor has completed the structural integrity inspection of the airframe during the first lifetime test, would allow the program manager to demonstrate that the airframe met structural fatigue requirements during the first simulated 25 year lifespan without succumbing to structural fatigue and reduce the risk that the P-8A Poseidon would need significant design changes.

*However, we determined that additional risk reduction is both advisable and achievable based upon the contractor's schedule for fatigue testing.*

## Delayed Correction of Known Deficiencies Waived Before Start of Initial Operational Test and Evaluation

On September 10, 2012, the Chief of Naval Operations, Director, Innovation, Test and Evaluation, and Technology (OPNAV N84), granted the P-8A *Poseidon* program a temporary waiver from operational test certification criteria on 28 unresolved deficiency

[4] The "Test and Evaluation Master Plan for the P-8A *Poseidon* Multi-mission Maritime Aircraft, Revision C" August 9, 2010, (Revision C of the *Poseidon* Test Evaluation Master Plan) describes fatigue testing as using a full-scale fatigue test article to verify two lifetimes.

reports identifying critical deficiencies that would affect the ability of the aircraft to accomplish its mission. The OPNAV N84 waiver allowed the program manager to enter into IOT&E on September 11, 2012. Secretary of the Navy Instruction 5000.2E, "Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System," September 1, 2011, requires that there are no uncorrected deficiencies effecting airworthiness, capability to accomplish mission, or crew safety before allowing the aircraft to enter into IOT&E. While Secretary of the Navy Instruction 5000.2E does allow the Chief of Naval Operations to grant waivers for uncorrected deficiencies, the waivers do not change or delay any testing or evaluation of the system.

The commanding officer of VX-20 classified the 28 unresolved deficiencies as Part I (mission-critical) by applying deficiency definitions provided in NAVAIR Instruction 3960.5A, "Naval Air Systems Command Technical Assurance Board Monitoring of Aircraft Weapon System Development," July 20, 2007. Specifically, the instruction requires the program manager to correct these deficiencies to bring the aircraft and its mission systems to an "acceptable condition" to accomplish primary or alternative missions—to include required interactions with other mission-critical platforms or systems. In agreement with the instruction, on February 1, 2013, OPNAV N84 staff emphasized to the audit team that the waivers were temporary and that they still expected the program manager to correct the deficiencies.

Since the P-8A *Poseidon* program was granted the September 2012 waiver, the commanding officer of VX-20 issued four additional mission-critical deficiencies. On February 8, 2013, the program manager stated that of the 32 deficiencies, he expected to close 21 deficiencies; partially fix 5 deficiencies; and have 6 deficiencies open at the time of the FRP decision. The program manager's expectations regarding closing and partially fixing deficiencies were contingent on the success of hardware and software upgrades planned to occur before the FRP decision.

~~(FOUO)~~ The aircraft may be unable to fully accomplish its mission if the program manager does not correct the 11 critical deficiencies expected to be open or only partially fixed before the FRP decision. While all of the 11 deficiencies met the overall criteria in NAVAIR instruction for mission-critical deficiencies, the instruction also classifies deficiencies according to recommended time of correction. Using the instruction, the commanding officer of VX-20 classified one of the deficiencies expected to be open at FRP and two deficiencies expected to be partially fixed as "single star" deficiencies. The single star designator recommends deficiency closure before operational deployment of the aircraft. The commanding officer of VX-20 classified the remaining eight deficiencies as "no star," meaning that commanders could operationally deploy the aircraft before correcting the mission-limiting deficiency. [redacted]

*The aircraft may be unable to fully accomplish its mission if the program manager does not correct the 11 critical deficiencies...before the FRP decision.*

(~~FOUO~~ [redacted]

Table 2 shows a break out by aircraft mission area based on 11 deficiencies that the program staff expect will be open or only partially fixed at the planned FRP decision in July 2013. The table also summarizes the potential mission impacts. See Appendix D for details on the specific mission impacts relating to the six open and five partially fixed deficiency reports.

**(~~FOUO~~) Table 2. Break out of Deficiencies and Potential Mission Impacts**

| Deficiency Status | Mission Area | Number of Deficiency Reports | Summary of Potential Mission Impacts |
|---|---|---|---|
| ~~(FOUO)~~ Open | ASW | 1 | [redacted] |
| | ASW/ASUW | 1 | [redacted] |
| | ASW/ASUW/ISR | 4 | • [redacted]<br>• [redacted] |
| ~~(FOUO)~~ Partially Fixed | ASW | 1 | [redacted] |
| | ASUW/ISR | 1 | [redacted] |
| | ISR | 1 | [redacted] |
| | ASW/ASUW/ISR | 2 | [redacted] |

* Operators have developed procedural mitigations, which are workarounds that could support downgrade or cancellation of the deficiency report.

**Legend**
ASUW – Anti-Surface Warfare
ASW – Anti-Submarine Warfare
ISR – Intelligence, Surveillance, and Reconnaissance

## *Unresolved Deficiencies Waived to Support Deployment*

On August 12, 2012, the PEO, Air Anti-Submarine Warfare, Assault, and Special Mission Programs sent a message to the OPNAV N84 requesting waiver for 28 unresolved deficiency reports. The message stated that the PEO had discussed the open deficiencies at the Operational Test Readiness Review and had assessed them to pose "an acceptable level of risk" for successful completion of IOT&E in support of a December 2013 first deployment. Based on the PEO's assessment and his own participation in the Operational Test Readiness Review, the OPNAV N84 granted the program manager the waiver on correcting the 28 unresolved system deficiencies to allow the program to begin IOT&E.

The program manager plans on resolving the above deficiencies through software updates, upgrades to mission equipment, and workarounds and plans to test the solutions during FOT&E in September 2013. However, both DOT&E and JITC raised concerns about having unresolved deficiencies before starting IOT&E, as discussed in the sections below. Because the program manager plans to test corrections addressing the 11 deficiency reports during FOT&E in September 2013, delaying the FRP decision until the FOT&E is complete would allow the program manager to determine the resolution of all open or partially fixed deficiency reports on P-8A operational effectiveness and suitability.

## *Director, Operational Test and Evaluation Concerns Relating to Unresolved Critical Deficiencies*

On July 20, 2012, the DOT&E issued the memorandum "Readiness of the P-8A *Poseidon* for Initial Operational Test and Evaluation," which identified concerns over mission system stability and performance. The DOT&E concerns related to the open deficiency reports that DOT&E staff stated "...have the potential to significantly degrade operational effectiveness and suitability across the range of *Poseidon* missions." The director recommended that the Navy continue to critically evaluate hardware and software deficiencies before beginning IOT&E. On August 28, 2012, DOT&E issued a second memorandum "P-8A *Poseidon* Multi-Mission Maritime Aircraft Operational Test and Evaluation Risk Assessment," which recognized some improved system performance particularly for the Electronic Support Measure sensor, that stated "...a number of unresolved deficiencies could degrade operational effectiveness during IOT&E in specific mission areas." Specifically, the memorandum highlighted unresolved deficiencies including data link problems leading to unreliable transmission of radar and infrared imagery intelligence products and voice communication, imagery quality and collection problems, radar resolution quality and pointing errors, unreliable identification of hostile targets, and impaired survivability fuel system performance problems. In the "FY 2012 Annual Report," December 2012, DOT&E reiterated concerns regarding the above unresolved deficiencies.

*'A number of unresolved deficiencies could degrade operational effectiveness during IOT&E in specific mission areas.'*

### *Unresolved Deficiencies Impact Mission-Critical Information Exchange*

JITC officials also expressed concern with known deficiencies not being corrected before conducting IOT&E. In August 2012, the JITC Acting Chief, Force Application/Force Protection Portfolio, issued the memorandum "P-8A *Poseidon* Multi-Mission Aircraft (MMA), Increment 1 Net Ready Key Performance Parameter (NR-KPP) Interim Status," which stated, "... the unresolved deficiencies present a high risk to mission success, should the P-8A, Increment I, proceed to Initial Operational Test and Evaluation (IOT&E)." The acting chief's primary concern was that the deficiencies had significant negative impact to mission-critical information exchange. This concern led the acting chief to state in the memorandum that the P-8A *Poseidon* had not met the portion of the Net-Ready Key Performance Parameter for operationally effective information exchange. On January 3, 2013, JITC staff stated that they had not changed their assessment concerning the critical information exchange capabilities of the P-8A *Poseidon*. In subsequent audit discussion on February 8, 2013, program office staff indicated that they were working with JITC staff to address the above concerns. Specifically, the program office staff explained that they held "summit" meetings with JITC staff on October 4, November 13, and November 15, 2012, to discuss the status of P-8A development efforts regarding communications systems; identify JITC's areas of concern; and devise a strategy to ensure that JITC had all the necessary data to assess the P-8A before the FRP decision. Additionally, the program office staff stated, based on their analysis and testing, that the P-8A deficiencies in performing information exchange were limited to 3 out of 39 critical information exchange requirements. They further stated that they planned to make corrections during FY 2013 to support testing the ability of the aircraft to meet these remaining requirements.

> *'The unresolved deficiencies present a high risk to mission success, should the P-8A, Increment I, proceed to Initial Operational Test and Evaluation (IOT&E).'*

## Incomplete Mission Testing

Since March 2005, the program manager had reduced planned testing before the FRP decision to demonstrate the P-8A *Poseidon* could fully perform the armed ASUW mission. We compared the following *Poseidon* test documents to determine the extent of the planned reduction in ASUW testing:

- "Test and Evaluation Master Plan for the P-8A *Poseidon* Multi-mission Maritime Aircraft, Revision A" March 16, 2005, (Revision A of the *Poseidon* Test and Evaluation Master Plan).
- "Test and Evaluation Master Plan for the P-8A *Poseidon* Multi-mission Maritime Aircraft, Revision C" May 27, 2010, (Revision C of the *Poseidon* Test and Evaluation Master Plan).

Specifically, Revision A of the *Poseidon* Test and Evaluation Master Plan included testing of the aircraft's missile carriage and launch/release capacity in support of the Operational Test Readiness Review, which would determine whether the aircraft was ready to proceed to IOT&E in support of the FRP decision. Conversely, Revision C of the *Poseidon* Test and Evaluation Master Plan states that IOT&E to support the FRP decision (and earlier program testing) would not include testing the armed (missile carrying) ASUW capabilities of the aircraft. Instead, Revision C states the Navy will conduct armed ASUW testing during Follow-on Operational Test and Evaluation (FOT&E),[5] after the FRP decision.

The Navy has implemented the test planning in revision C. Specifically, the DT/OT Report states that forward firing of ASUW weapons (the Harpoon missile) will be scheduled during FOT&E. In addition to firing the missile, the program manager stated that FOT&E testing will include testing to determine whether the Harpoon missile can integrate with the mission systems in the P-8A aircraft. Therefore, the program manager will not demonstrate firing the Harpoon Block 1C missile during Navy missions and determine whether the missile can successfully integrate with P-8A mission systems before entering FRP. Because the Harpoon missile is the P-8A *Poseidon*'s ASUW weapon, the *Poseidon* cannot fully demonstrate its ability to meet the Capability Production Document requirement for attacking surface targets without demonstrating that it can fire the missile and that the missile can integrate with the *Poseidon* mission systems.

*Therefore, the program manager will not demonstrate firing the Harpoon Block 1C missile during Navy missions and determine whether the missile can successfully integrate with P-8A mission systems before entering FRP.*

On July 26, 2012, we met with program office test staff to discuss our concerns regarding deferring the armed ASUW testing, to better understand the test objectives for armed ASUW testing, and to determine why the program manager deferred ASUW testing until the FOT&E test phase. Test staff stated that the primary objective of testing the armed ASUW capabilities was to determine whether the aircraft could successfully handle the airframe stress from carrying and firing missiles. As defined in the Capability Production Document, the ASUW mission requires that the P-8A *Poseidon* carry at least two missiles. Navy test staff stated that the program manager deferred the armed ASUW testing in response to a request from fleet commanders and a recommendation from the Director, Air Warfare for the Office of the Chief of Naval Operations. Specifically:

- On December 18, 2009, the Deputy Chief of Naval Operations (Integration of Capabilities and Requirements Air Warfare Division); the PEO, Air Anti-Submarine Warfare, Assault, and Special Mission Programs; and the program manager conducted a teleconference to address the Commander, Patrol

[5] FOT&E is the test and evaluation that may be necessary after the FRP decision review to refine the estimates made during Operational Test and Evaluation, to evaluate changes, and to re-evaluate the system to ensure that it continues to meet operational needs and retains its effectiveness in a new environment or against a new threat.

and Reconnaissance Group's proposal to modify the P-8A *Poseidon* test schedule by moving the armed ASUW testing to FOT&E, due to fleet concerns regarding maintaining on-time procurement and delivery of the P-8A *Poseidon*. Specifically, the fleet was concerned that conducting ASUW testing before the FRP decision could delay the fleets transition to the P-8A.

- On January 26, 2010, the Director, Air Warfare for the Office of the Chief of Naval Operations issued a memorandum "Deferral of Standoff Land Attack Missile-Expanded Response (SLAM-ER)[6] Operational Test and Evaluation on P-8A *Poseidon*," that recommended that the P-8A *Poseidon* program proceed with the revised test schedule that the Commander, Patrol and Reconnaissance Group proposed in December 2009.

In addition to deferring armed ASUW testing to FOT&E, the Deputy Assistant Secretary of the Navy for Air Programs, in comments to the draft report, stated that the Program Manager identified an opportunity to replace the Standoff Land Attack Missile-Expanded Response with the Harpoon missile. This would allow the Navy to leverage the Boeing testing of the Harpoon that was already planned to support foreign military sales of a variant of the *Poseidon* aircraft. The Deputy Assistant Secretary stated that this leveraging reduced the total ASUW weapon testing that would have been required and would enable an earlier test completion.

On November 1, 2012, subsequent to our July 2012 meeting, the program office test staff informed us that the Navy had established an agreement with the prime contractor (Boeing) that would allow the program office to obtain test data and analysis from armed ASUW testing of the P-8I.[6] The P-8I is an export variant of the P-8A *Poseidon* that India is purchasing directly from Boeing. Navy test staff stated this action should reduce the risk of deferring armed ASUW testing. Under an agreement with Boeing, signed November 16, 2012, Boeing (the contractor) is responsible for sharing test information relating to carrying and firing the Harpoon missile. Specifically, Boeing will provide the program manager with P-8I Harpoon airworthiness test plans, instrumentation plans, instrumentation calibration data, test data and analysis, and will allow government representatives to attend all testing. Additionally, Boeing will provide data on weapon stores compatibility and weapons separation analysis. Boeing plans to complete testing on the P-8I in June 2013.

We agree that the data and analysis gained through the Cooperative Research and Development Agreement with Boeing will reduce the risk of deferring armed ASUW testing of the P-8A *Poseidon* until FOT&E. Program office test staff also acknowledged that they still planned to execute test flights of the P-8A *Poseidon* during FOT&E to verify the data and analysis Boeing provides on the testing of the P-8I and to address

[6] Test staff stated the Navy plans to use the Harpoon missile instead of the SLAM-ER to perform the armed ASUW mission.

specific Navy missions. Deferring the FRP decision to allow completion of armed ASUW testing of the P-8A would further reduce program risk in transitioning the P-8A *Poseidon* to FRP.

## Effects of Incomplete Testing Results

With incomplete test results, the Under Secretary of Defense for Acquisition, Technology, and Logistics could decide to acquire 13 P-8A *Poseidon* aircraft (first FRP lot), at an estimated cost of $2.6 billion, that could require costly retrofits to meet lifespan and mission and system performance requirements. The retrofit costs would result from failure to demonstrate that the P-8A *Poseidon* airframe can meet life expectancy requirements, not validating the aircraft can fully and successfully perform the armed ASUW primary mission, and not correcting known system deficiencies.

The FRP decision should be rescheduled until the planned completion of FOT&E and life expectancy requirements in September 2013, so the milestone decision authority will have sufficient data to determine whether the P-8A *Poseidon* can meet the lifespan and the mission and system performance requirements to avoid costly retrofits. Specifically, this change in schedule would allow the contractor and the Navy to verify that the airframe met structural fatigue requirements during the first simulated 25 year lifespan; resolve system deficiencies; and demonstrate that the *Poseidon* aircraft can perform the ASUW mission.

## Department of the Navy Comments on the Finding and Our Response

Although not required to comment, the Deputy Assistant Secretary of the Navy for Air Programs provided comments on the finding sections discussing delayed life expectancy testing, delayed correction of known deficiencies waived before the start of IOT&E, and incomplete mission testing. Summaries of the Deputy Assistant Secretary's comments, along with our responses, follow below. For the full text of the comments, see the Management Comments section of the report.

### *Delayed Life Expectancy Testing*

The Deputy Assistant Secretary disagreed that the FRP was scheduled inappropriately in relation to the completion of the fatigue testing per DoD guidance. The Deputy stated that, while the report asserts that fatigue testing is required to be completed before the LRIP decision, the DoD Manual 4245.7M states that it is left to the users of the Manual to determine how early or how late in the acquisition phase the testing activity begins or ends. He then explained that the Navy had made changes to strengthen the commercial 737 airframe to reduce risks associated with potential outcomes of fatigue testing, which then made it acceptable to complete the first lifetime of fatigue testing after the Milestone C (LRIP I) decision in August 2010. The Deputy Assistant Secretary stated that the Under Secretary of Defense for Acquisition, Technology, and Logistics approved this approach and it was in accordance with DoD policy, specific guidance received at each milestone, and the P-8A Acquisition Strategy. He further stated that the

completion of fatigue testing was not an entrance criteria to enter into LRIP or FRP decisions. In addition, the Deputy Assistant Secretary stated that adjustments to the original fatigue test schedule were not driven by funding constraints, but caused by a number of considerations, including the availability of measured flight test loads data. The Deputy Assistant Secretary stated that the current full scale fatigue test schedule was determined by experienced subject matter experts to represent a balance of such considerations. He stressed that the FRP decision should not be linked to the completion of the first simulated 25-year lifespan testing. Finally, he stated that the *Poseidon* aircraft was expected to finish its first lifetime fatigue testing in October 2013, just 3 months after the scheduled FRP decision.

## *Our Response*

We did not revise the report to state that the FRP decision was scheduled appropriately with respect to completion of fatigue testing. Specifically, based on the scope of the design changes to the commercial airframe, the more demanding service life requirements of the Navy, and the continuing existence of known weaknesses in airframe components (as discussed in the finding), the judgmental application of the guidance in DoD Manual 4245.7M should include completing the first lifetime of airframe fatigue testing before holding the FRP decision. As stated in the report, holding the FRP decision after the contractor has completed the structural integrity inspection of the airframe during the first lifetime test would allow the program manager to demonstrate that the airframe would meet structural fatigue requirements. Therefore, the first lifetime testing results should be linked to the FRP decision. We did revise the report to show that the *Poseidon* aircraft was expected to finish its first lifetime fatigue testing in October 2013 and to explain that testing priorities, along with funding, drove adjustments to the airframe fatigue testing schedule.

## *Delayed Correction of Known Deficiencies Waivered Before Start of Initial Operational Test and Evaluation*

The Deputy Assistant Secretary stated the criteria to enter into the FRP decision included that the program is to demonstrate system performance, effectiveness, software maturity, and interoperability by having no unfixed, unverified, or unwaived Part I deficiencies. He stated that the initial results of the IOT&E, which concluded on March 25, 2013, matched the known deficiencies identified and documented during the 30-month developmental and integrated flight test period that preceded IOT&E. The Deputy Assistant Secretary stated that the program manager did have a plan to correct these known deficiencies and to test corrections during the FOT&E in September 2013 and that this approach was considered within acceptable risk to entry into IOT&E. He stated that this approach was the consensus of all stakeholders at the Operational Test Readiness Review. Therefore, the statement in the Results In Brief section of the draft report that the Chief of Naval Operations granted the program manager temporary waivers to allow the start of IOT&E "despite test officials' stated concerns" is misleading and the report implies that "test officials" were against entering into IOT&E. The Deputy Assistant Secretary further stated that the report description of the Chief of Naval Operations participation in the Operational Test Readiness Review and the deficiency waiver process

did not correctly portray the role of Chief of Naval Operations staff in the Operational Test Readiness Review or the routine nature of the process in which isolated deficiencies are sometimes waived to permit comprehensive testing to proceed as scheduled.

## *Our Response*

We revised the Results In Brief to delete the statement that the Chief of Naval Operations granted the program manager temporary waivers to allow the start of IOT&E "despite test officials' stated concerns" and to state instead that the Chief of Naval Operations accepted the risk of granting temporary waivers from correcting deficiencies to enter into IOT&E. In addition, we understand that the Chief of Naval Operations staff sometimes waives isolated deficiencies to enter into IOT&E. As result of his waiving the 28 deficiencies to allow the *Poseidon* aircraft to enter into IOT&E, the program manager will not have test data that identifies that these deficiencies have been corrected to meet the entrance criteria for the FRP decision planned for July 2013.

## *Incomplete Mission Testing*

The Deputy Assistant Secretary partially agreed that additional mission testing should be completed to inform the FRP decision. However, he stated that the draft report incorrectly characterized the Harpoon test schedule as a delay that the Navy introduced in response to fleet commander concerns regarding maintaining on-time delivery of the P-8A *Poseidon*. He explained that, after the Milestone C (LRIP I) decision, the program replaced the Standoff Land Attack Missile-Expanded Response with the Harpoon Block 1C weapon for the armed ASUW mission. He stated that the Navy made this replacement decision in order to leverage Boeing's planned testing of the Harpoon missile. Boeing had already planned this testing as part of the foreign military sales of a variant of the *Poseidon* aircraft, the P-8I, which the company was selling to India. The Deputy Assistant Secretary then clarified that, instead of causing a delay, the use of the Harpoon actually helped accelerate ASUW testing. Additionally, he stated that the draft report was incorrect in concluding that the P-8A *Poseidon* may be incapable of meeting a particular mission requirement simply because final testing of the associated capability has not been completed. He stated that both the P-8I and the P-8A aircraft have carried and released mission representative Harpoon test shapes.

## *Our Response*

We revised the finding discussion to clarify that the Harpoon test schedule was not a delaying factor for completing armed ASUW testing. Instead, the report now states that using the Harpoon actually reduced the total amount of testing required by allowing the Navy to leverage the Boeing testing of the Harpoon missile that was already planned to support foreign military sales of a variant of the *Poseidon* aircraft. We also revised the summary section of the finding to be more specific by stating that, with incomplete test results, the Navy lacks critical information necessary to make an informed decision about whether the P-8A *Poseidon* will fully meet operational requirements related to armed ASUW missions.

# Recommendation, Management Comments, and Our Response

**We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics award an additional low-rate initial production lot for the P-8A *Poseidon* aircraft in July 2013 and defer the full-rate production decision until the program manager for Maritime Surveillance Aircraft demonstrates that the airframe can achieve the required 25 year lifespan and Follow-on Operational Test and Evaluation has resolved mission limiting deficiencies and demonstrated that the aircraft can perform its primary missions, including anti-surface warfare.**

## *Under Secretary of Defense for Acquisition, Technology, and Logistics Comments*

~~(FOUO)~~ The Assistant Secretary of Defense for Acquisition responded for the Under Secretary of Defense for Acquisition, Technology, and Logistics. [redacted]

## *Our Response*

The Assistant Secretary of Defense for Acquisition's comments were nonresponsive. The comments did not describe a specific course of action, other than consideration of the recommendation during the lead-up to the Defense Acquisition Board review, and did not provide completion dates. Accordingly, we request that the Under Secretary of Defense for Acquisition, Technology, and Logistics provide an additional response to the final report. When formulating the response, we request that the Under Secretary consider both the information we provide in the Finding B, as well as the Navy's rationale for supporting a delay in the FRP decision, which is summarized below and fully presented in the Management Comments section of the report.

## *Department of the Navy Comments*

Although not required to comment, the Deputy Assistant Secretary of the Navy for Air Programs stated that he partially agreed with the recommendation. He stated that, though the rationale for the findings and recommendation in our report seems reasonable, they are still pre-decisional. He explained that discussions between the Assistant Secretary of the Navy for Research, Development, and Acquisition and the Under Secretary of Defense for Acquisition, Technology, and Logistics determined that an in-process review Defense Acquisition Board would be held in June 2013 to discuss the P-8A *Poseidon's* readiness for the FRP decision, the option for an additional LRIP buy, and to review the results of the IOT&E. The Deputy Assistant Secretary documented his support for delaying the FRP decision by listing the following factors as the "primary advantages" of the delay:

- maintaining production line stability by facilitating timely contracting for the next production lot,
- relieving the schedule pressures on the FRP Defense Acquisition Board associated with post-IOT&E reporting and software correction efforts, and
- allowing the FRP decision to be fully informed by the formal results of the upcoming FOT&E period.

The Deputy Assistant Secretary then explained his partial agreement by stating that, though he agrees with delaying the FRP decision until after completion of FOT&E, he did not agree with linking the FRP decision to the completion of fatigue testing. He stated that, according to the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation, the *Poseidon* aircraft was scheduled to finish its first lifetime fatigue testing in October 2013 (versus December 2013, as shown in the draft report). Therefore, he stated that, by the time of the June 2013 Defense Acquisition Board, there will be sufficient data to support conclusions on structural risks.

## *Our Response*

We agree with the Deputy Assistant Secretary's comments with regard to the advantages of delaying the FRP decision. In addition to the advantages the Deputy Assistant Secretary lists above, in his response to Finding A, he stated that the emerging program results indicate that there is a low risk of major retrofits after a further LRIP lot 4 rather than a FRP decision in July 2013. The award of LRIP lot 4 would result from the Under Secretary of Defense for Acquisition, Technology, and Logistics implementing our recommendation in Finding B.

We do not agree with the Deputy Assistant Secretary's assertion that the FRP decision should be decoupled from the completion of fatigue testing and that there will be sufficient data to support conclusions on structural risks by the time of the June 2013 Defense Acquisition Board review. While there should be progress data available in June 2013, as fatigue testing will be ongoing, testing to demonstrate that the airframe can achieve the required 25-year lifespan will not conclude until October 2013. This means that there will be up to 4 months of test data that will not be available at the in-process review Defense Acquisition Board. Based on the Deputy Assistant Secretary's comments, we updated the finding to show the estimated completion of the first lifetime of fatigue testing as October 2013.

# Appendix A. Scope and Methodology

We conducted this performance audit from June 2012 through March 2013 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We interviewed staff from: Program Executive Office for Air Anti-Submarine Warfare, Assault, and Special Mission Programs; program manager for Maritime Surveillance Aircraft, Patuxent River, Maryland; Deputy Assistance Secretary of Defense for Developmental Test and Evaluation, Pentagon; Assistant Secretary of the Navy for Research, Development, and Acquisition, Pentagon; Office of the Chief of Naval Operations, Director for Innovation, Test and Evaluation, and Technology Requirements, Pentagon; Director, Operational Test and Evaluation, Pentagon; the Commander, Operational Test and Evaluation Forces, Norfolk, Virginia; Joint Interoperability Test Command, Fort Huachuca, Arizona; Defense Contract Management Agency Boeing, Seattle, Washington; and Boeing, Seattle, Washington.

We collected, reviewed, and analyzed documents dated from September 1985 through February 2013. We reviewed the program's acquisition strategy, risk management plan, and test and evaluation plans to determine if the Navy took corrective action to resolve the testing issues and potential risks identified at the LRIP decision in August 2010, and evaluated whether the Navy's risk mitigation efforts adequately prevented future shortfalls from negatively affecting program cost and schedule.

To determine whether the Navy effectively prepared the P-8A *Poseidon* program for the FRP decision, we reviewed program planning and reporting documentation against the policies and guidance in the following DoD and Navy issuances:

- Secretary of the Navy Instruction 5000.2E, "Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System," September 1, 2011.
- NAVAIR Instruction 3960.5A, "Naval Air Systems Command Technical Assurance Board Monitoring of Aircraft Weapon System Development," July 20, 2007.
- DoD Manual 4245.7-M, "Transition from Development to Production," September 1985.

## Use of Computer-Processed Data

We did not rely on computer-processed data to perform this audit.

## Use of Technical Assistance

Two computer engineers from the Technical Assessment Director, DoD Office of Inspector General assisted with the audit. The engineers assisted the team in evaluating and reviewing P-8A *Poseidon* systems engineering; test and evaluation; and other acquisition planning related documentation.

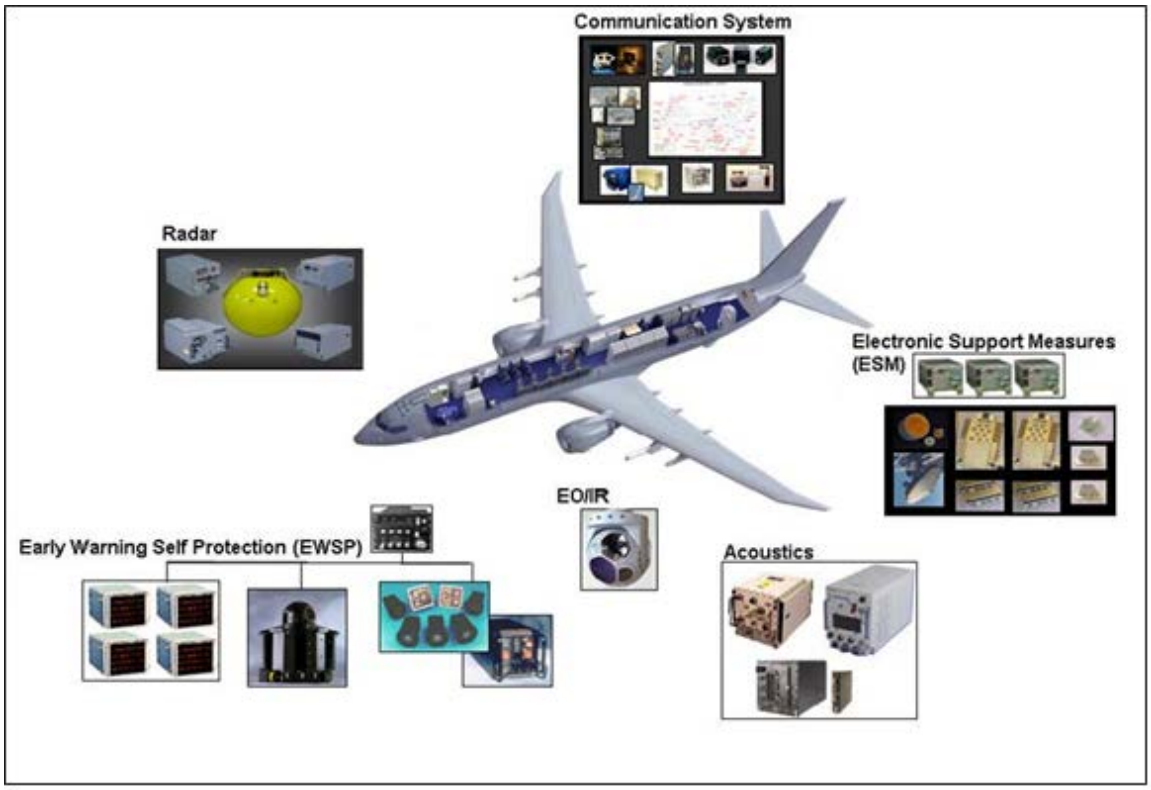
## Prior Coverage

No prior coverage has been conducted on P-8A *Poseidon* during the last 5 years.

# Appendix B. Description and Functions of the P-8A *Poseidon* Mission Computing and Display System and Its Subsystems

The P-8A *Poseidon* Mission Computing and Display System provides control of all aircraft components used for conducting operational missions. The system includes six mission subsystems: Acoustics; Radar; Electronic Support Measures; Electro Optical/Infrared; Early Warning and Self-Protection; and Communications. Figure B-1 depicts the six mission subsystems on the P-8A *Poseidon* aircraft. Descriptions of each mission subsystem follow.

**Figure B-1. P-8A *Poseidon* Mission Subsystems**




Source: Naval Air System Command.

## Acoustics

The acoustic subsystem provides passive and active search, localization, classification, target detection, tracking, and acoustic intelligence collection capabilities for ASW, as well as environmental data collection. The subsystem generates an ASW tactical picture and provides fire control solutions. The P-8A *Poseidon* provides the ASW tactical picture to other forces as required in real-time to support working cooperatively with other ASW air and surface resources. The subsystem will receive, process, and display all aircraft-deployable acoustic sensors currently in production and under development, for both U.S. and allied forces.

## Radar

The radar subsystem is integrated with other aircraft systems and sensors that enable easy analysis of targets and quick updates to data links. Its operating modes include weather radar, surface search, periscope search, navigation, and identification of friend or foe.

## Electronic Support Measures

The electronic support measures subsystem provides a real-time capability for detecting, measuring and analyzing radio frequency signals and modes, both known and unknown. This capability allows the P-8A *Poseidon* to identify, classify, and locate radar signals.

## Electro-Optical/Infrared

The electro-optical/infrared subsystem provides the P-8A *Poseidon* with the capability to conduct passive, visual searches at ranges well beyond that of the human eye. It detects, identifies, and tracks surface targets in the open ocean, littoral, and overland regions.

## Early Warning and Self-Protection

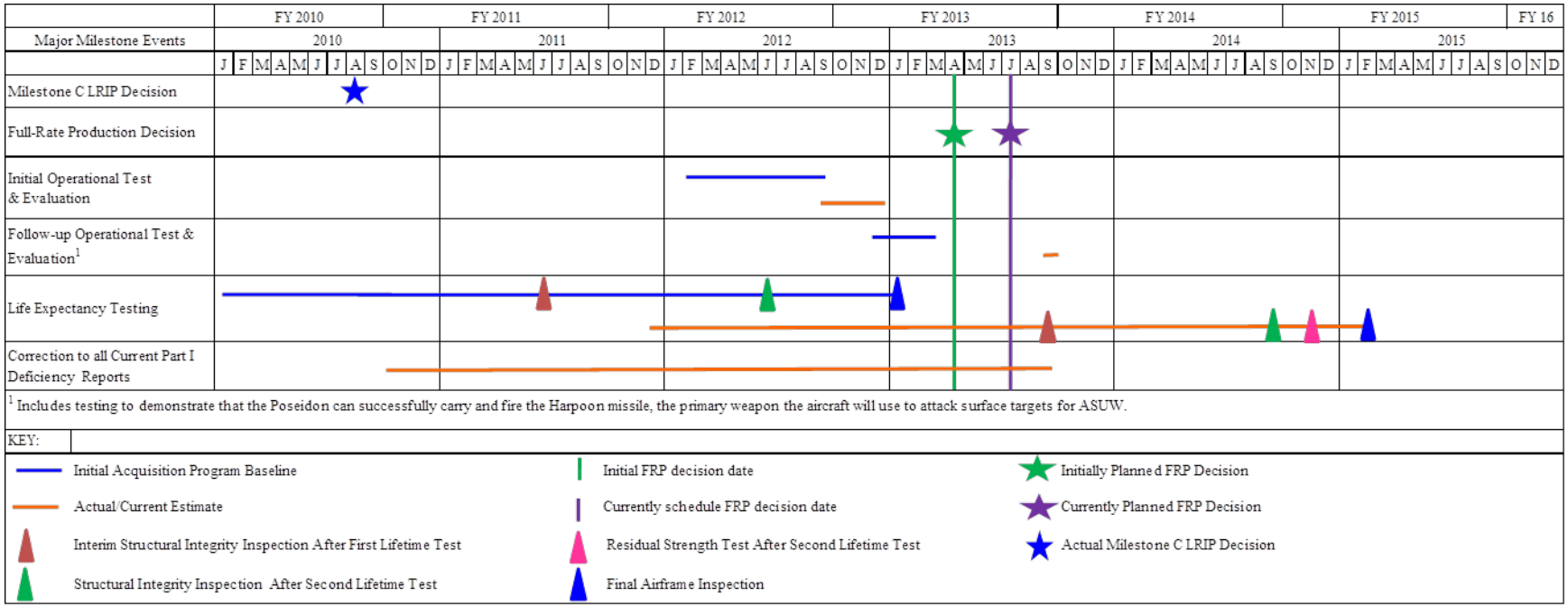
The early warning and self-protection subsystem uses infrared countermeasures to protect the P-8A *Poseidon* from missile attacks. The infrared jammer provides both the mission crew and the pilots with a fused threat picture at all times.

## Communications

The communications subsystem provides for all aspects of internal and external flight crew communications and theater/global network connectivity. Internal aircraft communications include communications among crewmembers and maintenance technicians, as well as selective conference communication. External communication circuits allow the aircrew to exchange information with land-based facilities, other aircraft, and surface and subsurface platforms.

# Appendix C. Timeline of Acquisition Milestone and Testing Events

The chart below shows the initial and currently planned as of November 2012 schedule of acquisition milestone and testing events for the P-8A *Poseidon* program.



# Appendix D. Deficiency Reports

The table below shows the project manager's expected status at FRP decision for 11 deficiency reports as of February 2013. The table also identifies the mission impact of each deficiency report. Using NAVAIR Instruction 3960.5A, "Naval Air Systems Command Technical Assurance Board Monitoring of Aircraft Weapon System Development," July 20, 2007, the commanding officer of VX-20 classified all 11 deficiencies as "Part I." A Part I deficiency classification is an indicator that a condition of safety, the integrity of the aircraft or an essential subsystem, or the ability to accomplish primary or alternative missions must be corrected to bring an aircraft into an acceptable condition. The NAVAIR instruction also classifies deficiencies according to recommended time of correction. The single star designator recommends deficiency closure before operational deployment of the aircraft. The "no star" designator means that commanders can operationally deploy the aircraft before correction of the mission limiting deficiency. These designations are shown in the "Title/Deficiency Designation" column below.

**~~(FOUO)~~ Table D-1. Mission Impact of Each Deficiency Report and Program Manager's Expected Status at FRP**

| Report No. | Date | Title/Deficiency Designation | Mission Impact | Mission (ASW/ASUW/ISR) | Expected Status at FRP |
|---|---|---|---|---|---|
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW | Open |
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW/ASUW | Open |

| Report No. | Date | Title/Deficiency Designation | Mission Impact | Mission (ASW/ASUW/ISR) | Expected Status at FRP |
|---|---|---|---|---|---|
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW/ASUW/ISR | Open |
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW/ASUW/ISR | Open, with procedural mitigation[1] |
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW/ASUW/ISR | Open, with procedural mitigation[1] |

[1] Procedural mitigations are workarounds used to support potential downgrade or cancellation of the deficiency report.

| Report No. | Date | Title/Deficiency Designation | Mission Impact | Mission (ASW/ASUW/ISR) | Expected Status at FRP |
|---|---|---|---|---|---|
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW/ASUW/ISR | Open, with procedural mitigation[2] |
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW/ASUW/ISR | Partially Fixed[3] |

[2] Procedural mitigations are workarounds used to support potential downgrade or cancellation of the deficiency report.
[3] Contingent upon successful completion of software and hardware upgrades and testing results, the program manager anticipates requesting the commanding officer of VX-20 to review the status of deficiency reports for consideration to downgrade to non-mission critical deficiency.

| Report No. | Date | Title/Deficiency Designation | Mission Impact | Mission (ASW/ASUW/ISR) | Expected Status at FRP |
|---|---|---|---|---|---|
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW/ASUW/ISR | Partially Fixed[4] |
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASUW/ISR | Partially Fixed[4] |

[4] Contingent upon successful completion of software and hardware upgrades and testing results, the program manager anticipates requesting the commanding officer of VX-20 to review the status of deficiency reports for consideration to downgrade to non-mission critical deficiency.

| Report No. | Date | Title/Deficiency Designation | Mission Impact | Mission (ASW/ASUW/ISR) | Expected Status at FRP |
|---|---|---|---|---|---|
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ISR | Partially Fixed[5] |
| (~~FOUO~~) [redacted] | [redacted] | [redacted] | [redacted] | ASW | Partially Fixed[5] |

[5] Contingent upon successful completion of software and hardware upgrades and testing results, the program manager anticipates requesting the commanding officer of VX-20 to review the status of deficiency reports for consideration to downgrade to non-mission critical deficiency.

# Glossary

**Acquisition Categories include categories I, II, and III**—Acquisition Category I programs have the highest dollar value and the Defense Acquisition Executive is the designated milestone decision authority. Acquisition Category II and III programs have relatively lower dollar values, and the Component (Army, Navy, Air Force) acquisition executive or designee serves as the milestone decision authority.

**Acquisition Phase**—All the tasks and activities needed to bring a program to the next major milestone. Acquisition phases provide a logical means of progressively translating broadly stated capabilities into well-defined, system-specific requirements and ultimately into an operationally effective, suitable, and survivable system.

**Developmental Testing and Evaluation**—Any testing used to assist in the development and maturation of products, product elements, or manufacturing or support processes. It also includes any engineering-type testing used to verify the status of technical progress, verify that design risks are minimized, substantiate achievement of contract technical performance, and certify readiness for initial operational testing. Development tests generally require instrumentation and measurements and are accomplished by engineers, technicians, or soldier operator-maintainer test personnel in a controlled environment to enable failure analysis.

**Follow-on Operational Test and Evaluation (FOT&E)**—A test and evaluation that may be necessary after the FRP decision review to refine the estimates made during Initial Operational Test and Evaluation, to evaluate changes, and to re-evaluate the system to ensure that it continues to meet operational needs and retains its effectiveness in a new environment or against a new threat.

**Full-Rate Production (FRP)**—Contracting for economic production quantities following stabilization of the system design and validation of the production process.

**Initial Operational Test and Evaluation (IOT&E)**—A dedicated Operational Test and Evaluation conducted on production or production representative articles to determine whether systems are operationally effective and suitable to support a FRP decision.

**Joint Capabilities Integration and Development System**—Supports the Chairman of the Joint Chiefs of Staff and the Joint Requirements Oversight Council in identifying, assessing, and prioritizing joint military capability needs as required by law. The capabilities are identified by analyzing what is required across all joint capability areas to accomplish the mission.

**Key Performance Parameters**—The attributes or characteristics of a system that are considered critical or essential to the development of an effective military capability and make a significant contribution to the characteristics of the future joint force. A key performance parameter normally has a threshold representing the minimum acceptable

value achievable to low-to-moderate risk and an objective representing the desired operational goal but at higher risk in cost, schedule, and performance.

**Low-Rate Initial Production (LRIP)**—The initial production effort of the production and deployment acquisition phase. LRIP is intended to result in completion of manufacturing development in order to verify adequate and efficient manufacturing capability and to produce the minimum quantity necessary to provide production-representative articles for IOT&E. LRIP establishes an initial production base for the system and permits an orderly increase in the production rate for the system, sufficient to lead to full-rate production upon successful completion of operational (and live-fire, where applicable) testing. At program initiation (Milestone B), the milestone decision authority determines the LRIP quantity for major defense acquisition programs and major systems.

**Operational availability**—The degree to which one can expect a piece of equipment or weapon system to work properly when it is required; that is, the percent of time the equipment or weapon system is available for use.

**Operational Effectiveness**—The measure of the overall ability of a system to accomplish a mission when used by representative personnel in the environment planned or expected for operational employment of the system considering organization, doctrine, tactics, supportability, survivability, vulnerability, and threat.

**Operational Suitability**—The degree to which a system can be placed and sustained satisfactorily in field use with consideration being given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, safety, human factors, habitability, manpower, logistics supportability, natural environmental effects and impacts, documentation, and training requirements.

**Operational Test and Evaluation**—The field test under realistic conditions of any item (or key component) of weapons, equipment, or munitions for the purpose of determining the effectiveness and suitability of the weapons, equipment, or munitions for use in combat by typical military users and the evaluation of the results of such tests.

**Operational Test Readiness Review**—A multidiscipline product and process assessment to ensure that the production configuration system can proceed into IOT&E with a high probability of success. Programs may conduct more than one Operational Test Readiness Review before IOT&E.

**Production and Deployment Phase**—The fourth phase of the acquisition life cycle as defined and established by DoD Instruction 5000.02, "Operation of the Defense Acquisition System," December 8, 2008. This phase consists of two efforts: LRIP and FRP and deployment separated by the FRP decision review. The production and deployment phase begins after a successful Milestone C (LRIP) review. The purpose of this phase is to achieve an operational capability that satisfies the mission need.

**Program Executive Officer (PEO)**—A military or civilian official who is responsible for directing multiple program managers for assigned acquisition programs. A PEO reports to, and receives guidance and direction from, the DoD component acquisition executive.

**Program Manager**—A designated individual who is responsible for, and has authority to accomplish, program objectives for development, production, and sustainment to meet the user's operational needs. The program manager shall be accountable for credible cost, schedule, and performance reporting to the milestone decision authority.

**Test and Evaluation Master Plan**—Documents the overall structure and objectives of the test and evaluation program. It provides a framework in order to generate detailed plans and documents schedule and resource implications associated with the program. The test and evaluation master plan identifies the necessary Developmental Test and Evaluation, Operational Test and Evaluation, and Live-Fire Test and Evaluation activities. It relates program schedule, test management strategy and structure, and required resources to Critical Operational Issues, Critical Technical Parameters, objectives and thresholds documented in the Capability Development Document, evaluation criteria, and milestone decision points.

# Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

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ASSISTANT SECRETARY OF DEFENSE
30150 DEFENSE PENTAGON
WASHINGTON, DC 20301-3015

ACQUISITION

17 MAY 2013

MEMORANDUM FOR PROGRAM DIRECTOR FOR ACQUISITION AND CONTRACT MANAGEMENT, OFFICE OF THE INSPECTOR GENERAL

THROUGH: DIRECTOR, ACQUISITION RESOURCES AND ANALYSIS 5/8/13

SUBJECT: Response to DoD Office of the Inspector General Draft Report - The Navy P-8A Poseidon Aircraft Needs Additional Critical Testing Before the Full-Rate Production Decision (Project No. D2012-D000AE-0176.000)

As requested, I am providing a response to the recommendation contained in the subject report.

**Recommendation:**
We recommend that the Under Secretary of Defense for Acquisition, Technology and Logistics award an additional low-rate initial production (LRIP) lot for the P-8A Poseidon aircraft in July 2013 and defer the full-rate production (FRP) decision until the program manager for Maritime Surveillance Aircraft demonstrates that the airframe can achieve the required 25-year lifespan and Follow-on Operational Test and Evaluation has resolved mission limiting deficiencies and demonstrated that the aircraft can perform its primary missions, including anti-surface warfare.

**Response:**
~~(FOUO)~~ [redacted]

Please contact [redacted] if additional information is required.

Katrina McFarland

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# Department of the Navy Comments

DEPARTMENT OF THE NAVY
OFFICE OF THE ASSISTANT SECRETARY
(RESEARCH, DEVELOPMENT AND ACQUISITION)
1000 NAVY PENTAGON
WASHINGTON DC 20350-1000

MAY 2 2013

MEMORANDUM FOR PROGRAM DIRECTOR FOR ACQUISITION AND CONTRACT MANAGEMENT, OFFICE OF THE INSPECTOR GENERAL

SUBJECT: Response to DoD Office of the Inspector General Draft Report - The Navy P-8A Poseidon Aircraft Needs Additional Critical Testing Before the Full-Rate Production Decision (Project No. D2012-D000AE-0176.000)

ENCLOSURE: (1) Detailed Navy Response

As requested, I am providing responses to the general content and recommendations contained in the subject report.

**Recommendation from the DoDIG Report:** *"We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics award an additional Low-Rate Initial Production (LRIP) lot for the P-8A Poseidon aircraft in July 2013 and defer the Full-Rate Production (FRP) decision until the program manager for Maritime Surveillance Aircraft demonstrates that the airframe can achieve the required 25-year lifespan and Follow-on Operational Test and Evaluation (FOT&E) has resolved mission limiting deficiencies and demonstrated that the aircraft can perform its primary missions, including Anti-Surface Warfare (ASuW)."*

**Response:** Partially concur. Discussions between the Assistant Secretary of the Navy for Research, Development, and Acquisition and the Under Secretary of Defense for Acquisition, Technology, and Logistics determined that an In-Process Review (IPR) Defense Acquisition Board (DAB) be held to discuss the P-8A's readiness for Full Rate Production (FRP), the option of an additional LRIP buy, and the results from Initial Operational Test and Evaluation (IOT&E). The IPR DAB is scheduled for June 2013. Though the rationale for the findings and recommendation from the DoDIG report seems reasonable, they are still pre-decisional. A detailed response to the report can be found in encl (1).

Please contact [redacted] if additional information is required.

Richard Gilpin
Deputy Assistant Secretary of the Navy
Air Programs

**DEPARTMENT OF THE RESPONSE TO DODIG DRAFT AUDIT REPORT ON "THE NAVY P-8A POSEIDON AIRCRAFT NEEDS ADDITIONAL CRITICAL TESTING BEFORE THE FULL-RATE PRODUCTION DECISION" D2012-D000AE-0176.000, DATED 26 MARCH 2013"**

**Finding A:** *"Program Manager Addressed [Director, and Operational Test and Evaluation] DOT&E Concerns from [Low Rate Initial Production] LRIP Decision"*

- *Navy addressed DOT&E concerns on potential risks identified in LRIP decision*
- *Test flight hours increased to assess system reliability*
- *Poseidon critical operational issues that related to potential systems risks*
- *Additional critical testing needs to support the [Full Rate Production] FRP decision*

**Navy Response:** Concur. The P-8A program manager addressed DOT&E concerns and did not end Developmental Test and Evaluation (DT&E) in August 2012 before the Operational Test Readiness Review (OTRR), rather, the program continued without pause into Phase 2 of Increment 1 and Engineering Change Proposal (ECP) 1 of Increment 2, while simultaneously addressing deficiencies found in the first phase of DT&E. The emerging results indicate that there is low risk of major retrofits after LRIP Lot 4 (LRIP 4).

**Finding B:** *"Additional Testing [is] Needed to Support the Full-Rate Production Decision"*

- *Delayed life expectancy testing*
- *Funding constraints delayed life expectancy testing*
- *Reduced risk in delayed life expectancy testing*
- *Delayed correction of known deficiencies waivered before start of IOT&E*
- *Unresolved deficiencies waivered to support deployment*
- *DOT&E concerns relating to unresolved critical deficiencies*
- *Unresolved deficiencies impact mission critical information exchange*
- *Incomplete mission testing*
- *Effects of incomplete testing results*

**Navy Response:** Do not concur with the finding that the FRP was scheduled inappropriately in relation to completion of fatigue testing per Department of Defense (DoD) guidance and partially concur with finding that additional mission testing should be completed to inform the Full-Rate Production Decision.

The findings in the DoD IG report (page 8) assert a requirement to complete the fatigue testing before the Low Rate Initial Production (LRIP) decision per DoD guidance. However, the DoD policy (DoD Manual 4245.7M, Change 1) referenced by the DoD IG report states on page 1-7:

> *"It is left to the users of this document to determine how early or how late in the phase the template activity begins or ends; and such a determination will be influenced by the types of program, the acquisition plan, and the best judgment of experienced Government and industry personnel."*

The engineering work performed to strengthen the commercial 737 airframe for the planned operating environment of the P-8A was conducted to reduce risk associated with

**Final Report Reference**

**DEPARTMENT OF THE RESPONSE TO DODIG DRAFT AUDIT REPORT ON "THE NAVY P-8A POSEIDON AIRCRAFT NEEDS ADDITIONAL CRITICAL TESTING BEFORE THE FULL-RATE PRODUCTION DECISION" D2012-D000AE-0176.000, DATED 26 MARCH 2013"**

potential outcomes of fatigue testing. Thus, the original P-8A plan to complete the first lifetime of fatigue testing well after P-8A Milestone C was determined to be acceptable.

This approach was approved by the Under Secretary of Defense (Acquisition, Technology and Logistics) and was in accordance with DoD policy, specific guidance received at each milestone, and the P-8A Acquisition Strategy. Further, completion of fatigue testing was not an entrance criteria for Milestone C, the LRIP decision for the P-8A program, nor for the FRP decision. Also, the DoD IG report incorrectly implies that a subsequent adjustment to this original fatigue test schedule was driven exclusively by funding constraints. In reality, the scheduling of full scale fatigue tests must balance a number of considerations, including the availability of measured flight test loads data. If conducted too early and prior to the availability of such flight test data, fatigue tests may produce inaccurate results and would represent an inefficient use of limited program resources.

The current P-8A full scale fatigue test schedule was determined by experienced subject matter experts to represent an appropriate balance of such considerations. The DoD IG conclusion that incomplete test results could result in costly retrofits to meet lifespan requirements is speculative, inconsistent with the program engineering team's assessment of likely full scale fatigue test outcomes, and unsupported by relevant historical precedent for analogous platforms. For these reasons, the P-8A FRP decision should not be linked to the completion of the first simulated 25-year lifespan testing.

In accordance with the Full Rate entrance criteria defined in the P-8A Milestone C Acquisition Decision Memorandum, the program is to demonstrate system performance, effectiveness, software maturity and interoperability by having no unfixed, unverified or unwaivered Category 1 Deficiency Reports.

Also in accordance with the FRP entrance criteria and within the schedule defined in the approved Acquisition Program Baseline, the program completed Initial Operational Test and Evaluation (IOT&E) on March 25, 2013. Though final IOT&E report preparation is still underway, all initial feedback is that the results of the IOT&E period matched the known deficiencies that were identified and documented during the 2.5 year developmental and integrated flight test period that preceded IOT&E.

As presented at the Operational Test Readiness Review (OTRR), the Program Manager did have a plan to correct these known deficiencies and to test the corrections in the September 2013, FOT&E period, prior to operational employment of the system. This approach was considered within acceptable risk for entry into IOT&E. Furthermore, it should be noted that this approach was the consensus of all stakeholders at the Operational Test Readiness review, so the DoD IG statement (page i) that IOT&E was entered "despite test officials' stated concerns" is misleading. The report as written incorrectly implies that "test officials" recommended against proceeding with IOT&E. As discussed and agreed upon by all at the OTRR, the program has continued with planned corrections and has delivered associated software updates on schedule.

Revised, page i

**Final Report Reference**

**DEPARTMENT OF THE RESPONSE TO DODIG DRAFT AUDIT REPORT ON "THE NAVY P-8A POSEIDON AIRCRAFT NEEDS ADDITIONAL CRITICAL TESTING BEFORE THE FULL-RATE PRODUCTION DECISION" D2012-D000AE-0176.000, DATED 26 MARCH 2013"**

Finally, the draft report comments describing the Chief of Naval Operations (CNO) participation in the OTRR and the subsequent deficiency waiver process do not seem to comprehend correctly the role of OPNAV in the OTRR or the routine nature of the process in which isolated deficiencies are sometimes waived in order to permit comprehensive testing to proceed as scheduled.

The Harpoon Block 1C will be tested in the planned September 2013, FOT&E period. In accordance with Chief of Naval Operations (OPNAV N88) memorandum dated January 26, 2010, and the approved Milestone C Test and Evaluation Master Plan, Antisurface Warfare (ASuW) weapon testing was to be completed following the IOT&E period. At Milestone C, it was anticipated that the subject of this testing would be conducted by the AGM-84K SLAM-ER.

After Milestone C the program identified an opportunity to replace the SLAM-ER with the AGM-84D Harpoon Block 1C weapon and leverage the planned Boeing testing of the Harpoon for their direct commercial sale of the P-8I to India. This leveraging reduced the total amount of ASuW weapon testing that would otherwise have been required and enabled an earlier test completion than would have been possible for SLAM-ER.

Added, page 16

This efficiency gain allowed operational testing of the weapon on the P-8A to be included in a September 2013, FOT&E period, in time to support the first P-8A squadron deployment. The DoD IG report incorrectly characterizes the resulting Harpoon test schedule as a delay that was introduced "in response to fleet commander concerns regarding maintaining on-time delivery of the P-8A Poseidon and meeting the scheduled December 2013 first deployment of the Poseidon."

This is contrary to the fact and the program's highly innovative initiative to extensively leverage P-8I Harpoon test data greatly accelerated the certification of an ASuW weapon for Fleet use while saving tens of millions of dollars relative to the cost of a stand-alone SLAM-ER test program.

Furthermore, it is incorrect to conclude that the P-8A may be incapable of meeting a particular requirement simply because final testing of the associated capability has not yet been completed. Mission-representative Harpoon test shapes have already been carried and released from both P-8I and P-8A aircraft.

The P-8A is a highly flexible and versatile platform which has been designed to accommodate the future integration of a wide range of new capabilities. The fact that a particular capability, in this case, Harpoon, has not yet been fully tested does not mean that the Navy "lacks critical information necessary to make an informed decision" about whether or not the platform can accommodate this capability.

**Recommendation 1:** *"We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics:*

3

Enclosure (1)

**Final Report Reference**

**DEPARTMENT OF THE RESPONSE TO DODIG DRAFT AUDIT REPORT ON "THE NAVY P-8A POSEIDON AIRCRAFT NEEDS ADDITIONAL CRITICAL TESTING BEFORE THE FULL-RATE PRODUCTION DECISION" D2012-D000AE-0176.000, DATED 26 MARCH 2013"**

- *"Award an additional low-rate initial production lot for the P-8A Poseidon aircraft in July 2013 and*
- *"Defer the full-rate production decision until the program manager for Maritime Surveillance Aircraft demonstrates that the airframe can achieve the required 25 year lifespan and Follow-on Operational Test and Evaluation has resolved mission limiting deficiencies and demonstrated that the aircraft can perform its primary missions, including anti-surface warfare."*

**Navy Response:** Partially concur.

The Maritime Patrol and Reconnaissance Aircraft (PMA-290) program office concurs with the recommendation to delay the Full Rate Production (FRP) decision until after the completion of Follow-on Operational Test and Evaluation (FOT&E).

However, the program does not concur that the FRP decision should be linked to completion of fatigue testing. According to DT&E, the P-8A is scheduled to finish its first lifetime fatigue testing in October 2013; therefore, by the time of the currently-scheduled June 2013 In-Process Review (IPR) Defense Acquisition Board (DAB), there will be sufficient data to support conclusions on structural risks.

Added, page 10

Furthermore, the program assesses that extensive existing developmental and integrated test data has already demonstrated the fundamental maturity of the basic P-8A airframe and mission system designs.

According to DT&E, the emerging test results indicate that the P-8A design has attained reasonable maturity and will meet all of its KPPs by FOT&E. The Navy's Initial Operational Capability (IOC) and first operational deployment no longer depend upon a favorable FRP decision formerly scheduled for July 2013. Upcoming IPR DAB discussions and decisions will provide further clarity for a way forward.

Therefore, the primary advantages of delaying the FRP decision would be to:

- Maintain production line stability by facilitating timely contracting for the next production lot,
- Relieve FRP DAB schedule pressures associated with post-IOT&E reporting and software deficiency correction efforts, and
- Allow the FRP decision to be fully informed by the formal results of the upcoming FOT&E period.

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# Inspector General
## Department of Defense

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