### ADDENDUM: FOCUSED PROGRAMS AND TOPICS OF DISCUSSION REQUESTED FROM THE DEPARTMENT OF THE NAVY (DON) BY THE AIR AND LAND FORCES AND SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTES FOR MARCH 24, 2010 HEARING ON AVIATION PROGRAMS

# **1.** A discussion of the validated 1,240 aircraft strike-fighter force structure DoN inventory requirement and the projected peak inventory shortfall of -263 aircraft in Fiscal Year 2017.

The 1,240 aircraft strike-fighter force is the projected DoN inventory needed to support the anticipated operational demand in the 2024 timeframe.

The estimated DoN inventory requirement of 820 aircraft supports 40 active duty Strike Fighter Squadrons (440 Strike Fighter Aircraft) and two reserve squadrons (20 aircraft). Additionally, the inventory will need to support aviator training, flight test, attrition reserve and the depot pipeline. The inventory projection is estimated based on historical averages and assumes 100 percent squadron entitlement (no productive ratio reductions) and does not account for potential future efficiencies gained from TACAIR Integration (TAI). Both services remain committed to TAI.

The Marine Corps TACAIR requirement to meet operational demands and commitments is 420 F-35B JSFs in 21 active and three reserve squadrons. Since 2001, this requirement has been consistently stated, documented and periodically verified for relevancy. A total of 282 aircraft will be assigned to operational squadrons, 60 aircraft for training use, six aircraft for test and evaluation, and the reminder for pipeline maintenance and attrition replacement. The inventory projection is based on detailed projected and historical operational analysis, optimization of the JSF multi-mission capabilities, complete legacy TACAIR replacement by the F-35B, and expected improvements in reliability, maintainability and survivability.

The latest Fiscal Year 2011 President's Budget DoN inventory shortfall is 177 aircraft toward the end of the decade. This can be reduced to about 100 aircraft by application of several mitigation options including some SLEP. Optimization of FRC throughput is being studied as an additional mitigation method. All options are on the table to manage the shortfall and projections will continue to evolve as analysis is updated.

2. A discussion of the DON's plan to reduce DON Unit Deployment Packages (UDPs) and Expeditionary squadrons from 12 to 10 primary mission assigned aircraft; accelerating the scheduled transitions of five Navy F/A-18C squadrons and transitioning two additional Navy F/A-18A/C squadrons into available F/A-18E/F aircraft utilizing designated F/A-18E/F attrition reserve aircraft; decreasing the Navy "productive ratio" for carrier aircraft wings from 90% resourced to 87% resourced; and, a discussion of the operational risk incurred by implementing the

#### aforementioned initiatives as it relates to meeting the National Military Strategy and Combatant Commander operational requirement.

The DoN remains committed to the JSF program. The timely delivery of the F-35B STOVL and F-35C carrier variant remains critical to our future strike fighter capacity. The DoN has the necessary tactical aircraft capacity in the near term to support our nation's strategic demands. However, ongoing assessments forecast a potential decrease in our strike fighter capacity during JSF transition, unless further mitigation measures are implemented. In addition to management initiatives currently in place, we plan on addressing this potential capacity decrease through additional aggressive and precise management strategies.

The Department's TACAIR Inventory management initiatives are targeted at preserving the service life of our existing legacy strike fighter aircraft (F/A-18A-D). The Navy will reduce the number of aircraft available in our squadrons during non-deployed phases to the minimum required. DoN expeditionary squadrons and those supporting the Unit Deployment Program (UDP) will be reduced from 12 aircraft to 10 aircraft per squadron on an as-required basis. The Navy is accelerating the transition of five legacy F/A-18C squadrons to F/A-18 E/F Super Hornets. The Navy will also transition two additional F/A-18C squadrons using F/A-18E/F attrition aircraft. The use of attrition aircraft expends the service life of the F/A-18E/F aircraft earlier than programmed. These measures reduce the operational demand on legacy F/A-18s, making more aircraft available for induction into life extension events. The DoN is also evaluating depot level efficiency to maximize throughput and return legacy strike fighter aircraft to the Fleet. Collectively, these measures will extend the service life of the legacy aircraft and make the projected shortfall manageable.

The management initiatives being implemented prudently balance operational risks and requirements today, while seeking to fulfill future projected capacity and capability requirements.

# 3. A discussion of the service life assessment program being conducted to evaluate the feasibility of extending the service life of the F/A-18E/F to 9,000 flight hours and a description of the funding currently contained in the fiscal year 2011-2015 future years defense plan for such program.

The F/A-18E/F Service Life Assessment Program (SLAP) is a three phased program which commenced in 2008 and will last through 2015. One of the F/A-18E/F SLAP goals is to define the necessary inspections and modifications required, if any, to achieve 9,000 flight hours. Other goals relate to increasing total landings, arrested landings and catapults beyond currently defined life limits. Phase A is currently underway and is developing methodologies to be used and assessing airframe, flight controls and

subsystems. Phases B and C will continue those assessments along with landing gear and multiple fleet teardowns.

The F/A-18E/F SLAP is incorporating lessons learned from the F/A-18A-D analysis, which was started sooner in its life cycle than F/A-18A-D and encompasses the entire weapon system vice just the airframe was the case for the F/A-18A-D SLAP. The F/A-18E/F SLAP also has the advantage of having a 3<sup>rd</sup> lifetime test cycles completed on multiple test articles providing detailed information on high fatigue areas early in the program.

Furthermore, the SLMP philosophy has been applied to the F/A-18E/F fleet much sooner in its lifecycle than the F/A-18A-D, which will optimize FLE, flight hours and total landings so that they all converge at the same time, which should align aircraft service life with fleet requirements.

The Fiscal Year 2011 President's Budget includes a request for \$97.2 million RDT&E (Fiscal Years 2011-2015) to support the F/A-18E/F SLAP study requirement.

### 4. An update on the three phases of legacy F/A-18A-D airframe, major subsystems and avionics service-life assessment and extension programs, and a discussions regarding the estimated costs, implementation risks and likelihood, schedule and depot capability in executing these programs.

The F/A-18 A-D SLAP is now complete and has revealed that extensions are possible with inspections and modifications. Based upon those results, SLEP planning has begun. The 3 phased SLEP is underway as follows:

<u>SLEP Phase A</u> is complete. It identified the critical safety of flight locations that needed immediate inspection and identified notional repair concepts to enable Rough Order of Magnitude (ROM) cost estimates.

<u>SLEP Phase B</u> is currently in work with Naval Air Systems Command (NAVAIR) and Boeing. It is categorizing parts by criticality, developing tracking algorithms to define recurring inspection intervals, conducting vertical tail failsafe solutions and upgrading analytical tools necessary for the NAVAIR and Boeing engineers to design repairs. It is currently 57 percent complete and is estimated to conclude in November 2010.

<u>SLEP Phase C</u> is in planning. It will finalize all work remaining from Phase B and develop modifications and any new inspections required. Estimated contract award date is late 2010.

The DoN is developing a Fiscal Year 2012 President's Budget request that will include SLEP requirements. The technical risk in developing modification kits to achieve the

10,000 flight hour goal is assessed as low. The current planning schedule has modifications beginning in 2012. Current assessments have determined that the Fleet Readiness Centers (FRC) have the capacity to execute the required number of HFH inspections and SLEP modifications. Material availability and engineering disposition turn around times influence depot efficiencies.

### 5. A discussion on the health of the F/A-18A-F, EA-18G and AV-8B fleets.

The F/A-18 fleet continues to meet operational needs in the current conflicts. DoN Hornets have consistently met full mission capable goals and operational commitments. NAVAIR uses a Health of Naval Aviation (HONA) database to store and track the actual utilization data of all the F/A-18s. Current data shows that for the F/A-18A-D aircraft the average age is 19.0 yrs. The average age of the F/A-18E/F is five years. The EA-18G has just recently achieved IOC.

The F/A-18A-Ds have flown approximately 70 percent of the total flight hours available at the 8,600 hour limit and approximately 60 percent of the fleet is over 6,000 flight hours with approximately 1.8 percent over 8,000 flight hours. SLEP of a portion of these aircraft will be required to meet operational commitments out to 2023.

The F/A-18 E/Fs have flown approximately 28 percent of the total flight hours available at the 6,000 hour limit and this will not be adequate to meet operational commitments out to 2035. The EA-18G have flown approximately 4 percent of the total flight hours available at the 7,500 hour limit and are currently able to meet commitments.

The AV-8B Fleet continues to meet its operational commitments with simultaneous support to three Marine Expeditionary Units (MEUs) and OEF. The Harrier does not measure airframe hours; the AV-8B tracks Fatique Life Expended (FLE). As of March 2010 the highest FLE aircraft is 46.2 percent of available expenditure, with a fleet-wide average of 26.3 percent expenditure.

# 6. A discussion regarding the recent F/A-18E/F and EA-18G programs of record modifications and an update regarding the on-going discussions with the aircraft manufacturer regarding Multi-Year Procurement contract certifications and negotiations.

In August 2009, the Department submitted a report to Congress stating that the Department believed the preferred option was to procure the remaining 89 F/A-18E/F and EA-18G aircraft through a single-year acquisition strategy. The Department also stated that if the requirement for the program of record for either the F/A-18E/F or EA-18G should change, the Department would re-evaluate the benefit of a multiyear procurement strategy.

On December 18, 2009 the Fiscal Year 2010 NDAA added nine additional F/A-18E/F aircraft to the Department's request as follows: 17 F/A-18E, one F/A-18F and 22 EA-18Gs.

On December 24, Resource Management Decision (RMD) 700 added 26 EA-18G aircraft in Fiscal Year 2012 and 2013 to the program of record (POR) for the Expeditionary Forces and shifted F/A-18E/F aircraft procurement to Fiscal Year 2013. These activities extended the production of the F/A-18E/F and EA-18G production line to 2013 and increased the total procurement to 124.

On February 26, 2010, the Secretary of Defense notified Congress of the Department's intent to explore the possibility of a multiyear acquisition strategy of the F/A-18 series aircraft for the Fiscal Years 2010-2013 procurements, citing Section 128 of the Fiscal Year 2010 NDAA and the Department of Defense Appropriations Act, 2010. The letter stated that due to the increase of budgeted aircraft from 89 to 124 and a viable offer recently received from the prime contractor, the Department needs additional time to evaluate the potential multiyear procurement. If a multiyear procurement is deemed to be worth pursuing, the Department will work with Congress to determine the best path forward.

Discussions continue with the prime manufacturer, Boeing, in regard to the F/A-18 multiyear. The Director, Cost Analysis and Program Evaluation (CAPE) is currently conducting a cost analysis, as required by Title 10, Section 2306b. The purpose of this cost analysis is to determine the actual savings that can be achieved by pursuing a multiyear over a single year contracting strategy for the same number of aircraft. Once complete, the Secretary of Defense will then evaluate the proposed multiyear against the requirements of Section 2306b and governing statutes and regulations. If appropriate, the Secretary of Defense will certify that all the multiyear requirements have been met and notify Congress by 1 May, 2010, per the Fiscal Year 2010 NDAA.

# 7. A discussion of current and future capabilities inherent in the F/A-18E/F that do not meet future Combatant Commander operational requirements for strike-fighter aircraft.

The F/A-18E/F is a highly capable aircraft designed to meet and defeat today's threats with growth potential for the future. The Super Hornet will be a complementary platform on the Nation's carrier decks with the F-35C into the 2030s. The F/A-18E/F will meet current and projected requirements with planned investments in the Fiscal Year 2011-2015 FYDP.

Processes have been established whereby all requirements from the Combatant Commanders are incorporated into tasking via the Director of Air Warfare (N88). These requirements are incorporated into the aircraft through budgeted, funded efforts.

### 8. A discussion of changes to the Marine Corps bed-down plan for the Joint Strike Fighter that have occurred since the release of the Fiscal Year 2010 President's Budget Request.

The Marine Corps bed-down has had only minor changes since the Fiscal Year 2010 President's Budget. Due to the earlier procurement of the F-35B as compared to the F-35C, the Marine Corps training, test, and first operational squadrons remains unchanged. The decrease in total procurement from Fiscal Year 2011 through 2015 necessary to support the Secretary of Defense JSF program restructure initiatives slowed the transition of 50 percent of the squadrons an average of one year. As a result, the transition of our legacy squadrons was re-ordered to retain TACAIR operational capabilities and meet Marine Corps operational commitments, while retaining the most capable F/A-18s for our enduring commitment to TAI.

## 9. DON perspectives on the proposed termination of the JSF F136 engine program, including how such termination may affect procurement, life-cycle costs, operational risks mitigation and logistics strategy footprint and execution.

The DoN, and the DoD as a whole, maintain that the benefits of an F-35 alternate engine program do not outweigh the significant costs/investment to develop, procure, and maintain two JSF engines. Even after factoring in Congress' Fiscal Year 2009-2010 funding additions, the alternate engine still requires \$2.5 billion more over the next five years. While we acknowledge there may be some general benefits, the likelihood that the DoD would ever recoup the necessary investment to be offset by the potential savings generated via competition is highly unlikely. Technically, the F136 development is at least four years behind the F135. Logistically, two types of engines would also require establishing separate depot repair lines at significant cost. Our current operational logistics footprint is limited in space available for lift and storage. Supporting two engines in expeditionary environments, onboard aircraft carriers, and amphibious ships would require duplicative spares lines; duplicative support equipment and training, and an increase in shipping containers in already constrained shipboard storage spaces. Two separate engine power modules will cause additional costs in our operations and maintenance accounts. Regardless of the decision on an alternate engine, it would limit the DoN's capability to meet operational demands due to the complexity of the logistics required to support two different engines.

10. A discussion of 1) how many aircraft engine types and models the DON currently operates, maintains and sustains and the logistical strategy employed by the DON to support all aircraft operations, 2) a representative comparison of how many aircraft engine types and models were aboard aircraft carriers during Operation Desert Storm, and 3) how many aircraft engine types and models are

## projected to be aboard aircraft carriers in 2035, assuming only the F135 engine F-35 aircraft.

1) Aircraft Engine Types/Logistics Strategy: The DON operates 24 active engine typemodel-series. The logistics strategy employed by the Department is informed by the system engineering process traced back to the requirements (as documented in the ORD, CDD, or CPD) to determine the best overall support concept. Factors influencing the logistics support concept are Title 10 core law; total ownership cost; reliability and maintainability requirements; and user's requirements for the mission.

2) Desert Storm Experience: Up to eight different type/model/series engines were aboard aircraft carriers during Operation Desert Storm.

3) Aircraft Engine Type (Current/CY35): Currently there are six different type-modelseries engines aboard the aircraft carrier. In 2035, four different type/model/ series engines are projected to be aboard CVNs: F135 (JSF); F414 (F/A-18E/F and EA-18G); T56 (E2D); and T700 (H-60).

A numerical engine count does not provide the full context for this discussion. The JSF engine is the largest tactical fighter engine in size and overall logistics footprint in the history of the Department of Defense. In comparison, the F135 engine is approximate twice the size of the Super Hornet F414 engine. While the performance of the F135 engine brings significant performance gains and warfighting advantage, it presents significant challenges logistically across all of the Services – but no more so than to the Navy and Marine Corps who operate in already constrained spaces aboard L-Class and CVN ships.

If one were to visualize the JSF F135 core engine module container it would closely approximate an eighteen foot long pipe and weigh 9,000 lbs. In comparison, the F/A-18E/F F414 engine is approximately 13 feet long and weighs only 4,600 pounds in its container. Secondly, the F-35 Joint Program Office and the F135 engine prime contractor have completed engine spares modeling. The model indicates that the Department will need to deploy with eight of the very large F135 power modules during a wartime six-month deployment per CVN. The eight power modules equates to sixty-two pallets of pre-staged ammunition. Recognizing power modules are just one of the key critical engines spares we must accommodate, it becomes more problematic with two engines.

We accept that the F136 alternate engine would be interchangeable on our platforms – but several engine components are not interchangeable. Supporting two engines would require: unique spares; unique support equipment; unique/additional training; and a larger range of spare modules without decreasing the number of spares per engine. Because of the size, weight and height of critical engine spares, it is not feasible to store all JSF engine spares in legacy store rooms or stack them as is done for legacy systems. This causes us to plan work-arounds in hangar deck spaces normally reserved to store and maintain tactical aircraft. Further, the footprint limits below-deck maneuverability and lift capacities aboard our ships. Adding an alternate engine makes the shipboard logistics even more challenging as it is not a one-for-one exchange. Logistics sparing in this case will require us to bring aboard more spares to support two engine configurations versus just one.

The Department of Navy plans further study and analysis on this topic to provide the best possible range of options to the combatant commander.

## 11. A discussion of the underway replenishment capability for the F-35B/C engine in supporting F-35 operations aboard L-class and CVN-class ship operations.

JSF Power Modules, at approximately 9,000 lbs the heaviest component of F-35B/C engines, exceed the rated load capacity of the STREAM Unrep system currently installed in NIMITZ-class aircraft carriers. FORD-class carriers will be delivered with a new underway replenishment system (Heavy Unrep) capable of receiving loads up to 12,000 lbs at conventional ship separation and sea conditions. Logistics support options for sparing JSF engine components in NIMITZ-class carriers, including future installation of the Heavy Unrep system, are being studied. For the L-class the interim solution for JSF Power Modules is delivery via Vertical Replenishment using MEU organic CH-53 E/K aircraft or MV-22. The long term solution for USMC Air Combat Element heavy Unrep requirements is still to be determined by Naval Sea Systems Command (NAVSEA) and NAVAIR for amphibious shipping.

# 12. A discussion of the post-production F110 re-engining program for the F-14 fighter aircraft as it related to mitigating risks regarding operational reliability, maintainability, contractor responsiveness and sustainability for the TF30 engine.

The F-14 Tomcat program was initiated as the Navy's variant of the Tactical Fighter Experimental (TFX) when the F-111B powered by TF30 engines, failed to achieve shipboard weight restriction and demonstrated significant "fighter' maneuverability issues. In May 1968 Congress stopped funding for the F-111B, allowing the Navy to pursue an answer tailored to naval requirements.

In July 1968, NAVAIR issued a Request for Proposals (RFP) for the Naval Fighter Experimental (VFX), a tandem two-seat fighter. The winning Grumman design, the F-14A, was conceptually designed to be powered by F401-PW-400 engines.

Developmental delays plagued the F401 development and the initial F-14A production reused the TF30 engines from the F-111B; the Navy planned to replace them with the F401-PW-400 engines in a proposed F-14B variant as the F401 engines became

available. The problems associated with the F401 development proved to be too significant and the F401 engine never entered production leaving all F-14As with TF30 engines. During the F-14A operational tenure, the TF30 engine was common to the USAF and Navy A-7 light attack aircraft as well as the USAF F-111A aircraft. There were not any unusual sustainability or maintainability issues with the TF30. As installed in the F-14, the TF30 engine proved to be deficient in both power produced and reliability. Significant operational problems involving "blade creep" and subsequent turbine failures, with resultant aircraft mishaps, were addressed by engine design changes which added additional weight to the TF30 engine. The contractor was responsive to investigating and correcting TF30 engine performance problems but the basic TF30 engine design was not suited to the F-14 platform. Secretary of the Navy John Lehman testified to Congress that the F-14/TF30 combination was "probably the worst engine/airframe mismatch we have had in years" and said that the TF30 was "a terrible engine" with F-14 accidents attributed to engine failures accounting for 28 percent of overall losses. TF30 engines were prone to compressor stalls, which could easily result in loss of aircraft control due to the wide engine spacing, causing severe yaw oscillations and leading to an unrecoverable flat spin.

The F-14D aircraft variant design called for more powerful engines to overcome aircraft deficiencies resulting from the TF30 design flaws. The F-14D was powered by two F110-GE-400 engines with 28,200 lbs thrust each. This increased thrust for the "D" Tomcat allowed for no-afterburner catapult launches off the carriers and otherwise improved overall performance and flying characteristics. The F110 engines allowed the F-14 aircrew to fly the aircraft throughout its performance envelope rather than flight restrictions imposed by deficient engine performance capabilities as was the case in TF-30 powered variants. The installation of the new F110 engines required only minor redesign changes to the aft fuselage and engine exhaust area.

The Navy procured 37 new F-14D aircraft from Grumman and remanufactured an additional 18 F-14A airframes to the F-14D configuration for a total of 55 F-14Ds. Additionally, 85 F-14B variants were equipped with the F110 engine, in lieu of the failed F401 engine, through remanufacture or conversion programs.

# 13. A discussion regarding the 40 percent increase regarding the estimated total ownership costs and affordability analysis conducted by Naval Air Systems Command in October, 2009 for the F-35B and F-35C as it relates to the legacy F/A-18A-D and AV-8B costs.

The department is on the front end of reviewing JSF total ownership costs and assumptions. The NAVAIR cost team brief on total ownership costs is a pre-decisional brief. These types of briefs are developed to inform leadership of ongoing technical analyses and provide options and consequences as we work to deliver affordable programs. In a program such as the JSF, these analyses are constantly evolving. The

brief is an internal working document and provides points for discussion in support of achieving successful and affordable fielding of all variants of the JSF.

The operating and support costs in the working document are not definitive and are subject to variance based on potential courses of action. The Navy Department is fully coordinated with Office of the Secretary of Defense (OSD), the USAF and the Joint Program Office (JPO) in executing this critical program.

# 14. A discussion regarding all issues, associated risks, feasibility, costs and schedule of integrating the F-35B and F-35C aircraft onto L-class and CVN-class ships for forward deployed operations, and what date changes to L-class ships will be made to support the forward deployability of the Marine Corps' planned Fiscal Year 2012 IOC date for F-35B.

Several "Cornerstone" modifications have been identified and planned for the L class ships to be compatible with F-35B operations to include: Special Access Program Facility (SAPF) spaces, Autonomic Logistics Information System (ALIS) infrastructure, and Deployable Mission Rehearsal Trainer (DMRT). Many of the alterations for the L-class F-35B integration are similar to the CVN F-35C alterations. Environmental Effects modifications due to the jet engine STOVL mode of operational and the Integrated Power Pack exhaust plumes require further analysis and testing to validate modifications to the L-class ships.

The shipboard environment affected by these two components are being fully evaluated through engineering analysis which will be verified using land based testing, and shipboard Developmental Testing (DT), which is scheduled to occur during second quarter Fiscal Year 2011. The test results will be used to finalize the L-class ship alterations required for F-35B integration and may include the relocation of ancillary systems, material changes, and shielding.

Those changes will be incorporated during the Fiscal Year 2012 Continuous Maintenance Availability period onto an L-class ship, currently scheduled to be LHD-1, the Wasp. The remaining L-class fleet will be modified to match the transition from AV-8B to F-35B to ensure operational commitments are met, specifically forward deployed MEUs.

Several separate ship alterations have been identified as requirements to integrate F-35C into NIMITZ- and FORD-class aircraft carriers. Aircraft Electrical Servicing Station (AESS) modifications, Ready Room and Aircraft Intermediate Maintenance Department (AIMD) upgrades, and ALIS and DMRT installations continue to mature, and are programmed for installation to meet F-35C IOC. The cost and schedule to incorporate the additional shipalts, which include Lithium-Ion Battery storage and Below Decks sound attenuation, will be delivered with CVN- 78, and addressed in future budget submittals for NIMITZ-class carriers.

One shipalt still in development concerns Flight Deck Jet Blast Deflectors (JBD). The Navy expects aircraft carrier JBDs will require some level of modification to accommodate F-35C heat plume concentration on the JBD. The Navy is currently collecting data from F-35 test aircraft to characterize the heat plume and signature of the JSF F-135 engine. The concentration of F-35C jet exhaust heat and plume differs from that of an FA-18E/F in physical location on the JBD, effects more JBD area, and may have a higher total integrated heat load. The goal of current analysis is to define the heat transfer to the Flight Deck and JBD components, determine the JBD system response, and develop a solution to mitigate the heat imparted by F-35C while retaining compatibility with the FA-18E/F. The solution must also ensure the mission of the JBD to protect the Flight Deck environment. These modifications will be incorporated aboard NIMITZ-class aircraft carriers during previously-scheduled availabilities. Modifications to CVN 78 will be accomplished during construction where possible, after finalization of a JBD system solution.

Several preliminary tests measuring the heat plume characteristics have been completed, funded by the F-35 Joint Program Office. Most recently, an angle plate test was conducted and the test results are being analyzed. Upon completion of this analysis, an F-35C will conduct high-power engine tests against a modified land-based CVN JBD. The cost and schedule to modify the test JBD will be dependent on the results of the ongoing analyses.

### 15. A discussion regarding the analysis and probability of when the F-35B and F-35C are scheduled to declare Initial Operation Capability as it relates to the restructured System Design and Demonstration (SDD) program delay of 13 months.

With the recent program restructuring approved by the Secretary of Defense, the IOC is projected to be 2012 for the F-35B and 2016 for the F-35C. The actions taken by the Secretary of Defense include procuring an additional F-35C aircraft to be used for flight testing, loaning three early production aircraft to developmental test and directing the addition of another software integration line to the program. These three steps, taken together, establish a viable program and continue to support the Marine Corps' December 2012 IOC.

The IOC is determined by the service based on both the program's performance and how the services define IOC. Each service has a somewhat different IOC depending on what capabilities they intend to have at IOC, their operational and testing requirements, and the number of aircraft they require for IOC.

For the Marine Corps F-35B, IOC is defined as a squadron of ten aircraft able to execute the full range of TACAIR directed mission sets and to deploy on F-35B-compatible ships

and to austere expeditionary sites. The Marine Corps plans to IOC with an Operational Requirements Document (ORD) compliant Block IIB aircraft.

For the Navy F-35C, IOC is defined as a squadron of ten ORD compliant Block 3 aircraft that are ready to deploy and have completed IOT&E.

# 16. Discussion of the known risks and issues specifically related to the DON regarding the development, fielding and deployment of the Autonomic Logistics Information Systems for sustaining the F-35 as it relates to maintenance and logistics operations.

F-35 Autonomic Logistics Global Sustainment is built concurrently with the aircraft and the ALIS is being used to support flight test operations today. As with any new system, there has been a learning curve associated with the new logistics support system and the new users; however, as maintainers continue to tax and use the system, improvements and efficiencies can be identified. The early operational use of ALIS with the developmental test program at Patuxent River will function as risk mitigation for OT&E and for operational fielding. Currently there are no known risks that do not have mitigation plans in-place. We will continue to address any issues that may arise as development continues, as is done for any complex developmental effort, and as plans for test and deployment mature.

17. Discussion of F-35C design issues regarding the aircraft splice (i.e. keel); aircraft in-flight airspeed acceleration requirements as it relates to key performance parameters; abrupt wing stall; aircraft, engine and integrated power package operations and performance limitations in hot external environments; anti-surface warfare capabilities; main and nose gear tire limits as it relates to takeoff and landing speeds of the aircraft; predicted portable memory device download times and low-observable material repair and restoration as it relates to required sortie generation rates.

Many of the issues listed in the question are routine developmental issues that are discovered and answered during any SDD. The F-35 SDD is no exception and we will likely uncover additional issues that we will need to address. To-date, no technical issues have been discovered which we cannot overcome. F-35 is currently meeting all Key Performance Parameters (KPPs).

F-35C aircraft keel: a slight negative static margin and negative fatigue margin was discovered during the normal strength analysis review. A fix has been developed for those SDD aircraft that would be impacted by a restriction. CF-5 and all subsequent F-35C aircraft will have a production representative fix installed during manufacture.

Abrupt wing stall: program early wind tunnel testing has investigated this phenomenon, though results remain inconclusive. As a mitigation strategy, a transonic spoiler was installed as a flight test unique configuration for F-35C SDD aircraft. Flight testing will confirm the need for a spoiler and if it can be safely removed, will be removed from the production configuration.

Engine and IPP environments: The F-35C IPP exhausts up and does not impact the landing surface. Modeling has not led to any design changes; however, OT&E will fully investigate any affects of exhaust impact on the upper surface relative to wind conditions.

Anti-surface warfare capabilities: ASuW capabilities are currently estimated from modeling efforts. Capabilities will be analyzed with SDD specified ASuW weapons and tested in IOT&E. The Department is currently planning to initiate an ASuW AoA to inform the long-term plans for F-35 and other critical surface, sub-surface and joint launch platforms.

Main Landing Gear (MLG) and Nose Landing Gear (NLG) tires: Based on modeling, there appears to be some challenges with F-35C landing gear tires under very taxing conditions, such as heavy weight, high altitude, and hot temperatures. As flight testing continues, these models will be verified and possible solutions or restrictions will be investigated.

Download times: Currently, download times are a challenge; however, corrections and potential future updates have been identified.

Low Observable (LO) repair and restoration: LO material lessons learned from previous programs have been incorporated into the F-35 design. Modeling to date shows that we are better than legacy aircraft, yet there is a continued effort to improve.

## 18. An update on the UH-1Y/AH-1Z development and procurement programs and past issues regarding production line efficiencies and capabilities.

The UH-1Y aircraft achieved initial operational capability in August 2008 and full rate production in September 2008. The UH-1Y program was given priority status in order to replace the under-powered UH-1N fleet as quickly as possible. AH-1Z testing and low rate production continues, with an operational evaluation (OT-II3C) starting later this month. The AH-1Z full rate production decision is scheduled for the first quarter of Fiscal Year 2011. 58 AH-1Zs will be built new to support the increased inventory objective, which exceeds the quantity of existing AH-1W airframes available for remanufacture. As of 2 March 2010, a total of 33 aircraft (25 UH-1Ys and eight AH-1Zs) have been delivered to the Fleet Marine Force, and an additional 36 aircraft are on contract and in production. Since April 2008, all helicopter deliveries have been on or

ahead of schedule. To date, all Fiscal Year 2009 and 2010 aircraft deliveries have been 56 days or more ahead of contract date and th

e program has not shown any significant impacts from the summer 2009 labor strike at Bell Helicopter. The most recent government assessment has determined that Bell helicopter has the current capacity to produce 32 H-1 upgrades aircraft per year. Plans are in place to increase this capacity to 36 aircraft per year in the near future.

## **19.** An update on V-22 procurement program and contractor performance; and performance of the MV-22 during Operation Iraqi and Enduring Freedom.

The Fiscal Year 2011 President's Budget request includes \$2.7 billion for procurement of 35 V-22s and for continued development of follow-on block upgrades. Fiscal Year 2011 is the fourth year of the V-22 multiyear procurement contract. Our multiyear procurement strategy supports a continued cost reduction and affordability trend, provides a stable basis for industry, and best supports the needs of the warfighter. The Fiscal Year 2011 appropriations will fully fund Lot 15 and procure long-lead items for Lot 16 under the V-22 multiyear contract. Over the past 12 months, Bell-Boeing has continued to consistently perform better than required on production, delivering aircraft on or ahead of schedule. The USMC continues to field and transition aircraft on time.

The MV-22B Osprey is now combat-tested and forward-deployed supporting combat operations and responding to contingencies around the world. As our premier medium lift assault support platform, the Osprey brings unprecedented range, speed and survivability to the warfighter, in a platform that far exceeds the capabilities of the CH-46E it is replacing. The MV-22B has been continuously supporting our Marines, in combat and in contingencies, since October 2007. During three consecutive squadron deployments in support of OIF (Fiscal Year 2008-2009) Osprey squadrons logged over 9,000 flight hours, carried over 40,000 passengers, and lifted over two million pounds of cargo while flying every mission profile assigned by the Multi-National Force-West Commander. The MV-22B also completed its first shipboard deployment as part of a MEU last November, capping its six-month deployment by flying 510 nautical miles from USS BATAAN (LHD-5) to Camp Bastion, Afghanistan. The shipboard squadron conducted a relief in place with another squadron to begin support of OEF.

The Osprey continues to redefine the speed and range at which the MAGTF commander can influence his operational area. The second MV-22B shipboard deployment is currently underway supporting humanitarian relief efforts in Haiti and follow-on presence in the U.S. Central Command (CENTCOM) area of operations. The CV-22 program has conducted multiple SOCOM deployments, including a successful trans-Atlantic operational deployment in support of operations in Africa and at locations in CENTCOM.

# 20. An update on the efforts related to the V-22 program related to the redesign, qualification, manufacturing and fielding of more reliable parts and subsystems and how it relates to planned goals for reducing current operations and maintenance costs.

As we continue to explore the tremendous capabilities of tilt-rotor aircraft, we are learning valuable lessons with respect to readiness and operating costs. As of December 2009, the V-22 had exceeded 70,000 total flight hours. More flight hours have been flown on this aircraft in the last two years than in the previous 18 years combined. Like other types of aircraft in the early operational phase of their lifecycles, the MV-22 has experienced lower-than-desired reliability of some components and therefore higher operations and support costs. Despite our readiness challenges, the MV-22 squadron in Afghanistan continues to meet mission tasking through hard work and aggressive sparing. We are meeting mission, but only at supply, maintenance, and operating costs that are inconsistent with our expeditionary nature and frugal culture.

Fleet wide, our Block B combat deployable aircraft averaged approximately 60 percent MC in Continental United States (CONUS) for 2009. With focused logistical support provided to our deployed aircraft, however, we average approximately seven of ten aircraft available on a daily basis in Afghanistan. This compares favorably with the 72 percent availability over 18 months of operations in Iraq and 71 percent availability for aircraft in the 22<sup>nd</sup> MEU. With the cooperation and support of our industry partners, we are tackling these issues head on, with aggressive logistics and support plans that will increase the durability and availability of the parts needed to raise reliability and concurrently lower operating costs of this aircraft. The Government-industry team has a coordinated strategy to address these issues which is spiral in nature and will provide incremental improvements over time. The team is executing this strategy, having improved many aspects of maintainability, component reliability, and overall affordability. With the commitment of funds in January 2010, we are now accelerating the incorporation of these improvements onto fleet aircraft. Successful component modification and improved maintenance and diligent supply support practices are intended to reduce component removals and increase component availability. While simultaneously maintaining an emphasis on its hard-won production excellence and these initial readiness advances, government and industry partners are engaged in the next iteration which aims to raise parts production capacity to meet demonstrated demand while designating additional candidates for potential redesign and retrofit.

# 21. Update on the VH-71 liability and termination negotiations as it relates to estimated costs and disposition of SDD and Increment I aircraft assets, and the \$100 million appropriated for VH-71 "technology capture".

The Fiscal Year 2011 President's Budget includes \$94.7 million for the settlement of the VH-71 termination and \$65.1 million for continuing efforts on VXX, the follow-on

program for presidential helicopters. We expect receipt of the VH-71 termination proposal late in fiscal year 2010 with negotiations and the anticipated settlement expected in Fiscal Year 2011. The Navy is currently working closely with DCMA in a complex effort to disposition all the assets acquired as part of the VH-71 Program cancellation. The majority of VH-71 specific tooling has been sold back to Agusta-Westland in Europe. The process to disposition non-aviation related assets is well underway in the United States, and is beginning in Europe. The Navy has begun preliminary negotiations with various operators of the EH-101 and other Federal entities concerning disposition of VH-71 aircraft and parts.

## 22. An update on the VH-(XX) analysis of alternatives and planned acquisition strategy in regards to requirements, costs and schedule.

The VXX Analysis of Alternatives (AoA) will address all feasible options with an assessment of requirements, capabilities, cost drivers, schedule implications, and risks. The requirement for a replacement Presidential Helicopter was validated by the Joint Requirements Oversight Council; however, the details and specifications on how the requirement will be safely and affordably met have not been finalized. As a first step in the process to determine how best to satisfy the need to transport the President, data will be analyzed and matured by the government study team into executable alternatives. This AoA process is underway and will support the development of an acquisition strategy, at which time cost/capability trades will be made. The AoA will also support CONOPS development, trade study analysis, specification development, system concept development and threat analysis leading to a successful Milestone A decision. Following Milestone A and beginning the Technology Development Phase, remaining Fiscal Year 2011 activities will focus on the proposed material solutions, specifically, reducing technology risk, determining and maturing the appropriate set of technologies .

### 23. An update on the health and sustainment initiatives pertaining to the service-life extension of the VH-3 and VH-60 rotorcraft fleets.

The Fiscal Year 2011 President's Budget requests an investment of \$43.4 million to continue programs that will ensure the aging legacy presidential fleet remains viable until its replacement is fielded. Ongoing efforts include the Cockpit Upgrade Program (CUP) for the VH-60N and Communications Suite Upgrade (CSU), Structural Enhancement Program (SEP), and Obsolescence Management Program (OMP) for both the VH-3D and VH-60N. The Trainer Conversion Program will start in Fiscal Year 2011 and will reduce training usage significantly on our VH-3D and VH-60N national assets. Future investments in the legacy fleet will be required to ensure continued safe and reliable executive transportation until the replacement aircraft is fielded.

## 24. An update on the CH-53K program and whether the program is meeting cost, schedule and performance goals.

The CH-53K program continues to execute an event driven schedule based on a solid technical foundation utilizing proven and mature technologies. In 2009, the Program Manager submitted a Program Deviation Report stating the program would not achieve the remainder of its APB milestones and would require additional RDT&E in order to complete development due to the associated schedule delays. There were a number of parallel issues contributing to this delay including late contract award, slower than planned government and industry staffing, alignment of the systems engineering process, delays in subcontracting and design maturation. The program has corrected all of the above issues and was recognized by an OSD Program Support Review as exhibiting sound technical and management approaches, good communication between government and industry, comprehensive risk management, and regularly conducting integrated design reviews. It is important to note that these delays were not driven by technical issue, and the program remains on a sound technical footing as it enters CDR later this year. In parallel, the program has been producing long lead items in preparation for the building of key test vehicles over the next year. The CH-53K has received the necessary funding to complete development of this critical aircraft and is now maintaining cost and schedule performance based on funding to support an IOC of Fiscal Year 2018.

## 25. An update on the P-8 program and whether the program is meeting current cost, schedule and performance goals.

The P-8 program is meeting all cost benchmarks, schedule milestones and performance thresholds in accordance with the APB.

The program has entered the flight test phase and has three flight test aircraft in or preparing for various aspects of ground and flight testing. In addition, a static test aircraft has been developing the flight envelope to support flight testing while a fatigue test article has been built and is being prepared to enter fatigue testing in late Fiscal Year 2011. Three additional flight test articles (production representative) are on contract and will be delivered beginning in early Fiscal Year 2011 to support Initial Operational Test and Evaluation (IOT&E) planned for February 2012.

The P-8 is making final preparations for Milestone C (planned for June 2010) and for the award of a production contract for the first LRIP lot of six P-8's. The program is on track to have developed, tested and delivered aircraft to meet the planned IOC target in the 2013 on time.

P-8 will bring improvements to on-station performance when compared to the legacy P-3 in Anti-submarine and Anti-surface Warfare and will have significantly better operational availability and will reap the benefits of training in high fidelity simulators. The program

has been well managed and is frequently used as an example of how to control costs while delivering critical performance on schedule.

# 26. An update the service life extension and Zone 5 repair programs of the P-3/EP-3 and a discussion on current fleet availability to meet Combatant Commander operational requirements.

P-3C Zone 5 wing fatigue has resulted in the grounding of 49 aircraft from December 2007 to September 2009, with more expected. Fatigue analysis will continue and there continues to be a moderate risk of future P-3C groundings. Based on projected depot output, it is expected that P-3C mission aircraft will return to pre December 2007 grounding levels no earlier than second quarter Fiscal Year 2012. The Navy received significant congressional support from Global War on Terror (GWOT) 08, GWOT 09 and OCO 10 supplementals totaling \$395 million for P-3C wing repairs to keep these critical aircraft flying. These funds have been utilized to purchase Zone 5 kits, Outer Wing Assembly kits and conduct installations which have been critical for P-3C sustainment and recovery. In Fiscal Year 2011, \$228.0 million is requested to sustain the P-3C until transition to the P-8A Poseidon. More than half of this amount (\$153.5 million) is for wing modifications, which will allow airframe sustainment to support the CNO's P-3 Fleet Response Plan, as well as supporting EP-3E requirements, which are executed within the P-3 Airframe Sustainment Program. As of March 05 2010, 14 P-3C aircraft have been returned to the fleet with 32 aircraft in work for Zone 5 repairs. Current mission aircraft availability is 65. The Navy will continue to closely manage the service life of the P-3C as the Maritime Patrol Reconnaissance Aviation forces transition to the P-8A Poseidon. Until force levels recover, allocations of aircraft must be balanced to meet mission and minimum training while preserving remaining P-3 service life. Currently P-3Cs are meeting combatant commander allocations for deployed aircraft.

# 27. An update on the Navy Unmanned Combat Air System Update (NUCAS) program and whether the program is meeting current cost, schedule, risk and performance goals.

Developmental work on the Navy UCAS Demonstration (UCAS-D) continues. This critical risk mitigation effort to land an unmanned, low observable relevant aircraft on an aircraft carrier (CVN) by 2013 is an essential step toward meeting future Navy warfighting needs. Though the contractor is late to their 2012 estimate, the government program office expects to be complete in 2013. Surrogate shipboard landing tests are proceeding as planned, with several events successfully completed in 2009 and early 2010. Low speed taxi testing has commenced. The program is on track to meet all technical performance parameters. The UCAS-D Government/Industry team is conducting a bottom-up review of the program to refine schedule and cost of the remaining portion of the program. The 2011 funding request is adequate.

### 28. An update on the Broad Area Maritime Surveillance program and whether the program is meeting current cost, schedule, risk and performance goals.

The BAMS UAS is currently meeting its cost, schedule, and performance parameters as defined by the program's APB. Currently, no risks or issues exist that would place any BAMS UAS APB parameter in jeopardy. The BAMS UAS program will meet the Navy requirement for a persistent ISR capability as well as providing a communication relay capability. The BAMS UAS is a larger Group-5 system which will be a force multiplier for the Fleet Commander, enhancing situational awareness of the battle-space and shortening the sensor-to-shooter kill chain. The BAMS UAS will work as an adjunct to the new P-8A Multi-mission Aircraft (MMA) as part of the Navy's Maritime Patrol and Reconnaissance Force (MPRF) to provide a more affordable, effective and supportable maritime ISR option than current ISR aircraft provide. The BAMS UAS leverages a variety of Department of Defense (DoD) investments including the RQ-4B Global Hawk air vehicle and engine, along with sensor payloads from numerous DoD platforms. The program is also pursuing synergy opportunities with both the Navy's MPRF and the Air Force Global Hawk. The BAMS UAS program conducted a PDR in February 2010 and in the past year, also successfully held System Requirements Review (SRR), System Functional Review (SFR) and the Integrated Baseline Review (IBR). The program is progressing well and is on-track to meet a fiscal year 2016 IOC.

### 29. An update on the E2D Advanced Hawkeye program and whether the program is meeting current cost, schedule, risk and performance goals.

The Advanced Hawkeye system entered the Production and Deployment Phase following a successful Milestone C review in May 2009. LRIP Lot 1 for two aircraft was awarded in June 2009. LRIP Lot 2 for two aircraft was awarded in January 2010. The program is on track to deliver three pilot production aircraft in 2010. Program cost remains stable.

The E-2D AN/APY-9 radar system continues to perform well as Developmental Testing nears the 70 percent complete mark and remains on track for Operational Evaluation (OPEVAL) in the first quarter of Fiscal Year 2012. All key performance parameters, including detection range are exceeding expectations. The E-2D has successfully demonstrated its integral role in the Navy's NIFC-CA architecture. Weapon System Specification Verification is on track to complete in 2010 and the program will conduct Operational Assessment #2 in late summer of 2010 to support DAB approval for LRIP 3 and 4 early 2011. The program continues to manage risk, and currently, has no high risk issues.

### **30.** A summary of all Class A, B and C aviation-related safety issues, including recent mishaps, trends, and analysis occurring within the past year.

#### **Recent Mishaps:**

15 March 2010: (Fallon, NV) 2-F/A-18E, Mishap – one Class "A"; one "TBD"
11 Mar 2010: (Beaufort, SC) F/A-18D, Mishap - Class "A"
18 Feb 2010: (W.Virginia) MH-60S crashed in remote area during training mission.
23 Jan 2009: (New Orleans, LA) T-34C crashed into water.
29 Oct 2009: (California) AH-1W crashed into water after midair collision.
28 Oct 2009: (Corpus Christi, TX) T-34C did not return from VFR training flight.
26 Oct 2009: (Afghanistan) AH-1 and UH-1 crashed in open desert.

Class A Flight mishaps over the past 10 years show a downward trend while the Class B and C mishap rate trends show a slight increase. An analysis of mishaps over the last 12 months shows that human error accounts for the highest percentage of the causal factors in Class A and B mishaps while material failures account for most causal factors in Class C mishaps. To date the FY 10 mishap rates for Class A, B, and C are ahead of FY 09 and the 10 year averages.

Naval Aviation continues to focus on decreasing human error in mishaps. This includes the introduction of Human Factors Analysis and Classification System (HFACS) as a tool for investigating, reporting and analyzing mishaps to determine the best human error mitigation strategies. Additionally, the Navy is revitalizing Operational Risk Management (ORM) and in particular Time-Critical Risk Management (TCRM). In Naval Aviation this will help improve Crew Resource Management (CRM) and decision making skills of aviators. It also has applicability to all sailors both on and off duty. Finally, in collaboration with the other Services and other Government agencies we are analyzing fatigue as an aeromedical contributor to mishaps and determining the best methods for fatigue alleviation and control.

#### **Class "A" Mishaps**

Aviation Class "A" Summary:

- Human error accounts for the largest percentage (83%) of involved factors for Aviation Class A Flight Mishaps
- FY00-09 mishap rates show a decreasing trend.

FY 2009 – 17 MAR 2010 AVIATION CLASS A FLIGHT MISHAPS			
INVOLVED FACTOR	# EVENTS	PERCENT	
AIRCREW FACTOR	8	67%	
MATERIAL MALFUNCTION	6	50%	
MAINTENANCE PERSONNEL	2	17%	
SUPERVISORY PERSONNEL	8	67%	
FACILITIES PERSONNEL	1	8%	
HUMAN ERROR	10	83%	
UNDETERMINED	0	0%	
UNDER INVESTIGATION	10		
ALL EVENTS	22		
FACTORS STILL UNDER INVESTIGATION NOT INCLUDED IN %. MISHAPS OFTEN INVOLVE MULTIPLE CAUSAL FACTORS.			

Department of the Navy (DoN) Class A Flight Mishaps FY09 through 17 March 2010



#### **Class "B" Mishaps**

Aviation Class "B" Summary:

- Human error accounts for the largest percentage (91%) of involved factors for Aviation Class B Flight Mishaps.
- Fiscal Year 2000-2009 mishap rates show a general increasing trend.

Department of the Navy (DoN) Class A Flight Mishaps FY09 through 17 March 2010

FY 2009 – 17 MAR 2010 AVIATION CLASS B FLIGHT MISHAPS			
INVOLVED FACTOR	# EVENTS	PERCENT	
AIRCREW FACTOR	13	62%	
MATERIAL MALFUNCTION	11	52%	
MAINTENANCE PERSONNEL	3	14%	
SUPERVISORY PERSONNEL	10	48%	
FACILITIES PERSONNEL	0	0%	
HUMAN ERROR	19	91%	
UNDETERMINED	0	0%	
UNDER INVESTIGATION	16		
ALL EVENTS	37		
FACTORS STILL UNDER INVESTIGATION NOT INCLUDED IN %. MISHAPS OFTEN INVOLVE MULTIPLE CAUSAL FACTORS.			



#### **Class "C" Mishaps**

Aviation Class "C" Summary:

- Material Malfunction accounts for the largest percentage (68 percent) of involved factors for Aviation Class C Flight Mishaps. Human error accounts for 43 percent of involved factors for Aviation Class "C" Flight Mishaps.
- Excluding two spikes in mishap rates in FY03 and FY09, the Aviation Class C Flight mishap rate has been fairly constant over the past 10 years.

FY 2009 – 17 MAR 2010 AVIATION CLASS C FLIGHT MISHAPS			
INVOLVED FACTOR	# EVENTS	PERCENT	
AIRCREW FACTOR	11	25%	
MATERIAL MALFUNCTION	30	68%	
MAINTENANCE PERSONNEL	7	16%	
SUPERVISORY PERSONNEL	7	16%	
FACILITIES PERSONNEL	0	0%	
HUMAN ERROR	19	43%	
UNDETERMINED	1	2%	
UNDER INVESTIGATION	52		
ALL EVENTS	96		
FACTORS STILL UNDER INVESTIGATION NOT INCLUDED IN %. MISHAPS OFTEN INVOLVE MULTIPLE CAUSAL FACTORS.			



### 31. An update on A-12 litigation.

The dispute over the 1991 termination for default of the A-12 program has been in litigation since June 1991. On appeal for the third time, on June 2, 2009 the Court of Appeals for the Federal Circuit affirmed the May 2007 judgment of the Court of Federal Claims that the Navy had properly terminated the contract for default. Plaintiffs/appellants, Boeing and General Dynamics, sought a rehearing before the full Court of Appeals, but their requests were denied on November 24, 2009. Both contractors have said they intend to ask the Supreme Court to review the case. Their petitions for a writ of certiorari are now due March 24, 2010. The Government will then have the opportunity to file its response to the petitions. The Supreme Court is expected to decide by the early fall whether it will review this case.

# 32. A list of all DON program funding shortfalls that are currently in the fiscal year 2011 through 2015 future years defense plan, as submitted, that would not permit full program scope execution as currently planned.

The Chief of Naval Operations (CNO) and Commandant of the Marine Corps (CMC) have each separately submitted an unfunded priority list. We have had no major changes to our programs since the Fiscal Year 2011 President's Budget request was submitted. However, we are aware that potential rate increases across the industry may influence programs, as well as economic order fluctuations that may influence costs independent of program performance. Program funding issues will be addressed in the Selected Acquisition Reports (SARs).