

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
TACTICAL AIR AND LAND FORCES
SUBCOMMITTEE

STATEMENT OF

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BEFORE THE

TACTICAL AIR AND LAND FORCES
SUBCOMMITTEE

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

DEPARTMENT OF THE NAVY'S AVIATION PROCUREMENT PROGRAM

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NAVAL AVIATION

Mr. Chairman, Representative Reyes, and distinguished members of the Subcommittee, we thank you for the opportunity to appear before you today to discuss the Department of the Navy's (DoN) Aviation programs. Our testimony today will provide background and rationale for the Department's Fiscal Year (FY) 2012 budget request for aviation programs. This statement also includes responses to the questions in your March 2, 2011, letter to Secretary Mabus.

The United States is a maritime nation with global responsibilities. For 235 years, our Navy and Marine Corps' persistent presence and multi-mission capability have been the representation of U.S. power across the global commons. Our naval tradition informs our decisions today, as we remain today firmly in a forward posture for engagement and action. We continue to build on our ability to come from the sea to conduct our missions rapidly across the range of military operations. We are an agile and amphibious power projection force in readiness, and such agility requires that the tactical aviation arm of our naval expeditionary forces remain strong.

The Fiscal Year 2012 President's Budget requests funding for 223 aircraft including 13 F-35 Joint Strike Fighters for both the Navy and the Marine Corps, 11 P-8As to replace the aging current Anti-Submarine Warfare and maritime patrol squadrons, 24 MH-60R and 18 MH-60S helicopters, 1 KC-130J, 24 H-1 variant helicopters, 30 MV-22 tilt-rotor aircraft, 28 F/A-18E/F fighter attack planes, 12 EA-18G to continue replacing the EA-6B, 6 E-2D Advanced Hawkeyes, 36 Joint Primary Aircraft Trainers (JPAT) and 20 Unmanned Aerial Vehicles (UAV). The Department has also requested funds for the continued development of the Broad Area Maritime Surveillance (BAMS) unmanned system and for the demonstration of the Navy Unmanned Combat Aerial System (N-UCAS). The DoN Fiscal Year 2012 aircraft program budget is funded for planned program execution throughout the Future Years Defense Program (FYDP).

TACTICAL AVIATION (TACAIR)

TACAIR Inventory Management

The Fiscal Year 2012 President's Budget request includes a DoN reduction of 67 F-35B/C aircraft, the addition of 41 F/A-18E/F aircraft and the service life extension of 150 F/A-18A-D aircraft. In 2010, we estimated the DoN Strike Fighter Shortfall (SFS) to be about 100 aircraft, but the President's Budget for 2012 reduces the DoN's projected shortfall to a manageable level of 65 aircraft, with a peak in 2018. The Navy will transition three additional squadrons from FA-18Cs to F/A-18Es and then redistribute the F/A-18C aircraft to requirements across the DoN. With the procurement of the additional 41 Super Hornets, redistribution of existing aircraft and management of aircraft service life, the DoN will have the operational tactical aviation strength required to meet our Service commitments.

The DoN continues to meticulously manage the flight hours and fatigue life of our tactical aircraft. Since 2004, we have provided fleet users guidance and actions to optimize aircraft utilization rates while maximizing training and operational opportunities. The Inventory Forecasting Tool (IFT) is used to project the combined effects of TACAIR transition plans, attrition and pipeline requirements on the total strike fighter aircraft inventory. The IFT has been updated with the most recent data to provide a current forecast of the strike fighter inventory

compared to the existing requirements. Critical variables used in the tool include F-35 deliveries, force structure, usage rates, life limits, depot turnaround time, Fatigue Life Expenditure (FLE), arrested and field landings and catapult launches. Our latest shortfall prediction of 65 aircraft is manageable and is based on Fiscal Year 2012 President's Budget.

We continue to perform High Flight Hour (HFH) inspections to extend the service life limits of the F/A-18A-D aircraft from 8,000 to 8,600 flight hours. Engineering analysis completed in 2009 revealed that extensive areas of the legacy F/A-18 airframe would require Service Life Extension Program (SLEP) inspections and modifications in order to reach the service life goals of 10,000 hours. The F/A-18A-D SLEP engineering development phase completes in 2012, and the program then commences with the induction of aircraft. The Fiscal Year 2012 President's Budget includes a request to SLEP 150 aircraft throughout and beyond the FYDP. The HFH and SLEP efforts can effectively extend the F/A-18 A-D service life to 10,000 hours, thereby mitigating the impacts of the SFS. Continued investment in Program Related Engineering and Program Related Logistics funds within the Operations and Maintenance, Navy (O&M,N) accounts is critical for sustaining the combat relevancy of the DoN's legacy platforms through the TACAIR transition.

F-35/Joint Strike Fighter (JSF):

The DoN remains strongly committed to both the F-35B Short Take-Off and Vertical Landing (STOVL) and F-35C Carrier Variant (CV) of the Joint Strike Fighter, as they are essential to our long-term Naval and Marine Corps Aviation strategy and the nation's security. Despite the recent program challenges, we believe there is no program, or combination of programs, that can more affordably provide the Combatant Commanders the warfighting capabilities they will need to protect the Nation's global interests. F-35 is planned to supersede the Department's aging TACAIR fleet by replacing the Navy and Marine Corps' legacy F/A-18A-D Hornets, Marine Corps AV-8B Harrier and EA-6B Prowler aircraft. The integration of F-35B and F-35C aircraft will provide the dominant, multi-role, fifth-generation capabilities needed across the full spectrum of combat operations to deter potential adversaries and enable future Naval and Marine Aviation power projection.

The Department of Defense (DoD) has recently completed the most in-depth, bottoms-up technical review of the program to date. The F-35 Technical Baseline Review (TBR) involved more than 120 technical experts investigating all aspects of the program. Based on this review, the Secretary of Defense (SECDEF) determined the F-35 Systems Development and Demonstration (SDD) phase should be re-structured; variants of the F-35 aircraft de-coupled; and the production ramp reduced to mitigate concurrency risk in design and production. The Fiscal Year 2012 President's Budget requests \$1.3 billion in Research, Development, Test & Evaluation (RDT&E) and \$3.1 billion in Aircraft Procurement, Navy (APN) for 13 F-35 aircraft (6 F-35B and 7 F-35C) with associated aircraft hardware and spares. These resource requirements align to the SECDEF's F-35 program restructure.

The TBR identified program challenges affecting all variants of the F-35, to include software development, flight test progress and production delays. The Navy's F-35C is progressing satisfactorily while select F-35B unique systems, such as the auxiliary air-inlet doors and the engine driveshaft interface require additional engineering. SECDEF is providing two-years of

additional government and industry scrutiny to overcome these challenges to ensure the Marine Corps is delivered the warfighting capabilities needed to defend the Nation. The Commandant of the Marine Corps is personally engaged in the oversight of the STOVL variant. After the allotted two-year time span, the Department's leadership will reassess the overall technical progress and then make informed decisions regarding the F-35B development and production.

With the restructure and technical challenges before us, the DoN is assessing the implications to F-35B and F-35C Initial Operational Capability (IOC). The Navy and Marine Corps require that the aircraft attain service-specific mission oriented capabilities as defined in the F-35 Operational Requirements Document (ORD) prior to considering declaration of IOC. The Marine Corps requires a Block 2B weapon system capability and the Navy requires a fully ORD-compliant Block 3C capability. Implementation of the TBR findings and development of detailed test schedules are still in progress. Once the findings have been assessed, test schedules further matured, and all information incorporated into a new Integrated Master Schedule, the services will then assess and establish IOC dates for each F-35 variant.

F-35 technical reviews identified two critical technologies that were rated below the threshold for MS-B. One, the lift fan anti-icing system has now been adequately matured to the necessary technical readiness level (TRL-6). The other, the Helmet Mounted Display, continues to experience technical difficulties. The program is investigating alternative, more mature technologies that can provide an interim warfighting capability while the ORD-compliant solution is matured. An ORD-compliant helmet will continue development and will be integrated into the air system when the technology has been proven.

Developmental aircraft of all three variants are now in flight testing. The program now has nine test aircraft operating at three test sites, with three more Navy/Marine Corps developmental test aircraft planned to be delivered this year (BF-5, CF-2, CF-3). The Marine Corps' BF-1 returned to flight following an extended modification period. The aircraft has now flown effectively in the conventional take-off and short take-off and vertical take-off modes. BF-2 has accomplished six vertical landings (VLs) to-date and is now executing other unique VL test points. BF-3 returned to flight in January after weapons bay door calibration and other modifications. BF-4 completed a 3.6 hour flight in early February, the longest flight test mission (other than a ferry flight) on the overall F-35 program. Another F-35B completed tests in February to expand its speed envelope to 1.2 Mach (550 knots). The Navy's CF-1 test aircraft ferried to Naval Air Station (NAS) Patuxent River in November 2010 and has been completing early flying qualities envelope expansion. CF-2 and CF-3 are undergoing final preparations and ground testing. Both CF-2 and CF-3 are expected to ferry to NAS Patuxent River, Maryland, this spring. Drop testing of Navy's CG-1 aircraft, to simulate carrier landings of up to 26.4 feet per second, has been completed and has enabled detailed analysis and model validation. This same test article, reconfigured for static testing, has completed testing in support of aircraft catapult and arrestment. These ground tests support our early efforts for ship integration and lay the foundation for jet blast deflector and other ship suitability testing this summer at Naval Air Engineering Station Lakehurst. To date, all known air/ship integration issues are resolvable.

As of early February 2011, the F135 engine program had completed a total of 12,122 hours of testing on ground-test engines, 4,229 hours on flight-test engines, and a total of 838 hours of flight testing on all three variants of F-35 aircraft. In 2010, the F135 propulsion contractor delivered the final flight test engine and the first 12 production engines, which includes all the

Low Rate Initial Production (LRIP) 1 engines and the start of LRIP 2. Notwithstanding this significant progress, there have been technical and cost challenges. In 2010, the program began implementing plans to modify test aircraft to rectify an F135 afterburner “screech” problem, which prevents the engine from sustaining full thrust. These issues are now understood and modifications are in-work for the flight test aircraft to complete flight envelope expansion on planned schedules. Contributing to the F-35B two-year probation decision were STOVL-unique propulsion system challenges, including those associated with roll-post thermal capabilities, driveshaft spacers, and clutch temperatures. Plans are now maturing to correct each of these propulsion system issues. With regard to engine affordability, the SECDEF chartered a 2010 F-35 Engine Joint Assessment Team (JAT) to investigate F135 propulsion costs and provide a ‘should-cost’ objective. The propulsion team is implementing the recommendations with a focus in the coming year to ensure the engine manufacturer and the Government continue to make the necessary investments to achieve F135 cost reduction goals. The current LRIP 4 engine negotiations show that the engine manufacturer has begun to reduce cost in alignment with the JAT assessments and recommendations.

With regard to the F136 alternate engine program, the DoN supports the SECDEF’s position that the interests of the taxpayer, the military, our partner nations, and the resource integrity of the overall F-35 program are best served by not pursuing a second engine. Our assessment is that the benefits that might theoretically accrue with a second engine are more than offset by excess cost, complexity and associated risks, and will divert precious modernization funds from other more pressing priorities.

While F-35 has been challenged this past year, and additional developmental challenges may arise, we strongly support the F-35 program. It is essential to our long-term National Security as the future backbone of our air-superiority and the core of Navy and Marine Aviation.

F/A-18 Overview

There are 20 Navy Super Hornet squadrons totaling 416 F/A-18E/Fs. One more F/A-18E/F squadron completes transition in March 2011. There are 17 Navy and 13 Marine F/A-18 A-D squadrons totaling 628 legacy A-D Hornets. Super Hornets and legacy Hornets have conducted over 148,000 combat missions in support of Operations IRAQI FREEDOM (OIF) and ENDURING FREEDOM (OEF) since September 11, 2001. While deployed both ashore and at sea aboard our aircraft carriers, F/A-18s have brought significant numbers of precision ordnance and laser-guided munitions to the fight, and have employed thousands of rounds of 20 millimeter ammunition supporting forces during strafing runs. These aircraft continue to provide vital overwatch and direct support to our troops on the ground in Iraq and Afghanistan. The F/A-18 fleet continues to meet operational needs in the current conflicts. DoN Hornets have consistently met readiness and operational commitments. Naval Air Systems Command (NAVAIR) uses a Health of Naval Aviation (HONA) database to store and track the actual utilization data of all the F/A-18s. Both the Legacy and the Super Hornet were procured with an objective of 20 years time in service. The average Legacy Hornet has just now reached that goal, while the Super Hornet is at almost 30 percent of its expected 20 year life. It is reasonable to conclude that most aircraft will substantially exceed 20 years in service, based on current trends.

F/A-18 A/B/C/D (Legacy) Hornet

The Fiscal Year 2012 President's Budget request is \$364.6 million in APN for the continuation of the SLEP, systems upgrades and obsolescence programs for the F/A-18 platform. As the F/A-18 program transitions to the F/A-18E/F and F-35, today's inventory of 628 F/A-18A/B/C/Ds will continue to comprise more than half of the DoN's strike fighter inventory until 2013. The funds requested will procure and install center-barrel modifications and SLEP kits, which will be a major contributor to extending the service life of select candidate aircraft from the F/A-18 C/D fleet to 10,000 flight hours. The Service Life Management Program (SLMP) continues to monitor and improve the health of the legacy F/A-18A-D fleet through analyses of TACAIR inventories and the management of usage rates at the squadron level. The F/A-18A-Ds have flown approximately 75 percent of the total flight hours available at the 8,600 hour limit and approximately 69 percent of the fleet is over 6,000 flight hours with 15 aircraft over 8,000 flight hours. SLEP of approximately 150 of these aircraft, to extend their service life to 10,000 flight hours, will be required to meet operational commitments out to 2023.

In order to maintain a tactical advantage, we will continue to procure and install advanced systems ((Joint Helmet-Mounted Cueing Systems (JHMCS), Multi-Function Information Distribution System (MIDS) and LITENING for USMC)) on selected F/A-18A/B/C/D aircraft. The Marine Corps is upgrading 56 Lot 7-9 F/A-18As and 30 Lot 10/11 F/A-18Cs to a Lot 21 avionics capability with digital communications, a tactical data link, JHMCS, MIDS and LITENING. The Marine Corps will also upgrade 38 F/A-18A-D model APG-73 radars with the Expand 4/5 upgrade, providing an enhanced Synthetic Aperture Radar (SAR) capability, further improving its all-weather capabilities. The Marine Corps anticipates these upgrades will enhance the current capabilities of these aircraft with the digital communications, tactical data link and situational awareness required for them to remain viable and relevant. The Marine Corps expects the F/A-18(A++/C/D) to remain in the active inventory until Fiscal Year 2022 and in the reserve inventory until Fiscal Year 2023. The Marine F/A-18s are also employing the LITENING targeting pod in expeditionary operations including OEF. When combined with data link hardware, the LITENING pod provides real-time video to ground forces through Remotely Operated Video Enhanced Receiver (ROVER) and Video Scout ground workstations.

The F/A-18 A-D Service Life Assessment Program (SLAP) is now complete and has identified that extensions of the airframe are possible with inspections and modifications. Based upon those results, SLEP, a three-phased program, has begun. SLEP Phase A 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. SLEP Phase B is currently in work with NAVAIR and the Original Equipment Manufacturer (OEM); this phase categorizes parts by criticality, developing tracking algorithms to define recurring inspection intervals, conducts vertical tail failsafe solutions and upgrades analytical tools necessary for the NAVAIR and OEM engineers to design repairs. Phase B is currently 90 percent complete and should conclude in August 2011. SLEP Phase C is in planning, it will finalize all remaining Phase B work and develop modifications and inspections as required. The estimated contract award date is summer 2011. The life extension of the F/A-18 A-D's major subsystems and avionics is independent of the airframe, but progressing as well.

The Fiscal Year 2012 President's Budget request includes SLEP requirements for 150 airframes; modifications begin in 2012. The technical risk in developing modification kits to achieve the

goal of 10,000 flight hours is assessed as low. 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.

F/A-18 E/F Super Hornet

The Fiscal Year 2012 President's Budget requests \$2.4 billion in APN-1 for 28 F/A-18 E/F Block II (Lot 26-38) aircraft. The F/A-18E/F continues to transition into the fleet, improving the survivability and strike capability of the carrier air wing. The Super Hornet provides a 40 percent increase in combat radius, 50 percent increase in endurance and 25 percent increase in weapons payload over the legacy Hornets. The program will complete procurement of the 556 programmed aircraft in 2014. Production line shutdown will begin in Fiscal Year 2014 with the final shutdown occurring in Fiscal Year 2016. The Super Hornet uses an incremental development approach to incorporate new technologies and capabilities – the JHMCS, Advanced Targeting Forward Looking Infra Red(ATFLIR) with shared real-time video, Shared Reconnaissance Pod System (ShARP) and MIDS data-link. The F/A-18E/F Fiscal Year 2012 Budget request includes \$172.6 million in APN to implement commonality, maintain capabilities and improve reliability and structural safety.

The APG-79 Active Electronically Scanned Array (AESA) radar system was installed in all production F/A-18E/Fs and EA-18Gs beginning with Lot 30 in Fiscal Year 2006, and a retrofit program exists to modify 133 Lot 26-29 Block II aircraft with APG-79 radars. The Navy plans to equip all 419 Block II Super Hornets with AESA radars, providing the Super Hornet a significant increase in detection range, lethality and survivability over the legacy Hornets. AESA squadrons have been successfully deploying since 2007 and are highly valued by Fleet Commanders. The AESA Squadrons are considered force multipliers because of their ability to share battlespace management data with other non-AESA tactical aircraft in the carrier battle group.

The F/A-18 E/Fs have flown approximately 30 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. As a result, the F/A-18E/F Service Life Assessment Program commenced in 2008 and will last through 2015. Its goal is to analyze actual usage versus structural test data to identify the feasibility of extending F/A-18E/F service life from 6,000 flight hours to 9,000 flight hours via a follow on SLEP. Extending the airframe to 9,000 hours through both inspections and modifications is currently assessed as a low risk effort. The F/A-18E/F SLAP is a three phased program which commenced in 2008 and will last through 2015. The Fiscal Year 2012 President's Budget includes a request for \$100.4 million RDT&E (Fiscal Years 2012-2016) to support the F/A-18E/F SLAP study requirement. One of the F/A-18E/F SLAP goals is to define the necessary inspections and modifications required 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. E/F SLAP was started sooner in its life cycle than the F/A-18A-D SLAP and encompasses the entire weapon system vice just the airframe. The F/A-18E/F SLAP also has the advantage of having a 3rd lifetime of test cycles completed on multiple

test articles providing detailed information on high fatigue areas early in the program. The SLMP philosophy has also 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 approximately the same time, which should align aircraft service life with fleet requirements.

A multi-year procurement (MYP) contract for 124 F/A-18E/F Super Hornets and EA-18G Growlers was signed on September 24, 2010 for Fiscal Years 2010 through 2013. In December 2010, SECDEF added 41 E/F aircraft to the Fiscal Year 2012 President's Budget request in Fiscal Years 2012 through 2014. The total planned procurement is now 556 Super Hornets and 114 Growlers.

Airborne Electronic Attack (AEA) / EA-18G Growler

The Fiscal Year 2012 President's Budget request is \$1.1 billion in APN for 12 Full Rate Production (FRP) EA-18G aircraft and \$17.1 million in RDT&E, N for correction of deficiencies. The program completed Operational Test and Evaluation (OT&E) in May 2009 and was deemed Operationally Effective and Operationally Suitable. IOC was achieved in September 2009 and a favorable FRP decision was obtained in November 2009. The first EA-18G squadron deployed in an expeditionary role in November 2010 to Iraq. EA-18Gs in-service have flown approximately five percent of the 7,500 total flight hours per aircraft and are meeting all operational commitments.

The EA-18G began replacing expeditionary and carrier-based Navy EA-6Bs in 2009. These transitions will continue through 2015. A total of 78 EA-18Gs have been procured to date. As directed by the Quadrennial Defense Review in 2009, SECDEF added 26 EA-18G aircraft to the program of record across the FYDP to increase joint force capacity to conduct expeditionary electronic attack. The additional aircraft will fill the Navy's four expeditionary electronic attack squadrons currently using the legacy EA-6B Prowler. As reflected in the Fiscal Year 2011 President's Budget, the program of record is now 114 aircraft.

The Navy has completed an Analysis of Alternatives (AoA) to determine the best path forward for the Next Generation Jammer (NGJ). The NGJ system will replace the ALQ-99 electronic warfare pods currently flown on the EA-18G and EA-6Bs and will provide DoD with the advanced comprehensive electronic attack capability to outpace the threat.

Airborne Electronic Attack (AEA) / EA-6B Prowler

The Fiscal Year 2012 President's Budget request includes \$20.2 million in RDT&E,N for electronic warfare counter response, \$34.1 million in APN for common AEA systems and \$27.7 million in APN for all EA-6B series aircraft. Currently there are 85 EA-6Bs in the Navy and Marine Corps to support 62 operational aircraft in 14 active component squadrons and one reserve component squadron. This includes 39 Navy and Marine Corps Improved Capability (ICAP) II aircraft and 23 ICAP III aircraft. The replacement of Navy EA-6B aircraft with EA-18G was expected to be completed in 2012; however, the Navy now plans to complete the transition of the aircraft in 2015. This extension allows for full transition of carrier-based and expeditionary mission aircraft while supporting OIF and OEF combat efforts.

The Marine Corps currently has 11 operational EA-6B ICAP II aircraft and nine operational EA-6B ICAP III aircraft in four VMAQ squadrons. The transition to the ICAP III aircraft began in March 2010 and will complete in 2012. As the Navy transitions ICAP III squadrons to EA-18G, the Navy Prowlers will be transferred to the Marine Corps. Once the transition is complete, the Marine Corps will have 32 ICAP III aircraft to support its EA-6B program of record through 2019. Aircrew training for the DoN will be conducted at VAQ-129 through 2014. Once the Navy has completed its transition from the EA-6B, the Marine Corps may be required to establish a Fleet Replacement Squadron to support its program of record.

Marine Aviation is on a path towards a distributed AEA system of systems that is a critical element in achieving the Marine Air Ground Task Force Electronic Warfare (MAGTF EW) vision: a composite of manned and unmanned surface, air, and space-based assets, fully networked and collaborating to provide the MAGTF commander the ability to control the electro-magnetic spectrum at the time and place of his choosing. Current aviation programs supporting this vision are the EA-6B and the Intrepid Tiger II ALQ-231 pod, scheduled to deploy with an AV-8B squadron in fall 2011. In development are Unmanned Aircraft System (UAS) EW payloads to include a Software Reprogrammable Payload. Critical to the development of all these potential sensors is the development of an EW services architecture which will facilitate cooperative and collaborative networked Electronic Warfare Battle Management.

E-2D Advanced Hawkeye (AHE)

The E-2D Advanced Hawkeye is the Navy's carrier-based Airborne Early Warning and Battle Management Command and Control system. The E-2D provides Theater Air and Missile Defense and is capable of synthesizing information from multiple onboard and off-board sensors, making complex tactical decisions and then disseminating actionable information to Joint Forces in a distributed, open-architecture environment.

Utilizing the newly developed AN/APY-9 Mechanical Electronic Scan Array (MESA) radar and the Cooperative Engagement Capability (CEC) system, the E-2D works in concert with surface combatants equipped with the Aegis combat system to detect, track and defeat air and cruise missile threats at extended range and provide Battle Group Commanders required reaction time. This system-of-systems architecture, known as Naval Integrated Fire Control-Counter Air (NIFC-CA), provides vital force protection and allows the Navy to safely project forces into the littorals and overland to ensure access in contested areas.

The E-2D Advanced Hawkeye program is in the Production and Deployment phase after the Defense Acquisition Board (DAB) approved MS-C in June 2009. The SDD flight test program is 96 percent complete. Three pilot production aircraft were delivered in 2010, and the program successfully completed its second Operational Assessment (OA). From a cost standpoint, the Estimate at Complete (EAC) has been stable for over 42 months and the program is on track to finalize carrier suitability testing by third quarter Fiscal Year 2011. OT&E is scheduled to begin first quarter Fiscal Year 2012. LRIP 1 and 2 contracts have been awarded with two LRIP 1 aircraft scheduled for delivery in 2011. A DAB, which will authorize LRIP 3 and 4 procurements, is scheduled for March 2011. All major acquisition milestones have been achieved on or ahead of schedule since program inception in 2003.

The E-2D AN/APY-9 radar system continues to perform well, displaying satisfactory design maturation. All hardware and software is being delivered to the aircraft on schedule. During the

2009 Office of Naval Research's live fire demonstrations, the E-2D successfully demonstrated its integral role in the NIFC-CA architecture.

The Fiscal Year 2012 President's Budget requests \$110.9 million in RDT&E, N for continuation of SDD and \$1,236.3 million in APN for six LRIP 4 aircraft and advanced procurement (AP) for Fiscal Year 2013 FRP 1 aircraft.

AV-8B Harrier

The Fiscal Year 2012 President's Budget requests \$30.7 million in APN funds to continue development of the AV-8B Readiness Management Program (RMP), Operational Flight Program and Avionics Weapons Systems Development and Integration, and Engine Life Management Program (ELMP). Avionics development includes completion of the Airborne Variable Message Format Terminal which will provide digital communication interoperability with other Variable Message Format capable platforms, including F-35.

Today's Harrier, equipped with precision weapons, LITENING targeting pods with a video downlink to ROVER ground stations and the digitally-aided Close Air Support (CAS) Marine Tactical System protocol, is a proven, invaluable asset for the MAGTF and Joint Commander across the spectrum of operations. The AV-8B program focuses on sustainment efforts to mitigate significant legacy inventory shortfalls, maintain airframe sustainment and address reliability and obsolescence issues of avionics and subsystems. The AV-8B continues to be deployed heavily in support of emerging operational contingencies. Each Marine Expeditionary Unit (MEU) that deploys does so with embarked AV-8Bs. The aircraft supports ground forces in Afghanistan with its precision weapons, 25-millimeter cannon, and sophisticated sensor suite. The Harrier has a proven combat record, and its weaponry and basing flexibility from the decks of L-class ships to the austere Afghanistan environment have been invaluable. Planned capability upgrades, obsolescence mitigation and readiness initiatives will ensure the AV-8B remains relevant, healthy and sustained through 2022.

The Fiscal Year 2012 President's Budget requests \$51.5 million in Overseas Contingency Operations (OCO) procurement funding for USMC expeditionary LITENING targeting pod upgrades, which include enhanced Forward Looking Infrared (FLIR) and charge-coupled device optics, a Laser Target Imaging Processor, a more powerful video downlink transmitter and improved ground moving target and air-to-air target tracking systems. Building on its extensive and proven combat record, the United States Air Force and Marine Corps are upgrading the LITENING pod to the Gen 4 (fourth generation) standard to support engaged Marine Corps, joint and coalition warfighters. Finally, the Fiscal Year 2012 Budget requests \$2.0 million in OCO procurement funding to install OCO-procured ALE-47 kits. ALE-47 provides AV-8B an improved countermeasure capability over the legacy and obsolete ALE-39 system.

The AV-8B Fleet continues to meet operational commitments with simultaneous support to three MEUs and OCO. The Harrier monitors structural FLE vice flight hours. As of January 2011, the highest FLE aircraft is 49.0 percent of available expenditure. The single-seat, deployable aircraft FLE average is 26.8 percent. Continued investment in engine sustainment, avionics and in managing airframe component obsolescence is critical to ensuring these aircraft remain viable contributors to the TACAIR inventory.

P-8A Poseidon

The future of the Navy's maritime patrol force includes plans for sustainment, modernization, and re-capitalization of the P-3C force. The P-8A Poseidon is the replacement aircraft for the P-3C Orion. The Fiscal Year 2012 President's Budget requests \$622.7 million in RDT&E, N for development and \$2.275 billion in APN for procurement of 11 P-8A Poseidon aircraft. Fiscal Year 2012 research and development funding will support the continued development of the P-8A and associated testing. Fiscal Year 2012 funds support the procurement of the 11 LRIP P-8A aircraft which are scheduled to begin delivery in May 2014 and advanced procurement for the subsequent LRIP. The program is on track for IOC in 2013 when the first squadron will have transitioned and be ready to deploy forward in support of the combatant commander. The P-8A program is meeting all cost, schedule and performance parameters in accordance with the Acquisition Program Baseline (APB).

The program completed the MS C Review in August 2010 which authorized the Navy to proceed with LRIP Lots 1, 2, and 3 for six aircraft in Fiscal Year 2010, seven aircraft in Fiscal Year 2011 and eleven aircraft in Fiscal Year 2012. The Navy awarded the LRIP Lot 1 contract in January 2011. The first three flight test aircraft are being flown at NAS Patuxent River, MD in support of the Integrated Test and Evaluation (IT&E) plan. The last three of six flight test articles are on schedule for delivery from the OEM.

P-3C Orion

The aging P-3C fleet continues to provide critical anti-submarine warfare, anti surface warfare, and intelligence, surveillance, and reconnaissance support for Joint and Naval operations worldwide. In Fiscal Year 2012, \$171.5 million is requested to sustain the P-3C until transition to the P-8A Poseidon. A subset of \$100.4 million of this request is for wing modifications, which will allow airframe sustainment to support the Chief of Naval Operation's P-3 Fleet Response Plan, as well as supporting EP-3E requirements, which are executed within the P-3 Airframe Sustainment Program. The P-3C is being sustained to keep the aircraft a viable warfighter until it is replaced by P-8A beginning in 2013.

The aircraft is well beyond planned fatigue life of 7,500 hours for critical components, with an average airframe usage of over 16,000 hours. Since February 2005, 12 aircraft grounding bulletins have impacted 101 P-3 aircraft. In December 2007, NAVAIR's RDT&E funded P-3C Fatigue Life Management Program determined that in addition to existing structural fatigue issues associated with the forward lower wing section (Zones 2-4), the lower aft wing surface (Zone 5) of the P-3 aircraft had showed fatigue damage beyond standards for acceptable risk, resulting in the grounding of 39 P-3 aircraft. As of January 2011, a total of 59 aircraft have been grounded for Zone 5 fatigue. P-3 groundings, due to known material fatigue, will continue for the remainder of the P-3 program. Heretofore unknown fatigue issues will continue to present persistent risk until the P-8A transition is complete.

A return to aircraft availability numbers representative of pre-December 2007 grounding levels was recently achieved in December 2010; 85 P-3C mission aircraft are available today. Preserving funding for Zone 5 and outer wing kits and installations is critical to sustaining the minimum number of P-3Cs until replaced by the P-8A. As of February 25, there have been 38 Zone-5 modifications completed; 30 Zone-5 aircraft are in work and five outer wing assemblies

have been delivered for ongoing installations. Key elements of the sustainment approach are: strict management of requirements and flight hour use, special structural inspections to keep the aircraft safely flying, semi-annual fatigue updates per individual P-3C/EP-3 aircraft and increased use of simulators to satisfy training requirements. In the Fiscal Year 2012 President's Budget request, \$71.1 million is requested for sustainment and modernization. These funds will continue addressing a multitude of mission essential efforts to replace obsolete components, integrate open architecture technology and leverage commonality.

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 P-8A Full Operational Capability is achieved, allocations of aircraft must be balanced to meet mission and minimum training while preserving remaining P-3 service life. Maintaining P-3C sustainment and modernization programs and the P-8A procurement schedule is critical to avoid any increases in aircraft non-availability.

EP-3 Aries Replacement/Sustainment

The EP-3E ARIES is the Navy's premier manned Airborne Intelligence, Surveillance, Reconnaissance, and Targeting (AISR&T) platform. The Joint Airborne Signals Intelligence (SIGINT) Common Configuration includes spiral upgrades which, in conjunction with SECDEF and ISR Task Force surge efforts, are fielding a robust Multi-Intelligence (INT) capability inside the FYDP. Multi-INT sensors, robust communication, voice internet protocol and data links employed by the flexible and dependable P-3 air vehicle help ensure effective AISR&T support to conventional and non-conventional warfare across the current Range of Military Operations. Operating around the globe, the EP-3E continues to satisfy critical Joint, Combatant Commander, and Service airborne ISR priorities and requirements.

In Fiscal Year 2012, the President's Budget request is \$104.0 million in APN, including \$20.8 million for OCO to address EP-3E SIGINT and communications capability upgrades and obsolescence. The APN request supports the LRIP installations and FRP buy for communications intelligence modifications necessary to keep pace with the evolving threat. The EP-3E program continues to modify aircraft with multi-intelligence capability to meet emergent classified requirements. Modifications are necessary to keep the platform viable until the EP-3 capabilities are recapitalized.

The Navy cancelled the EP-3E replacement (EP-X) in the Fiscal Year 2011 President's Budget and currently the Navy is in the process of developing a "Family of Systems" concept to recapitalize airborne ISR capabilities. In the interim, the Navy will continue to replace obsolete equipment with mission-critical sensor improvements on board the EP-3 to support US and coalition forces currently engaged in OCO.

MH-60R and MH-60S

The Fiscal Year 2012 President's Budget requests \$1.0 billion for 24 MH-60R aircraft including AP for 24 Fiscal Year 2013 aircraft and \$17.7 million RDT&E, N for continued replacement of the Light Airborne Multi-Purpose System (LAMPS) MK III SH-60B and carrier-based SH-60F helicopters with the MH-60R. The \$17.7 million will continue development of the Ku-band data link, a fleet driven capability upgrade to the APS-147 Radar known as the Automatic Radar

Periscope Detection and Discrimination program, a Mode V interrogation capability into the identification friend-or-foe system and the aluminum gearbox. An aluminum gearbox design is replacing the current magnesium gearbox to reduce corrosion and improve total ownership cost. The MH-60R is used in both anti-submarine warfare (ASW) with its dipping sonar, sonobuoys and torpedoes and in the surface warfare (SUW) role with its electronics surveillance measures system, multimode radar with inverse synthetic aperture radar, FLIR system and Hellfire missiles. It has demonstrated three to seven times the capability in the ASW role and significant increases in its SUW capability over legacy systems. The MH-60R program achieved FRP in 2006. The second MH-60R operational deployment is currently underway with HSM-77 aboard the carrier USS ABRAHAM LINCOLN (CVN 72). There are three operational Carrier Air Wing squadrons and two fleet replacement squadrons operating the MH-60R. Two additional operational squadrons will transition to the MH-60R by the end of Fiscal Year 2011.

The Fiscal Year 2012 President's Budget requests \$483.0 million in APN for 18 MH-60S aircraft including advanced procurement for 18 Fiscal Year 2013 aircraft and \$30.6 million in RDT&E, N funds for the MH-60S to continue development of the Organic Airborne Mine Countermeasures (OAMCM) (Block II) and the Armed Helicopter (Block III) missions. The MH-60S is the Navy's primary combat support helicopter designed to support carrier and expeditionary strike groups. The MH-60S has replaced three legacy Navy helicopter platforms. The basic MH-60S reached IOC and FRP in 2002. The Armed Helicopter configuration reached IOC in June 2007 and OAMCM is scheduled to reach IOC in 2011. The second MH-60S operational deployment is currently underway with HSC-12 aboard the USS ABRAHAM LINCOLN (CVN 72). MH-60S helicopters currently operate with self defense equipment, crew-served weapons and Hellfire missiles. MH-60S configuration enhancements include Fixed Forward Firing Weapons that will begin fielding in 2012.

The SECDEF certified a MYP for the Army and Navy to pursuing a joint platform procurement of the MH-60R and MH-60S airframes along with the Army's UH-60M. At the same time, the SECDEF certified the Navy MYP strategy for the MH-60R and MH-60S common cockpit procurement.

T-6B Joint Primary Aircraft Training System (JPATS) and other Training Systems

The T-6 is the primary flight training aircraft for Navy and Marine Corps pilots and Naval Flight Officers (NFO), replacing the aging and increasingly difficult to support T-34. The recent grounding of 186 T-34 aircraft, almost three-fourths of the Chief Naval Aviation Training (CNATRA) T-34 inventory, due to rudder pedal cracks demonstrates the urgency of this procurement. The current requirement for T-6's has been revised to 295 aircraft following an internal Navy requirements review. To date, 197 T-6's have been procured and 107 have been delivered. Of those 107 aircraft, 65 are the newer T-6B aircraft with an upgraded avionics variant of the T-6A. The Fiscal Year 2012 President's Budget request includes \$266.9 million to procure 36 T-6Bs under a United States Air Force contract. The JPATS program first delivered the T-6B aircraft to the Navy in August 2009 and IOC occurred in April 2010. Funding requested in the President's Budget will also support the critical sustainment of the TH-57, the training helicopter for Navy and Marine Corps helicopter pilots, and of the T-45, the Navy's training jet for future jet pilots and NFOs.

ASSAULT SUPPORT AIRCRAFT

KC-130J Hercules

The KC-130J continues to replace the aging KC-130F/R/T fleet in order to fulfill the Marine Corps' requirement for 79 KC-130 aircraft, which provide fixed wing, rotary wing and tiltrotor air-to-air refueling (AAR); assault support; airborne multi-sensor imagery reconnaissance (MIR); and CAS to the MAGTF. The Fiscal Year 2012 President's Budget requests \$94.4 million in APN for the procurement, support and sparing of one aircraft. Keeping this transition program on track allows the Marine Corps to fully exploit the agility of this unique multi-mission assault support platform while mitigating ever increasing legacy KC-130T operating and sustainment costs.

As of February 8, 2011, 42 USMC KC-130J aircraft of a total program of 104 (79 Marine Corps, 25 Navy) have been delivered, and an additional five aircraft are on contract, expected to deliver between Fiscal Year 2011 and 2014.

LIGHT ATTACK AND UTILITY AIRCRAFT

UH-1Y / AH-1Z

The H-1 Upgrades Program is replacing the Marine Corps' UH-1N and AH-1W helicopters with state-of-the-art UH-1Y and AH-1Z aircraft. These legacy aircraft have proven enormously effective over decades of heavy use, and as they reach the end of their service lives we look forward to expanding utility and attack helicopter capabilities. The new Yankee and Zulu aircraft are fielded with integrated glass cockpits, world-class sensors and advanced helmet-mounted sight and display systems. The future growth plan includes a digitally-aided close air support (CAS) system designed to tie these airframes, their sensors and their weapons systems together with ground combat forces and capable DoD aircraft. Low-cost weapons such as the Advanced Precision Kill Weapon System II (APKWS II) will increase lethality while reducing collateral damage.

The Fiscal Year 2012 President's Budget requests \$72.6 million in RDT&E, N for continued product improvements and \$798.6 million in APN for 26 H-1 Upgrade aircraft: 15 UH-1Y, 10 AH-1Z and one AH-1Z OCO aircraft. The program is a key modernization effort designed to resolve existing safety deficiencies, to enhance operational effectiveness, and to extend the service life of both aircraft. Additionally, the 84 percent commonality between the UH-1Y and AH-1Z will reduce lifecycle costs and logistical footprint significantly, while increasing the maintainability and deployability of both aircraft. The program will provide the Marine Corps 349 H-1 aircraft through a combination of remanufacturing and new production.

The UH-1Y "Yankee" aircraft achieved IOC in August 2008 and FRP in September 2008. The "Yankee Forward" procurement strategy prioritized UH-1Y production in order to replace the under-powered UH-1N fleet as quickly as possible. The AH-1Z completed its operational evaluation (OT-II3C) in June 2010 and received approval for FRP in November 2010. As of 1 March 2011, 52 aircraft (38 UH-1Ys and 14 AH-1Zs) have been delivered to the Fleet Marine Force; an additional 48 aircraft are on contract and in production. Lots 1-5 aircraft deliveries are

complete and Lot 6 deliveries are progressing on schedule. The AH-1Z achieved IOC in February 2011 and in November 2011 a MEU will deploy with both UH-1Y and AH-1Z aircraft – the first such all-upgrades deployment. To date, all Fiscal Year 2009 - 2011 aircraft deliveries have been completed ahead of the contracted schedule date.

The UH-1Y completed its first overseas deployment with the 13th MEU in July 2009 and has supported sustained combat operations in OEF since November 2009. The UH-1Y has continued to demonstrate high rates of deployed readiness, achieving an average mission capability rate of 85 percent for the last squadron deployment which completed in November 2010. Deployed utilization is also high, with the nine OEF UH-1Ys averaging 3134 flight hours every six months (54.7 hours/month/aircraft), tripling normal continental United States (CONUS)-based operating levels.

Due to increased utility helicopter demand from the ground combat element, the Marine Corps approved a restructure of the H-1 squadron configuration from 18 AH-1Zs and nine UH-1Ys to 15 AH-1Zs and 12 UH-1Ys. As a result, the aircraft procurement mix changed to 189 AH-1Zs and 160 UH-1Ys, with 58 AH-1Z aircraft built new since insufficient numbers of AH-1Ws are available for remanufacture. The total aircraft procurement remains the same at 349.

V-22B Osprey

The Fiscal Year 2012 President's Budget request includes \$2.4 billion in APN for procurement of 30 MV-22Bs and for continued development of follow-on block upgrades. Fiscal Year 2012 is the fifth year of the V-22 MYP contract. The V-22 MYP strategy supports a continued cost reduction and affordability trend, provides a stable basis for industry and best supports the needs of the warfighter. The funds requested in the Fiscal Year 2012 President's Budget will fully fund Lot 16 under the V-22 MYP contract, and procure long-lead items for Lot 17. The Marine Corps continues to field and transition aircraft on time.

The effectiveness and survivability of this revolutionary, first-of-type MV-22B Osprey tiltrotor has been repeatedly demonstrated in combat, from land-based operations in Iraq and Afghanistan to sea-based operations in Haiti and the Horn of Africa. As the 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, giving combatant commanders unprecedented agility and operational reach.

The MV-22B has been continuously supporting the Marines since October 2007, in extreme environment conditions during nine combined deployments to Iraq, Afghanistan, and aboard amphibious shipping. It has the lowest Class A flight mishap rate of any USMC fielded tactical rotorcraft over the past ten years, and in 2010, the MV-22 had the lowest cost per seat mile of any DoN rotorcraft. Those figures will only improve as our cost per flight hour continues to decrease and our readiness rates continue to rise.

In February 2011, the V-22 fleet exceeded 100,000 total flight hours. With the pace of new aircraft introduction, flight hours have doubled since November 2008. The introduction of this new tiltrotor capability into combat has provided valuable lessons with respect to readiness and operating costs. Improvements continue to be made and are having a clear effect on increasing aircraft availability and decreasing flight hour costs. The MV-22 squadrons in Afghanistan and

on the MEU are seeing mission capable rates in the 70 percent range. This compares with the 71.6 percent availability over eighteen months of operations in Iraq. To keep these improvements on track, much in the same manner as with other successful programs like the F/A-18 and H-53 during early fleet introduction, we have introduced a Readiness Operations and Safety Improvement Program (OSIP) into the Fiscal Year 2012 President's Budget. This OSIP will provide the stable source of APN-5 so crucial to all programs in the early stages of their fleet introduction.

The MV-22 capability is being increased and fielded over time via a block upgrade acquisition strategy. The great benefit of a fly-by-wire rotorcraft is becoming clearer as we increase airspeed and lift by simply rewriting the flight control software. These advancements, along with any corrections of deficiency, require thorough testing. To support this, we have added RDT&E to the V-22 line in FY 2012 and FY 2013 to fund a replacement fully-instrumented aircraft. We have only one such aircraft now, and it is five iterations of V-22 behind what we fly today and requires hundreds of maintenance man hours per flight hour.

CH-53K Heavy Lift Replacement Program

In Fiscal Year 2012 the President's Budget requests \$629 million RDT&E, N to continue SDD of the CH-53K. In the past year, the CH-53K program successfully completed its Critical Design Review (CDR), and began system capability and manufacturing process demonstration. During the balance of Fiscal Year 2011 and continuing through Fiscal Year 2012, the program will work on manufacturing the various test articles needed to support developmental test activities. The funding requested for Fiscal Year 2012 will support activities required to achieve first flight of the CH-53K in Fiscal Year 2013.

The new build CH-53K will replace the legacy fleet of CH-53E helicopters with an aircraft that provides the performance necessary to support our future warfighting requirements. The CH-53E Super Stallion provides unparalleled combat assault support to the MAGTF and is one of the Marine Corps most-stressed aviation communities. CH-53s, providing vital lift of heavy equipment, supplies and troops, are currently deployed in Afghanistan, the Horn of Africa, and with Marine Expeditionary Units. Since May 2010, these aircraft have flown over 11,500 hours, carried more than 79,000 passengers, and moved over 16 million pounds of cargo in support of coalition forces in Afghanistan and the Horn of Africa, while flying well above their programmed rates in austere, expeditionary conditions. The need for heavy lift support has increased substantially when compared to last year's numbers over the same reporting period. The only true heavy lift helicopters deployed to Afghanistan, CH-53Es have performed combat external recoveries of three coalition helicopters during this period. Forward-deployed aircraft typically operate at over three times the peacetime utilization rates.

To keep these platforms viable until the CH-53K enters service, the Fiscal Year 2012 President's Budget requests \$133.6 million for both near and mid-term enhancements, including the Force XXI Battle Command Brigade and Below, Integrated Mechanical Diagnostic System, T-64 Engine Reliability Improvement Program kits, Directed Infrared Countermeasures, Critical Systems Armor and sustainment efforts such as Kapton wiring replacement. While these aircraft are achieving unprecedented operational milestones, they are nearing the end of their service life; the CH-53E is approaching 30 years of service and the CH-53D, operational for almost 40 years is scheduled to retire from active service in First Quarter Fiscal Year 2013.

The new-build CH-53K will fulfill land and sea based heavy-lift requirements not resident in any of today's platforms, and contribute directly to the increased agility, lethality, and presence of joint task forces and MAGTFs. The CH-53K will transport 27,000 pounds of external cargo out to a range of 110 nautical miles, nearly tripling the CH-53E's lift capability under similar environmental conditions, while fitting into the same shipboard footprint. The CH-53K will also provide unparalleled lift capability under the high altitude, hot weather conditions similar to those found in Afghanistan, greatly expanding the commander's operational reach.

Maintainability and reliability enhancements of the CH-53K will improve aircraft capability and operational effectiveness over the current CH-53E with improved cost effectiveness. Additionally, survivability and force protection enhancements will increase protection dramatically, for both aircrew and passengers, thereby broadening the depth and breadth of heavy lift operational support to the Joint Task Force and MAGTF commander. Expeditionary heavy-lift capabilities will continue to be critical to successful land- and sea-based operations in future anti-access, area-denial environments, enabling seabasing and the joint operating concepts of force application and focused logistics.

The CH-53K program continues to meet all of its performance goals, but is expected to achieve IOC approximately 40 months later than the original goal of September 2015. The current projected Program Acquisition Unit Cost is approximately 5.7 percent higher than the original goal and projected Average Procurement Unit Cost is approximately 4.3 percent higher. These schedule and cost projections have changed little over the past 18 months, varying only as program budget assumptions changed, providing a good indication that program execution is stable.

EXECUTIVE SUPPORT AIRCRAFT

VH-71 / VXX Presidential Helicopter Replacement Aircraft

The Fiscal Year 2012 President's Budget includes \$180.1 million for continuing efforts on VXX, the follow-on program for presidential helicopters. Fiscal Year 2012 reflects a funding adjustment to address the revised MS A date. The original funding profile assumed MS A early in Fiscal Year 2011 and commensurate contract start.

The VH-71 termination proposal was received on May 21, 2010, with negotiations and the anticipated settlement expected late in Fiscal Year 2011. The Navy is currently working closely with Defense Contract Management Agency and Defense Contract Audit Agency in a complex effort to disposition all assets acquired during the VH-71 Program. The majority of VH-71 specific tooling has been sold back to the OEM in Europe. The process of disposition of non-aviation related assets is well underway in the United States and is beginning in Europe. The Navy continues to dialogue with various operators of the EH-101 and other Federal entities concerning disposition of VH-71 aircraft and parts.

VXX activity will include continuing effort that began in Fiscal Year 2010, with current activity in Fiscal Year 2011 focused on completing the AoA, capability based assessments, concept of operations development, trade study analysis, specification development, system concept

development and threat analysis leading to a successful MS A decision in the latter part of Fiscal Year 2011. Following the decision to enter into the Technology Development Phase at MS A, Fiscal Year 2012 activities will focus on the proposed material solutions. Specifically, the program will begin reducing technology risk by determining and maturing the appropriate set of technologies through select prototype demonstrations.

The VXX AoA addresses all feasible options with a holistic 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; the details and specifications on how the requirement will be met safely and affordably 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 near completion and will support the development of an acquisition strategy that will balance capability and affordability; the emphasis will be on affordability.

VH-3D/VH-60N Executive Helicopters Series

The Fiscal Year 2012 President's Budget requests an investment of \$58 million to continue programs that will ensure the legacy Presidential fleet remains viable until its replacement is fully fielded. Ongoing efforts include the Cockpit Upgrade Program for the VH-60N, Communications Suite Upgrade, Structural Enhancement Program and the Obsolescence Management Program. The VH-3D and VH-60N Trainers Conversion Program will begin in Fiscal Year 2011 and continue into Fiscal Year 2012. Service life assessment results are currently being evaluated for both VH-3D and VH-60N, with non-recurring engineering beginning for the Service Life Extension Program beginning in Fiscal Year 2012. The VH-3D Cockpit Upgrade Program, providing a common cockpit with the VH-60N, will start in Fiscal Year 2012. Continued investments in the legacy fleet will ensure continued safe and reliable Executive transportation until the replacement aircraft is fielded.

UNMANNED AVIATION

MQ-4C Broad Area Maritime Surveillance (BAMS) UAS

The Fiscal Year 2012 President's Budget requests \$548.5 million RDT&E to continue SDD of the BAMS UAS and \$4.5 million MILCON to construct a training facility at NAS Jacksonville. The MS B decision for the BAMS UAS program was achieved on April 18, 2008. The program is on schedule. The Systems Requirement Review (SRR) was conducted in January 2009, System Functional Review in June 2009, Integrated Baseline Review in July 2009, Preliminary Design Review (PDR) in February 2010 and the CDR in February 2011. The BAMS UAS program will meet the Navy requirement for a persistent ISR capability. The BAMS UAS is a larger Group-5 system that will be a force multiplier for the Fleet Commander, enhancing situational awareness of the battle-space and shortening the sensor-to-shooter kill chain. BAMS UAS will work as an adjunct to the new P-8A Poseidon to provide a more affordable, effective and supportable maritime ISR option than current ISR aircraft. The Navy also procured two USAF Global Hawk (Block 10) UASs in Fiscal Year 2004, for demonstration purposes and to perform risk reduction activities for the BAMS UAS Program, known as the BAMS-

Demonstrator (BAMS-D) program. BAMS-D UAS has been deployed to the Central Command (CENTCOM) theater of operations for over two years.

MQ-8B Vertical Takeoff and landing Unmanned Aerial Vehicle (VTUAV)

The MQ-8B Fire Scout is an autonomous vertical takeoff and landing tactical UAV (VTUAV) designed to operate from all air-capable ships, carry modular mission payloads, and operate using the Tactical Control System and Line-Of-Sight Tactical Common Data Link. The Fiscal Year 2012 President's Budget requests \$108.2 million RDT&E to develop an endurance upgrade and integrate weapons on the MQ-8B, and \$198.9 million APN for the production of 12 Fire Scout MQ-8B aircraft, Ship Control Stations and initial spares. The RDT&E budget includes funding to increase endurance and integrate specialty payloads to support the Special Operation Forces (SOF) mission and satisfy urgent needs and a CNO-directed 18-month Rapid Deployment Capability for the Weaponization of the MQ-8B. The MQ-8B aircraft quantity supports Littoral Combat Ship (LCS) missions, SOF missions and other expeditionary demands. Procurement of ship based control stations is aligned with both the LCS mission and outfitting Fast Frigate (FFG) ships to support the SOF missions. Production to incorporate the endurance changes is included in the APN budget. The MQ-8B system is continuing a Military Utility Assessment (MUA) on the USS HALYBURTON to evolve fleet concepts for operation of the system. The MQ-8B system will deploy to Afghanistan in April 2011 to support the ISR Task Force from expeditionary facilities. The Fire Scout program will also continue to support integration and testing in all mission modules on LCS. The Navy continues to cooperate with the Coast Guard for their ship-based UAS planning.

Unmanned Combat Air System Carrier Demonstration (UCAS-D)

The Fiscal Year 2012 President's Budget requests \$198.3 million RDT&E to continue the Navy Unmanned Combat Aircraft System Carrier Demonstration (UCAS-D) efforts to research a tactical jet-sized, carrier-suitable, low observable relevant, unmanned aircraft system. The UCAS-D program will demonstrate UCAS carrier operations and Autonomous Aerial Refueling (AAR), and mature required technologies to Technology Readiness Level (TRL)-6. The Aviation/Ship Integration portion of the program is meeting all technical objectives, with surrogate aircraft flights in vicinity of aircraft carriers (CV) completed in 2009 and 2010, and the next carrier-related operations scheduled for Spring 2011. The UCAS-D contract was competitively awarded in August 2007. The program was re-baselined in 2010 due to delays in the original contract schedule which was focused on early completion of UCAS-D objectives. The re-baselined schedule is executable within existing resources; completion of the carrier demonstration is planned for Fiscal Year 2013. AV-1 first flight was completed on February 4, 2011. Shipboard X-47B deck handling operations and flight operations in the vicinity of an aircraft carrier are scheduled to begin in 2012. Actual catapult launches, arrested landings and additional flight operations in the vicinity of a CV are scheduled to be completed in 2013. UCAS-D is an essential first step toward full-scale development of a carrier-suitable unmanned ISR/strike platform. Successful UCAS-D sea trials will set the stage for potential follow-on acquisition programs.

Cargo Unmanned Aerial System (CUAS)

The Fiscal Year 2012 President's Budget requests \$53.9 million in support of Cargo UAS (CUAS) deployment through Fiscal Year 2012. This effort supports the USMC operational requirements captured in a Cargo UAS Joint Urgent Operational Needs (JUONS). The Marine Corps is assigned the lead service. Currently, two vendors have been awarded contracts in support of Cargo UAS development. The CUAS initiative is a MUA which will inform a follow-on program of record.

The purpose of the Cargo UAS capability is to "get trucks off the roads" in combat zones, minimizing the improvised explosive device (IED) threat to logistics convoys. The CUAS will provide a low risk, persistent, 24-hour capability for dispersed forces on the battlefield. This capability will mitigate the requirement for manned ground vehicles to resupply forces in remote locations. The CUAS will also augment manned aviation assault support assets and airdrop methods when the weather, terrain, and enemy pose an unsuitable level of risk. Aerial delivery of cargo by the CUAS, between main logistical hubs and remote "spokes", will be executed under the control of a ground control station at a main operating base and a remote terminal at the drop-off zone.

RQ-21A Small Tactical Unmanned Aircraft System (STUAS)

The Fiscal Year 2012 President's Budget requests \$49 million in RDT&E (\$22.7 million Navy, \$26.3 million Marine Corps) and \$12.8 million in APN for the RQ-21A Integrator STUAS program that will address Marine Corps and Navy ISR capability shortfalls currently supported by service contracts. This Group 3 UAS will provide persistent, ship and land-based ISR support for tactical level maneuver decisions and unit level force defense/force protection missions. MS B and contract award occurred in July 2010. MS C and LRIP decisions are scheduled for the 4th quarter of Fiscal Year 2012. Fiscal Year 2012 USMC RDT&E will procure two LRIP systems in order to support Initial Operation Test and Evaluation as well as complete the EMD. Fiscal Year 2012 APN will procure one LRIP system.

RQ-7B Marine Corps Tactical UAS (MCTUAS)

The Fiscal Year 2012 President's Budget requests \$0.9 million RDT&E to continue development efforts and government engineering support, and \$11.4 million in APN to support the continuation of congressionally mandated Tactical Common Data Link retrofits for RQ-7B Shadow units. MCTUAS is the same system as the Army's RQ-7B Shadow UAS, and is a Group 3 system procured as an interim replacement for the RQ-2B Pioneer UAS until a suitable Group 4 UAS can be fielded. The transition to the RQ-7B Shadow began in Fiscal Year 2007 and the Marine Corps procured its thirteenth and final system in Fiscal Year 2010. The Shadow UAS provides rapid fielding of a capability that meets Marine Corps urgent operational requirements and brings immediate interoperability and commonality between Army and Marine Corps unmanned aircraft units operating side-by-side in Afghanistan.

Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System

The Fiscal Year 2012 President's Budget requests \$121.1 million RDT&E for the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System efforts. The UCLASS system will provide a persistent, aircraft carrier based ISR and strike capability supporting carrier air wing operations no later than 2018. In order to achieve the UCLASS operational objectives, the system will maximize use of existing technology to launch and control the air vehicle, transfer data in support of precision strike, and conduct persistent surveillance operations. The UCLASS system will consist of a carrier-suitable air vehicle, a remote vehicle control segment, a system support segment, and connectivity to carrier unmanned components and systems, and to existing DoD Tasking, Processing, Exploitation and Dissemination systems. The system will be integrated into Carrier Controlled Airspace operations and will be maintained in accordance with standard fleet processes, wherever possible, as tailored for UAS application. The system will contain appropriately balanced survivability attributes to be effective in specified tactical situations. The Initial Capability Document has been entered into the Joint Capability Integration and Development System process. Formal acquisition and contracting strategies are in development.

WEAPONS

Tactical Tomahawk BLK IV Cruise Missile

The Fiscal Year 2012 President's Budget requests \$303.3 million of Weapons Procurement, Navy (WPN) for procurement of an additional 196 BLK IV weapons and associated support and \$36.1 million of OPN for the Tactical Tomahawk Weapon Control System (TTWCS). \$6.3 million in RDT&E, N is requested for updates of the weapon system. WPN resources will be for the continued procurement of this versatile, combat-proven, deep-strike weapon system in order to meet surface and subsurface ship-fill load-outs and combat requirements. OPN resources will address the resolution of TTWCS obsolescence and interoperability mandates.

Theater Mission Planning Center (TMPC)

TMPC is the mission planning segment of the Tomahawk Weapon System. Under the umbrella of TMPC, Tomahawk Command and Control System (TC2S) develops and distributes strike missions for the Tomahawk Missile; provides precision strike planning, execution, coordination, control and reporting; and enables Maritime Component Commanders the capability to plan and/or modify conventional Tomahawk Land-Attack Missile missions. The Fiscal Year 2012 President's Budget requests \$2.5 million RDT&E and \$36.7 million OPN for continued TMPC development and support. These resources will complete testing of TC2S Version 4.3 and continue the development and testing of TC2S Versions 5.0 to improve joint interoperability, mission planning time and system usability. These resources are critical towards supporting 125 planning sites, to include Cruise Missile Support Activities; Tomahawk Strike and Mission Planning Cells; Carrier Strike Groups, Command and Control Nodes and Labs/Training Classrooms.

Joint Air-to-Ground Missile (JAGM)

The Fiscal Year 2012 President's Budget requests \$118.4 million of RDT&E to support the continued development of this next-generation air-ground precision-guided weapons program. The DoN, in conjunction with the United States Army, received formal approval to proceed with the development of the JAGM in January 2008. During a 27-month technology development phase, two competing contractors completed system-level preliminary design reviews and successfully fired three ground-launch test missiles. These launches demonstrated the Key Performance Parameters for range and the maturity of JAGM missile seeker technologies in the semi-active laser, millimeter-wave, and imaging infrared modes. In Fiscal Year 2011, the JAGM program will complete MS B, conduct a competitive down-select, and award an Engineering and Manufacturing Development (EMD) contract to the winning JAGM competitor. JAGM will be launched from Navy and Marine Corps fixed-wing, rotary-wing, and unmanned platforms.

Hellfire Weapon System

The Fiscal Year 2012 President's Budget requests \$36.7 million, including \$14.0 million of OCO funding, for 421 Hellfire all-up-round weapons. Hellfire procurements are a mix of thermobaric, blast/fragmentation, and anti-armor warheads, to provide maximum operational flexibility to our warfighters. This procurement quantity will bring the inventory total to approximately fifty-percent of the requirement and will increase our training assets. While the DoN develops the JAGM, continued support for legacy Hellfire weapons is required. Hellfire continues to be a priority weapon for current military operations as it enables our warfighters to attack targets in the caves of Afghanistan, as well as to prosecute military operations in urban environments.

Small Diameter Bomb II (SDB II)

The Fiscal Year 2012 President's Budget requests \$47.6 million of RDT&E for the continued development of this joint DoN and Department of the Air Force weapon and bomb-rack program. SDB II provides an adverse weather, day or night standoff capability against mobile, moving, and fixed targets, and enables target prosecution while minimizing collateral damage. SDB II will be integrated into the internal carriage of both the Navy (F-35C) and Marine Corps (F-35B) variants of the F-35 and will be compatible with the BRU-61/A miniature-munitions carriage. SDB II entered MS B in August 2010 and successfully completed CDR in January 2011.

Joint Standoff Weapon (JSOW)

The Fiscal Year 2012 President's Budget requests \$7.5 million of RDT&E for continued JSOW-C-1 test activity and \$137.9 million of WPN for production of 266 All-Up Rounds. The JSOW-C-1 variant fills a critical capability gap by adding maritime moving-target capability to the highly successful baseline JSOW-C program. JSOW-C-1 targetting is achieved via a data-link and guidance software improvements. Initial LRIP deliveries began in October 2010.

Direct Attack Moving Target Capability (DAMTC)

The Fiscal Year 2012 President's Budget requests \$41.3 million for the completion of OT and the first FRP order of 3,500 weapons. DAMTC was initiated as a Fiscal Year 2007 Rapid

Deployment Capability (RDC) in response to an urgent requirement identified by the combatant commander overseeing operations in Iraq and Afghanistan. The RDC has now transitioned to a formal program of record entering the Department's formal acquisition system at MS C. DAMTC provides a flexible, dual-mode weapon capable of precision guidance and attack on stationary targets through the weather, as well as reactive targeting and attack of moving and maneuvering targets in clear weather. The material solution for the DAMTC program is the Laser Joint Direct Attack Munition (LJDAM). The Laser JDAM leverages proven baseline JDAM technology and the existing JDAM logistics infrastructure mitigating life-cycle support costs.

Advanced Anti-Radiation Guided Missile (AARGM)

The Fiscal Year 2012 President's Budget requests \$6.7 million of RDT&E for the follow-on development and test program and \$73.1 million for production of 72 All-Up-Rounds and Captive Training Missiles. The AARGM development program transforms the legacy High-speed Anti-Radiation Missile (HARM) into an affordable, lethal, and flexible time-sensitive strike weapon system. AARGM adds multi-spectral targeting capability with supersonic fly-out to destroy sophisticated enemy air defenses and expand upon the traditional anti-radiation missile target set. The program was approved for its first of three LRIPs in Fiscal Year 2008. IT&E began in February 2011 and Initial OT&E (IOT&E) is scheduled to begin in the third quarter of Fiscal Year 2011, with IOC on the F/A-18C/D in 2011.

Advanced Precision Kill Weapon System II (APKWS II)

The Fiscal Year 2012 President's Budget requests \$29.0 million of PAN&MC, including \$11.5 million of OCO funding, for procurement of 1656 APKWS II Precision Guidance Kits and \$3.1 million of RDT&E to support an APKWS Fixed-Wing Joint Capabilities Technology Demonstration. After the DoN assumed program authority from the Army on September 30, 2008, Congress appropriated funding and approved a DoN above-threshold reprogramming (ATR) request in Fiscal Year 2008 to complete APKWS II development. Integrated testing was completed in January 2010, MS C followed in April 2010 and the LRIP contract was awarded in July 2010. IOC is planned for the fourth quarter of Fiscal Year 2011. APKWS II will provide an unprecedented precision guidance capability to our current unguided (and thus less accurate) rockets, improving accuracy and minimizing collateral damage. The program is on schedule and on budget to meet the needs of our warfighters in today's theaters of operations.

Sidewinder Air-Intercept Missile (AIM-9X)

The Fiscal Year 2012 President's Budget requests \$8.8 million of RDT&E and \$47.1 million of WPN for this joint DoN and Department of the Air Force program. RDT&E will be applied toward AIM-9X developmental/operational tests and requirements definition for Joint Staff directed Insensitive Munitions requirements. WPN will be for production of a combined 132 all-up-rounds and Captive Air Training Missiles and missile-related hardware. The AIM-9X Sidewinder missile is the newest in the Sidewinder family and is the only short-range infrared air-to-air missile integrated on USN/USMC/USAF strike-fighter aircraft. This fifth-generation weapon incorporates high off-boresight acquisition capability and increased seeker sensitivity through an imaging infrared focal plane array seeker with advanced guidance processing for

improved target acquisition; and advanced thrust vectoring capability to achieve superior maneuverability and increase the probability of intercept of adversary aircraft.

Advanced Medium-Range Air-to-Air Missile (AMRAAM/AIM-120)

The Fiscal Year 2012 President's Budget requests \$2.9 million for continuing RDT&E efforts and \$188.5 million for production of 161 all-up-rounds and captive air training missiles and missile-related hardware. AMRAAM is a joint Navy and Air Force missile that counters existing aircraft and cruise-missile threats. It uses advanced electronic attack capabilities at both high and low altitudes, and can engage from beyond visual range as well as within visual range. AMRAAM provides an air-to-air first look, first shot, first kill capability, while working within a networked environment in support of the Navy's Theater Air and Missile Defense Mission Area.

The following are the responses to Hearing Questions requested in the Sub-Committee's Letter of Invitation to Secretary Mabus, dated March 2, 2011.

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 sought a rehearing before the full Court of Appeals, but their requests were denied on November 24, 2009. The contractors sought and obtained Supreme Court review. On January 18, 2011, the contractors presented their argument that the impact of a state secrets privilege assertion upon default termination of the A-12 contract precluded the proper presentation of the contractors' superior knowledge affirmative defense. A decision is expected before the current term of the Supreme Court expires in late June 2011.

DoN aircraft strike-fighter force structure inventory requirement

The 1,240 aircraft strike-fighter force is the projected DoN inventory needed to support the anticipated operational demand through the 2024 timeframe. The Navy inventory requirement of 820 aircraft supports - 40 active duty Strike Fighter Squadrons composed of 440 aircraft, and two reserve squadrons with 20 aircraft. In order to maintain the operational aircraft, support aircraft are required for aviator training, flight test, attrition reserve and the depot pipeline. This 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-35 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, 64 aircraft for training use, six aircraft for test and evaluation, and the remainder 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-35, and expected improvements in reliability, maintainability and survivability.

During the Fiscal Year 2011 President's Budget submit, the DoN inventory shortfall projection was 177 aircraft toward the end of the decade, without the implementation of mitigation levers. With implemented levers, including the planned SLEP of Legacy Hornets, it was estimated that the shortfall could be reduced to approximately 100 aircraft. Combined with the planned accelerated transition of three additional Super Hornet squadrons (10 total) using the 41 additional aircraft in PB12, and the modification of the Marine Corps' transition plan to account for the delayed delivery of 67 F-35B/C to outside the FYDP, the Fiscal Year 2012 President's Budget DoN strike-fighter inventory shortfall projection is a manageable 65 aircraft. The shortfall is estimated to peak in 2018. As analysis is updated projections will continue to evolve and further mitigations will be explored.

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 aircraft provides a 40 percent increase in combat radius, 50 percent increase in endurance, 25 percent greater weapons payload, three times more ordnance bring-back, and is five times more survivable than legacy F/A-18A/C models. The Super Hornet will be a complementary platform on the nation's carrier decks with the F-35C into the 2030s and will meet current and projected requirements, with planned investments in the Fiscal Years 2012-2016 FYDP and beyond. These investments in F/A-18E/F spirals, to include upgraded avionics and sensors, will ensure relevancy against emerging and future threats.

JSF and F/A-18E/F capabilities will be complementary, with an ideal balance of versatility, lethality, survivability, and capacity that will pace the threat through 2030. A mix of the two aircraft in future carrier air wings represents an affordable, timely solution to the strike-fighter shortfall and provides conventional conflict analysis validated, combat capability and capacity to support foreseen carrier strike group mission requirements through 2030.

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.

The DoN supports the Secretary of the Defense's position that the interest of the taxpayer, the military, our partner nations, and the resource integrity of the overall F-35 program as best served by not pursuing a second engine. Our assessment is that the benefits that might theoretically accrue with a second engine are more than offset by excess cost, complexity and associated risks, and will divert precious modernization funds from other more pressing priorities. The implementation of two F-35 engines onboard aircraft carriers is suboptimal due to increased Operational Logistics Footprint (LFP) aboard carriers. While the engine is interchangeable, several engine components are not. For example, the engine front fans and gearboxes are different and not interchangeable.

In the 1990 timeframe of Operation Desert Storm, the following tactical carrier based aircraft engines were onboard: TF30 or F110 for F-14 (noting that only a single engine type was supported afloat); F404 for F/A-18A-D (during one deployment in 1996, both the F404/400 and F404/402 were supported on one carrier due to unique operational requirements; however, unlike the F-35 engines, much of the support equipment, components and training were common); T56 for E-2; J52-P8B for A-6; TF41 for A-7; TF34 for S-3; and J52-P408 for EA-6B. Of these, future carrier based aircraft engines include F414 for FA/-18E/F and EA-18G, T56 for E-2D and F135 for F-35.

There are currently 24 active type/model/series engines in the DoN inventory. Of the total quantity of 11,040 engines, only 9,402 are considered active engines. The population of Naval Aviation engine type/model/series from Desert Storm timeframe in the 1990's to 2035 totaled 22. The number of different type/model/series engines will be below 10 in 2035 due mostly to a decrease in the type/model/series of aircraft.

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 separate ship alterations have been identified as requirements to integrate F-35C into CVN aircraft carriers. These modifications provide electrical power supply, expanded weapons handling, construction of secure access facilities, Autonomic Logistics Information Systems, mission rehearsal training, and Joint Precision Approach and Landing System. F-35C thermal impacts on CVN are currently being modeled with promising preliminary results. Land based testing of the F-35C exhaust plume on the jet blast deflector are scheduled to be tested this summer, will validate the analysis, and will determine the scope of the JBD modifications. Ship modification will continue to be incorporated into CVN68-class aircraft carriers during planned maintenance availabilities in advance of F-35C arrival. Required modifications that are not part of the CVN78-class design will be incorporated into the ship prior to F-35C deployment.

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 resulting from the recent technical baseline review.

The DoN is assessing the implications of the restructured program to F-35B and F-35C IOC. The Navy and Marine Corps require that the aircraft attain service-specific mission oriented capabilities as defined in the F-35 Operational Requirements Document (ORD) prior to considering declaration of IOC. The Marine Corps requires a Block 2B weapons system capability and the Navy requires a fully-ORD compliant Block 3C capability. Implementation of the TBR findings and development of detailed test schedule is still in progress. Once the findings have been assessed, test schedules further matured, and all information incorporated into a new Integrated Master Schedule, the services will be able to assess and establish IOC dates for each F-35 variant.

Discussion of the known risks and issues specifically related to the DON regarding the development, fielding and deployment of the Autonomic Logistics Information Systems (ALIS) 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 NAS 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.

Aviation Safety

Naval Aviation Summary - The table below provides a summary of all Class A, B & C Flight mishaps from Oct 2009 through March 02, 2011. The rates are based on total Flight Hours of 1,624,743.

| YEAR | Flight Hours | Class A | Class A Rate | Class B | Class B Rate | Class C | Class C Rate |
|-------|--------------|---------|--------------|---------|--------------|---------|--------------|
| FY 10 | 1,172,460 | 11 | 0.94 | 16 | 1.36 | 77 | 6.57 |
| FY 11 | 452,283 | 2 | 0.44 | 4 | 0.88 | 35 | 7.74 |

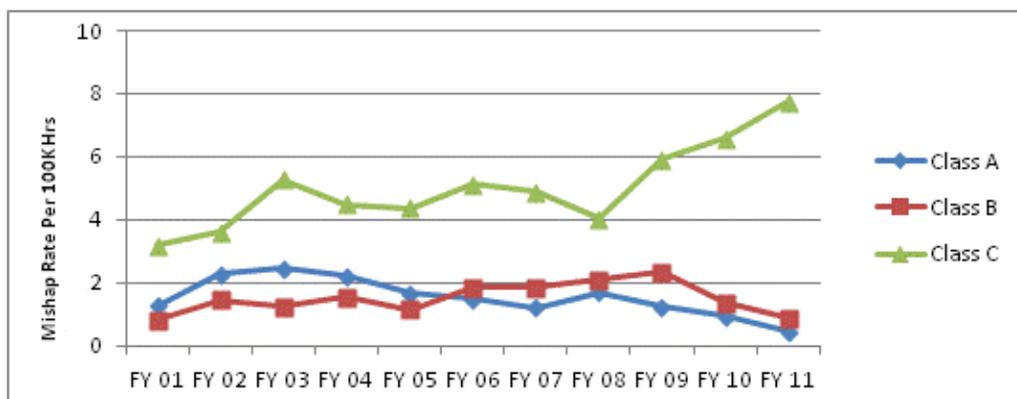
The most recent DON Flight Class A Mishaps include:

- Dec 02, 2010: (El Centro, CA) F/A-18C departed runway after landing. Pilot ejected safely.
- Dec 29, 2010: (near Tallahassee, FL) T-45 crashed during training flight. Both crew ejected safely.

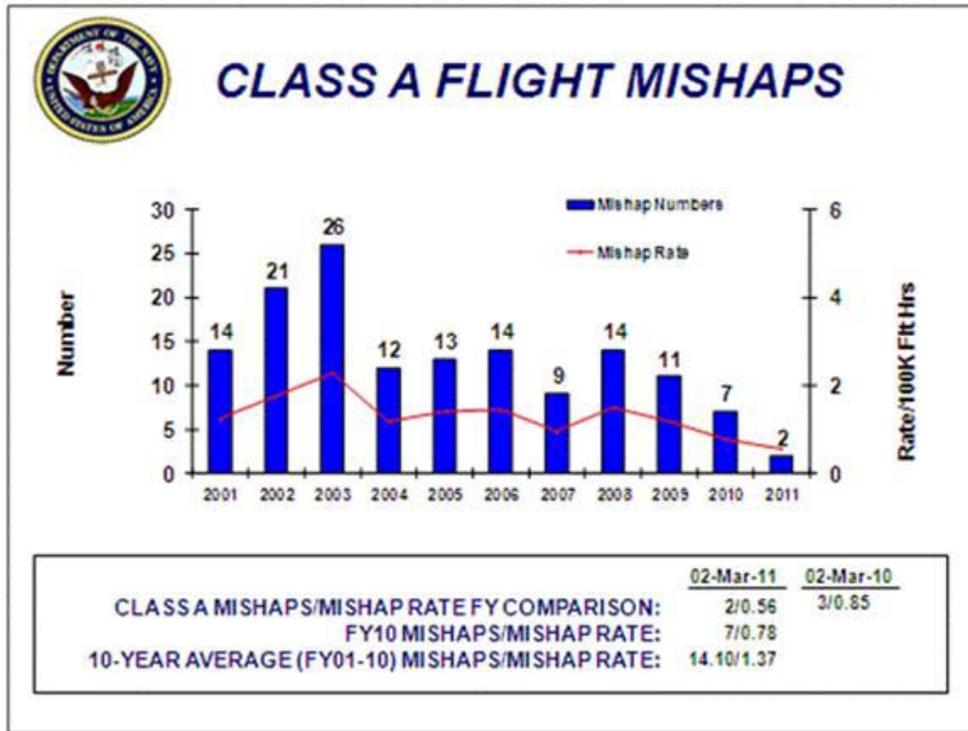
Recent DON Flight Related Mishaps (FRM) or Aviation Ground Mishaps (AGM) not included in above table or below Navy and Marine Corps charts:

- Dec 05, 2010: (Afghanistan) Fratricide during an F/A-18C day air-to-ground strafe delivery.
- Dec 03, 2010: (PAX River, MD) Airborne Low Frequency Sonar (ALFS) transducer assembly departed MH-60R. Transducer recovered. Expect mishap downgrade after repair cost calculation

DON Historical Mishap Rate Trend per 100K Flight Hours (as of March 2, 2011) per Mishap Class is shown below.



Class A Flight Mishap historical data for U.S. Navy



Class A Flight Mishap historical data for U.S. Marine Corps

