NOT FOR PUBLICATION UNTIL RELEASED BY THE HOUSE ARMED SERVICES COMMITTEE TACTICAL AIR AND LAND FORCES SUBCOMMITTEE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

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OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

DEPARTMENT OF THE NAVY'S AVIATION PROCUREMENT PROGRAM

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NOT FOR PUBLICATION UNTIL RELEASED BY HOUSE ARMED SERVICES COMMITTEE TACTICAL AIR AND LAND FORCES SUBCOMMITTEE Mr.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 will provide background and rationale for the Department's Fiscal Year 2013 budget request for aviation programs aligning to our strategic priorities and budgetary goals.

The United States is a maritime nation with global responsibilities. For 236 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 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 strike and amphibious power projection force in readiness, and such agility requires that the tactical aviation arm of our naval strike and expeditionary forces remain strong.

The Fiscal Year 2013 DoN budget request, while less than was requested in Fiscal Year 2012 aligns with the new strategic guidance for the Department of Defense (DoD) and provides the Department with the best balance of naval aviation assets. Guided by the Defense Strategic Guidance, the Navy-Marine Corps team is built for war, capable of operating forward to preserve the peace, respond to crises and protect United States and allied interests. The force will be leaner, agile, flexible, ready and technologically advanced. Most of the aircraft in TACAIR are electromagnetic pulse (EMP) hardened or have development requirements based on mission requirements.

The Navy and Marine Corps are committed to the Joint Strike Fighter (JSF) program in both the F-35B and F-35C variants. We have reduced the Fiscal Year 2013 procurement request by 69 aircraft to minimize the number of aircraft the Department will have to modify for concurrency. This action funds the costs associated with concurrency from within the JSF program as well as reduces the Department's overall investment in the JSF Program. The budget also has optimized Unmanned Aerial Systems (UAS) investments across the DoN's portfolio and is developing a comprehensive and flexible portfolio of unmanned systems to meet a variety of maritime reconnaissance requirements. In 2012 we began the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) development program; while the MQ-8B Fire Scout aircraft demonstrated in-theater capability and follow-on MQ-8C upgrade have superseded the need for the Medium Range Unmanned Aerial System (MRMUAS) which was terminated in the Fiscal Year 2013 request. We continue to optimize our buying power through the use of multi-year procurements (MYP) of the F/A-18E/F, EA-18G, MV-22 and H-60 programs. We are recapitalizing our aging fleet of E-2C, EA-6B and P-3 aircraft with more capable and more supportable aircraft – the E-2D, EA-18G and P-8A. We are exploring alternatives and concepts for the recapitalization of the Executive Helicopter, the C-2A and the F/A-18E/F – we will do so with lean acquisition and optimized technology at an affordable cost.

The Fiscal Year 2013 President's Budget requests funding for 94 aircraft including 10 F-35 JSFs for both the Navy and the Marine Corps, 13 P-8As to replace the aging current Anti-Submarine Warfare and maritime patrol squadrons, 17 MV-22 tilt-rotor aircraft, 26 F/A-18E/F fighter attack planes, 12 EA-18G to complete the replacement of the EA-6B, 5 E-2D Advanced Hawkeyes and

11 Unmanned Aerial Vehicles (UAV). The DoN 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 2013 aircraft program budget request is funded for planned program execution throughout the Future Years Defense Program (FYDP).

TACTICAL AVIATION (TACAIR)

TACAIR Inventory Management

In 2010, we estimated the DoN Strike Fighter Shortfall (SFS) to be about 100 aircraft, but the net effect of the Fiscal Year 2013 President's Budget, which includes restructuring the F-35B/C ramp and moving 69 aircraft out of the FYDP, along with the impact of reduced operational rates and force structure requirements, put the DoN's projected shortfall at a manageable level below 65 aircraft in the 2020's.

While the SFS continues to fall within the manageable levels throughout the DoN, the Marine Corps may experience elevated operational risk in the 2020's if the predicted shortfall comes to fruition. Over the past two Presidential Budgets, the Marine Corps TACAIR transition completion has extended from 2023 to 2031. This eight year slide has forced the Marine Corps to evaluate inventory availability amongst its Harrier and Hornet fleet in the later years and adjust its transition priorities and timing. The last active Marine F/A-18 squadron is currently scheduled to transition in 2027, and the current F/A-18 reserve squadron does not receive its F-35's until the year 2030. The Harriers were expected to complete their transitions in 2022 in the Fiscal Year 2011 President's Budget, and then 2026 in Fiscal Year 2012 President's Budget. The Harriers are now planned to remain in service through 2030 due to reduced F-35 ramp rates and the fact that they have more flight hour life remaining than the Hornets.

As legacy F/A-18 squadrons are reduced, the service shortfall number must be considered in proportion to the primary mission aircraft inventory requirement. Due to a lower number of F/A-18 squadrons in the 2023 to 2026 timeframe, the shortfall number associated with the Marine Corps will have a more significant impact on their few remaining F/A-18 operational squadrons.

Additionally, the AV-8B will operate with a shortfall of ten aircraft in Fiscal Year 2012, reaching twelve aircraft during Fiscal Year 2013, based on attrition. One AV-8B squadron will be retired at the end of Fiscal Year 2013 to meet USMC manpower reductions, allowing the remaining squadrons to operate without a shortfall. The Navy will transition three additional squadrons from F/A-18C to F/A-18E and then redistribute those F/A-18C aircraft amongst the DoN requirements.

The DoN continues to meticulously manage the fatigue life and flight hours 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) projects the combined effects of transition plans, attrition, and pipeline requirements on the total strike fighter aircraft inventory. The IFT is updated in conjunction with budget submittals to provide forecasts of the strike fighter inventory compared to the

requirements. The tool utilizes these critical variables to project future inventories – F/A-18E/F and F-35B/C deliveries, force structure, aircraft usage rates, structural life limits, depot turnaround time, Fatigue Life Expenditure (FLE), arrested and field landings, and catapult launches.

F-35B/F-35C Lightning II:

The DoN remains firmly committed to both the F-35B Short Take-Off and Vertical Landing (STOVL) variant and the F-35C Carrier Variant (CV) of the JSF program, as they are essential to our immediate and long-range Navy and Marine Corps aviation strategy and the nation's security. F-35 will supplant the DoN's aging TACAIR fleet by replacing the Navy and Marine Corps legacy F/A-18A-D Hornet and the Marine Corps AV-8B Harrier and EA-6B Prowlers. The incorporation of F-35B and F-35C aircraft into our naval force will provide the dominant, multi-role, fifth-generation capabilities that are essential across the full spectrum of combat operations to deter potential adversaries and enable future naval aviation power projection.

The F-35B STOVL variant combines the multi-role versatility and strike fighter capability of the legacy F/A-18 with the basing flexibility of the AV-8B. The Marine Corps will leverage the F-35B's sophisticated sensor suite and very low observable fifth-generation strike fighter capabilities, particularly in the area of data collection and information dissemination, to support the Marine Air Ground Task Force (MAGTF) well beyond the abilities of today's MAGTF expeditionary attack, strike and electronic warfare assets. Having these capabilities in one aircraft will provide the joint force commander and the MAGTF commander unprecedented strategic and operational agility. Similarly, the F-35C CV variant complements the F/A-18E/F Block II and EA-18G in providing survivable, long-range strike capability and persistence in an access-denied environment. Together, the F-35B and F-35C will provide the Expeditionary Strike Group and Carrier Strike Group commanders a survivable, "day-one" strike capability in a denied access environment with the tactical agility and strategic flexibility to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by current legacy aircraft.

The overall F-35 development program has been re-planned and is now resourced with adequate margin and realistic planning factors to complete System Development and Demonstration (SDD). Key activities that supported the re-plan included the development of an Integrated Master Schedule, execution of a Schedule Risk Assessment, and completion of the Integrated Baseline Review. Under these efforts, the DoD revised flight test rates, established longer software development spans, included revised systems engineering processes, and established new performance measurements. This plan has strong support within the DoN as we believe it places the development program on sound footing towards delivering full Block 3 capabilities.

The F-35 SDD flight test program exceeded overall test point and flight targets for 2011 for all variants. Both F-35B and F-35C testing ended 2011 ahead of schedule, reducing risk, and increasing overall confidence in the JSF program. JSF aircraft achieved 972 test flights in 2011, a 137 percent increase from the total flights in 2010. The JSFs also executed 7,823 unique test points, a 93 percent increase from the total test points achieved in 2010 and the total SDD flight time surpassed 2,000 flight hours on October 14, 2011. F-35 firsts in 2011 included the first F-

35 ship-board operations, with BF-2 and BF-4 aboard the USS WASP, and the first F-35 ship suitability testing, including Jet Blast Deflector, nominal and steam ingestion catapult tests and compatibility test with the Electromagnetic Aircraft Launch System.

In January 2011, Secretary Gates placed the F-35B on probationary status because it was experiencing significant unique technical issues. F-35B testing was decoupled from the other two variants, allowing the program to increase focus on F-35B-specific development issues while testing on the other variants progressed. All three variants improved their testing performance in 2011. In particular, the F-35B successfully completed more flights and more test points than planned. The F-35B is now demonstrating development, test, and production maturity comparable to and not substantially different from the other F-35 variants. With this data, SECDEF made the decision to lift STOVL from probation on January 20, 2012. As with the other variants, some additional technical issues have been identified on the F-35B since probation began. However, none of these issues rises to the level of significance of those that placed STOVL on probation, and they are consistent with the kind of discovery to be expected in any complex tactical aircraft development program. Similar F-35A and F-35C technical issues being discovered in test have been proactively addressed and are being resolved concurrent with flight test. The decision to lift probation will result in absolutely no reduction in DoN F-35B oversight or the level of attention given by the DoD to each of the JSF variants going forward.

DoD established the F-35 program with a planned measure of concurrent development and production that balanced cost, risk, and need for TACAIR modernization. Concurrency, however, is a transient issue in which risks progressively decline through the end of SDD. The F-35 program is currently experiencing changes driven by design maturity discoveries as ground test, flight test, and overall system qualification efforts proceed. As more testing is completed, concurrency risks are progressively reduced as the design is confirmed or issues identified requiring changes are incorporated. Earlier aircraft are open to a greater need for changes, and as succeeding Low-Rate Initial Production (LRIP) lots are built, their cumulative requirements for retrofit modifications decline.

F-35 sustainment costs remain a concern. The DoN continues to support the F-35 Joint Program Office (JPO) in its disciplined approach to analyzing and reducing sustainment costs and while the JPO and the Services made progress in 2011, there is more work to do in this area and the focus remains. For example over the next 12 months the JPO will complete the F-35 Business Case Analysis (BCA). The results from the BCA will assist the Program Executive Office (PEO) in refining the current F-35 support strategy by identifying the best mix of existing Service/Partner Organic capabilities with that of the Industry team to develop the optimum long term best value F-35 support solution. The DoN, working in concert with the JPO, will analyze options outside of the PEO's span of control to reduce operating cost; such as reviewing basing options and the sequencing of those actions, unit level manpower/squadron size and discrete sustainment requirements. Through these combined efforts, the Department believes the PEO can increase convergence on an affordable F-35 sustainment strategy that both meets the required level of Service/Partner performance and lowers the total life cycle cost of the overall program.

The Initial Operational Capability (IOC) dates for F-35B and F-35C have not yet been established and will be determined by each service, based on both the program's performance and how the service defines IOC. In general terms, for example, 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 and operate from F-35B compatible ships and austere expeditionary sites. The Marine Corps plans to achieve IOC with a multi-mission capable Block 2B aircraft as described in the JSF Operational Requirements Document (ORD)/Change 3. For the Navy F-35C, IOC is defined as a squadron of ten ORD compliant Block 3F aircraft that are ready to deploy and operate from CVNs after having completed Initial Operational Test and Evaluation (IOT&E). The Marine Corps IOC for the F-35C will follow the Navy's lead to ensure capability symmetry onboard carriers.

The Fiscal Year 2013 President's Budget requests \$1.48 billion in Research, Development, Test & Evaluation (RDT&E,N) to continue the F-35 SDD program and \$2.7 billion in Aircraft Procurement, Navy (APN) for ten F-35 aircraft (six F-35B and four F-35C) with associated aircraft hardware and spares. These resource requirements fully align to the Secretary of Defense's F-35 program re-plan. Maintaining this rate, and an eventual optimum production ramp rate, is critical towards achieving F-35 affordability goals and preventing excessive expenditures on aircraft with limited service-life and decreasing operational relevance.

The DoN is aware of the many challenges that remain on the F-35 program. However, this aircraft is an essential future Navy/Marine Corps Aviation capability and we are fully committed to the F-35B and F-35C variants of this program. Towards obtaining this capability at the lowest cost, and at the earliest date possible, we continue to closely monitor all F-35 development, production, and sustainment efforts to ensure we are ready to meet our national security obligations.

F/A-18 Overview

The F/A-18 Hornets have consistently met readiness and operational commitments. There are 22 Navy Super Hornet squadrons with 440 F/A-18E/Fs; deliveries and squadron transitions will continue through 2016. There are 15 Navy and 13 Marine F/A-18 A-D squadrons with 625 legacy A-D Hornets. While the F/A-18A-Ds transition to the F/A-18E/F and F-35, the current inventory of F/A-18A-Ds will comprise more than half of the DoN's strike fighter inventory well into 2013. Super Hornets and legacy Hornets have conducted more than 148,000 combat missions since September 11, 2001. While deployed ashore and aboard our aircraft carriers at sea, F/A-18s have brought significant precision ordnance and laser-guided munitions to the fight, and have employed thousands of rounds of twenty-millimeter ammunition supporting forces during strafing runs. These aircraft continue to provide vital overwatch and direct support to our troops on the ground in combat overseas.

Both the legacy Hornet and the Super Hornet were procured with an objective of 20 years' time in service. The average legacy Hornet has exceeded that goal, while the Super Hornet is already at almost 30 percent of its expected 20 year life. It is reasonable to conclude, based on current trends, that most aircraft will substantially exceed 20 years in service.

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

The Fiscal Year 2013 President's Budget request is \$79.6 million in APN for the continuation of SLEP, systems upgrades and obsolescence programs for the inventory of 625 legacy F/A-18 Hornets. Funds requested will procure and install center-barrel modifications and Service Life Extension Program (SLEP) kits required for extending the service life to 10,000 flight hours of select candidate F/A-18A-D aircraft. The High Flight Hour (HFH) inspections and SLEP modifications can extend the F/A-18A-D service life to 10,000 hours and mitigate the impacts of the SFS. Continued investment in Program Related Engineering (PRE) and Program Related Logistics funds within the Operations and Maintenance, Navy accounts is critical for sustaining the combat relevancy of the DoN's legacy platforms through the TACAIR transition.

The Service Life Management Program (SLMP) monitors and improves the health of the F/A-18A-D fleet through analyses of TACAIR inventories and management of usage rates at the squadron level. 74 percent of the F/A-18 A-D fleet have over 6,000 flight hours while 32 aircraft have over 8,000 flight hours. To meet our operational commitments through mid 2020s, we will be required to extend the service life of at least 150 F/A-18A-D to 10,000 flight hours. The F/A-18 A-D Service Life Assessment Program (SLAP) has completed and we are identifying all of the inspections and modifications necessary to extend the airframe service life to 10,000 flight hours. Based upon those results, we are midway through a three-phased SLEP. SLEP Phase A identified the critical safety of flight locations that needed immediate inspection and identified notional repair concepts. SLEP Phase B categorized parts by criticality, and upgraded analytical tools for use by the Naval Air Systems Command (NAVAIR) and Original Equipment Manufacturer engineers to design repairs. SLEP Phase C will finalize all remaining Phase B work and develop inspections and modifications required to extend the service life of 150 legacy F/A-18s. Efforts to extend the life of the F/A-18 A-D's major subsystems and avionics, independent of the airframe, are also underway.

The Fiscal Year 2013 President's Budget request includes SLEP requirements for 150 airframes. The first aircraft were inducted in early Fiscal Year 2012. Although risk is inherent in extending the service life of an aircraft, the technical risk in developing modification kits to achieve the goal of 10,000 flight hours is low. The Fleet Readiness Centers 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.

In order to maintain a tactical advantage, we will continue to procure and install advanced systems such as Joint Helmet-Mounted Cueing Systems (JHMCS), Multi-Function Information Distribution System (MIDS), APG-73 radar enhancements, Advanced Targeting FLIR (ATFLIR) upgrades, and LITENING for the Marines on selected F/A-18A-D aircraft.

F/A-18 E/F Super Hornet

The Fiscal Year 2013 President's Budget requests \$2.0 billion in APN for procurement of 26 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 increased combat radius and endurance, and a 25 percent increase in weapons payload over the legacy Hornets. The President's Budget request for Fiscal Year 2013 includes \$276.7 million in APN to implement commonality, maintain capabilities and improve reliability and structural safety of the Super Hornet fleet. The Super Hornet uses an incremental development approach to incorporate new technologies and capabilities: the JHMCS, ATFLIR with shared real-time video, Shared Reconnaissance Pod System (ShARP), MIDS data-link, Multi-Sensor Integration, & continued advancement of the APG-79 Active Electronically Scanned Array (AESA) radar.

The program continues to deliver on-cost and on-schedule and the last year of procurement to complete the Program of Record (POR) of 565 aircraft is planned for 2014. Production shutdown begins in mid-2012 at the sub-vendor level and concludes in 2016. A MYP contract for 124 (Fiscal Years 2010 through 2013) F/A-18E/F Super Hornets and EA-18G Growlers was signed on September 24, 2010. 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 DON is looking to extend the existing MYP authorization to include the Fiscal Year 2014 procurement of 13 aircraft.

All Lot 30 (Fiscal Year 2006) and beyond F/A-18E/Fs and EA-18Gs have the APG-79 AESA radar system installed in production, and a retrofit program exists to modify 133 Lot 26-29 Block II aircraft with the AESA radar. More than 300 APG-79 AESA radars have been produced to date. 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. Successfully deploying since 2007, AESA radar equipped squadrons are highly valued by fleet commanders because of their ability to share tactical battle space management data with the non-AESA radar tactical aircraft in the carrier battle group. The F/A-18E/F and EA-18G with the APG-79 are force multipliers.

The Fiscal Year 2013 President's Budget includes a request for \$11.0 million RDT&E,N to support the F/A-18E/F SLAP study requirement. Currently, the F/A-18 E/F fleet has flown approximately 30 percent of the available 6,000 total flight hours; the remaining service life will not be adequate to meet operational commitments through 2035. In 2008, the Navy commenced a three phased F/A-18E/F SLAP to analyze actual usage versus structural test data and identify the feasibility of extending F/A-18E/F service life from 6,000 to 9,000 flight hours via a follow-on SLEP. The F/A-18E/F SLAP will define the necessary inspections and modifications required to achieve 9,000 flight hours and increase total and arrested landings, and catapults beyond currently defined life limits and is currently assessed as low risk. The SLMP philosophy has been applied to the F/A-18E/F fleet at an earlier point in its lifecycle than the F/A-18A-D, which will optimize FLE, flight hours and total landings aligning aircraft service life with fleet requirements.

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

The Fiscal Year 2013 President's Budget request includes \$19.7 million in RDT&E,N for Electronic Warfare (EW) Counter Response; \$187.0 million RDT&E,N for Next Generation Jammer (NGJ); \$10.6 million RDT&E,N for MAGTF EW, \$50.0 million in APN for common

Airborne Electronic Attack (AEA) systems; \$30.1 million in APN for all EA-6B series aircraft; and \$34.1 million APN for MAGTF EW.

Currently, 72 EA-6Bs in the Navy and Marine Corps support 67 operational aircraft in 13 active squadrons and one reserve squadron. This includes 40 Navy and Marine Corps Improved Capability (ICAP) II aircraft and 32 ICAP III aircraft. Following the final Navy EA-6B transitions to EA-18G in 2015, all ICAP III EA-6Bs will transfer to and be operated by the Marine Corps. The final retirement of the EA-6B from the DoN inventory will be by the end of 2019.

Marine aviation is on a path towards a distributed AEA system of systems that is a critical element in achieving the MAGTF EW vision: a composite of manned and unmanned surface, air, and space assets, on a fully collaborative network providing the MAGTF commander control the electromagnetic spectrum when and where desired. In development are the ALQ-231 Intrepid Tiger II communications jammer, UAS EW payloads, a Software Reprogrammable Payload and an EW Services Architecture to facilitate collaborative networked Electronic Warfare Battle Management.

The Intrepid Tiger II is intended to be carried on the AV-8B and eventually other fixed and rotary wing platforms and will provide direct AEA support to ground troops engaged in combat operations. Intrepid Tiger II development and procurement is in response to Marine Corps requirements for increased precision EW capability and capacity across the MAGTF and provides EW capability directly to tactical commanders without reliance upon the limited availability of the low density/high demand EA-6B Prowler.

The NGJ is new electronic warfare technology that replaces the 40-year-old ALQ-99 system and is designed to provide modified escort power in support of joint and coalition air, land, and sea tactical strike missions. NGJ is critical to the Navy's vision for the future of airborne electronic attack strike warfare. Funding is vital to maintain schedule, allowing the program to transition to the technology development phase and ensure timely start of the EA-18G long lead integration activities, release of the TD Request for Proposal to industry.

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

The Fiscal Year 2013 President's Budget request is \$1.1 billion in APN for procurement of 12 EA-18G aircraft and \$13 million in RDT&E,N for correction of deficiencies. The first EA-18G squadron deployed in an expeditionary role in November 2010 to Iraq and subsequently redeployed on short notice to Italy in March 2011 in support of Operation NEW DAWN (OND) and Operation UNIFIED PROTECTOR (OUP). The EA-18G received accolades from both U.S. Central Command (CENTCOM) and Supreme Headquarters Allied Powers Europe for the AEA's enabling contribution to the battlespace.

In 2009 the Navy began transition from EA-6Bs to EA-18Gs. The first carrier-based EA-18G squadron deployed in May 2011. All three active component Navy expeditionary squadrons and two of the 10 carrier based squadrons have completed transition to the EA-18G. The Navy will be divested of EA-6Bs by 2015. The program of record is for 114 EA-18G aircraft, of which 90

have been procured to date. The final procurement of EA-18Gs is planned for 2012. 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 EA-18G fleet has flown approximately five percent of the 7,500 total flight hours per aircraft and are meeting all operational commitments.

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

E-2D Advanced Hawkeye (AHE)

The Fiscal Year 2013 President's Budget requests \$119.1 million in RDT&E,N for continuation of SDD and \$1.040 million in APN for five Full Rate Production (FRP) Lot 1 aircraft and advance procurement (AP) for Fiscal Year 2014 FRP Lot 2 aircraft.

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 radar and the Cooperative Engagement Capability 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, 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 Milestone C in June 2009, at which time the program received authorization for procurement of the first two lots of LRIP aircraft (LRIP Lot 1 is two aircraft and LRIP Lot 2 is three aircraft). The SDD flight test program is 100 percent complete and all Key Performance Parameter thresholds have been met. An Operational Test Readiness Review was successfully conducted on February 1, 2012, certifying entry into Initial IOT&E, and IOT&E will continue through August 2012. Both LRIP Lot 1 aircraft were delivered in 2011, and delivery of the three LRIP Lot 2 aircraft will be completed in 2013. A DAB for approval to procure the final two lots of LRIP aircraft, Lots 3 (five aircraft) and 4 (five aircraft), as well as AP for FRP Lot 1, was successfully held on in March 2011 and the respective contracts have been awarded. LRIP Lots 3 and 4 aircraft will be delivered in 2014 and 2015, respectively. From a cost standpoint, the Estimate at Complete has been stable for over 54 months and the program is on schedule for an FRP Decision in the first quarter of Fiscal Year 2013. All major acquisition milestones have been achieved on or ahead of schedule since program inception in 2003.

AV-8B Harrier

The Fiscal Year 2013 President's Budget requests \$38.7 million in APN funds to continue development of the AV-8B Readiness Management Program, Operational Flight Program and Avionics Weapons Systems Development and Integration, and Engine Life Management Program. The Fiscal Year 2013 President's Budget requests \$42.2 million in OCO procurement funding for Marine Corps expeditionary LITENING targeting pod upgrades installation of OCO-procured ALE-47 kits (improved aircraft self protection, expendable system).

The AV-8B continues to be deployed heavily in support of operational contingencies. Each Marine Expeditionary Unit (MEU) deploys with embarked AV-8Bs. As of 2012 the AV-8B, equipped with precision weapons, LITENING targeting pods with a video downlink to ROVER ground stations, beyond visual range air-to-air radar missiles, is a proven, invaluable asset for the MAGTF and joint commander across the spectrum of operations. In 2012, the AV-8B has received the H6.0 Operational Flight Program enabling full integration of the ALE-47 suite and Digital Improved Triple Ejector Rack increasing the smart weapon carriage capability from four weapons to ten. The Harrier out-of-service date has been extended from 2022 to 2030, based on current F-35B transition plans. As a result, the AV-8B program must focus on sustainment efforts to mitigate significant legacy inventory shortfalls, maintain airframe sustainment and address reliability and obsolescence issues of avionics and subsystems. Additionally, this aircraft must be funded to maintain combat relevance to include tactical datalink and sensor improvements in order provide continued operation in support of operational contingencies and transition qualified aircrew to the F-35. The current digital aided Close Air Support (CAS) technology installed on the AV-8B is obsolete.

Operation ODYSSEY DAWN confirmed the expeditionary advantages of STOVL capabilities by placing the Harrier as the closest fixed-wing asset to Libya. Such dynamic support slashed transit times to the battlefield by two-thirds and kept close air support aircraft on station without strategic tanking assets. Capability upgrades, obsolescence mitigation and readiness initiatives must be funded to ensure the AV-8B remains relevant, healthy and sustained through 2030.

ASSAULT SUPPORT AIRCRAFT

MV-22

The Fiscal Year 2013 President's Budget requests \$54.4 million in RDT&E, N for continued product improvements and \$1.5 billion in APN for procurement of 17 MV-22Bs (Lot 17) and \$95.9 million for continuation of follow-on block upgrades. Fiscal Year 2013 is the first year of the planned follow-on V-22 MYP contract covering Fiscal Year 2013-2017. The funds requested in the Fiscal Year 2013 President's Budget fully fund Lot 17 and procure long lead items for Lot 18 as well as Economic Order Quantity buys for Lots 18 - 21. The Marine Corps continues to field and transition aircraft on time. The APN request includes \$95.9 million to

support the ongoing Operations and Safety Improvement Programs (OSIP), including Correction of Deficiencies and Readiness.

The MV-22B has been supporting the Marines continuously since October 2007, in extreme environmental conditions during thirteen deployments to Iraq, Afghanistan and aboard amphibious shipping. In February 2011, the V-22 fleet exceeded a total of 100,000 flight hours. The MV-22B squadrons in Afghanistan and the MEU are seeing mission capable rates in the seventy percent range and are performing every assigned mission. Additionally, the Osprey has the lowest Class A flight mishap rate of any USMC fielded tactical rotorcraft over the past ten years.

The effectiveness and survivability of this revolutionary, first-of-type MV-22B Osprey tiltrotor has been repeatedly demonstrated in combat. The rescue of a downed F-15E airman during Operation ODYSSEY DAWN was an example of what the Navy and Marine Corps' expeditionary force brings our nation. As an integral part of that seaborne presence, the MV-22B was able to perform its part of this mission with unprecedented speed and agility. Twenty minutes from the time he was evading capture in hostile territory, the rescued pilot was safely back on American territory aboard USS KEARSARGE.

Under the existing MYP, Ospreys have been delivered under cost and on time. The fifth and final buy under the multiyear occurred in Fiscal Year 2012; the Fiscal Year 2013 President's Budget request includes provisions for a second MYP which builds on the successes of the first. This second MYP will procure 91 MVs over five years and will produce significant savings when compared to single year procurements. The stability it provides supports the Marine Corps' need to retire old aircraft and field new and better capabilities. Additionally, the stabilization of the supplier base encourages long-term cost reduction initiatives on the part of the prime contractors and their suppliers.

The introduction of this new tiltrotor capability into combat has provided valuable lessons with respect to readiness and operating costs. Improvements to both continue and are having a clear effect on increasing aircraft availability and decreasing flight hour costs. At the close of Fiscal Year 2011, the mission capability rate of the MV was up 19 percent over Fiscal Year 2010 and the cost per flight hour decreased 13 percent in the same period. Due to these cost reduction efforts, the V-22 program received the prestigious David Packard Excellence in Acquisition Award which recognizes exemplary performance and innovation acquiring and delivering products and capabilities to the warfighter.

To keep these improvements on track a readiness OSIP was introduced into the Fiscal Year 2012 President's Budget. This OSIP provides a stable source of crucial modification funding as the Ospreys continue to improve readiness and reduce operating cost.

The MV-22B capability is being increased and fielded over time via a block upgrade acquisition strategy. The great benefit of a fly-by-wire rotorcraft was very clear recently when the Osprey increased airspeed and lift by simply modifying the flight control software. Such improvements require thorough testing; Fiscal Year 2013 RDT&E,N funds will be utilized to complete a fully-instrumented test aircraft which will replace the existing test aircraft. The current test aircraft is

five iterations behind the V-22 being flown today and requires hundreds of maintenance manhours per flight hour to operate and maintain.

FIXED WING AIRCRAFT

KC-130J

The Fiscal Year 2013 President's Budget requests \$942 million in APN across the FYDP for procurement of eight KC-130J's and continued product improvements. Targeted improvements include propeller and air-to-air refueling hose reel reliability, aircraft survivability through advanced electronic countermeasure modernization and replacing Vietnam era flare dispensers used for battlefield illumination, greatly enhancing mission effectiveness.

The KC-130J Hercules achieved IOC in 2005 and has been fielded throughout our active force, bringing increased capability, performance and survivability with lower operating and sustainment costs to the Marine Air Ground Task Force. Forward deployed continuously in support of Operations Iraqi and Enduring Freedom since 2005, the KC-130J continues to deliver Marines, fuel and cargo wherever needed. In 2011 the KC-130J continued to be a force multiplier for the Marine Corps through its support to combat operations in Afghanistan, humanitarian and disaster relief efforts in Pakistan, Tunisia and Japan, tactical recovery of downed aircrew in Libya, and support to Marine Expeditionary Units worldwide.

In September 2010, the Marine Corps fielded the first bolt-on / bolt-off Harvest HAWK Intelligence, Surveillance and Reconnaissance (ISR)/weapon mission kit for the KC-130J, expanding the role of the MAGTF's tanker. With the mission kit installed, the KC-130J is capable of providing persistent close air support and multi-sensor imagery reconnaissance for our Marines in harm's way. Three mission kits have been fielded to date, with three more expected to field in Fiscal Year 2013.

The USMC has procured 47 KC-130Js, 32 aircraft short of the 79 aircraft program of record. Procurement of the program of record will allow us to fully outfit our active and reserve force with this unique, multi-mission assault support and refueling platform. The reserve component is programmed to begin transition from the legacy KC-130T aircraft to the more capable, more efficient KC-130J aircraft beginning in Fiscal Year 2015. This reserve component transition will begin with the aircraft requested in the Fiscal Year 2013 President's Budget. Delays in procurement would force the Marine Corps to sustain the KC-130T aircraft longer than planned at an increased cost.

P-8A Poseidon

The P-8A Poseidon recapitalizes the maritime Patrol Anti-submarine Warfare (ASW), Anti-Surface Warfare (ASUW) and armed ISR capability currently resident in the P-3C Orion. The P-8A combines the proven reliability of the commercial 737 airframe and avionics with an open architecture that enables integration of modern sensors and robust communications. The Fiscal Year 2013 President's Budget requests \$421 million in RDT&E, N for integrated development and associated testing and \$2.837 billion for procurement of 13 FRP P-8A Poseidon aircraft which are scheduled to begin delivery in May 2015. APN funding supports AP for the subsequent FRP procurement lot. The program is on track for IOC in late 2013 when the first squadron will have completed transition and is ready to deploy. The P-8A program is meeting all cost, schedule and performance parameters in accordance with the Acquisition Program Baseline.

In August 2010 the P-8A program surpassed Milestone C, authorizing the Navy to proceed with procurement of 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 and LRIP Lot 2 contract in November 2011. The first LRIP aircraft delivery occurs in March 2012 to Patrol Squadron 30 at NAS Jacksonville, Fl. The first three flight test aircraft are being flown at NAS Patuxent River, MD, in support of Integrated Test & Evaluation (IT&E). Two of three production representative aircraft have been accepted by the Navy to support IOT&E. The third of these aircraft has been supporting integrated test and training in preparation for IOT&E and will be formally accepted by the Navy prior to commencement of IOT&E.

P-3C Orion

The legacy P-3C fleet continues to provide ASW, ASUW, and ISR support for Joint and Naval operations worldwide. In Fiscal Year 2013, \$148.4 million is requested for P-3C airframe and mission systems sustainment. Nearly one third (\$41.4 million) is for wing modifications 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. Mission systems sustainment and modernization totals \$107 million to address numerous safety of flight and obsolescence issues. The P-3C is being sustained to maintain warfighting capability and capacity until completion of P-8A transition in Fiscal Year 2018.

The aircraft is well beyond planned fatigue life of 7,500 hours for critical components, with an average airframe usage of over 17,000 hours. Since February 2005, 14 aircraft grounding bulletins have impacted 118 P-3 aircraft. In December 2007, NAVAIR's ongoing RDT&E funded P-3 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 showed fatigue damage beyond acceptable risk resulting in the grounding of an additional 39 P-3 aircraft. As of February 2012, a total of 75 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, and unknown fatigue issues will continue to present persistent risk until P-8A transition is complete. A return to pre- December 2007 aircraft availability numbers was achieved in December 2010; 83 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. The Navy will continue to manage closely the service life of the P-3C through transition to the P-8A Poseidon.

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 SIGINT Common Configuration includes Signals Intelligence (SIGINT) spiral upgrades, which, in conjunction with Secretary of Defense and the ISR Task Force (ISR TF) surge efforts, are fielding a robust Multi-Intelligence (INT) capability inside the FYDP. Multi-INT sensors, robust communication, voice over IP 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 2013, the President's Budget request is \$79.4 million in APN, including \$13.0 million for OCO to address EP-3E SIGINT and Communications capability upgrades and obsolescence. The APN request supports the FRP installations and procurements 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 is in the process of developing the AISR&T family of systems construct to recapitalize the EP-3 AISR&T capabilities within existing of Program of Record platforms; BAMS, VTUAV, UCLASS, P-8, H-60, and E-2D. The strategy has been further refined to focus on module systems and payloads required for the Navy to conduct AISR&T on a variety of vehicles, providing the COCOM with scalable capability and capacity. An inclusive full spectrum approach of the Navy sea and shore based manned and unmanned platforms align with the CNO's priorities.

UNMANNED AERIAL SYSTEMS

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

The Fiscal Year 2013 President's Budget requests \$657.5 million RDT&E,N to continue SDD of the BAMS UAS, \$51.1 million in APN for procurement of long-lead materials for the first lot of low-rate initial production aircraft, and \$70.9 million in Military Construction to construct a Main Operating Base at NAS Jacksonville, as well as a Forward Operating Base and a maintenance training facility to support IOC. The Milestone B decision for the BAMS UAS program was achieved on April 18, 2008. The program is on schedule and will complete first flight this year, with Milestone C planned for Fiscal Year 2013. The BAMS UAS program will meet the Navy requirement for a persistent ISR capability. BAMS UAS is a large Group-5 system that will greatly enhance situational awareness of the battle-space and shorten the sensor-to-shooter kill chain.

The Navy procured two Air Force (USAF) Global Hawk (Block 10) UASs in Fiscal Year 2004 for demonstration purposes and to perform risk reduction activities for the BAMS UAS Program. This effort is known as the BAMS-Demonstrator (BAMS-D) program. In April 2011, Navy

accepted three additional Block 10 aircraft from the USAF to be utilized as spare parts assets. BAMS-D UAS has been deployed to the CENTCOM theater of operations for over three years.

MQ-8B Vertical Takeoff and landing Unmanned Aerial Vehicle (VTUAV) and associated Rapid Deployment Capability (RDC) efforts

The MQ-8 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. Fire Scout has completed over 200 autonomous ship board take-offs and landings. The Fiscal Year 2013 President's Budget requests \$99.6 million RDT&E to continue development of an endurance upgrade (MQ-8C), integrate radar and integrate weapons on the MQ-8B, and \$133.8 million APN for the production of six Fire Scout MQ-8C aircraft and Ship Control Stations. The RDT&E budget includes funding to increase endurance and integrate specialty payloads to support the Special Operation Forces (SOF) mission using the RDC process (Approved AFRICOM JUONS) and satisfy a NAVCENT Urgent Operational Needs Statement 18-month Rapid Deployment Capability for the Weaponization of the MQ-8B. The MQ-8B aircraft quantity supports Littoral Combat Ship (LCS) missions, near-term SOF missions until the MQ-8C Endurance Upgrade is fielded and ISR TF demands in Afghanistan. Procurement of shipbased control stations is aligned with both the LCS mission and outfitting frigates (FFGs) and other ships to support the SOF missions. The ship-based control station and other ship ancillary equipment is common between MQ-8B and MQ-8C. Production of the MQ-8C was included in the APN budget starting in Fiscal Year 2012. Commonality of avionics, software, and payloads between the MQ-8B and MQ-8C is being maximized. The primary difference between the MQ-8B and MQ-8C is in the commercial airframe provided for each variant. The MQ-8B uses the Schweitzer 333 helicopter while the MQ-8C uses the Bell 407 helicopter. The MQ-8C will almost triple the MQ-8B endurance and greatly increase the payload capacity. At least 28 MQ-8C aircraft Endurance Upgrades are required to support the SOF mission and are included in the RDC. The MQ-8B system has performed a Military Utility Assessment (MUA) aboard USS HALYBURTON to evolve fleet concepts for operation of the system and successfully completed a two month SOF Proof of Concept evaluation in an operational environment. Fire Scout has been integrated into and is currently deployed aboard USS SIMPSON and deployments are in work for USS KLAKRING, USS BRADLEY, and USS Samuel B. ROBERTS to support SOF and Navy operations in 2012 and 2013. Fire Scout was deployed to Afghanistan in April 2011 to support the ISR Task Force with 300 hours per month of ISR video from an expeditionary facility. As of February 2012, Fire Scout has provided over 2,100 ISR flight hours in Afghanistan. The Afghan 90 day user assessment gave Fire Scout its highest grades in all categories, and the user has requested additional Fire Scout aircraft and spares to grow the requirement to 600 hours per month. The Fire Scout program will also continue to support integration and testing in all LCS-based mission modules. 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 2013 President's Budget requests \$142.3 million RDT&E to continue the Navy 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 in support of potential follow on unmanned acquisition programs. 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. In July 2011, the first ever unmanned coupled approaches to CVN landing were completed and integration data was gathered during F/A-18 surrogate testing aboard USS DWIGHT D. EISENHOWER (CVN-69). The UCAS-D contract was competitively awarded to Northrop Grumman 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 rebaselined schedule is executable within existing resources; completion of the carrier demonstration is planned for Fiscal Year 2013. The first X-47B (AV-1) completed its first flight February 4, 2011 and has flown a total of 16 envelope expansion flights at Edwards AFB, CA. AV-2 completed its first flight November 22, 2011. AV-1 completed transport to NAS Patuxent River, MD in December 2011 to begin check-outs and testing in support of carrier suitability and operations. Shipboard X-47B deck handling operations and flight operations in the vicinity of an aircraft carrier are scheduled to begin in 4Q 2012. Actual catapult launches, arrested landings and additional flight operations in the vicinity of a CV are scheduled to be completed in 2013. The latest AAR testing period was completed in January 2012 utilizing a manned surrogate aircraft, and AAR development and testing will continue throughout 2012 and 2013. The program is constrained by USN CVN schedules and planning. Currently the program is working closely with USN and CVN leadership to reduce risk and align program and CVN operational schedules to best accommodate demonstration objectives. 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.

Medium Range Maritime UAS (MRMUAS)

The Fiscal Year 2013 President's Budget indefinitely defers the MRMUAS prior to initiation of Milestone A. OSD (AT&L) approved the MRMUAS Material Solution Analysis and authorized the start of an AoA and a draft Capability Development Document (CDD) in Fiscal Year 2011. The AoA and CDD drafting will be completed in Fiscal Year 2012. These documents will support the Navy's next generation of sea based Group 4 UAS and identify technology investments needed to improve the Navy's sea based UAS systems.

Tactical Control Station (TCS)

The Fiscal Year 2013 President's Budget requests \$9.1M RDT&E for the Tactical Control Station (TCS). TCS provides a standards compliant, open architecture, with scalable capabilities for command, control, of the VTUAV system. TCS completed the software transition from the Solaris operating system to the Linux operating system in 2011. The Linux operating system conversion will overcome hardware obsolescent issues with the VTUAV Solaris based Control Stations and provide lower cost software updates using DoD common application software. In addition, the TCS Linux upgrade will enhance collaboration with the Navy's future UAS common control station. The TCS program is also supporting the VTUAV weaponization, radar, and MQ-8C endurance upgrade RDC efforts. The TCS program has continually met schedule and cost goals over the last five years while delivering quality software. In Fiscal Year 2013,

TCS will continue the VTUAV RDC efforts, support transitioning the Linux operating system software to a technology refreshed control station, enhance the VTUAV Ocean Surveillance Initiative for ships Automatic Identification System and sensor track generation, and develop an interface to an ISR Process Exploit Dissemination (PED) system. The PED system will facilitate imagery analysis and utilization by the host ship.

Cargo Unmanned Aerial System (CUAS)

The Fiscal Year 2013 President's Budget is not requesting funding for continued CUAS deployment in Fiscal Year 2013. The previous effort supported the USMC operational requirements captured in a Cargo UAS Joint Urgent Operational Needs (JUONS). The Marine Corps is assigned the lead service. Two vendors were awarded contracts in support of Cargo UAS development. The CUAS initiative is a MUA which will inform a follow-on program of record.

Lockheed Martin/Kaman KMAX Cargo UAS completed the Quick Re-action Assessment on time and was selected for the RDC. CUAS operations were started in November 2011 and are planned for six months with priced options for an addition six months. The CUAS is meeting the RDC goals and is also supporting the development of UAS concept of operations (CONOPS).

The purpose of the Cargo UAS capability is to develop CONOPS to "get trucks off the roads" in combat zones, minimizing the improvised explosive device threat to logistics convoys. The CUAS will provide a low risk, persistent, 24-hour capability for dispersed forces on the battlefield. This capability mitigates 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," is being 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 2013 President's Budget requests \$33.9million in RDT&E,N (\$9.73 million Navy, \$24.2 million Marine Corps) and \$9.6 million in APN and \$27.6 million in PMC for 15 (five USN, ten USMC) RQ-21A Integrator STUAS 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. Milestone B and contract award occurred in July 2010. Milestone C and LRIP decisions are scheduled for the first quarter of Fiscal Year 2013. STUAS will enter into IOT&E 3rd Qtr Fiscal Year 2013.

RQ-7B Marine Corps Tactical UAS (MCTUAS)

The Fiscal Year 2013 President's Budget requests \$0.9 million RDT&E to continue development efforts and government engineering support and \$49.3 million in APN to support the continuation of congressionally mandated TCDL retrofits for RQ-7B Shadow units. USMC

Shadow squadrons have seen continuous service in Iraq and Afghanistan since 2007. The USMC received its 13th RQ-7B Shadow system in first quarter Fiscal Year 2012, completing baseline fielding for four squadrons. The USMC Shadow systems are identical to Army Shadow systems, bringing interoperability and commonality between Army and Marine Corps unmanned aircraft units operating side-by-side in Afghanistan. An eighteen-month initiative to weaponize two USMC RQ-7B systems with a laser-guided projectile was started in first quarter Fiscal Year 2012.

Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System

The Fiscal Year 2013 President's Budget requests \$122.5 million RDT&E for the UCLASS System efforts. The UCLASS system will enhance carrier capability and versatility for the Joint Forces commander through integration of a persistent and mission flexible unmanned aircraft into the Carrier Air Wing. In April 2011, the UCLASS initial capabilities document was approved by the Joint Requirements Oversight Council. The UCLASS system will provide persistent intelligence surveillance and reconnaissance (ISR) with precision strike in a range of mission including irregular warfare and major combatant operations environments. It will be sustainable onboard an aircraft carrier, as well as ashore, and will be designed to minimize increases in the logistics footprint of the current carrier air wing. The UCLASS system will have the ability to pass command and control information along with sensor data to other aircraft, naval vessels, and ground forces. Sensor data will be transmitted, in either raw or processed forms, at appropriate classification levels, to exploitation nodes afloat and ashore. Interfaces will be provided with existing ship and land-based command and control systems, including ISR tasking, as well as processing, exploitation, and dissemination systems. The UCLASS system will achieve these capabilities through the use of a carrier-suitable, semi-autonomous, unmanned Air Segment, a Control System and Connectivity Segment, and a Carrier Segment.

WEAPONS PROGRAMS

Tactical Tomahawk BLK IV Cruise Missile Program

The Fiscal Year 2013 President's Budget requests \$308.97 million of Weapons Procurement, Navy (WPN) for procurement of an additional 196 BLK IV weapons and associated support, \$34.9 million of OPN for the Tactical Tomahawk Weapon Control System (TTWCS), and \$8.8 million in RDT&E for capability 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. RDT&E will be used to complete engineering, test, and transition of the Joint Multi-Effect Warhead System into the program production baseline. Since the submittal of the President's Budget request for 2012, Congress approved the Fiscal Year 2011 Omnibus reprogramming request for \$310M to replace the 221 missiles expended in Operation ODYSSEY DAWN. These additional missiles will be procured in Fiscal Year 2012. Due to constraints in the ceiling in the Fiscal Year 2012 contract, the 56 missiles funded with Fiscal Year 2012 procurement funds will be ordered under the Fiscal Year 2013 contract.

Tomahawk 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 2013 President's Budget requests \$2.5 million RDT&E and \$42.9 million OPN for continued TMPC system upgrades and support. These resources will complete fielding of TC2S Version 4.3, complete the upgrade and testing to TC2S Versions 5.0, and initiate the upgrade to TC2S Version 6.0. These planned upgrades will 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.

Sidewinder Air-Intercept Missile (AIM-9X)

The Fiscal Year 2013 President's Budget requests \$21.1 million of RDT&E and \$80.2 million of WPN for this joint DoN and USAF program. RDT&E will be applied toward AIM-9X/BLK II developmental/operational tests and requirements definition for Joint Staff directed Insensitive Munitions requirements, as well as initial AIM-9X/Block III development activities. WPN will be for production of a combined 150 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 2013 President's Budget requests \$2.9 million for continuing RDT&E efforts and \$102.7 million for production of 67 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.

Small Diameter Bomb II (SDB II)

The Fiscal Year 2013 President's Budget requests \$31.1 million of RDT&E for the continued development of this joint DoN and USAF 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 Joint Strike Fighter and will be compatible with the BRU-61/A miniature-munitions carriage. The Joint Miniature Munitions Bomb Rack Unit (JMM BRU) BRU-61A/A is being developed to meet the operational and environmental integration requirements for internal bay carriage of the SDB II in the F-35B and F-35C. SDB II entered Milestone B in August 2010 and successfully completed its Critical Design Review in January 2011. JMM BRU will enter Technology Development in May 2013.

Joint Standoff Weapon (JSOW)

The Fiscal Year 2013 President's Budget requests \$5.5 million of RDT&E for continued JSOW-C-1 test activity and \$127.6 million of WPN for production of 280 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 targeting is achieved via a data-link and guidance software improvements.

Advanced Anti-Radiation Guided Missile (AARGM)

The Fiscal Year 2013 President's Budget requests \$7.0 million of RDT&E for the follow-on development and test program and \$86.7 million of WPN for production of 100 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 for conducting Destruction of Enemy Air Defense (DEAD) missions. AARGM adds multi-spectral targeting capability and targeting geospecificity to its supersonic fly-out to destroy sophisticated enemy air defenses and expand upon the HARM anti-radiation missile target set. The program was approved for its third LRIP contract in Fiscal Year 2011. IOT&E re-started on August 10, 2011 and is scheduled to end during the second quarter of Fiscal Year 2012; with IOC on the F/A-18C/D aircraft no later than the fourth quarter of Fiscal Year 2012.

Hellfire Weapon System

The Fiscal Year 2013 President's Budget requests \$91.5 million, including \$17.0 million of OCO funding, for 1,210 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 sixty-percent of the munitions requirement and will increase our training assets. The DoN continues to support legacy Hellfire weapons as well as procure and support technology enhancements that will provide the warfighter the flexibility to prosecute new and emerging threats. The Hellfire missile 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.

Advanced Precision Kill Weapon System II (APKWS II)

The Fiscal Year 2013 President's Budget requests \$42.1 million of PAN&MC, including \$17.9 million of OCO funding, for procurement of 2,358 APKWS II Precision Guidance Kits. 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. Milestone C was achieved in April 2010 and LRIP contract award in July 2010. IOT&E was successfully completed in January 2012. IOC is planned for the second quarter of Fiscal Year 2012. APKWS II will provide an unprecedented precision guidance capability upgrading our current unguided 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.

Direct Attack Moving Target Capability (DAMTC)

The Fiscal Year 2013 President's Budget requests \$15.4 million for the second FRP order of 1,069 weapons. DAMTC was initiated as a Fiscal Year 2007 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 Milestone 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.

Joint Air-to-Ground Missile (JAGM)

The Joint Air-to-Ground Missile (JAGM) system is currently a Joint Department of the Army/Department of the Navy pre-Major Defense Acquisition Program with the Army designated as the lead service. The Government utilized full and open competition to initiate the Technology Development (TD) phase of the JAGM program. The originally planned 27- month TD phase is complete. In the TD Phase, the two contractors completed a Preliminary Design Review (PDR), wind tunnel and ground testing, and flight testing in support of initial Navy platform integration activities. The Services recognize that HELLFIRE capability and inventory issues need to be addressed and that the requirement for JAGM remains valid. Discussions are underway between the DoN, the Army and OSD on the path forward.

Responses to the Specific Questions from the Tactical Air and Land Forces Subcommittee

Provide a discussion of the validated 1,240 DoN aircraft strike-fighter force structure inventory DoN requirement and the projected peak inventory shortfall through 2025

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 is 420. To meet operational demands, commitments, and force structure reductions the Marine Corps will have 18 active and 2 reserve squadrons. Integral to our current force structure reductions, our tactical aviation squadrons were restructured to optimize the support they provide to the Marine Air Ground Task Force. The Marines increased their flexibility and responsiveness by increasing the number of 16 aircraft squadrons (from 7 to 9) thereby enabling tactical flexibility for simultaneous expeditionary afloat and ashore operations with current and future employment models. A total of 254 (234 active and 20 reserve) aircraft will be assigned to operational squadrons, 60 aircraft for training use, six aircraft for test and evaluation, and the remainder for pipeline maintenance and attrition replacement. The reduction in squadrons (24 to 20) will mitigate the previous risk of lower pipeline and attrition aircraft procurement by re-categorizing the reduced primary mission aircraft to fill the pipeline and attrition gaps.

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. The DoN defines the shortfall as the amount of aircraft by which operational requirement (force structure demand) exceeds the aircraft available for tasking. The Fiscal Year 2013 President's Budget request Strike Fighter Shortfall is predicted to peak at a manageable level below 65, and the DoN will continue to mitigate the Strike Fighter sustainment issue through the implementation of management, demand, and supply initiatives. Supply initiatives include service life extension of Legacy Hornets, procurement of additional F/A-18E/F Super Hornets, and new JSF deliveries. Management initiatives include the accelerated transition of Legacy Hornet squadrons into Super Hornets and the service life extension of 150 Legacy Hornets. Demand initiatives include reducing DoN expeditionary squadron size and modifying Joint Strike Fighter (JSF) transition plans.

These efforts, combined with a substantial decrease in Legacy Hornet utilization rates and changes to USMC force structure, resulted in a decrease in the projected shortfall despite the flattening of the F-35B/C ramp that moved 69 aircraft to outside the Future Years Defense Program (FYDP).

The Strike Fighter Shortfall is projected to fluctuate throughout the next 20 years. The Marine Corps will experience a majority of the projected shortfall in the next 10 years as it relies heavily on the F-35 procurement rates and the management of remaining service life on the F/A-18A-D. As legacy F/A-18 squadrons are reduced the service shortfall number must be considered in proportion to the primary mission aircraft inventory requirement. Due to a low number of F/A-18 squadrons in the 2023 to 2026 timeframe, the shortfall number associated with the USMC will have a more significant impact on those few remaining F/A-18 operational squadrons. In the years beyond 2020, the Navy will possess the majority of the shortfall as the F/A-18E/F reaches its service life limit.

The USN and USMC continue to adjust transition plans as F-35 procurement ramps are flattened. The Marine Corps is taking advantage of higher service life remaining in its AV-8B inventory by sliding them to the end of the transition, thus reducing the demand for F/A-18A-D in the later years. Sustainment and relevancy funding will be imperative to maintain the requisite operational capability throughout the 2020's.

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 and 12,000 flight hours and a description of the funding currently contained in the FY 2013-2016 FYDP for such program

The F/A-18E/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 three-phased F/A-18E/F Service Life Assessment Program (SLAP) commenced in 2008 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. The Fiscal Year 2013 President's Budget includes a request for \$95.8 million RDT&E (Fiscal Years 2013-2017) to support the F/A-18E/F SLAP 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. No analysis has been conducted, nor is any currently planned to extend the F/A-18E/F service life to 12,000 flight hours. Other SLAP 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. The F/A-18E/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 third lifetime of test cycles completed on multiple test articles providing detailed information on high fatigue areas early in the program. The Service Life Management Program

(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 Fatigue Life Expended (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.

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 discussion regarding the estimated costs, implementation risks, schedule and depot capability in executing these programs;

The F/A-18A-D SLAP showed that the airframe can fly to 10,000 hours with significant modifications and inspections to maintain airworthiness. The inspection results to date have matched the previously briefed models. The F/A-18A-D aircraft have been kept operationally relevant through upgrades. Ongoing High Flight Hour (HFH) inspections are designed to extend service life beyond 8,000 flight hours.

SLEP goals of 10,000 flight hours will likely involve wholesale replacement of aircraft structure (center barrel, inner wings, etc.) as well as repairs and inspections. Squadron commanders manage each aircraft's service life (flight hours, wing root fatigue, landings, cat/traps) to ensure full utilization of available service life. The progress of the SLMP is reviewed periodically at the three-star level via the Naval Aviation Enterprise (NAE) process.

F/A-18A-D SLEP Phase B is complete and SLEP Phase C is now underway. Analysis thus far has revealed extensive areas of the airframe will require inspections and modifications to reach service life goals of 10,000 flight hours. To date there have been no SLEP modifications installed under SLEP Phase C as this activity is scheduled to begin in Fiscal Year 2012. Overall, the SLEP Phase C effort is on track per the current schedule, and is anticipated to complete in Fiscal Year 2018. HFH inspections have been ongoing for three years. Revisions to the HFH suite have been issued as a result of SLAP Phase I and II. Sixty-one (61) aircraft have completed the initial HFH inspection and 58 are currently in work.

The F/A-18A-D SLEP effort has utilized a phased approach since inception. This approach addresses the most critical airframe requirements first to ensure timely fielding of priority inspections and modifications. This approach reduces both airworthiness and cost risks. The SLEP cost uncertainty analysis conducted by NAVAIR 4.2 cost estimators calculated a range of costs; the submitted budget request reflects the "most likely" costs for both labor and material. The phased approach allows for future program trade space to mitigate potential program-wide delays. Major subsystems and avionics are not a part of the SLEP effort. Capability upgrades are also not included; SLEP only extends the service life of the airframe. Upgrades are an independent cost, not associated with extending the service life. The projected average cost per aircraft for a SLEP induction is \$15.5M TY\$ (\$13.8M (APN5) and \$1.7M (O&M,N)). Additional costs are \$9.6M TY\$ (APN5) per aircraft to address capability upgrades, obsolescence, and sustainment.

The DoN plans to conduct SLEP inspections/modifications at any one of six Fleet Readiness Center (FRC) Field or Industrial locations. Sufficient capacity exists to support the SLEP

program. The six locations include: NAS Lemoore, Lemoore, CA; NAS North Island, San Diego, CA; NAS Jacksonville, Jacksonville, FL; Boeing, Cecil Field, Jacksonville, FL; MCAS Beaufort, Beaufort SC; and NAS Oceana, Virginia Beach, VA. When practical, SLEP inspections/modifications will be done concurrently during major depot events such as Center Barrel Replacement modifications or during other scheduled maintenance events, and as dictated by the compliance requirements of the applicable Technical Directive.

In order to maintain a tactical advantage, procurement and installation of advanced systems will continue Joint Helmet-Mounted Cueing Systems (JHMCS), Multi-Function Information Distribution System (MIDS) and LITENING for USMC)) on selected F/A-18A-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, tactical data link, JHMCS, MIDS and LITENING.

The February 2012 Flight Hour and Inventory Report shows the average flight hours on DoN operational F/A-18 A-D models at 7,029, 6,320, 6,666, and 6,501 respectively.

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

<u>F/A-18A-F, EA-18G</u>

The F/A-18A-D has been a highly effective aircraft for the Navy and Marine Corps in OIF/OEF, and will continue as such in future conflicts. The F/A-18A-D aircraft have been kept operationally relevant through upgrades that include: Combined Interrogator Transponder to determine friend or foe, a JHMCS, MIDS, Link-16 data-link, advanced Integrated Defense Electronic Counter Measures, APG-73 radar and digital CAS. The aircraft was originally designed for 6,000 flight hours, and was recently extended to 8,000 flight hours by analysis. Extensions beyond 8,000 flight hours require inspections and/or repairs/modifications.

Although the F/A-18A-Ds are out of production, the existing inventory of 625 Navy and Marine Corps aircraft will comprise over half of Naval Aviations TACAIR force structure through 2013. They are scheduled to remain in inventory through the mid 2020s. The 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. 74 percent of the F/A-18A/D fleet has over 6,000 flight hours and 32 aircraft have over 8,000 flight hours. Service Life Bulletin 008 provided a service life extension increase to 8,000 hours. To meet USN and USMC operational commitments out to 2026 for active squadrons, and through 2029 for USMCR, the DoN will SLEP 150 aircraft to extend their service life to 10,000 flight hours.

The F/A-18E/F began FRP in 2000. Eighty percent of the total procurement objective has been delivered (453 of 565). IOC was achieved in September 2001. Fiscal Year 2013 President's Budget supports the thirteenth year of FRP. This installment includes planned procurement of EA-18G as follow-on to EA-6B (F/A-18E/F and EA-18G share a common Boeing production line). Production line shutdown is scheduled to begin in 2012 with the shutdown of long lead items suppliers. Multi-Year Procurement III (MYPIII) was approved on September 28, 2010.

Discussions are underway to extend MYPIII to include the procurement of 13 F/A-18E/F aircraft in Fiscal Year 2014.

The F/A-18E/F fleet has 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 SLAP commenced in 2008 and will continue through 2015.

The EA-18G is in FRP. EA-18G is procured under F/A-18 MYPIII (Fiscal Years 2010-2013). Airborne Electronic Attack (AEA) Kits are procured via a separate contract. To date, 56 aircraft have been delivered; this represents 49 percent of the Inventory Objective of 114 aircraft. FRP was approved November 2009 and IOC was in September 2009. The Fiscal Year 2013 President's Budget is the last procurement year and completes the Navy's total EA-18G procurement of 114 aircraft. EA-18Gs in-service have flown approximately five percent of the 7,500 total flight hours per aircraft and are meeting all operational commitments. To date, five squadrons have completed transition including all three active component expeditionary squadrons. First EA-18G squadron deployed in an expeditionary role in November 2010 in support of Operation New Dawn (OND) and redeployed in March 2011 in support of Operation Odyssey Dawn (OOD)/Operation Unified Protector (OUP) combat operations. First carrier based EA-18G squadron deployed on board the USS George H.W. Bush (CVN-77) in May 2011. The EA-18G will be employed "From the Sea" by the Joint Force Maritime Component Commander (JFMCC) to support Joint Airborne Electronic Attack (AEA) missions requested by the COCOM.

Our adversaries' expanded use of the electromagnetic spectrum has increased the Joint requirement for expeditionary AEA, while at the same time also increasing the operational necessity for the Carrier Strike Group to maintain its own organic AEA capability. While 114 EA-18Gs are sufficient, the current jamming pods (ALQ-99) on the EA-18G are obsolete and continued support for the Next Generation Jammer (IOC 2020) program development is required.

<u>AV-8B</u>

The current USMC inventory consists of 144 AV-8B aircraft. This number includes 16 TAV-8B trainers, five Day Attack, 35 Night Attack and 88 Radar aircraft. Of the total inventory, 35 aircraft (24 percent of USMC inventory) were out of reporting for PMI and special re-work during 2011.

The AV-8B was originally a 6,000-hour airframe. In 2010, PMA-257 transitioned to a Fatigue Life Expended (FLE) model that more accurately measures actual stress history on individual airframe components, enabling the airframe to fly beyond 6,000 hours. Fleet averages for Night Attack, Production Radar, and Remanufactured Radar variants of the Harrier are 28 percent, 18.8 percent, and 30.4 percent FLE, respectively. However, the AV-8B is currently experiencing an increasing number of required modification and obsolescence issues. Intangibles that will affect service life are aircraft component(s) that enter obsolescence or reach end of service life before the airframe planned fatigue life expended reaches 100 percent. Reduction in demand signal

may also cause proportional reduction in sub venders and supply contractors.

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 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 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 regarding all issues, associated risks, feasibility, costs and schedule of integrating the F-35B and F-35C aircraft into L-Class and CVN-Class ships for forward deployed operations, and when changes to L-Class ships will be made to support the forward deployability of the Marine Corps' planned IOC date for the F-35B.

In October 2011, F-35B (STOVL variant) testing aboard the USS WASP (LHD-1) was completed. Seventy-two Vertical Landings (VL) and Short Take-Offs (STO) were conducted with the following results: thermal and acoustic data was consistent between landings and aligned with predictions; temperatures, displacements and strains all remained below limits for a single VL; data was obtained for critical multiple-landing (quick-repeat) VLs. The on-going data analysis is expected to improve predictions of operationally-relevant ship impacts. To date, the ship alterations required to integrate F-35B (STOVL variant) into LHA and LHD-Class ships are as listed (with no known show-stoppers for F-35B operations aboard LHAs and LHDs):

- F-35B L-Class "Cornerstone" Alterations: There are eight known modifications required to provide necessary electrical servicing upgrades, expanded weapons handling and storage, provision for the F-35B Autonomic Logistics Information System (ALIS), secure access facilities, deployable mission rehearsal training (DMRT), and relocation of the flight deck tramline for flight safety. The tramline modification was completed to support DT-1 flight testing. The remaining "cornerstone" ship alterations will commence on USS WASP (LHD 1) in September 2012 (estimated).
- F-35B L-Class "External Environment" Alterations: These are the design changes necessary to protect external equipment from the effects of downwash and exhaust impingement during takeoff and landing evolutions. These alterations will be completed once all DT data has been analyzed.
- L-Class Cornerstone Alterations started with the USS Bonhomme Richard in Calendar Year 2011 and will finish with the USS Bataan in Calendar Year 2021.

- L-Class "External Environment" Alterations will start with the USS Wasp in Calendar Year 2013 and will finish with the USS Bataan in Calendar Year 2021.
- USMC, CFFC, and OPNAV are conducting planning to ensure a JSF capable L-Class ship is available in the western Pacific theater in 2017, when VMFA-121 permanently relocates to MCAS Iwakuni.

Regarding alterations required to integrate F-35C (carrier variant) into the CVN 68 Class and CVN 78 Class aircraft carriers, the following is provided:

- Initial analysis has been completed and modifications required for F-35C integration on CVNs are actively being developed to maturity or are being installed (with no known show-stoppers). They include: electrical servicing upgrades, expanded weapons handling, construction of secure access facilities, Autonomic Logistics Information System (ALIS), mission rehearsal training, Joint Precision Approach and Landing System (JPALS), thermal effect mitigation (additional Jet Blast Deflector (JBD) side-panel cooling), Li-Ion battery facility, canopy explosive HAZMAT storage, noise abatement and aircraft specific maintenance shops and services modifications.
- Current modeling analysis of land-based test results conducted in 2011 indicate that additional JBD side-panel cooling modules and orifice adjustments will be required to manage thermal impacts of jet exhaust at afterburner limited (ABLim) thrust setting.
- Required CVN modifications will be incorporated into CVN 68 (NIMITZ) Class aircraft carriers during planned maintenance availabilities in advance of F-35C arrival. All known modifications have been incorporated into CVN 78 Class design except additional JBD side-panel cooling, Li-ion battery facility, canopy explosive HAZMAT storage, and aircraft specific maintenance shops and services modifications, which 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 Operational Capability as it relates to the restructured System Development and Demonstration (SDD) delay resulting from the recent technical baseline review.

The IOC dates for F-35B and F-35C has not yet been determined by leadership. The Navy and Marine Corps require Service specific operational capabilities as defined in the F-35 Operational Requirements Document (ORD) prior to considering declaration of IOC. Achieving these capabilities are event driven and dependent upon the progress of the re-baselined F-35 program.

For the F-35B, the Marine Corps requires: One squadron of ten F-35B aircraft with required spares, ground support equipment, tools, technical publications, and a functional ALIS (including peripherals); one squadron manned with trained/certified personnel capable of conducting autonomous operations; F-35B aircraft with the requisite performance envelope, mission systems, sensors, and weapon clearances (Block 2B); home base supporting infrastructure and facilities ready and capable of supporting and sustaining operations; qualifications/certifications required for deploying on F-35B compatible ships and to austere expeditionary sites; the ability to execute the TACAIR directed mission sets; and Joint Program Office and F-35 contractor procedures, processes, and infrastructure capable of sustaining operations of the IOC squadron. The reduced ramp rate has delayed the completion date of the

Marine Corps' transition to the Joint Strike Fighter by over four years. The Marine Corps' IOC is event driven based on key operational and sustainment capabilities required to support operations.

For the F-35C, the Navy requires: One squadron of ten F-35C aircraft with full stealth and ORD compliant avionics/weapons capabilities (Block 3F) with the capability to execute the F-35C's primary mission sets; functional ALIS (including peripherals) and carrier integration modifications in place to support CVN deployments, airworthiness and flight deck certifications; trained aircrew, maintainers, and support personnel; and SDD/OPEVAL complete and Joint Program Office/F-35 contractor procedures, processes, and infrastructure capable of sustaining operations of the F-35C IOC squadron.

A discussion of the known risks and issues specifically related to the DoN regarding the development, fielding and deployment of the Autonomic Logistics Information System 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 ALIS is being used to support flight test operations today. As with any new system, there has been a learning curve associated with this new logistics support system and it is expected to continue. Currently, the Department is managing all key risk items. An overview of the primary ALIS issues and risks affecting the DoN are:

- Fielding of ALIS Software Release 103 to support Block 1B aircraft and beyond. At • present the ALIS Release 103 schedule is at risk due to Certification & Accreditation (C&A) and data quality concerns. PEO(JSF) is working closely with the OEM and air system C&A experts to mitigate the C&A issues. An element of this mitigation involves implementing an interim solution involving workarounds, based on an updated release of ALIS 102 that will sustain Block 1B aircraft at Eglin AFB. With regard to data quality, ALIS functionality is dependent upon the provision of accurately structured and populated logistics data (e.g., Air Vehicle Sustainment Data Build, Bill of Material). At present, the DoN has identified a number of data quality shortcomings that are being addressed by the OEM and PEO(JSF) personnel and manual workarounds have been instituted; permanent resolution of these issues is expected by second quarter CY2013. We expect the first release of ALIS 103 to commence Flight Test assessment at Edwards AFB during the week of March 5, 2012; ALIS 103 will provide the initial integrated sustainment solution covering a range of capabilities including Maintenance, Supply Chain, Customer Relations Management and Mission Planning Support.
- DoN ALIS Deployment Suitability: PEO(JSF) is currently managing a USMC instituted initiative in regards to the deployment suitability of the existing ALIS baseline design. The strategy to ensure functional deployability includes a three phase program of effort to develop Deployable ALIS. The initial requirements analysis and definition phase of this project will conclude in March 2012 and the second phase conducts technology risk reduction studies and is currently in progress, scheduled to conclude this year. Phase III, the engineering design activity effort, is projected to commence in early 2013 with a

target of producing a prototype for initial assessment by late 2014, and a production standard design by mid 2015.

• Successful Integration of Propulsion System Sustainment into ALIS: Currently the Propulsion System is managed by the OEM utilizing an independent contractor sustainment application. This is a recognized temporary solution pending the fielding of the appropriate ALIS capability. However, retirement of this capability is dependent upon the resolution of Air Vehicle and Off-Board system related integration challenges. An element of this is the incorporation of appropriate functionality to sustain the F135 engine in ALIS. The prime system integrator, and the engine OEM are in the process of defining the remaining actions necessary to successfully integrate propulsion sustainment by the end of CY2012. Achievement of this task is a priority for the Program and carries moderate to high schedule risk.

An update on the V-22 procurement program and contractor performance, and performance of the MV-22 during Operations Iraqi and Enduring Freedom;

The V-22 program continues to perform extremely well in the field and in production. Under the current MYP I contract, industry delivered 34 V-22s (28 MV/6 CV) during CY 2011 – all were delivered on or ahead of contract schedule. The first three MYP I lots are performing well and cost reduction initiatives are delivering expected results. The program is also on track to award a follow-on MYP contract (Fiscal Years 2013-2017) which will yield significant savings.

The V-22's strong performance in the field continues to be demonstrated on a daily basis with over 160 aircraft now fielded across the Marine Corps and Air Force Special Operations Command. The combined MV and CV fleet has accumulated more than 130,000 flight hours including 17 deployments since 2007, and the MV-22 has exhibited the lowest Class A flight mishap rate of any tactical rotorcraft in the Marine Corps over the last 10 years.

MV-22B squadrons redeployed from a successful 18 month combat tour in Operation Iraqi Freedom (OIF) in April 2009 having flown over 6,000 sorties, nearly 10,000 flight hours and transporting more than 45,000 passengers and 2.2 million pounds of cargo.

MV-22B squadrons supporting Operation Enduring Freedom (OEF) in Afghanistan and the Marine Expeditionary Units (MEU) aboard amphibious warships are seeing mission capable rates in the seventy percent range and are performing every assigned mission. Since deploying to combat operations in OEF, from November 2009 through September 2011, the MV-22Bs have flown 9,487 flight hours, carried 86,697 passengers, and delivered 3,680,174 lbs of cargo.

The effectiveness and survivability of this revolutionary, first-of-type MV-22B Osprey tilt-rotor has been repeatedly demonstrated in combat. The rescue of a downed F-15E airman during Operation ODYSSEY DAWN was an example of what the Navy and Marine Corps' expeditionary force brings to our nation. As an integral part of that seaborne presence, the MV-22B was able to transit over 130 nautical miles from the USS KEARSARGE to the objective area with unprecedented speed and agility. Twenty minutes from the time he was evading capture in hostile territory, the rescued pilot was safely back on American territory aboard the USS KEARSARGE.

An update on the efforts related to the V-22 program concerning 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;

Component/subsystem redesign is an integral part of the V-22 Program's plan for improving readiness and reducing operating costs. At the platform level, the V-22 continues to meet its KPP for reliability as set forth in the acquisition documentation, but continue aggressive efforts to improve component performance by analyzing inherent component reliability using the Critical Item Logistics Review (CILR) list. This disciplined, repeatable process has identified key components for improvement. Since July 2009, 27 component improvements have been incorporated and validated via on-aircraft performance with Mean Flight Hour Before Removal (MFHBR) improvements ranging from 50 percent to over 7000 percent improvement. At the aircraft level, this has translated into a 19 percent improvement in Mission Capable rates from Fiscal Year 2010 to Fiscal Year 2011. Eleven additional components with upgraded reliability are slated for incorporation/validation during 2012.

The V-22 Cost Per Flight Hour (CPFH) Reduction Team has been reducing costs through a four pillared approach targeted at improving Maintenance Practices, Maintenance Planning, Repair Capabilities and Contract Strategies and works closely with the R&M teams to incorporate the improved components noted above. These efforts yielded a 13 percent reduction in V-22 CPFH from Fiscal Year 2010 to Fiscal Year 2011 which will equate to billions of dollars in cost avoidance over the life cycle of the aircraft. This significant achievement in CPFH reduction was recognized by OSD awarding the V-22 CPFH Reduction Team with the prestigious David Packard Excellence in Acquisition Award.

An update on the E-2D Advanced Hawkeye program and whether the program is meeting current cost, schedule, risk and performance goals

The Fiscal Year 2013 President's Budget requests \$119.1 million in RDT&E,N for continuation of SDD and \$984.7 million in APN for five FRP Lot 1 aircraft and AP for Fiscal Year 2014 FRP Lot 2 aircraft. 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 DAB approved Milestone C in June 2009, at which time the program received authorization for procurement of the first two lots of LRIP aircraft [LRIP Lot 1 (two aircraft) and LRIP Lot 2 (three aircraft)]. The SDD flight test program is 100 percent complete and all KPP thresholds have been met. An Operational Test Readiness Review was successfully conducted on February 1, 2012, certifying entry into Initial Operational Test and Evaluation (IOT&E), and IOT&E will continue through August 2012. Both LRIP Lot 1 aircraft were delivered in 2011, and delivery of the three LRIP Lot 2 aircraft will be completed in 2013. A DAB for approval to procure the final two lots of LRIP aircraft, Lots 3 (five aircraft) and 4 (five aircraft), as well as AP for FRP Lot 1, was successfully held on in March 2011 and the respective contracts have been awarded. LRIP Lots 3 and 4 aircraft will be delivered in 2014 and 2015, respectively. From a cost standpoint, the Estimate at Complete (EAC) has been stable for over 54 months and the program is on schedule for an FRP decision in the first quarter of Fiscal Year 2013. All major acquisition milestones have been achieved on or ahead of schedule since program inception in 2003.

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 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. On May 23, 2011, the Supreme Court held that when a contractor's defense to the government's allegations of contractual breach is dismissed to protect state secrets, the proper remedy is to leave the parties where they were on the day that the contractor filed suit. At that point the contractors continued to hold \$1.3 billion in unliquidated progress payments which the government allowed based on McDonnell Douglas's financial weakness at the time of contract termination and the contractors' intention to dispute the default determination. Entitlement to the \$1.3B plus interest remains in dispute as the case was remanded to the U.S. Court of Appeals for the Federal Circuit for consideration of the question of whether the government was required to disclose its superior knowledge of stealth technology to the contractors. The Federal Circuit further remanded the case to the Court of Federal Claims for factual documentation and to address the government's arguments that it does not have an obligation to share its superior knowledge "with respect to highly classified information" or "when (as was the case here) the agreement specifically identified information that must be shared." The trial court must also determine if the issues can safely be litigated. Due to administrative complications for the parties, a briefing and argument schedule has not been established.

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

Naval Aviation Summary (Navy & Marine Corps) - The table below provides a summary of all Class A, B & C Flight mishaps from Oct 2010 through February 29, 2012. The rates are based on total Flight Hours of 1,689,330.

YEAR	Flight Hours	Class A	Class A Rate	Class B	Class B Rate	Class C	Class C Rate
FY 11	1,226,979	16	1.30	15	1.22	73	5.95
FY 12	462,351	6	1.30	8	1.73	22	4.76

The most recent DON Flight Class A Mishaps include:

- 26 Feb 2012: (Bahrain) F/A-18C sustained dual bleed warning lights airborne. Aircraft recovered successfully.
- 24 Feb 2012: (Fallon, NV) F/A-18F crashed while on a routine training mission. Aircrew ejected. No injuries.
- 22 Feb 2012: (R-2507/Chocolate Mountains, CA) AH-1W and UH-1Y collided shortly after takeoff during night training mission. 7 fatalities.
- 19 Jan 2012: (Afghanistan) CH-53D crashed. 6 fatalities.
- 21 Dec 2011: (Bridgeport, CA) MH-60S crashed while conducting mountain flying in the Toiyabe National Forest. Crew sustained minor injuries.
- 02 Nov 2011: (NAS Kingsville) T-45C crew ejected during section takeoff. No fatalities.

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

• 29 Oct 2011: (Gulf of Aden) Post flight inspections on multiple AV-8B aircraft revealed impact damage to compressor blades. (AGM)

DON Historical Mishap Rate Trend per 100K Flight Hours (as of February 29, 2012) per Mishap Class



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



*see last slide for definition of UCI/LCI and FY12 Max explanation

10-YEAR AVERAGE (FY02-11) MISHAPS/MISHAP RATE:

13.60/1.36



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

