

NOT FOR PUBLICATION UNTIL RELEASED BY THE
SENATE ARMED SERVICES COMMITTEE
AIRLAND SUBCOMMITTEE

STATEMENT OF

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BEFORE THE

AIRLAND
SUBCOMMITTEE

OF THE

SENATE ARMED SERVICES COMMITTEE

ON

DEPARTMENT OF THE NAVY'S TACTICAL AVIATION PROCUREMENT PROGRAM

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NAVAL AVIATION

Mr. Chairman, Senator Brown, 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) tactical aviation programs. Our testimony today will provide background and rationale for the Department's Fiscal Year (FY) 2012 budget request for tactical aviation programs.

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

The Fiscal Year 2012 President's Budget requests funding for 223 aircraft including 13 F-35 Joint Strike Fighters for both the Navy and the Marine Corps, 28 F/A-18E/F fighter attack planes and 12 EA-18G to continue replacing the EA-6B. The Department has also requested funds for the demonstration of the Navy Unmanned Combat Aerial System (N-UCAS). The DoN Fiscal Year 2012 aircraft program budget is funded for planned program execution throughout the Future Years Defense Program (FYDP).

TACTICAL AVIATION (TACAIR)

TACAIR Inventory Management

The Fiscal Year 2012 President's Budget request includes a DoN reduction of 67 F-35B/C aircraft, the addition of 41 F/A-18E/F aircraft and the service life extension of 150 F/A-18A-D aircraft. In 2010, we estimated the DoN Strike Fighter Shortfall (SFS) to be about 100 aircraft; however, the President's Budget for 2012 reduces the DoN's projected shortfall to a manageable level of 65 aircraft, with a peak in 2018. On April 15, 2011 in the Department of Defense and Full-Year Continuing Resolution Appropriations Act 2011, Public Law 112-10, Congress added nine F/A-18E/F to the program of record of 556 aircraft shown in the Fiscal Year 2012 President's Budget request, further reducing the shortfall to 52 aircraft, with a peak in 2018.

This reduction in the shortfall projection is primarily the result of the Navy plan to transition three additional squadrons from FA-18Cs to F/A-18Es and then redistribute the F/A-18C aircraft to requirements across the DoN. The plan was made possible with the procurement of 41 additional Super Hornets, the redistribution of existing aircraft, and careful management of aircraft service life. These efforts will allow the DoN to have the operational tactical aviation strength required to meet our service commitments.

The DoN continues to balance carefully our investment portfolio, managing meticulously the flight hours and fatigue life of our tactical aircraft while we monitor new aircraft coming online. Since 2004, we have provided fleet users guidance and actions to optimize aircraft utilization rates while maximizing training and operational opportunities. The Inventory Forecasting Tool (IFT) is used to project the combined effects of TACAIR transition plans, attrition and pipeline

requirements on the total strike fighter aircraft inventory. The IFT has been updated with the most recent data to provide a current forecast of the strike fighter inventory compared to the existing requirements. Critical variables used in the tool include F-35 deliveries, force structure, usage rates, life limits, depot turnaround time, Fatigue Life Expenditure (FLE), arrested and field landings and catapult launches. Our latest shortfall prediction of 52 aircraft is manageable and is based on Fiscal Year 2012 President's Budget.

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

F-35/Joint Strike Fighter (JSF):

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

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

The TBR identified program challenges affecting all variants of the F-35, to include software development, flight test progress and production delays. The Navy's F-35C is progressing satisfactorily while select F-35B-unique systems, such as the auxiliary air-inlet doors and roll

post actuator heating, require additional engineering. SECDEF is imposing two years of additional government and industry scrutiny to overcome these challenges to ensure the Marine Corps is delivered the warfighting capabilities needed to defend the nation. The Commandant of the Marine Corps is personally engaged in the oversight of the STOVL variant progress, and since January 2011 we have experienced substantial improvements in flight test and resolution of the STOVL technical challenges that have exceeded the TBR predictions. The Department's leadership is assessing continually F-35B progress, and will make an informed decision regarding the F-35B development and production as early as possible, but no later than the two year limit directed by SECDEF.

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

F-35 technical reviews have identified two critical technologies that were rated below the threshold for MS-B. One, the lift fan anti-icing system, has now been matured adequately to the necessary technical readiness level (TRL-6). The other, the Helmet Mounted Display System (HMDS), continues to experience technical difficulties. The program is implementing a dual-path strategy to reduce risk and inject competition into the HMDS development. The dual path has not alleviated the requirements of the ORD but will provide an interim warfighting capability while the ORD-compliant solution is matured.

Developmental aircraft of all three variants are now in flight testing. The program now has ten test aircraft operating at three test sites, with two more Navy/Marine Corps developmental test aircraft planned to be delivered this year (BF-5 and CF-3). Each of the Patuxent River Naval Air Station (NAS) F-35B test assets (BFs 1-4) have flown effectively in the conventional take-off, short take-off and vertical landing modes. BF-2 and BF-4 are currently undergoing a modification period in preparation for ship based testing later this year. Another F-35B completed tests in February to expand its speed envelope to 1.2 Mach. To date the F-35B has completed over 100 vertical landings, over 200 short take-offs and over 150 slow landings, and has completed 97% of the unique vertical landing test points required for ship trials and ready-for-training certification.

The Navy's CF-1 test aircraft ferried to NAS Patuxent River in November 2010 and has been completing early flying qualities envelope expansion. CF-2 completed its first flight in April and recently ferried to Patuxent River. CF-3 is undergoing final preparations and ground testing for a ferry later this summer. Drop testing of Navy's CG-1 aircraft, to simulate carrier landings of up to 26.4 feet per second, has been completed and has enabled detailed analysis and model validation. This same test article has been reconfigured for static testing and has conducted nearly 70% of the required static testing. These ground tests support our early efforts for ship

integration and lay the foundation for jet blast deflector and other ship suitability testing this summer at Naval Air Engineering Station Lakehurst.

As of May 15, 2011, the F135 engine program had completed a total of 16,055 hours of engine ground testing, and 1,362 flight test hours, for a SDD total of 17,417 hours. In 2010, the F135 propulsion contractor delivered the final flight test engine and the first 12 production engines, which includes all the Low Rate Initial Production (LRIP) 1 engines and the start of LRIP 2. Notwithstanding this significant progress, there have been technical and cost challenges. In 2010, the program began implementing plans to modify test aircraft to rectify an F135 afterburner “screech” problem, which prevents the engine from sustaining full thrust. These issues are now understood and modifications are in work for the flight test aircraft to complete flight envelope expansion on planned schedules.

Contributing to the F-35B two-year probation decision were STOVL-unique propulsion system challenges, including those associated with roll-post thermal capabilities, driveshaft spacers, and clutch temperatures. Engineering solutions and incorporation plans will correct each of these propulsion system issues. With regard to engine affordability, the SECDEF chartered a 2010 F-35 Engine Joint Assessment Team (JAT) to investigate F135 propulsion costs and provide a ‘should-cost’ objective. The propulsion team is implementing the recommendations with a focus in the coming year to ensure the engine manufacturer and the government continues to make the necessary investments to achieve F135 cost reduction goals.

In support of the SECDEF’s position that the interests of the taxpayer, the military, and our partner nations, and the resource integrity of the overall F-35 program, are served best by not pursuing a second engine, the F136 Joint Strike Fighter engine contract was terminated on April 25, 2011.

F-35 has been challenged this past year, and additional developmental challenges may arise, but we’ve seen flight test progress improve dramatically beyond expectations and technical challenges have been resolved quickly. Together, Navy and Marine Corps, we strongly support the F-35 program. It is essential to our long-term national security as the future backbone of our air superiority force and as the core of Navy and Marine aviation.

F/A-18 Overview

There are 21 Navy Super Hornet squadrons totaling 420 F/A-18E/Fs. There are 16 Navy and 13 Marine F/A-18 A-D squadrons totaling 628 legacy A-D Hornets. Super Hornets and legacy Hornets have conducted over 148,000 combat missions in support of Operations IRAQI FREEDOM (OIF) and ENDURING FREEDOM (OEF) since September 11, 2001. While deployed both ashore and at sea aboard our aircraft carriers, F/A-18s have brought significant precision ordnance and laser-guided munitions to the fight, and have employed thousands of rounds of 20 millimeter ammunition supporting forces during strafing runs. These aircraft continue to provide vital overwatch and direct support to our troops on the ground. The F/A-18 fleet continues to meet operational needs in the current conflicts. DoN Hornets have consistently met readiness and operational commitments. Naval Air Systems Command (NAVAIR) uses a Health of Naval Aviation (HONA) database to store and track the actual utilization data of all the F/A-18s. Both the Legacy and the Super Hornet were procured with an objective of 20 years’ time in service. The average legacy Hornet has just now reached that goal, while the Super

Hornet is at almost 30 percent of its expected 20 year life. It is reasonable to conclude that most aircraft will exceed substantially their 20 years in service, based on current trends.

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

The Fiscal Year 2012 President's Budget request is \$364.6 million in APN for the continuation of the SLEP, systems upgrades and obsolescence programs for the F/A-18 platform. As the F/A-18 program transitions to the F/A-18E/F and F-35, today's inventory of 628 F/A-18A/B/C/Ds will continue to comprise more than half of the DoN's strike fighter inventory until 2013. The funds requested will procure and install center-barrel modifications and SLEP kits, which will be a major contributor to extending the service life of select candidate aircraft from the F/A-18 C/D fleet to 10,000 flight hours. The Service Life Management Program (SLMP) continues to monitor and improve the health of the legacy F/A-18A-D fleet through analyses of TACAIR inventories and the management of usage rates at the squadron level. The F/A-18A-Ds have flown approximately 75 percent of the total flight hours available at the 8,600 hour limit. Approximately 70 percent of the fleet is over 6,000 flight hours, with 18 aircraft over 8,000 flight hours. SLEP of approximately 150 of these aircraft, to extend their service life to 10,000 flight hours, will be required to meet operational commitments out to 2023.

In order to maintain a tactical advantage, we will continue to procure and install advanced systems ((Joint Helmet-Mounted Cueing Systems (JHMCS); Multi-Function Information Distribution System (MIDS); and LITENING for the Marine Corps) on selected F/A-18A/B/C/D aircraft.

The Marine Corps is upgrading 56 Lot 7-9 F/A-18As and 30 Lot 10/11 F/A-18Cs to a Lot 21 avionics capability with digital communications, a tactical data link, JHMCS, MIDS and LITENING. The Marine Corps will also upgrade 72 F/A-18A-D model APG-73 radars with the Expand 4/5 upgrade, providing an enhanced Synthetic Aperture Radar (SAR) capability and improving further its all-weather capabilities. The Marine Corps anticipates these upgrades will enhance the current capabilities of these aircraft with the digital communications, tactical data link and situational awareness required for them to remain viable and relevant. The Marine Corps expects the F/A-18(A++/C/D) to remain in the active inventory until Fiscal Year 2022 and in the reserve inventory until Fiscal Year 2023. The Marine F/A-18s are also employing the LITENING targeting pod in expeditionary operations including OEF. When combined with data link hardware, the LITENING pod provides real-time video to ground forces through Remotely Operated Video Enhanced Receiver (ROVER) and Video Scout ground workstations.

The F/A-18 A-D Service Life Assessment Program (SLAP) is now complete and has identified that extensions of the airframe are possible with inspections and modifications. Based upon those results, SLEP, a three-phased program, has begun. SLEP Phase A is complete; it identified the critical safety of flight locations that needed immediate inspection and identified notional repair concepts to enable rough order of magnitude (ROM) cost estimates. SLEP Phase B is currently in work with NAVAIR and the original equipment manufacturer (OEM); this phase categorizes parts by criticality, develops tracking algorithms to define recurring inspection intervals, conducts vertical tail failsafe solutions and upgrades analytical tools necessary for the NAVAIR and OEM engineers to design repairs. Phase B is currently 90 percent complete and should conclude in August 2011. SLEP Phase C, in planning, will finalize all remaining Phase B work and develop modifications and inspections as required. The Phase C estimated contract

award date is summer 2011. The life extension of the F/A-18 A-D's major subsystems and avionics is independent of the airframe, but progressing as well.

The Fiscal Year 2012 President's Budget request includes SLEP requirements for 150 airframes; modifications begin in 2012. The technical risk in developing modification kits to achieve the goal of 10,000 flight hours is assessed as low. Current assessments have determined that the Fleet Readiness Centers (FRC) have the capacity to execute the required number of HFH inspections and SLEP modifications. Material availability and engineering disposition turnaround times influence depot efficiencies.

F/A-18 E/F Super Hornet

A multi-year procurement (MYP) contract for 124 F/A-18E/F Super Hornets and EA-18G Growlers was signed on September 24, 2010 for Fiscal Years 2010 through 2013. In December 2010, SECDEF added 41 E/F aircraft to the Fiscal Year 2012 President's Budget request in Fiscal Years 2012 through 2014 and Congress added 9 E/F aircraft to PB-11. The total planned procurement is now 565 Super Hornets and 114 Growlers.

The Fiscal Year 2012 President's Budget requests \$2.4 billion in APN-1 for 28 F/A-18 E/F Block II (Lot 26-38) aircraft. The F/A-18E/F continues to transition into the fleet, improving the survivability and strike capability of the carrier air wing. The Super Hornet provides an increase in combat radius, endurance and weapons payload over the legacy Hornet. The program will complete procurement of the 565 programmed aircraft in 2014. Production line shutdown will begin in Fiscal Year 2014 with the final shutdown occurring in Fiscal Year 2016. The Super Hornet uses an incremental development approach to incorporate new technologies and capabilities –JHMCS; Advanced Targeting Forward Looking Infra Red (ATFLIR) with shared real-time video; Shared Reconnaissance Pod System (ShARP); and MIDS data-link. The F/A-18E/F Fiscal Year 2012 Budget request includes \$172.6 million in APN to implement commonality, maintain capabilities and improve reliability and structural safety.

The APG-79 Active Electronically Scanned Array (AESA) radar system was installed in all production F/A-18E/Fs and EA-18Gs beginning with Lot 30 in Fiscal Year 2006, and a retrofit program exists to modify 133 Lot 26-29 Block II aircraft with APG-79 radars. The Navy plans to equip all 428 Block II Super Hornets with AESA radars, providing the Super Hornet a significant increase in detection range, lethality and survivability over the legacy Hornets. AESA squadrons have been successfully deploying since 2007 and are highly valued by fleet commanders. The AESA squadrons are considered force multipliers because of their ability to share battlespace management data with other non-AESA tactical aircraft in the carrier strike group.

The F/A-18 E/Fs have flown approximately 30 percent of the total flight hours available at the 6,000 hour limit. Force structure analysis has shown that this will not be adequate to meet operational commitments out to 2035. As a result, the F/A-18E/F Service Life Assessment Program commenced in 2008 and will last through 2015. The goal is to analyze actual usage versus structural test data to identify the feasibility of extending F/A-18E/F service life from 6,000 flight hours to 9,000 flight hours via a follow-on SLEP. Extending the airframe to 9,000 hours through both inspections and modifications is currently assessed as a low risk effort. The Fiscal Year 2012 President's Budget includes a request for \$100.4 million RDT&E (Fiscal Years

2012-2016) to support the F/A-18E/F SLAP study requirement. One of the F/A-18E/F SLAP goals is to define the necessary inspections and modifications required to achieve 9,000 flight hours.

Other goals in the SLAP study 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 in assessing airframe, flight controls and subsystems. Phases B and C will continue those assessments along with landing gear and multiple fleet teardowns. The F/A-18E/F SLAP is incorporating lessons learned from the F/A-18A-D analysis. E/F SLAP was started sooner in its life cycle than the F/A-18A-D SLAP and encompasses the entire weapon system vice just the airframe. The F/A-18E/F SLAP also has the advantage of having a third lifetime of test cycles completed on multiple test articles providing detailed information on high fatigue areas early in the program. The SLMP philosophy has also been applied to the F/A-18E/F fleet much sooner in its lifecycle than the F/A-18A-D, which will optimize FLE, flight hours and total landings so that they all converge at approximately the same time, which should align aircraft service life with fleet requirements.

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

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

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

The Navy has completed an Analysis of Alternatives (AoA) to determine the best path forward for the Next Generation Jammer (NGJ). The NGJ system will replace the ALQ-99 electronic warfare pods currently flown on the EA-18G and EA-6Bs and will provide DoD with the advanced comprehensive electronic attack capability to outpace the threat. The Next Generation Jammer is planned for integration initially on EA-18G aircraft, and may later offer integration opportunities on F-35B and F-35C aircraft.

Conclusion

The Department of the Navy supports fully the F-35 Joint Strike Fighter program. While the

Navy and Marine Corps await completion of F-35 SDD, our current fleet of F/A-18 aircraft remain ready and relevant through a portfolio of assessments, inspections, improvements and investments.

Thank you for this opportunity to discuss Navy and Marine Corps tactical aviation and the F-35 program. We look forward to answering any questions you have.