

Next Generation AESA Radar Takes First Flight in Super Hornet

The first flight of the integrated APG-79 Active Electronically Scanned Array (AESA) Radar was flown in a U.S. Navy F/A-18 Super Hornet at NAVAIR China Lake, Calif. on Wednesday, July 30, 2003. The flight marked another milestone in the spiral development of the aircraft by commencing an extensive flight test program with the APG-79 installed. The new radar will make the F/A-18 an even more powerful precision strike platform providing revolutionary capability to the fleet.

“We’ve reached an exciting time for the F/A-18 and AESA, flight testing! The AESA radar will truly revolutionize the Hornet aircraft and the way in which we conduct combat operations.”, said NAVAIR F/A-18 Program Manager Capt. B.D. Gaddis.

The AESA radar system is integrated in the F/A-18 by prime contractor, The Boeing Company, of St Louis, Mo. and built under a subcontract by Raytheon Corporation of El Segundo, Calif. The integrated NAVAIR and Industry team expect to deliver the radar to the fleet by 2006.

Performance and capabilities of current airborne radars are limited by the speed of the mechanically scanned antennas. In an active array radar like the APG-79, the radar beam can be steered at close to the speed of light. This rapid beam scan feature enables superior performance and capabilities. The APG-79 radar’s Multi-Function Array is comprised of numerous solid state transmit and receive modules, or T/R modules. Because the array is solid state, mechanical breakdowns are virtually eliminated, leading to dramatic



Super Hornet takes off for maiden flight with AESA Radar.

Photo courtesy of Boeing Corporation

improvements in reliability and lower cost; all achieved with tremendous performance enhancements. The APG-79 is more lethal, more survivable, more reliable and more affordable than its mechanical cousins.

“The AESA radar system is part of a spiral development designed into the Super Hornet as part of its promised leading-edge technology,” said Tony Parasida, Boeing vice president for the F/A-18 program. “The Super Hornet was designed with room for growth -- room to incorporate new technologies now and to enhance the aircraft’s network centric capability.”

Look Inside For ...

Lot 26 rolls off Assembly Line	2
F/A-18 Wingman Award	3
Out and About	4
Engine’s Benefit from PBL	5
Swiss Visit	5
Hornet Teams Recognized	6
This ’n That	6
New Paint for Super Hornet	7
FIRST Welcomes ATFLIR	8

Lot 26 Rolls off the Assembly Line

Nicolette Cormier

The first Super Hornet from Lot 26, equipped with all the latest aviation technology, recently rolled off the Boeing assembly line. Before heading out to the fleet, Aircraft 'E65,' featuring a redesigned forward fuselage, was delivered to the Navy for further flight-testing at the NAVAIR Strike Testing facility Patuxent River, Md.

The aircraft's enhanced forward fuselage allows for future technological upgrades, ensuring spiral development in the F/A-18E/F Block II configuration.

"Primarily the fuselage allows for increased cooling and power capacity to accommodate anticipated future equipment upgrades," said Lt. Cmdr. John Mawhinney, NAVAIR F/A-18 Core Avionics. "We also took advantage of this redesign effort to incorporate manufacturing Cost Reduction Initiatives (CRIs), and also simplify the design. These enhancements will reduce the Super Hornet's manufacturing cost and make it easier to maintain throughout its service life."

Originally developed in the mid-1990s, the E/F version of the aircraft employed advanced technologies to greatly improve the mission performance of the combat-proven F/A-18. However, recognizing the need for continual improvements in affordability and performance, the Navy formed a partnership with the Boeing Company that would significantly reduce the unit cost of the F/A-18E/F by modifying the forward fuselage and allow the incorporation of six new avionics systems.

The program's goals were to provide all features necessary to incorporate a new radar, new Advanced Crew Station (ACS), and four other improved avionics systems. The significantly increased equipment cooling

incorporated in the redesigned fuselage made possible a more effective and cost worthy installation of the APG-79 Active Electronically Scanned Array (AESA). Although AESA will not be delivered with Lot 26 aircraft, the plan is to retrofit Lot 26 with AESA when the new radars become available. The first production install of AESA is planned to occur with Lot 27.

the "E" model and front cockpit of the "F" model," said Mawhinney. "The biggest change occurs in the "F" model Lot 26 aircraft with the ACS. The ACS is a completely redesigned aft cockpit with enhanced functionality for the Weapons Systems Officer (WSO) and allows for aft seat release of guided air-to-ground and air-to-air weapons. There are also provisions for future retrofit of upgraded displays, including an 8x10 center display. With proper aircrew coordination, the enhanced functionality and capability provided by ACS will result in a more efficient and lethal aircraft. It is an evolutionary increment on the path to full capability, as envisioned by Sea Power 21, Network Centric Operations, and the Hornet Roadmap."

The first Lot 26 for Strike Fighter Squadron 122 (VFA-122) is due to deliver in mid September. VFA-122 will begin training their initial cadre of instructor pilots and WSOs on a simulator in late August.

VFA-41 ("F" squadron) is expected to begin transition training soon after the beginning of the year and VFA-14 is projected to transition to Lot 26 F/A-18E models shortly thereafter.

While these first Lot 26 aircraft will not bring about an immediate surge in Network Centric Warfare capability, the growth potential is there and they will be easy to retrofit as the new systems become available.

"The Block II Super Hornet with Link 16, AESA, ATFLIR, SHARP, JHMCS, and AIM-9X will ensure the F/A-18 will remain one of the world's premier strike fighter aircraft, and the backbone of the U.S. Navy's contribution to Network Centric Warfare and Sea Power 21 capabilities," Mawhinney said.

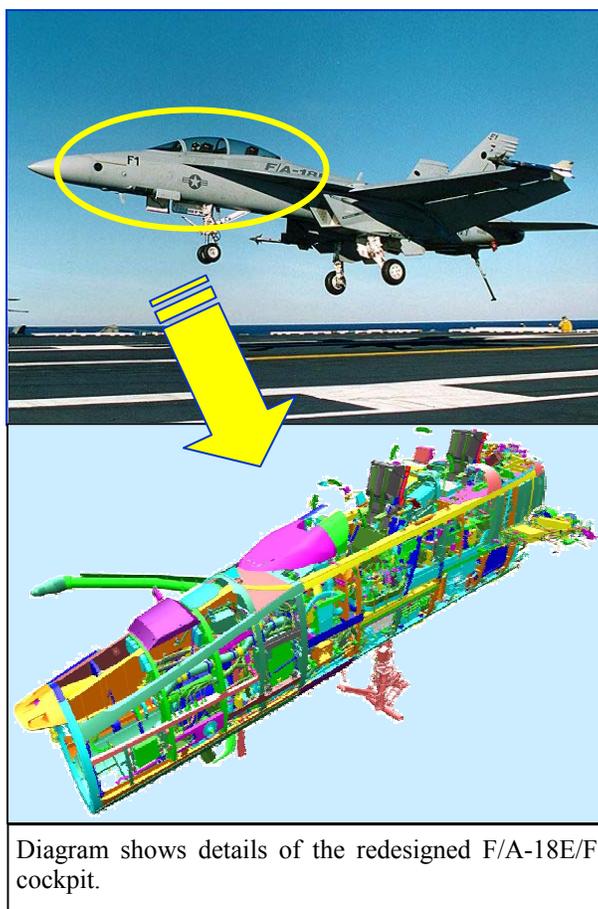


Diagram shows details of the redesigned F/A-18E/F cockpit.

The redesigned forward fuselage is built to last three times longer than required to ensure low life cycle cost and high operational readiness. The design incorporates new outer mold line access doors that are identical to, or larger than the existing designs, but with fewer fasteners.

"As far as the cockpit is concerned there is not a lot of change from Lot 25 in the forward and aft crew stations for



F/A-18 Wingman Award Presented For OIF Support

F/A-18 Program

Rusty Campbell wasn't thinking of himself when he headed for Kuwait during the buildup for "Operation Iraqi Freedom" (OIF). He was thinking of the USMC and the assistance they needed keeping their F/A-18 aircraft ready to launch. Campbell, an employee of VSE Corporation (a company that is contracted with NAVAIR PMA265 and AIR-3.6 to support the Automated Maintenance Environment (AME) engine life tracking system) was recently presented with the F/A-18 Wingman Award during a ceremony in VSE's Lexington Park, Maryland offices. The F/A-18 Wingman Award is given to an individual or team for effort that is of significant value to the fleet, directly in support of the fleet, and at the fleet's location. Rusty Campbell's support and dedication to the fleet have made him a distinguished and admirable recipient of this award.

A former Marine with 27 years service, Campbell was recognized for his service on board several aircraft carriers and also ashore with USMC contingents in Kuwait during "Operation Iraqi Freedom" (OIF).

Members of the F/A-18 community and VSE employees applauded as Capt. "BD" Gaddis, NAVAIR F/A-18 program manager, presented Campbell with the award. Addressing Campbell, Gaddis said, "I realize that it doesn't matter whether you are in or out of the Corps, you are always a Marine and willing to step up to the plate. You jumped on a plane and headed out to the Middle East and did a terrific job. Thank you."

During the buildup for OIF, Campbell volunteered to go to the Middle East in support of deployed squadron AME requirements. Upon learning of problems ashore with the five deployed United States Marine Corps F/A-18C/D aircraft, he volunteered to go Kuwait in order to ensure the units had the best tools



Photo courtesy of VSE Corporation
F/A-18 Program Manager Capt. Donald "BD" Gaddis presents Rusty Campbell with the F/A-18 Wingman Award. Campbell was recognized for his service on board several Dr. Alfred Markwalder, Swiss Armament Chief, Defense Procurement Agency .

available to maintain essential war fighting assets.

**"I realize that it doesn't matter whether you are in or out of the Corps, you are always a Marine and willing to step up to the plate. You jumped on a plane and headed out to the Middle East and did a terrific job. Thank you."
Capt. "BD" Gaddis**

VSE F/A-18 AME Fleet Support Team Program Manager, Terry Chandler, spoke highly of Campbell. "As a retired Marine, Rusty was more than enthusiastic to have the opportunity to be in-country and support the Marine Corps. He has a

reputation for excellence and is recognized and respected by the fleet sailors and Marine based support."

Chandler said that within the last few years there has been an AME rep on practically every ship, or with every squadron, and during every major operation that the Navy and Marine Corps have undertaken since the war on terrorism began.

"Rusty has been part of F/A-18 AME fleet support team for four years. With all of his fellow team members he spent a great deal of time aboard ship in support of the F/A-18 community and the fleet."

"The majority of the 23-man team is made up of retired Sailors and Marines who understand the dynamics of fleet F/A-18 squadrons requirements. Rusty is an example of the values that have driven the AME fleet support team over the past six years. His unique skills and capabilities have grown within the team and have made the VSE Support team a world-class operation.



Out and About With The Fleet



Atlantic Ocean (Aug. 12, 2003) – An F/A 18 Hornet assigned to the "Gladiators" of Squadron VFA-106) lands on the flight deck aboard USS Theodore Roosevelt (CVN 71). Roosevelt is operating in the Atlantic Ocean conducting carrier qualifications. U.S. Navy photo by Photographer's Mate Airman Apprentice Michael D. McCann-Cole.

Aboard USS Carl Vinson (CVN 70) Aug. 3, 2003 – Integrated Catapult Control System personnel relay messages to the topside petty officer as they prepare an F/A-18C Hornet assigned to the "Fighting Redcocks" of Squadron VFA-22 for launch from the flight deck aboard USS Carl Vinson (CVN 70). The USS Carl Vinson Carrier Strike Group is currently on an extended deployment in the Western Pacific. U.S. Navy photo by Photographer's Mate 2nd Class Inez Lawson.



Pacific Ocean (Aug. 7, 2003) Aviation Boatswain's Mate Airman Jesus Romero stands by as an F/A-18 Super Hornet is prepared to launch from the flight deck of USS John C. Stennis (CVN 74). The USS Stennis is at sea conducting training exercises in the Southern California operating area. U.S. Navy photo by Photographer's Mate 2nd Class Jayme Pastoric.

Hornet Engine's Benefit from PBL Contract

Nicolette Cormier

The U.S. Navy has awarded General Electric Aircraft Engines (GEAE) a \$357 million performance-based logistics (PBL) contract to work on the F/A-18 Hornet (models A-D) at NAVAIR Jacksonville during the next five years.

"The contract was due to excellent work by the PBL working group team," said Dave Reed, NAVAIR F/A-18 F404 Assistant Program Manager for Logistics. "This work will include the repair and over haul of 37 major assemblies and sub assemblies on the F404-engine which powers the F/A-18 aircraft." The team consisted of members from GE, NAVAIR and the NAVICP.

GEAE will provide material, program management, warehousing, and information technology. The NAVAIR Depot at Jacksonville, Florida, will provide labor and overhaul expertise for the F404 engine. Work will include repair and replacement of 26 internal engine components. The Lynn plant will provide the engineering for the project.

Said Steve Knopping, GE F404 PBL Director, "GEAE is able to launch its first military PBL contract, providing an opportunity to improve



Photo courtesy of NAVAIR Jacksonville

Celebrating their recent contract award are Left to right John Crumpley, Terri Ferslew, Wayne Tison, Wes Johnson, Ken Traylor, Steve Knopping, Captain David Beck, Luis Llera, Jeff Colquitt, Jim Yadon and Mike Butler.

readiness through parts availability, and setting the stage for future PBL contracts on other product lines."

The Quadrennial Defense Review, September 2001, directed the Department of Defense (DoD) to implement PBL's to compress the supply chain and improve readiness. The foundation of this unique partnership is based in establishing logistics performance requirements and contractual incentives. The contract proposes that all logistics support elements can be incorporated within the

Performance-Based Business Environment. In other words, the PBL solution provides incentives for reliability and stops paying for frequent repair. It also allows Industry to bring flexibility and innovation into the management of the supply chain.

The F404 engine contract will provide the F/A-18 Hornet fleet with better than 85 percent component availability, a level significantly higher than that offered by traditional support processes.



Swiss Looking at Super Hornet Addition to Air Defense



Rear Adm. Walter Massenburg, NAVAIR Assistant Commander for Aviation Depots, greets Dr. Alfred Markwalder, Swiss Armament Chief, Defense Procurement Agency during his recent visit to NAVAIR.

Capt. "BD" Gaddis, F/A-18 Program Manager briefed the guests on the current status of the F/A-18E/F and its products, while Capt. Win Everett, F/A-18 Deputy Program Manager for Fleet Support, briefed the status of the F/A-18C/D aircraft and the FCC software v10.7 upgrade. Capt. Everett also provided data on how the v10.7 Flight Control Computer (FCC) Software upgrade increased departure resistance and enhanced aircraft maneuverability.

F/A-18 Hornet Teams Recognized for Excellence

Edited from an article by NAVAIR Public Affairs

Four teams from the NAVAIR F/A-18 program office were recognized for their efforts and excellence during a Commander's Awards ceremony held June 10. The award presentations, hosted by the Aircraft Division People Focus Group, recognized the achievements of the area work force.

A total of nineteen teams were awarded for their efforts and excellence directly related to the mission and represents an outstanding achievement in specific problem areas, or breakthroughs enabling mission accomplishment, or both. The achievements demonstrated the teams' efforts in overcoming difficulty in solving problems or developing methods to enhance the operational capability of new or existing systems, or both.

The F/A-18E/F CNI T&E Logistics IPT planned and fielded the Initial Operational Capability and support of Communication/Navigation/Identification subsystems. The team was recognized for, because of current mobilizations and deployments, "getting resources to the fleet F/A-18A+, C/D and E/F operational squadrons much earlier than originally planned and in greater quantities."

The F/A-18 Automated Maintenance Environment Logistics/Supportability Integrated Logistics Support Team was awarded for working with the F/A-18 Program Office and the Navy in implementing the Automated Maintenance Environment concept and business process improvement/re-engineering efforts.

The NAWCAD F/A-18 Multifunctional Information Distribution System-Low Volume Terminal Test Team was recognized

for its support of the F/A-18 MIDS-LVT program, which has enabled delivery of this capability to the Navy and Marine Corps.

The F/A-18A-D Flight Control Computer OFP Version 10.6.1/10.7 test team was commended for adapting the high-angle-of-attack control law structure from the F/A-18E/F aircraft with the legacy Hornet aircraft flight control computer software. "Through this modification, the legacy Hornet now enjoys significantly increased high AoA maneuverability, departure/spin resistance, and out-of-control recovery capability.

Teams were also recognized for achievements that enhance Aircraft Division efforts by supporting fleet requirements or mission readiness. Achievements were, but not limited to, development, accomplishment, or improvement of processes.



The F/A-18E/F Super Hornet completed a milestone as it completed a destructive failure test to twice the maximum load the aircraft is designed to encounter. The full-scale structural test article demonstrated a 204 percent Design Limit Load capability during a wing/fuselage bending condition, compared to a design requirement of 150 percent. This is the first of a series of failure tests which will enable the team to determine the true structural capability of the aircraft.



Boeing F/A-18 Team 'Thinks Pink' To Solve FOD Problem, Super Hornets dolled up in pink? It's happening on the shop floor in F/A-18E/F final assembly at Boeing Integrated Defense Systems in St. Louis.

It all started when High Performance Work Organization (HPWO) teams in Department 194A needed a solution for a potential FOD problem involving systems installation of the F/A-18E/F forward fuselage. The group uses temporary, plastic cable "zip ties" to hold wire bundles tightly in place during installation. The ties were a potential FOD problem because they were black plastic and hard to see. The teams called in Process Control Engineering and Phantom Works, and decided the easiest solution was to change the color of the ties.

They specially ordered pink ties that glow under a black light, which makes it easier for assemblers to see them. The teams have been using the ties about a month and they've made a real difference.

Super Hornet Pilot Says So Long to Squadron Lt. Cmdr. Jake "J.Q." Ellzey an F/A-18E pilot from VFA 14 said farewell recently to his squadron after making his final trap aboard USS Nimitz (CVN 68). In a traditional ceremony on Nimitz' flightdeck, Ellzey was "wet down" after climbing out of his Super Hornet, marking the conclusion of his three-year tour with VFA-14. Armed with a few buckets of water, friends and fellow pilots proceeded over to the jet and doused him with cold water.



Depot Selected To Apply New Paint Coating On Super Hornet

By Bill Bartkus
NAVAIR Depot North Island

NAVAIR and The Boeing Company have teamed up to test a replacement for paint on the F/A-18E/F Super Hornet. The Low Cost Appliqué Program, (LCAP), is intended to reduce hazardous materials associated with painting aircraft, reducing maintenance, and eliminating weight growth from fleet repainting.

"LCAP is a research, technical development and engineering project. The NAVAIR F/A-18 Program Office (PMA265) is the overall project lead in partnership with Boeing to put a plastic appliqué on the Super Hornet," said Charles Soper, Industrial Logistics Support Competency at NAVAIR Depot North Island

"This was originally performed on an F/A-18C, then on a Joint Strike Fighter aircraft, and an S-3 Viking. Now the process is being tested on the Super Hornet."

According to Soper, LCAP is an experimental test program to decrease the lifecycle cost of the coating systems. "The Navy spends a lot of money on paint coatings for aircraft, including applications and continuous maintenance," said Soper. He also said that the goal of LCAP is to reduce cost while making the aircraft more maintainable.

Naval Air Warfare Center (Aircraft Division) initiated the program and asked to use the Depot plant and its engineers and artisans to perform the job. Soper said that the Depot agreed to the project in July 2002.

"The Business Office (now the Industrial Logistics Support Competency) was tasked with coordinating the project," said Soper, who was named the project coordinator

"We inducted the first Super Hornet at the Depot Test Line on May 5 where artisans weighed and de-fueled the aircraft. We also performed induction runs with the squadron," he said. "Then the aircraft went to the Paint Shop where artisans stripped and sanded it."



Photo courtesy of The Boeing Company
Aircraft painter Victor Farinas appliqué an F/A-18E/F in the paint bay at NAVAIR Depot North Island.

The aircraft belongs to VX-23 Naval Strike Aircraft Test Squadron in Patuxent River, Md.

Depot and Boeing engineers, and artisans and painters from Boeing Seattle, and Boeing St. Louis, worked alongside Depot artisans in the Paint Shop to apply the material. "The aircraft recently flew and has started its two-year test program," Soper said. "It has been a very successful project," he mentioned. "It took approximately two weeks to appliqué the aircraft, and return it to the Test Line."

Six Depot artisans and six artisans from Boeing worked in teams of two. "They also reapplied markings on the aircraft," Soper said.

The lead supervisors included Tom Sapien in the Paint Complex, and Terry Timm at the Test Line.

"The process was painstaking," Soper said. "Artisans had to cut around fasteners in order to hand apply the material in sheets. They had to smooth it out as they went along so that there weren't any voids or bubbles."

Soper said that Larry Lausin and Diana Peter, both with Depot Support Equipment, had to procure cutting tables, cabinets, and other equipment to support the project. Depot Engineering and the Materials Laboratory were also involved in the project.

"Boeing developed the appliqué, and NAVAIR PMA265 provided the aircraft," Soper said. "This was an overall team effort with the manufacturer and the user."

He said that the aircraft looks the same from afar, "but up close you can see that it's a smooth surface. It's not like a regular painted surface on the aircraft."

For this portion of the project, Soper said appliqué material was applied on the upper surface and on the lower surface aft of the intake ducts. "Previously, Boeing had problems with other types of appliqué that peeled off. Boeing has done a lot of research into the adhesion qualities and the material is not expected to come off."



FIRST Program Welcomes ATFLIR

Nicolette Cormier

The unique partnership between the U.S. Navy and industry grows stronger as the F/A-18 Advanced Targeting FLIR (ATFLIR) is added to the NAVAIR F/A-18E/F Integrated Readiness Support Teaming (FIRST) concept. A contract, between FIRST and ATFLIR's prime contractor Boeing, was signed July 15, 2003

"This is only the first small step to fully realize the concept of FIRST as a true Performance Based Logistic (PBL) for roadmap systems," said Lt. Cmdr. Jaime Engdahl, NAVAIR F/A-18 Electro-optical Team Leader. "This contract addresses specific near-term tasks such as program sustaining logistics, Raytheon technical representative support, engineering investigations, and Depot analysis. We are closely working with NAVICP, Boeing, and Raytheon to bring together all aspects of logistics support into one performance based concept."



ATFLIR a welcome addition to both the Super Hornet and the FIRST program.

"FIRST is not a single contract or program in and of itself, it's a support concept that embraces the 10 element of logistics," said Steve Nickle, contracting officer for the F/A-18A-F programs. "The program is a combination of NAVAIR and NAVICP contracting. These two teams working together provide a total support package that improves readiness, mission capability, and life cycle product management."

The program's goals are affordable readiness, and lifetime Super Hornet support through reliability improvements, obsolescence management and technology insertion. To achieve these goals FIRST concentrates on a government/industry partnership that includes a Hornet support network, supply chain management and performance based contracting

The advantages provided by FIRST to ATFLIR, and the F/A-18 fleet are numerous. They include improved material availability through quicker response times, optimal use of transportation, as well as tools to better manage the logistics system and increased system reliability. The FIRST program draws upon the best of both government and industry. It is designed to be invisible to the warfighter while increasing readiness and driving down ownership costs for the F/A-18E/F and its weapons systems.



ATFLIR loaded and ready for take off on an F/A-18.

The FIRST Program, made aviation history for its uniqueness when the first contract between the Boeing Company and the NAVAIR F/A-18 program was signed in June 2001. The program is a joint undertaking between the Navy and industry to improve fleet support and lower support costs. The venture came about due to the joint efforts between the Naval Inventory Control Point (NAVICP), Boeing, NAVAIR and the Navy depots.