



# NADEP NORTH ISLAND: DEMYSTIFYING THE DEPOT

By Mike Hammond      Photos by Joe Feliciano

Somewhere in the fleet, the following conversation might be taking place: Pilot to mechanic, “My plane’s headed for the depot at North Island. What happens to it there?” Mechanic to pilot, “Sir, you got me. It just goes away and a few months later it comes back all clean and shiny.” So what really happens to the F/A-

18 *Hornets*, E-2C *Hawkeyes*, C-2A *Greyhounds*, H-60 *Seahawks*, AH-1 *Cobras* and S-3 *Vikings* that disappear into Naval Air Depot (NADEP) North Island’s hangars in San Diego, Calif? The answer is: plenty!

Part of the Naval Air Systems Command, NADEP North Island is the Navy’s largest aviation industrial



facility on the West Coast. Its civilian and military personnel refurbish naval aircraft and components, utilizing a unique capability to test, disassemble, repair, manufacture, rebuild and calibrate much of the U.S. Navy's aircraft and parts inventory.

When an aircraft arrives at NADEP North Island, whether under its own power or by truck, the first step is to induct it into the depot. Paperwork is completed to turn the airplane over to the depot, and the squadron and depot versions of the Aviation Discrepancy Book are checked for repair and modification requirements to be performed. Next, depot artisans begin the examination and evaluation (E&E) process to determine what needs to be done in order to get the aircraft back to the fleet as quickly and cost-effectively as possible. The depot's work center process then begins,

outlining all of the work necessary in minute detail and estimating the costs, parts and labor charges. The work may be scheduled maintenance or unscheduled work that was found to be needed during the E&E process, modifications and upgrades, or work done in response to squadron requests based on their unique knowledge of how the aircraft is flying.

The depot and the squadron or air wing negotiate a completion date that takes into account the depot's need to give the aircraft the best maintenance and repair possible and the fleet's need to get the airplane back for training or to meet critical deployment schedules. "Throughout the process," said AE1(NAC) Stephen Dyson, a C-2 crew chief, "we may be in contact with maintenance control at the squadron to ask if certain things were already done, or if

**Left, an artisan reinstalls a panel on the leading edge of an E-2C Hawkeye on the NADEP North Island test line, where aircraft are readied for test flights. Right, the carriers *Nimitz* (CVN 68) and *Constellation* (CV 64) sit at the depot's doorstep at NAS North Island, Calif. Below, an F/A-18 Hornet is moved from induction at the depot's test line to the hangar where it will undergo months of maintenance and repair before returning to the fleet.**





paperwork is available that we don't have, and we keep the squadron abreast of what's happening with their plane."

A stop in the paint hangar comes up next, where paint is removed by plastic media blasting (PMB), a more environmentally friendly and time-saving method than the customary chemical stripping, which is still used in some applications. Tom Sapien, Aircraft Paint/PMB supervisor, explained that "the depaint process is crucial to the fleet because it's our job to identify corrosion on aircraft and arrest it before the aircraft is repainted and reinducted into the fleet." However, this step can be a challenge due to the amount of paint on the aircraft when they arrive at the depot. The specification calls for only a 9mm coating, but aircraft have arrived with 30mm of paint, adding up to 600 pounds to aircraft weight and requiring as much as an additional six days at the depot for removal. Once all the paint is removed, an anticorrosive or primer coating is applied to protect the stripped surfaces from exposure to the saltwater environment if the aircraft will remain at North Island for a lengthy period.

**An F/A-18 Hornet gets washed down in one of the bays in the depot paint area. NADEP North Island must meet the rigorous environmental standards of California, the toughest in the nation, in all its operations.**

Disassembly comes next, allowing the aircraft frame and its component parts to take different paths to completion at the depot. The airframe gets work on corrosion, stress damage, cracks and an array of other maintenance and repair activities. It may be x-rayed to find hidden damage and surfaces may be ground, heat-treated or examined nondestructively

for honeycomb or other internal damage. With a composite material facility that was the first of its kind in the Department of Defense, NADEP utilizes specialized materials of extraordinary strength and light weight to repair and replace surfaces that only a few years ago would have needed to be bought new.

Component parts that need work are removed and sent to shops that specialize in that type of part, such as avionics, landing gear, stabilizers and flaps, instruments, fuel cells, ordnance systems, canopies, parachutes, and hydraulic and pneumatic systems. This element comprises the largest portion of the depot's workload; in FY 2001 NADEP North Island completed more than 63,000 component parts.

Once the complex dance of moving parts and



Left, NADEP North Island artisan John Ruiz carefully tests the fit of a section of honeycomb in an F/A-18 *Hornet* stabilator. The depot was the first DOD facility to repair aircraft components made of or using composite materials. Below, Leon Boykin, one of the more than 3,000 civilian employees of NADEP North Island, performs fiberglass repairs on an S-3 *Viking* nose cone. While the majority of NADEP artisans are veterans of military maintenance operations, only about 70 are active-duty Navy personnel.

assemblies around the depot for maintenance and repair is completed, reassembly of the aircraft begins. Then, it's another visit to the paint complex, where the aircraft get a new coat of paint, decals, stencils and all the required critical safety of flight markings.

The last stop is the depot test line where depot artisans and military crews perform a series of ground tests and checks until they deem the aircraft ready to fly. NADEP North Island pilots and crew then take to the air and perform another series of checks to ensure the airworthiness of all the aircraft's systems. If any discrepancies are found or problems develop, they're corrected, and depot pilots and crew again do a check flight.

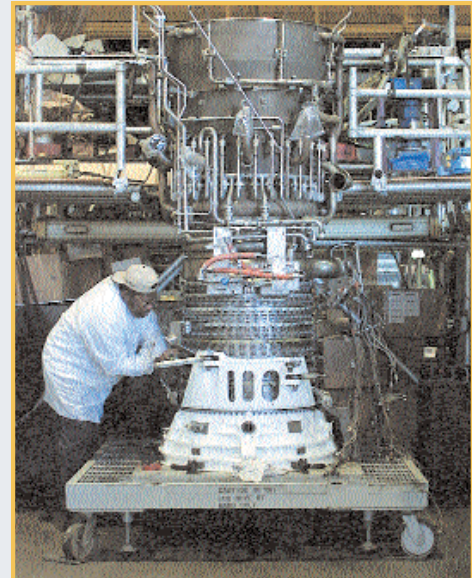
When all agree the aircraft meets the requirements of safety and a top-quality product, the aircraft is removed from the depot's books. Military pilots, either those assigned to the depot or from an active squadron, fly the aircraft to the organization designated to receive it—which, due to the vagaries of deployment and training schedules, may not be the same as the one it left.

Tessie Pino, overhaul and repair supervisor in the depot's F/A-18 team, explained the challenge current operations place on the depot. "With the war going on right now, we have many 'must-meet' aircraft scheduled. Actually, we had the first aircraft that came back from Operation Enduring Freedom, which had 11 bombs painted on it for 11 missions. It's being worked on right now as a must-meet, and will be returned to the fleet



soon to join the war again."

NADEP North Island strives to develop new technology and procedures to streamline the depot process. Their engineers and artisans pioneered new procedures in the late 1980s to disassemble an F/A-18 *Hornet* where it was never designed to be taken apart in order to replace the center section, nose or tail. This imaginative effort has saved \$150 million to date and will extend the service life of today's *Hornets* until the *Super Hornet* E/F models phase into fleet units. Similarly, the depot instituted phased depot maintenance for the C-2A *Hawkeye* and E-2C *Greyhound*, in which the entire tail section of a C-2 or the center support section of an E-2 is removed and replaced by one that has been prepared ahead of time. These aircraft typically



Above, Chu Fang of NADEP North Island's research and engineering department tests the global positioning system and armament software of an SH-60 *Seahawk*. Above right, NADEP North Island is the only Navy facility performing depot-level maintenance on the LM2500 turbine engine, which powers many Navy surface vessels. Right, the depot is capable of manufacturing wire bundles and electrical components. Below, AT2(AW) Cesar Decena (seated) and AT2 Stephen Applebaum perform a series of tests in the depot's Fleet Calibration Laboratory.



complete the NADEP process in half the time as in years past.

The depot can also manufacture many E-2/C-2 replacement parts that are not available through any other means, which can be used in the depot or to supply the fleet as needed. And the depot's artisans have taken the turnaround time for individual aircraft components from an average only a few years ago of 70–90 days to under 30 days. Efforts like these ensure that aircraft spend less time in the depot and are thus more available to the squadrons and aviation units of the fleet, providing greater opportunities for training time and improving readiness.

NADEP North Island also brings in-house engineering and logistics support to the table. The depot's logisticians provide innovative



**Above, an F/A-18 Hornet taxis from NADEP North Island's test line for a check flight. Depot pilots, sometimes assisted by squadron pilots and aircrew, fly check flights on all aircraft before they are returned to the fleet. Left, maintenance control center personnel at NADEP North Island brief depot pilots on the status of aircraft before check flights.**



solutions to the challenges of getting parts, materials, equipment, skills and expertise to the right place at the right time, allowing the fleet and its aviation units to function fully and capably while deployed. In a time when information is at a premium, the depot provides a flow of publications and drawings that the fleet needs to take care of its immediate problems on site.

Two laboratories at the depot also provide critical services to the fleet and the depot. The Navy Primary Standards Laboratory ensures accurate calibration of the electronic, microwave, flow, pressure, mechanical and other systems in the modern Navy's aircraft, surface vessels and submarines, which are crucial for mission effectiveness. The Materials Engineering Laboratory supports investigations into breakdowns and wear in the materials used in today's aerospace systems, and assists the depot in its efforts to identify environmentally

friendly materials for use in its processes.

"Every aircraft repaired, every component fixed, every repair engineered, every logistics plan developed here must have the stamp of being delivered by the best and delivered with

quality, timeliness and cost value," explained NADEP North Island Commanding Officer Captain Pete Laszcz. "America's naval warfighters can have confidence as they go in harm's way that the products from here will carry them safely to the accomplishment of their mission. Instilling that confidence is our mission, and our people have shown themselves to be equal to the task."

With that, the opening conversation might now go something like this: Pilot to mechanic, "My plane's headed for the depot at North Island. What happens to it there?" Mechanic to pilot, "Sir, we don't have time to go over all the stuff they do to it there. Better read *Naval Aviation News* for the whole story."



Mike Hammond is the NADEP North Island Public Affairs Officer. For more information on the depot, log on to [www.nadepni.navy.mil](http://www.nadepni.navy.mil).