

F-35B LIGHTNING IIs Team with British AIRCRAFT CARRIER

WHAT'S INSIDE

- ▶ Physiological Episodes Update
- ▶ CMV-22B COD Tracking
- ▶ Seahawk Sustainment Success



Grampaw Pettibone says ...

There's only one thing ol' Gramps wants to know more than The Man With No Name's name, and that's what in tarnation y'all think of this here glossy. Lemme know your ruminations by fillin' out our Reader Survey at <https://www.surveymonkey.com/r/6WGBKSR>



"I get to see the world from the sky," said Sgt. Derek Levi, MV-22B crew chief, Marine Medium Tiltrotor Squadron (VMM) 165, Marine Aircraft Group 16, 3rd Marine Aircraft Wing, pictured overlooking the landscape of Marine Corps Air Ground Combat Center, Twentynine Palms, Calif., during an aerial flight formation exercise.

U.S. Marine Corps photo by Lance Cpl. Rachel K. Young

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ON THE COVER



On the cover: Within days of the first deck landing Sept. 25, F-35B Lightning II fighter jets conduct their first night flying trials off the U.K.'s largest warship, HMS Queen Elizabeth. During night trials, pilots used state-of-the-art night-vision technology to land the fighter jets on the flight deck. (U.S. Navy photo by Dane Weidmann)

This Fall issue celebrates several recent milestones achieved by the F-35 Lightning II from sea trials aboard the HMS Queen Elizabeth (page 26) to the Marine Corps' first F-35B combat strikes (page 9). During operational testing with Carrier Air Wing (CVW) 7 aboard aircraft carrier USS Abraham Lincoln (CVN 72), F-35C stealth fighters were integrated into the air wing for the first time (page 10); and the Navy's new carrier-on-board-delivery aircraft, the CMV-22B Osprey, is on track to deploy with the F-35C (page 18).

We highlight several other new platforms with the first released image of the developmental VH-92A Presidential Helicopter as it conducts landing and take-off testing at the White House South Lawn (page 8), and the Navy awarded the engineering and manufacturing development contract for the MQ-25A Stingray (page 16).

On the back cover: Aviation Machinist Mate 2nd Class Clinton Blakemore and Aviation Electronics Technician 1st Class Erica Orzech perform final checks prior to a Blue Angels practice demonstration. (U.S. Navy photo by MC2 Jess Gray)

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Flightline

Q&A with New PEAT Lead

Rear Adm. Fredrick Luchtman relieved Rear Adm. Sara Joyner in June as the lead of Naval Aviation's Physiological Episodes Action Team (PEAT). In this issue of Naval Aviation News, Adm. Luchtman provides an update on Naval Aviation's number one safety priority—physiological episodes.

What do you bring to the effort?

The biggest thing I bring is my commitment to the aviation community and their families in finding a solution to PEs. We work very hard at synchronizing efforts across the Naval Aviation Enterprise, but we begin and end every day with the safety of our aviators and maintainers foremost in our minds.

What is the progress to date on resolving PEs?

Since the PEAT's establishment in August 2017, we serve as a unified, single-source entity, which unites DOD and non-DOD entities as a cohesive force to combat PEs, and we have made significant progress.

Recall that our T-45 fleet took an operational pause from April to July 2017 due to PE concerns. That was the catalyst for the creation of the PEAT, and T-45 was our first priority.

We implemented the root cause and correction action (RCCA) process, which was the same used during the F-22 mishap investigation in 2012. Through RCCA, we were able to identify and correct engineering deficiencies in that aircraft, which greatly reduced the PE rate, and along the way, we were able to definitively rule out contamination as a root cause.

Bottom line is that we have turned the corner in T-45.

In our legacy F/A-18 Hornet fleet (F/A-18 A-D), we implemented Air Frames Bulletin 821 (AFB-821) to address numerous aging components and have seen almost a 50-percent drop in the PE rate over the last year.

We now focus great effort on our F/A-18 E/F Super Hornet and E/A-18G Growler fleets. The Environmental Control Systems and Onboard Oxygen Generating Systems of those aircraft are more complex than those of the T-45 and require significant data collection to advance through RCCA. Despite that fact, a focus on preventative maintenance and replacement of sub-performing system components has resulted in a decrease in PE rate of 22 percent from its peak last year.

We will soon see installation of the Cockpit Pressure and Oxygen Monitoring System in Hornet, Super Hornet and Growler aircraft, which will provide additional alerts to aviators when either system is not performing as intended and provide engineers the downloadable data we need to assess system functionality.

In parallel with our engineering work, we are laboring to develop and

“Our challenge is that the cockpit is an inhospitable host, and many physiological sensors that work fine at sea level, under 1 G, and at ambient pressure, simply do not function as well in the dynamic flight environment.”

field physiological sensors that will allow us to better understand how our aviators perform at the physiological level in the dynamic flight environment.

Our challenge is that the cockpit is an inhospitable host, and many physiological sensors that work fine at sea level, under 1 G, and at ambient pressure, simply do not function as well in the dynamic flight environment. That said, our industry partners and in-house scientists are working hard to provide solutions quickly, and many are in the test phase at the moment.

Lastly, due to an infusion of PE-related funding for aeromedical research, we are moving forward on dozens of various research projects that are designed to identify the underlying mechanisms that are contributing to PEs. (See Naval Medical Research Unit-Dayton article on page 23.)



U.S. Navy photo

On right, Rear Adm. Fredrick Luchtman, lead of the Physiological Episodes Action Team (PEAT), talks to Lt. Tristan Brandenburg, a test pilot with Air Test and Evaluation Squadron (VX) 23, during a PEAT roadshow Sept. 11.

Along with the increased research and facilities at NAMRU-Dayton, what other commands are involved?

In addition to the great work being done at NAMRU-Dayton, we have a number of other Navy commands involved in performing PE-related research.

For example, researchers from the Navy Experimental Dive Unit, Naval Surface Warfare Center Panama City, NAVAIR, Navy Aerospace Medicine Institute, the Office of Naval Research, the Center for Naval Analysis, and the Navy and Marine Corps Public Health Center are all working on PE-related projects. Additionally, we have numerous collaborative efforts with the Air Force, academic and industry partners, NASA and partner nations (e.g., Royal Australian Air Force). (See page 21 for PE Monitoring Industry Day.)

This all-hands effort is critical to addressing all aspects of PEs.

How is the Navy collaborating with NASA?

NASA is a great partner, and we sought them out early on to leverage their expertise in developing the framework for our RCCA processes. NASA's input has been valuable, especially

as it relates to medical research and system integration. As NASA has stated, PEs happen to humans (not machines), and therefore much of our data collection and research efforts have been devoted to understanding the environment in which our aviators work. NASA continues to be a useful consultant and partner in our research efforts.

What are the advantages of the Air Force and Navy collaboration?

The Navy's PEAT is working closely with the Air Force's counterpart (AF-PEAT) to leverage opportunities for joint root cause analysis, testing and corrective action implementation, along with external subject matter experts from NASA, industry, academia, medical and dive communities to help resolve PEs.

The Navy and Air Force are committed to finding solutions to the causes of PEs in our aircraft, ensuring our pilots are not exposed to unnecessary risk and restoring confidence in their aircraft. This relationship has already enabled us to synchronize research and achieve a better understanding of the cockpit environment and our oxygen systems. 🛩️



U.S. Navy photo

A native of Auburn Hills, Michigan, **Rear Adm. Fredrick Luchtman** graduated from the U.S. Naval Academy in 1989. In December 1990, he was commissioned a naval aviator in Beeville, Texas.

As a career fighter jet F/A-18 pilot, he commanded Carrier Air Wing (CVW) 7 and Strike Fighter Squadron (VFA) 15. Luchtman also deployed with VFA-82, VFA-136, VFA-131 and CVW-2. He participated in Operations Southern Watch, Deny Flight, Deliberate Force, Enduring Freedom, Iraqi Freedom and Inherent Resolve. Ashore, Luchtman has served as a strike fighter tactics instructor at Strike Fighter Weapons School, Atlantic; C4 Systems chief at U.S. Strategic Command; tactical air commander detailee and the executive assistant to commander, Navy Personnel Command; and executive assistant to commander, U.S. Pacific Fleet.

Luchtman was promoted to flag rank in August 2018 after assuming his role as lead of the Physiological Episodes Action Team. Luchtman is a graduate of the Navy Fighter Weapons School (TOPGUN) and of the Naval War College, earning a master of arts in national security and strategic studies.

He has accumulated more than 4,000 flight hours and 1,000 carrier arrested landings in Navy jet aircraft. Luchtman's personal awards include the Legion of Merit, Bronze Star, Defense Meritorious Service Medal, Meritorious Service Medal, Air Medal with Combat "V," Strike/Flight Air Medal (eight awards) and other personal and unit awards. 🛩️

Grampaw Pettibone

Gramps from Yesteryear: September-October 2008

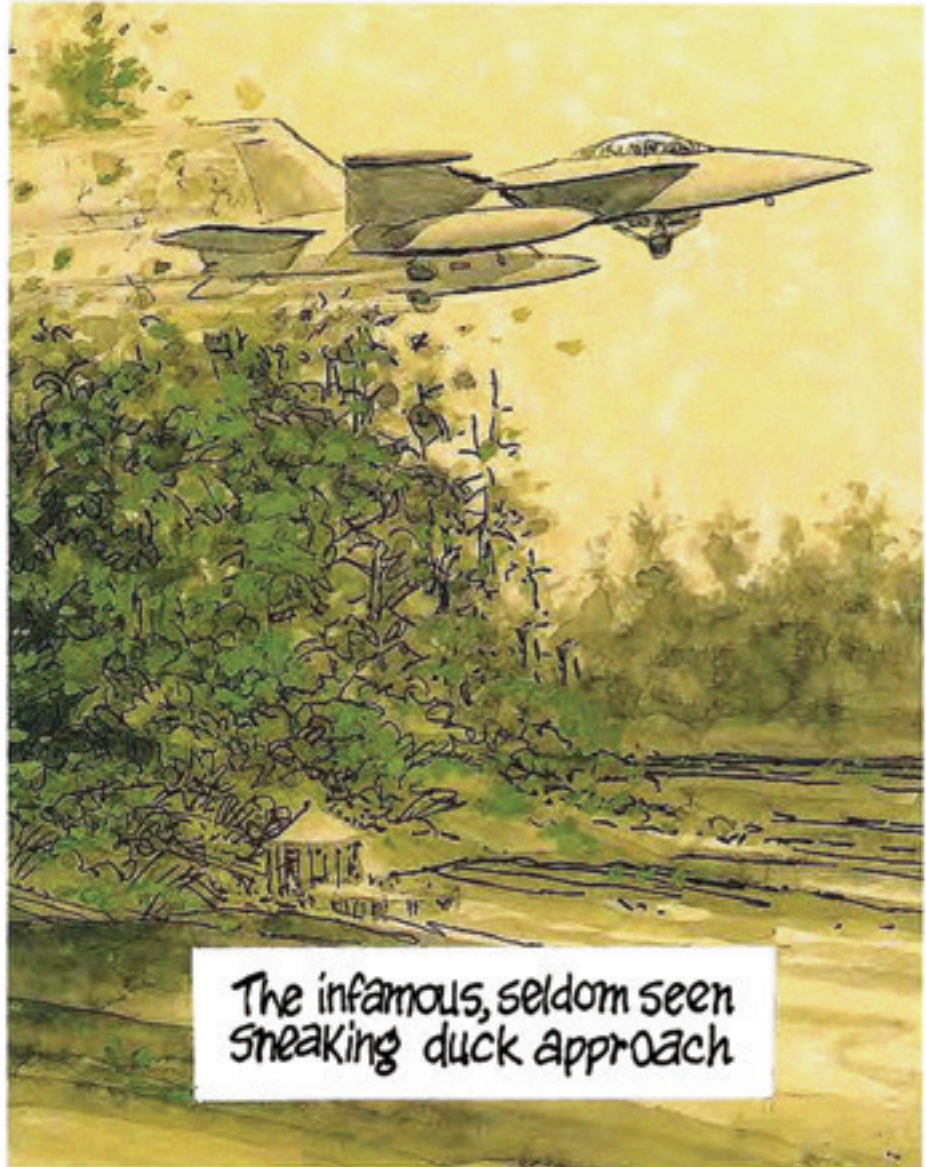
Illustration by *Ted Wilbur*

Tree Top Tangle

A two-seat F/A-18 Hornet was scheduled for an air-to-air radar evaluation hop. Prior to takeoff, the nose wheel steering failed but troubleshooters had supposedly corrected the problem. The Hornet got safely airborne but the gear handle would not move up. The white mechanical stop was visible in the landing gear control panel. The pilot reduced power and depressed the down lock override (contrary to NA-TOPS), removing the mechanical stop. He raised the gear handle and initiated a right turn.

The flaps were raised from half to auto and everything worked normally except the nose gear remained extended. The pilot reduced power to preclude exceeding airspeed limits for the hung gear. While the main gear were extending, the engines were at idle, the aircraft decelerating. The rear seater noticed ground closure and called, "Watch your rate of descent." The pilot went to military power, then maximum afterburner.

Ahead was a line of trees, about 100 feet tall. The aircraft struck the tops of the trees in a nose-high, wings level attitude with little vertical velocity. The aircraft managed to land but the left stabilator sustained major damage. The left engine was severely foddied. 🛩️



Grampaw Pettibone says ...



Sometimes a minor emergency can turn into a bucket of cobras a la Indiana Jones. I know the Hornet is one fine flyin' machine and can do wonders. But it's no better than the human bein's in the cockpit. A 10- to 30-knot overspeed of the gear ain't as bad as hittin' the ground. The guy in the back could have been a little more help, too.

If you think you might have had the same kind of trouble in such a situation, better bone up on emergency procedures. Not too many of us like those squirmen' cobras. 🛩️

New Presidential Helo Conducts Testing



U.S. Marine Corps photo

A developmental VH-92A helicopter conducts landing and take-off testing at the White House South Lawn Sep. 22 as part of a comprehensive test plan designed to ensure the aircraft meets all operational specifications.

PATUXENT RIVER, Md.—A developmental VH-92A Presidential Helicopter conducted landing and take-off testing at the White House South Lawn Sep. 22.

The aircraft is the first of six test aircraft developed under the Engineering and Manufacturing Development (EMD) phase, which includes the design, certification and testing of a replacement helicopter to support the presidential world-wide vertical-lift mission.

The landings and take-offs are part of the comprehensive test plan designed to ensure the aircraft meets all operational specifications.

Government testing began in August 2018 and is on schedule to achieve Initial Operational Capability in late 2020.

The Presidential Helicopters Program Office provides current (VH-3D and VH-60N) and future (VH-92A) safe and reliable executive lift helicopters to the Marine Corps to execute the mission of timely helicopter transportation for the President and Vice President of the United States, heads of state and other official parties.

The global nature of these commitments requires aircraft to deploy worldwide and operate in various environmental and climatic conditions without mission degradation. The VH-92A is designed to provide safe, survivable, timely, flexible, dependable, worldwide movement in support of the president while maintaining information availability and communications connectivity.

From the Presidential Helicopters Program Office. 🦅

Marine Corps F-35B Conducts First Combat Strikes

BAHRAIN—The Marine Corps F-35B Lightning II conducted its first combat strikes Sept. 27 in Afghanistan in support of Operation Freedom’s Sentinel.

In support of ground clearance operations, the F-35B conducted an air strike deemed successful by the ground force commander.

The fighter launched from Wasp-class amphibious assault ship USS Essex (LHD 2) as part of Essex Amphibious Ready Group. The F-35Bs from Marine Fighter Attack Squadron (VMFA) 211 are currently embarked on Wasp.

“The F-35B is a significant enhancement in theater amphibious and air warfighting capability, operational flexibility and tactical supremacy,” said Vice Adm. Scott Stearney, commander, U.S. Central Command. “As part of the Essex Amphibious Ready Group, this platform supports operations on the ground from international waters, all while enabling maritime superiority that enhances stability and security.”

The 13th Marine Expeditionary Unit (MEU) is the first combat-deployed MEU to replace the AV-8B Harrier with the F-35B.

“The opportunity for us to be the first Navy-Marine Corps team to employ the F-35B in support of maneuver forces on the ground demonstrates one aspect of the capabilities this platform brings to the region, our allies and our partners,” said Col. Chandler Nelms, Commanding Officer, 13th MEU.

From U.S. Naval Forces Central Command Public Affairs. 🇺🇸



U.S. Marine Corps photo by Cpl. A. J. Van Fredenberg

Marines with Marine Fighter Attack Squadron (VMFA) 211, 13th Marine Expeditionary Unit (MEU), load ordnance into an F-35B Lightning II aboard Wasp-class amphibious assault ship USS Essex (LHD 2) in preparation for the F-35B's first combat strike.



An F-35C Lightning II from the "Rough Raiders" of Strike Fighter Squadron (VFA) 125 prepares to launch from the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).

F-35C Lightning II Conducts Operational Test-1 Aboard CVN-72

ATLANTIC OCEAN—F-35C Lightning II aircraft from Strike Fighter Squadron (VFA) 125 conducted their Operational Test-1 (OT-1) in August with Carrier Air Wing (CVW) 7 and Carrier Strike Group (CSG) 12 aboard aircraft carrier USS Abraham Lincoln (CVN 72).

OT-1 evaluates the full spectrum of the F-35C's suitability for operation within a carrier air wing and mission effectiveness to the maximum extent possible.

"The F-35C brings stealth, enhanced electronic capabilities and a different sustainment model," said Rear Adm. Dale Horan, director, Joint Strike Fighter Fleet Integration Office. "Operating this new generation of aircraft out on the aircraft carrier brings a different set of tools, techniques and procedures, and we're learning how to integrate them into the battle group."

The F-35C has the ability to pass on information it collects not only to other F-35s in the air, but to legacy aircraft, carrier air wings, strike groups and troops on ground, enhancing the fleet's warfighting potential.

Evaluators have been assessing the suitability of the F-35C aboard carriers by defining how well it performs with other aircraft and incorporates into an air plan,

monitoring maintenance and identifying its logistics footprint.

"We hope to see how it integrates onboard the ship," Horan said. "Can we maintain it? Can we get the parts? Can we get it airborne? Can we repair it if it has a problem? Those are the kinds of things [we are looking for]."

In addition to assessing its carrier suitability, OT-1 evaluators observed the effectiveness of the F-35C in real-world scenarios.

"The effectiveness piece is what we're doing when we're airborne and executing missions," said Capt. Matt Norris, a member of the Joint Strike Fighter Operational Test Team. "We've been integrating with the strike group and accomplishing many missions like defensive counter air and anti-submarine warfare, for instance."

Previously, F-35C and F/A-18 Super Hornet pilots had only conducted carrier qualifications together, so OT-1 marked the first time F-35Cs joined a carrier air wing to perform in a cyclic operations environment.

During cyclic operations, aircraft simulate missions, practice aerial maneuvers and take off and land continuously with brief pauses to allow for maintenance, refueling and ordnance changes.

Aboard Abraham Lincoln, the F-35C flew cyclic operations with Super Hornets, E-2D Hawkeyes and EA-18G Growlers, conducting missions it would execute in combat. The addition of the F-35C brings advanced capabilities that transform the way an air wing conducts operations.

While pilots adapted to the new aircraft, CVN-72's crew also adjusted to the F-35. From aviation boatswain's mates to air-traffic controllers, each Sailor learned to manage the aircraft with its unique attributes and capabilities.

"The level of planning that is required to execute an evolution like we did for OT-1 is huge, so everyone aboard Abraham Lincoln should be proud of the level of effort that they put in and how well they executed," Norris said. "We can't fly this aircraft without everything the ship does for us, and the Lincoln has been an impressive ship."

With the successful completion of OT-1, the fifth-generation aircraft is one step closer to becoming deployable in the Navy fleet.

Written by Mass Communication Specialist 2nd Class Jacques-Laurent Jean-Gilles, USS Abraham Lincoln Public Affairs. 🇺🇸

New Special Mission Patrol Squadron Stands Up

PATUXENT RIVER, Md.—The Navy stood up a new unit Sept. 10 intended to carry on the mission of Special Projects Patrol Squadron (VPU) 2, which is set for deactivation in fiscal 2019 in line with the ongoing sundown of the P-3 Orion maritime patrol aircraft.

In a Sept. 10 notice, Chief of Naval Operations Adm. John Richardson approved the immediate establishment of Fleet Support Unit One at Naval Air Station (NAS) Jacksonville, Florida, from which the unit will fly the P-3's successor, the P-8A Poseidon.

The unit's officer-in-charge will report to commander, Patrol and Reconnaissance Wing 11, also located at NAS Jacksonville.

The unit already existed "as a component established through the annual year process," the notice states. Now a standalone command, Fleet Support Unit One's mission is "to provide oversight, training, operations, maintenance and configuration management for the P-8 quick reaction capability aircraft," the notice states.

Specifically, the unit "will configure and operate P-8 aircraft to provide follow-on special mission capability in place of [special] projects patrol squadron (VPU) P-3 aircraft due to sundown in 2019," the notice states.

Operating out of Marine Corps Air Station Kaneohe Bay, Hawaii, the "Wizards" of VPU-2 have been the Navy's sole VPU squadron since the April 2012 disestablishment of VPU-1. Both squadrons were established in 1982 and tasked with flying P-3s outfitted with special surveillance and reconnaissance equipment.

Written by Jeff Newman, Naval Aviation News staff writer. 🇺🇸



U.S. Air National Guard photo by Airman 1st Class Tiffany A. Emery

Navy to Combine F-35C Training Squadrons

PATUXENT RIVER, Md.—The Navy will combine its two F-35C Lightning II training squadrons with the July 1 deactivation of Strike Fighter Squadron (VFA) 101 and reallocation of its personnel and aircraft under VFA-125.

As the two F-35C fleet replacement squadrons (FRS), VFA-101 and VFA-125—respectively based at Eglin Air Force Base,

Florida, and Naval Air Station (NAS) Lemoore, California—serve the principal mission of training future pilots of the fifth-generation strike fighter's carrier-based variant.

In a Sept. 10 notice, Chief of Naval Operations Adm. John Richardson said the move "will co-locate the fleet replenishment squadron production of pilots directly into the operational squadrons scheduled for transition to F-35C, and meet testing and evaluation requirements for initial operating capability of VFA-147 as the first joint strike fighter deployer in fiscal year '21."

"The move of VFA-101 personnel and aircraft also supports Naval Aviation Warfighting Development Center advanced training at NAS Fallon, Nevada," he said.

Deactivated in September 2005 when it was an FRS for the retiring F-14 Tomcat, the "Grim Reapers" of VFA-101 were reactivated in 2012 as an F-35C FRS.

Established in November 1980 as the Navy's first F/A-18 Hornet squadron, the "Rough Raiders" of VFA-125 were deactivated in October 2010 and merged into VFA-122, an FRS for the F/A-18E/F Super Hornet. VFA-125 was reactivated as an F-35C FRS in January 2017.

The first operational F-35C squadron, the "Argonauts" of VFA-147 began their transition from the Super Hornet in early 2018.

In anticipation of future reactivation, Richardson's order calls for preservation of VFA-101's "squadron lineage," such as its name, insignia and call sign.

Written by Jeff Newman, Naval Aviation News staff writer. 🇺🇸



U.S. Navy photo by MC3 Daniel E. Gheesling

An F-35C Lightning II assigned to the "Rough Raiders" of VFA-125 conducts carrier qualification with USS Abraham Lincoln (CVN 72).

RQ-7B Shadow Logs Last Flight at RIMPAC

MARINE CORPS BASE HAWAII—After years of service, the RQ-7B Shadow unmanned aerial system was retired after its final flight July 29 during the Rim of the Pacific (RIMPAC) exercise at Pyramid Rock Beach.

Marine Unmanned Aerial Vehicle Squadron (VMU) 3 was the last squadron to use the Shadow. The Marine Corps' other unmanned aerial vehicle (UAV) squadrons have already transitioned to the RQ-21 Blackjack.

The Shadow's support for RIMPAC operations was vital, said Master Sgt. Madhur Sawhney, an air crew chief with operations and training for Marine Aircraft Group (MAG) 24.

"The Shadow provided real-time footage of the objective area for the Marine Air-Ground Task Force commander to guide his decisions," Sawhney said. "Prior to any forces landing on the beach, we were up in the air gathering intelligence alongside our other air combat element aircraft."

While the Shadow has been a versatile

system that makes a difference during missions, the transition to the new Blackjack makes the Marine Corps' expeditionary mission even sharper, he added.

"The last flight was the end of an era," said Capt. Mathew Kramer, a UAV commander with VMU-3. "Variances of the RQ-7 have been flying since Operation Desert Storm, throughout the wars in Iraq and Afghanistan, right up until operations ceased. It's exciting to see how the Blackjack will perform."

The transition continues a long line of progress, Sawhney said.

"Serving for as long as I have, we have retired multiple platforms over the years to continuously be a more effective force

to assist in operations," he said. "The last flight of the Shadow is a positive direction toward returning to our expeditionary roots."

"The San Antonio-class amphibious transport dock ships that are part of amphibious ready groups and Marine expeditionary units will be able to launch the Blackjacks," Sawhney said, noting the new platform is lighter and smaller than its predecessor.

Once including about 70 Marines, the detachment supporting the Shadow mission has decreased to 21 personnel with the Blackjack.

Written by Sgt. Jesus Sepulveda Torres, Marine Corps Base Hawaii. ✈️



A Marine Corps RQ-7B Shadow unmanned aircraft system assigned to Marine Unmanned Aerial Vehicle Squadron (VMU) 3 prepares to launch for its last flight July 29 as part of the Rim of the Pacific exercise at Marine Corps Base Hawaii.

Marine Corps photo by Sgt. Jesus Sepulveda Torres



U.S. Army photo

CH-53K Extreme Conditions Test

The CH-53K King Stallion lands Aug. 31 at the Army's Yuma Proving Ground in Arizona to test the aircraft's systems and performance under extreme temperature and dust conditions. The CH-53K's enhanced fly-by-wire technology, composite rotor blades and specialized engines and gearbox supports missions in some of the world's most extreme environments. ✈️

End of an Era: FRC Southeast Conducts Last P-3 Engine Test Run

JACKSONVILLE, Fla.—Though it may lack the pizzazz of the Pontiac GTO's 389 from Ronny and the Daytonas' famous song, the T-56 turbo-prop engine that powered the venerable P-3 Orion for decades was a stalwart of the Navy for more than half a century.

As the P-3 gives way to the new P-8A Poseidon, Fleet Readiness Center Southeast (FRCSE) Detachment Jacksonville marked a milestone Sept. 11 as the unit tested its last T-56 engine.

"With a four-engine plane, you can imagine how many engines we were running in its heyday," said Chief Aviation Machinist's Mate (AD) Danger Escobar. "We received the test cells in 2002 and, in the last 16 years, we've run more than 640 engines."

At the test cell, Sailors gave the safety brief and went through the paces of turning up the engine. As the T-56 roared to life in its test stand on a point just off the St. Johns River, the propeller began to turn. In moments, it was blowing with such force that tree limbs 50 yards behind it bent as though a hurricane was afoot.

"We take the engines that we build back at the hangar, we bring them out here, we install them on the test stands and we run them up and verify they are in ready for issue so we can send them off to the fleet," said AD2 Taylor Moan. "It allows the leadership to know it's good to go, all operational checks are good and done, and we can send it to a squadron and be comfortable with it on a wing."

While running the engine, a Sailor checked for signs of oil, fuel or air leaks. Once the engine was found to be running properly, it was delivered back to the detachment. There the engine will be one of the last T-56 power plants to be stored, awaiting the needs of one of the remaining Navy patrol squadrons still flying the P-3C.

For years, the detachment's work has largely been focused on the P-3C and supporting the Navy's patrol squadrons at Naval Air Station Jacksonville and beyond. However, after the P-8A Poseidon began replacing the aircraft, the workload had to shift.

"The last test cell run for the T-56 engine marks a milestone event that symbolically captures the tipping point for the transition from the P-3 Orion aircraft maintenance capabilities at FRCSE Detachment Jacksonville," said Cmdr. Mike Polito, the detachment's officer in charge. "Now it's time to focus on the future, to shift gears to gaining additional P-8A Poseidon and H-60R Seahawk capabilities."

Written by Clifford Davis, Fleet Readiness Center Southeast Public Affairs. 🦋



U.S. Navy photos by Clifford Davis

Aviation Electrician's Mate 2nd Class Antonio Garcia, left, and Aviation Machinist's Mate (AD) 2nd Class Taylor Moan, right, operate the control room during the final testing of a T-56 engine at Fleet Readiness Center Southeast Detachment Jacksonville.



Sailors conduct a foreign object debris walk-down to ensure safety during the unit's final test run of a T-56 engine.



AD2 John Curwick signals the control room during the final testing of a T-56 engine.



Vice Adm. Dean Peters, commander, Naval Air Systems Command (left) answers questions from the audience alongside Vice Adm. William Lescher, deputy chief of naval operations, integration of capabilities and resources (middle) and Vice Adm. DeWolfe Miller, commander, Naval Air Forces.



Commander, Fleet Readiness Centers, Rear Adm. Mike Zarkowski describes the Fleet Readiness Centers, mission at the 2018 Tailhook Reunion.

NAE FOCUSED ON READINESS RECOVERY

Story and Photography by Gulianna Dunn

At the 2018 Tailhook Association Reunion in Reno, Nevada, discussion focused on the future of carrier aviation, as well as the goals, requirements and progress being made throughout the Naval Aviation Enterprise (NAE).

The four-day event covered topics such as Naval Aviation's relationship with industry and featured a brief from the Naval Safety Center, along with several panel sessions focused on helicopter operations, junior officer warfighting and the future carrier air wing.

The reunion concluded Sept. 8 with an aviation flag panel consisting of seven leaders of the NAE—a partnership of Naval Aviation stakeholders focused on readiness and advancing future warfighting capabilities at the best possible cost.

"We're all aligned through the Navy, the Marine Corps and Naval Aviation to get after what our priorities are and to understand our issues, so we can improve things rapidly," said the panel's moderator, Vice Adm. DeWolfe Miller, commander, Naval Air Forces. "This panel's focus is to talk about the effort that each of us are applying toward that full mission-capable aircraft."

Vice Adm. William Lescher, deputy

chief of naval operations (OPNAV), integration of capabilities and resources, said it is not one particular issue or thing that affects readiness; rather, it's the processes already in place.

"We're changing the process, and it's called performance to plan—it's an initiative that we brought to align the command and control of readiness recovery and to provide a tool to let us focus our activity and get after readiness recovery," Lescher explained. "The concept of performance to plan is to reenergize the Naval Aviation Enterprise in a way that hasn't been seen in a number of years—reenergize it by having a single, supported commander, a single, empowered process owner to drive and be accountable for accelerated readiness recovery."

Miller, Naval Aviation's Air Boss, is that single process owner.

The leaders discussed their united efforts to recover and generate readiness, acknowledging the need for close

collaboration between industry partners and Naval Aviation.

"We have to strengthen our partnership with industry," said Vice Adm. Dean Peters, commander, Naval Air Systems Command. "We have to renew our relationships, ensure transparency, and that everything we do as a combined government and industry team is focused on up aircraft."

Rear Adm. Scott Conn, director, Air Warfare, OPNAV, who leads Naval Aviation's efforts to balance warfighting requirements with available funds, echoed Peter's desire to align industry partners and readiness recovery efforts.

"The money is there. It's coming to the squadrons. So I don't think we will be able to continue to buy our way out of this," Conn said. "We, and I mean everyone in this room, will have to work together to attack the processes and find the efficiencies."

Peters addressed the need to tackle readiness, specifically, the functions of reliability, asset management, maintenance capability and supply.

"Our aircraft—the components on those aircraft—are failing much sooner than they were predicted to," Peters said.



Rear Adm. Roy Kelley, commander, Naval Air Forces Atlantic, explains how a strong partnership between industry and Naval Aviation will lead to future readiness.

“We’re missing something in our design review process and the way we test and field those aircraft. We have to do better. That’s just one of the high-leverage activities that we are doing from the technical side.”

Lt. Gen. Steven Rudder, deputy commandant for aviation, Headquarters Marine Corps, said leaders throughout the fleet must continue to work together toward readiness recovery.

“Before we buy any aircraft or look at any gear, we look at filling up our readiness accounts,” Rudder said. “It means that we want to make sure the [maintenance] depots have what they need to produce a good product, but we didn’t do that very well over the past few years. Now we are. It’s hiring the right people and producing good products.”

Rear Adm. Michael Zarkowski, commander, Fleet Readiness Centers, addressed Naval Aviation maintenance capabilities, in particular, the expectations of personnel who fly the aircraft.

“All of the [junior officers] and midgrade officers should expect from us aircraft out of our PMI [planned maintenance interval] lines, out of our rework and our mod[ification] lines that are quality aircraft, delivered to you on time and ready to go,” Zarkowski said.

While the leaders discussed the benefits of up aircraft and readily available parts, Rear Adm. William Crane, commander, Naval Air Force Reserve, explained putting the right people in the right jobs is critical on the road to recovery.

“My focus to increase readiness is on the enlisted side—the culture and the skillset piece,” Crane said. “Fit and fill, to explain, that means we have a billet, and we fill it with a Sailor (that is goodness), but we would be better served at a readiness level if this Sailor fit the job requirements—someone who can work on the aircraft they are assigned to. We are making some policy process changes on that so we get good fits and are maximizing their experiences.”

Rear Adm. Richard Duke Heinz, commander, Naval Supply Systems Command, who oversees supply support for naval aircraft, ships and submarines worldwide, gave the audience a brief overview of supply efforts across Naval Aviation.

“We manage a global supply chain of \$30 billion of repair parts that equates to about 30 million individual components or parts,” Heinz said. “A third of that inventory is with the fleet—on a flight line or with supply on a carrier—a third of that is in a warehouse—broken and waiting to get fixed or fixed and waiting to be reissued—and the last third is in the repair cycle. Our challenge, as the panel has alluded to, is the capacity to get those parts fixed and return them faster.”

Heinz explained investments have been made in capacity and capability with industry as a means to strengthen partnerships, a reoccurring theme throughout the panel.

After the panelists’ remarks, audience members asked questions on issues such as live, virtual and constructive training, the cannibalization rates of aircraft components and the retention rates of talented operators and pilots.

“We are moving forward to repair



U.S. Navy photo

Tremel Awarded Distinguished Flying Cross

Lt. Cmdr. Michael “Mob” Tremel was presented the Distinguished Flying Cross by the Navy’s Air Boss, Vice Adm. DeWolfe Miller, commander, Naval Air Forces, for his actions last year in Syria. The Distinguished Flying Cross is given for heroism or extraordinary achievement during aerial flights and was awarded to Tremel during the 2018 Tailhook Association Reunion, in Reno, Nev.

“While monitoring a Russian SU-35 Flanker operating above him, Lt. Cmdr. Tremel identified a Syrian SU-22 Fitter closing quickly on the coalition ground force. He executed three warning passes with flares, but the Fitter disregarded the warnings and delivered ordnance on the coalition ground force,” the award citation states. “Tremel immediately fired two air-to-air missiles that destroyed the Fitter and protected the coalition force from further threat.”

The last air-to-air kill for a U.S. Navy pilot before Tremel’s was Feb. 7, 1991, during Operation Desert Storm when a Navy F-14 Tomcat shot down an Iraqi Air Force Mi-8 helicopter with an AIM-9 Sidewinder missile. 🇺🇸

our parts, all of this with one goal in mind, and that’s more up aircraft that can fight and win tonight,” Miller said. “We are aligned, committed and focused to get that done as rapidly as possible.”

Gulianna Dunn is a communications specialist with Naval Aviation Enterprise Public Affairs. 🇺🇸

MQ-25 STING

Navy Awards Contract to Design, Build

By Program Executive Office (Unmanned & Weapons) Public Affairs



The Navy awarded Boeing an \$805.3 million engineering and manufacturing development contract Aug. 30 to design and build the MQ-25A Stingray, which will be the service's first unmanned aircraft to operate from an aircraft carrier.

The contract covers design, development, fabrication, test, delivery and support of four test Stingrays, including their integration into the carrier air wing with initial operational capability targeted for 2024.

"This is a trailblazing step for unmanned carrier aviation," said Capt. Chad Reed, program manager of the Unmanned Carrier Aviation (UCA) program office. "Our team looks forward to working with Boeing to deliver this critical capability to our warfighters and pioneering the integration of manned and unmanned aircraft in the carrier air wing's operational environment."

When operational, MQ-25 will serve as a tanking aircraft, delivering an organic refueling capability at longer ranges and with greater persistence than currently provided by combat strike fighters. This will extend the range of the Navy's aircraft carriers while improving the performance, efficiency and safety of the carrier air wing, enabling missions that otherwise could not be performed.

RAY



Photos courtesy of Boeing



“When operational, MQ-25 will serve as a tanking aircraft, delivering an organic refueling capability at longer ranges and with greater persistence than currently provided by combat strike fighters.”

The Stingray will also free up those strike fighters—primarily F/A-18 Super Hornets—currently allocated to aerial refueling missions.

“This is a historic day,” Chief of Naval Operations Adm. John Richardson said. “We will look back on this day and recognize that this event represents a dramatic shift in the way we define warfighting requirements, work with industry, integrate unmanned and manned aircraft, and improve the lethality of the air wing—all at relevant speed. Everyone who helped achieve this milestone should be proud we’re here. But we have a lot more to do. It’s not the time to take our foot off the gas. Let’s keep charging.”

The Stingray is the first air system procured by the UCA program office. The system has three major “segments”—the air vehicle, its control system and connectivity and its integration with the carrier.

MQ-25 is an accelerated acquisition program that expedites decisions and enables rapid actions with less overhead. The intent is to significantly reduce development timelines to deliver capabilities to the fleet faster. By reducing MQ-25’s key performance parameters to mission tanking and carrier suitability, industry has increased flexibility to rapidly design a system that meets those requirements.

“MQ-25A is a hallmark acquisition program,” said James F. Geurts, assistant secretary of the Navy for research, development and acquisition. “This program is a great example of how the acquisition and requirements communities work hand-in-hand to rapidly deliver capabilities to our Sailors and Marines in the fleet.”

Written by Program Executive Office (Unmanned & Weapons) Public Affairs. 🦅

CMV-22B On Track to



An aviation boatswain's mate (handling) directs an MV-22B Osprey, assigned to Air Test and Evaluation Squadron (HX) 21, to land on the flight deck of aircraft carrier USS George H.W. Bush (CVN 77).

*By Jeff Newman and
MC3 Roland John*

The Navy is well on its way to meeting its goal of deploying the CMV-22B Osprey alongside the F-35C Lightning II, which will depend on the new carrier onboard delivery (COD) platform for at-sea deliveries of its massive engine.

A modified version of the Marine Corps' MV-22B Osprey, the CMV-22B will be tailored to the COD mission of delivering cargo and passengers to aircraft carriers and, potentially, other ships at sea. The current COD platform, the C-2A Greyhound, is incapable of carrying the F-35C's engine power module inside its fuselage, so the CMV-22B will be needed for logistical support when the fifth-generation strike fighter deploys for the first time in 2021.

"CMV-22 will [reach initial operational capability] in the Navy in 2021, and that is mapped to our first F-35 deployment for those engine considerations," Rear Adm.

Scott Conn, director of Air Warfare in the Office of the Chief of Naval Operations, testified Sept. 28 before the House Armed Services Subcommittee on Seapower and Projection Forces.

The CMV-22B will come with extended range via increased fuel capacity, a beyond-visual-range high-frequency radio for contacting ships beyond the horizon, a public address system for communicating with passengers, and a better lighting system for loading cargo at night. Basing the new COD platform on an existing aircraft allows for an abbreviated development and test schedule.

"The only thing that we're testing are the things different on the CMV-22 as

Deploy in 2021



U.S. Navy photo by MC3 Roland John

compared to the MV-22,” Conn said. “So that’s going to be a very compressed test.”

Air Test and Evaluation Squadron (HX) 21 pilots took a major step toward integrating the Osprey into the carrier air wing in August when they successfully performed heavy gross weight rolling landings and takeoffs aboard USS George H.W. Bush (CVN 77). Landing and taking off with forward airspeed allows the Osprey to haul more weight than if it were to land and take-off vertically, when only the rotors are providing lift.

In addition, Bush’s onboard testing included integrating the MV-22 into flight deck operations.

“This underway is a historic event

for the Navy,” said Lt. Gavin Kurey, the first Navy pilot to land an MV-22 on an aircraft carrier. “I never thought I’d be part of something like this as a COD guy. There’s a lot of reluctance initially to join new platforms that are so different, but to be part of the first wave that can help to make that transition happen is an amazing experience.”

For Kurey, it was his second milestone aboard Bush—his first arrested landing piloting a C-2A came on the flattop in 2012.

The Osprey previously demonstrated its ability to perform the COD mission in 2016 during a three-week Fleet Battle Experiment aboard USS Carl Vinson (CVN 70), during which 34,590 pounds of cargo

and 563 passengers were transported to and from the ship via MV-22Bs. The experiment began the development of the concept of operations for integrating the CMV-22B into the carrier air wing.

The Navy awarded the CMV-22B development contract to V-22 manufacturer Bell Boeing in 2016, but its transition from the C-2A began this year with facility renovations and personnel actions at the existing East and West Coast Fleet Logistics Centers—Naval Station (NS) Norfolk, Virginia, and Naval Air Station (NAS) North Island, California.

Part of a five-year production contract awarded in June that included MV-22Bs and Air Force-variant CV-22Bs, the first CMV-22B is scheduled to be delivered in the first quarter of fiscal 2020 to NAS Patuxent River, Maryland, for flight testing. Delivery to the fleet will follow later that year, said Col. Matthew Kelly, program manager for the V-22 joint program office.

“In a recent visit I took to the Boeing facility in Philadelphia, it was great to see the CMV-22 hardware on the production line as envisioned by the joint program office since its development in 2016,” Kelly said. “The V-22 joint program office is ensuring scheduled development and milestones stay on track, and we’re working with the Navy to ensure a smooth transition from the C-2 to the CMV-22B.”

The Navy plans to replace its remaining C-2As with CMV-22Bs beginning in 2020, with the full fleet expected to be delivered by 2025. A key part of that process is transitioning career Greyhound pilots like Kurey to the Osprey.

“I started off flying Greyhound carrier onboard delivery aircraft and I love the platform,” said Lt. Cmdr. Steven Tschanz, another HX-21 test pilot. “With that said, nothing lasts forever, and the Navy came up with a solution to move us into the future with the CMV-22B Osprey.

“The COD community is growing. I think the next few years are going to be a dynamic and exciting time, not just for pilots, but also the U.S. Navy.”



Artist rendering of the CMV-22B in COD livery.

First CMV-22B Squadron Stands Up

The Navy took another early step in its COD transition with the Oct. 1 establishment of the first CMV-22B squadron at NAS North Island.

Fleet Logistics Multi-Mission Squadron (VRM) 30 is one of two planned CMV-22B squadrons that will replace the two existing COD squadrons, one each on the East and West Coast. VRM-30 will replace Fleet Logistics Support Squadron (VRC) 30 at NAS North Island, while the future VRM-40 will replace VRC-40 at NS Norfolk.

“This action starts the carrier onboard delivery aircraft transition from C-2A Greyhound to CMV-22B Osprey as Naval Aviation sun-downs the Greyhound fleet due to C-2A end of service life,” an Aug. 6 notice from Chief of Naval Operations Adm. John Richardson states.

In addition to creating VRM-30, the Navy also stood up a Naval Aviation Training Support Group (NATSG) at Marine Corps Air Station New River, North Carolina, which already hosts Marine Medium Tiltrotor Training Squadron (VMMT) 204, the Corps’ V-22 fleet replacement squadron.

The NATSG will serve “as the

aviation group staff with responsibility to liaise with the Marine Corps, and oversee Navy pilot, aircrew and aircraft maintenance personnel through the training pipeline of VMTT-204,” the notice states.

The NATSG will also support the future standup of a new VRM-type wing and CMV-22B fleet replacement squadron, VRM-50, both at NAS North Island.

C-2 Sunset Moves Up to Fiscal 2024

The Navy has also been able to accelerate the Greyhound’s sundown by three years to fiscal 2024 thanks to funding from Congress for additional CMV-22B purchases.

“The initial plan was to sundown the C-2 in 2027,” Conn said during his Sept. 28 testimony. “With the help of Congress, with additional [CMV-22Bs], we’ve been able to push that left to fiscal year ’24.”

Given the facilities that still need to be constructed, training required for Sailors to be able to operate and maintain the aircraft, and flight hours that aircrew need to accrue, the CMV-22B’s IOC is already scheduled for as early as possible.

“There is no means by which I can accelerate that any further,” Conn said. “We’re going as fast as we can go. Any additional aircraft at this point would relieve or provide a shock absorber during the transition, as we go from transition to deployment and follow-on detachments until we’re completely divested of our C-2.”

Jeff Newman is a staff writer for Naval Aviation News. Mass Communication Specialist 3rd Class Roland John is a member of USS George H.W. Bush Public Affairs. 🦅



A C-2A Greyhound approaches the flight deck of the aircraft carrier USS Theodore Roosevelt (CVN 71).

Artist rendering courtesy of Boeing

U.S. Navy photo by MC1 Michael Hogan

PHYSIOLOGICAL MONITORING

INDUSTRY IDEAS WANTED

By Andrea Watters

Monitoring aviators and aircrew in the machine is the focus of a DOD innovation project, industry representatives learned Sept. 20.



U.S. Navy photo by MC2 Z.A. Landers

Military aircrew serve in physically demanding environments at or near the physiological limitations of the human body, which exposes them to the risk of degraded performance. Called physiological episodes (PEs), when these events occur aircrews experience unanticipated, unexplained and at times incapacitating symptoms during or after flight that impair physiological functions.

“Because physiological episodes happen to humans, not aircraft, our primary concern is the safety and well-being of our aviators and aircrew. If we can understand the environment they are operating in and then influence that environment to give them more margin, we’ll be in a much better place,” said Rear Adm. Fredrick Luchtman, Physiological Episodes Action Team (PEAT) lead for the Navy.

Luchtman, along with Naval Aviation and Air Force subject matter experts, briefed about 40 industry representatives during a Physiological Monitoring industry Day in California, Maryland. Government representatives challenged industry to provide ideas on developing and fielding a physiological monitoring and alerting system that can predict when a PE is happening or about to happen.

“What we don’t currently have is anything that monitors the physiological parameters of the human in real-time during flight,” said Joel Wathen, physiological monitoring integrated product team (IPT) lead for the Aircrew Systems Program Office, which is leading this effort.

To expedite the process, the program office is working with the Defense Innovation Unit (DIU), which was chartered to accelerate

commercial innovation for DOD, explained Capt. David Padula, Aircrew Systems Program Office program manager.

DIU has a business model to fund non-traditional and traditional defense contractors to carry out prototype projects that are directly relevant to enhancing mission effectiveness.

“We’re casting a wider net to discover increased solution sets,” Padula said. “Working with DIU provides an opportunity for us to produce prototypes and deliver capability much quicker than traditional acquisition processes.”

The idea is that commercial, non-traditional defense companies may have existing, new or emerging technologies available that could be used to find a solution quicker, Wathen said.

Another perspective is to consider aviators as high-performance athletes, explained Jennifer Farrell, chief engineer for the Air Force’s Human Systems Program Office.

“We need to look at the pilots as if they were elite athletes. How do we monitor them and then make their performance better? How do we make sure that they can, while they’re in this demanding environment, respond appropriately,” Farrell said.

The DIU area of interest solicitation is open until Oct. 10 for industry ideas to be submitted at <https://www.diux.mil/work-with-us/companies/cso-solution-brief>.

Andrea Watters is editor of Naval Aviation News. 🐦

NAS Jacksonville Recieves New Hypoxia Trainer

By Lt. Cmdr. Marcus Gobrecht

In July, the Aviation Survival Training Center (ASTC) at Naval Air Station (NAS) Jacksonville received the first of eight of the Navy’s newest hypoxia training devices, designed to train aviators on aircraft emergency procedures during loss of cabin pressure.

Hypoxia occurs when there is a deficiency in the amount of oxygen reaching body tissue.

The Normobaric Hypoxia Trainer (NHT) replaces the Low Pressure Chamber (LPC) training device, which was removed in December 2017. The nearly 80,000-pound LPC device, essentially a large vacuum vessel, was capable of simulating rapid decompression and provided familiarization training on the

use of oxygen-related Aviation Life Support Systems.

In 2016, the Chief of Naval Operations ordered the decommissioning of LPC devices during the fielding of the NHT, and the LPC in Jacksonville was the first to be decommissioned.

The two-day effort was coordinated by the Naval Air Warfare Center Training Systems Division (NAWCTSD) and required two cranes to lift the

56,000-pound LPC device onto a truck. A second truck transported remaining pieces and ancillary equipment to the final disposition site in Odenville, Alabama.

After restoring the training room, personnel from the Rapid Design, Development and Fabrication Laboratory (FabLab) at NAWCTSD built and tested the NHT prototype. Unlike the LPC, the NHT induces hypoxia using a nitrogen-generation system and mixed gases as opposed to reduced pressure.

The first aviators used the trainer during a test event July 25, and the device successfully produced an environment equivalent altitude to 25,000 feet, providing the conditions necessary to get all 10 students onboard hypoxic. The students executed the same emergency procedures as they would in an aircraft and donned emergency breathing equipment. All 10 students fully recovered on the device’s rescue air system, and the test event was deemed a success.

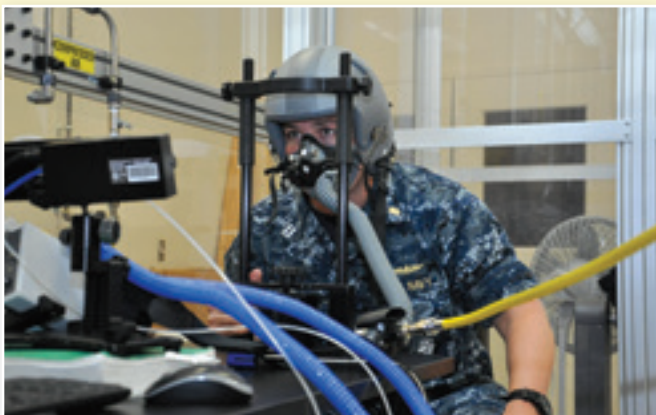
The FabLab will finalize the trainer’s design, and over the next year, NAWCTSD will deliver the trainers to the ASTCs, with the final device being installed and ready for training no later than February 2020.

Lt. Cmdr. Marcus Gobrecht is the Safety & Survivability Integrated Product Team lead at Naval Air Warfare Center Training Systems Division. 🐦



Aviators participate in the testing of the Normobaric Hypoxia Trainer at the Aviation Survival Training Center at Naval Air Station Jacksonville.

U.S. Navy photo



Lt. Todd Seech, an aerospace experimental psychologist with the Naval Aerospace Medical Research Laboratory at Naval Medical Research Unit-Dayton (NAMRU-Dayton), breathes through an oxygen mask in a reduced breathing environment used to examine the interaction of hypoxia and fatigue effects.



Lieutenants Dan Xu (left), a Navy research biochemist, and Joshua Roaf, a naval surface warfare officer and graduate intern at NAMRU-Dayton, work to draw a filter sample for contaminant verification of particulate matter during a test at the unit's Environmental Health Effects Laboratory in July.

U.S. Air Force photos by Bryan Ripple

Navy's Medical Research Labs Expand PE Facilities, Studies

By Dr. Richard D. Arnold

The Naval Aerospace Medical Research Laboratory (NAMRL) has expanded its research portfolio of physiological episode-related studies from about five per year prior to fiscal 2017 to 25 unique PE research protocols in fiscal 2018.

With a number of unexplained PEs being reported across Navy and Air Force aircraft platforms, Naval Medical Research Unit-Dayton (NAMRU-Dayton) is responding to the challenge by rapidly expanding its environmental physiology research capacity by adding experienced altitude effects researchers and developing new laboratory facilities.

Research topics include the effects of barometric pressure changes, the effects of variable breathing gas mixtures, and the effects of breathing resistance on aircrew physiology and performance. The lab is developing and testing a range of physiologic, gas and chemical sensors for use as in-flight PE detection and mitigation tools.

NAMRL is not alone in the fight to understand and mitigate PEs.

For example, the Environmental Health Effects Laboratory (EHEL) is collaborating with NAMRL to conduct more extreme environmental exposure protocols than NAMRL can accomplish through its human-use research program.

In addition, NAMRU-Dayton is strengthening its collaboration with other DOD laboratories including the Naval Medical Research Center, Naval Health Research Center, Naval Submarine Medical Research Laboratory, NAMRU-San Antonio, Naval Air Warfare Center Aircraft Division and Training Systems Division, Navy Experimental Diving Unit, Air Force 711th Human Performance Wing and Army Aeromedical Laboratory.

The Dayton unit is also working with academia and industry partners including Case Western Reserve University, Florida Institute for Human and Machine Cognition, and KBRwyle to conduct research and development (R&D) in response to the rise of in-flight physiologic episodes.

The command continues to receive R&D support from long-term stakeholders such as the Naval Air Systems Command. More recently, non-traditional sponsors of aeromedical research such as Defense Health Agency and Bureau of Medicine and Surgery have enabled the lab to mount a substantial response to the threat of PEs to DOD aircrew.

In support of the lab's planned research, NAMRL is constructing a new respiratory physiology laboratory that will aid studies on the effects of four factors:

- variable breathing gas mixtures
- in-line breathing resistance
- breathing gas pressure and flow disruptions
- flight equipment fit on aircrew physiology and cognitive function

NAMRL is building several aircraft-specific life support system (LSS) simulators to reproduce the breathing environments of the T-45 and F/A-18 aircraft.

Due to this surge in PE-related research NAMRL has added a number of senior scientific staff with experience in respiratory physiology research.

For more information, visit www.med.navy.mil/sites/nmrc/Dayton. You can also follow the command on Twitter @NAMRU Dayton and Facebook @NavalMedicalResearchUnitDayton.

Dr. Richard D. Arnold is the director of the Naval Aerospace Medical Research Laboratory, Naval Medical Research Unit-Dayton. ✈

Navy's C-130 Fleet Recovering

By Jeff Newman

The Navy plans to have all its C-130 Hercules transport aircraft back up and flying this fiscal year after being grounded in September 2017 over concerns with the aircraft's four-bladed propellers.

Much of the fleet was put on an operational pause in the weeks following a deadly July 2017 crash of a Marine Corps Forces Reserve KC-130T that killed 15 Marines and one Sailor. That September, Naval Air Systems Command (NAVAIR) issued a grounding bulletin removing from service all four-bladed C/KC-130T propellers pending inspection and overhaul or replacement.

To expedite the downed C/KC130Ts' return to service, the Navy, selected as a replacement propeller the eight-bladed NP2000—the same one used on the E-2D Advanced Hawkeye and C-2A Greyhound—and originally planned to include the upgrade in its fiscal 2019 budget. But in March, as part of an omnibus spending package, Congress earmarked \$121 million for the project in fiscal 2018, accelerating the upgrade by a year.

"We'll have all the aircraft up by [fiscal year] '19 and all the aircraft converted to the NP2000 by [fiscal year] '20," said Rear Adm. Scott Conn, director of Air Warfare in the Office of the Chief of Naval Operations, in Sept. 28 testimony before the House Armed Services Subcommittee on Seapower and Projection Forces.

A C-130T flew with the NP2000 propellers installed for the first time one day prior to Conn's testimony. As of then, it was one of two Navy Hercules aircraft to have received the upgrade.

In replacing the propellers, the Navy is leveraging work done by the Air Force, which has already installed the NP2000 on its National Guard aircraft, NAVAIR Commander Rear Adm. G. Dean Peters said in April.



A 153rd Airlift Wing maintainer plugs in a generator cable into a C-130H after arriving at Eglin Air Force Base, Fla. The Air Force's first fully upgraded C-130H is here for test and evaluation on its new modified propeller system and engines.

“To be able to take advantage of work that’s already been done with the Air Force and National Guard, there was really no reason to wait” once Congress accelerated the funding, Peters said.

Operated by the Navy Reserve, the Navy Unique Fleet Essential Airlift (NUFEA) fleet “provides the responsive, flexible and rapidly deployable air logistics to support necessary combat operations from the sea,” Conn said.

Spread across five Fleet Logistics Support (VR) Squadrons located in fleet concentration areas across the country, the C-130T fills the requirement for medium lift and outsized cargo, including one particular component that ensures the Hercules will remain in high demand for the foreseeable future.

“It is the only Navy aircraft capable of moving all modules of the F-35 [Lightning II] engine,” Conn said.

“Additionally, the C-130T provides unique capability, delivering passengers and cargo to austere locations, including unprepared fields and runways less than 3,000 feet,” he noted. “And in light of the landscape that we’re in right now strategically, that’s probably an important capability that we need.”

The Navy also operates one additional C-130T—the famous “Fat Albert” flown by the Naval Flight Demonstration Squadron, better known as the Blue Angels.

Having bought its last C-130T in 1996, the Navy is now looking to recapitalize the fleet, beginning with the advanced procurement of three updated KC-130J aircraft—which are already being flown by the Marines—in fiscal 2023, Conn said.

“It’s not just recapitalizing,” he said. “It’s the modernization of the aircraft. We have to keep them relevant.”

The Navy is also investing \$28.5 million into avionics obsolescence upgrades to keep the C-130T compliant with new standards set by the Federal Aviation Administration and International Civil Aviation Organization for air traffic control management systems worldwide.

Meanwhile, an \$8.9 million upgrade replacing the C-130T’s steel brakes with carbon alternatives should be completed by fiscal 2020.

“These modernization efforts are critical to maintain the Navy’s logistics support to our deployed forces,” Conn said.

Jeff Newman is a staff writer for Naval Aviation News. ✈



U.S. Air Force photo by Samuel King Jr.



Two F-35B Lightning II fighter jets piloted by Royal Navy (RN) Commander Nathan Gray and Royal Air Force (RAF) Squadron Leader Andy Edgell on approach to making the first landings aboard HMS Queen Elizabeth Sept. 25.

F-35B LIGHTNING II's Team with British AIRCRAFT CARRIER

By HMS Queen Elizabeth Communications

The first F-35B Lightning II fighter jets landed on the deck of the United Kingdom's new aircraft carrier Sept. 25, marking the beginning of more than half-a-century of "carrier strike" operations.

Royal Navy Commander Nathan Gray and Royal Air Force Squadron Leader Andy Edgell, both test pilots at the F-35 Integrated Test Force (ITF) at Naval Air Station Patuxent River, Maryland, were the first pilots to land the stealth F-35B fighter jets aboard HMS Queen Elizabeth. Gray was the first pilot to take off from the ship's ski ramp.

The first landings and takeoffs from Queen Elizabeth are the culmination of a British endeavor lasting more than a decade to bring an aircraft carrier back to the U.K.'s arsenal. Able to embark up to 24 of the supersonic jets, the Queen Elizabeth-class (QEC) carrier gives the Royal Navy a capability possessed by few others.

"The largest warship in British history is joining



British aircraft carrier HMS Queen Elizabeth.

U.S. Navy photo by Dane Wiedmann

Royal Navy photo



Royal Navy photo by PO Aaron Hoare

Royal Navy Commander Nathan Gray lands his F-35B aboard Queen Elizabeth for the first time.

forces with the most advanced fighter jets on the planet. This marks a rebirth of our power to strike decisively from the seas anywhere in the world,” said U.K. Defense Secretary Gavin Williamson. “The historic first landing on the deck of HMS Queen Elizabeth is a monumental moment in our country’s proud military history. It is also a statement of Britain’s determination to promote peace and prevent war.”

The landings mark the start of the first of two first-of-class flight trials (fixed wing) phases, held back-to-back this fall, during which the ITF team plans to perform a variety of flight maneuvers and deck operations to develop the F-35B operating envelope for QEC carriers. They will evaluate jet performance on more than 200 test points during different weather and sea conditions, as well as the aircraft’s integration with the ship. A third phase is scheduled for 2019 and will be followed by operational testing.

The return of carrier strike to the U.K. comes eight years after a fighter jet last landed on a British carrier.

“I am quite emotional to be here on HMS Queen Elizabeth, seeing the return of fixed wing aviation,

F-35B ITF Conducts First Shipborne Rolling Vertical Landing on HMS Queen Elizabeth

NORTH ATLANTIC—An F-35B Lightning II conducted the first shipborne rolling vertical landing (SRVL) Oct. 13 as a part of the fifth-generation strike fighter’s first trials aboard the new British aircraft carrier, HMS Queen Elizabeth. The U.K. is the only nation currently planning to use the maneuver, which will allow jets to land aboard with heavier loads, meaning they won’t need to jettison expensive fuel and weapons before landing.

The jets had previously conducted vertical landings, coming to a hover to the side of the ship and veering sideways over the flight deck before gently lowering to land. It is regarded as a safer method to reduce speed before the jet lands in this way, rather than landing at speed and coming to a stop before running out of deck.

An F-35B conducting an SRVL takes a more conventional landing pattern, approaching the ship from the aft end at speed, before using thrust from its rotating nozzle, combined with wing-generated lift to touch down and come to a stop as soon as possible.

The first SRVL was conducted by Peter Wilson, a BAE Systems U.K. test pilot with the F-35 Pax River Integrated Test Force (ITF). Landing 755 feet back from the end of the carrier’s ski jump, the jet came to a complete standstill at the 580-foot mark.

“I’m excited and thrilled to have achieved this. The whole team is,” Wilson said. “It’s an inherently risky maneuver. We have always under-

stood it is safer to stop before you land than it is to land before you stop and the prime reason for that is that if something goes wrong with the airplane it is far better for it to be stationary than a rolling wreckage.

“I’ve worked on this for the past 17 years; it’s fantastic to know that it’s matched the modelling and simulation we have done over the years. I’ve flown over 2,000 SRVLs in the simulator, and am honored to have been able to do the first one aboard Queen Elizabeth here today.”

As important as the pilot in the cockpit was Royal Navy Lt. Christopher Mould, who served as the landing signal officer (LSO) during Wilson’s flight.

Taking his place in a packed-but-eerily-silent FLYCO (Flight Control) space, Mould had final say as to whether the jet could land. With seconds to go before touchdown, his call of “happy” allowed the historic landing to take place.

“I’ll admit, I was nervous. it was a pretty intense experience,” Mould said. “It’s the first time we’ve ever done it. As the independent checker, I have to make sure that what we are seeing in FLYCO is also what the pilot is seeing and call it as I see it.”

A fellow test pilot aboard, U.S. Marine Corps Maj. Michael Lippert, also with the ITF, said America was watching this part of the trials particularly closely. The Marine Corps, which also flies the F-35B variant, will join the ship when she deploys operationally for the first time in 2021.



Royal Navy photo by LPhoto Kyle Heller

Gray gives the thumbs up after making the first F-35B vertical landing aboard Queen Elizabeth.



Royal Navy photo by LPhoto Kyle Heller

Gray conducts the first F-35B take off from Queen Elizabeth as well.



Royal Navy photo

U.K. test pilot Peter Wilson, F-35 Pax River Integrated Test Force, conducts the first shipborne rolling vertical landing while piloting an F-35B Lightning II during the first trials aboard HMS Queen Elizabeth.

"This is one of the main reasons we are here. It is of interest to the service at large—we are learning from each other," Lippert said. "I will have the honor of conducting the first SRVL at sea for the U.S. military, so I'm excited. It's what we all join up for—this is truly experimental test flying."

"It's fantastic to have achieved this, absolutely brilliant," said Royal

Navy Commander James Blackmore, Commander Air aboard Queen Elizabeth "It was text-book, just what we expected. This is the first step in proving this capability; another milestone in aviation for the Royal Navy."

The SRVL is a significant achievement for both the U.K. and the U.S.

"What today's milestone eventually means is that we will give our strategic leaders even more choice. Pushing this ever expanding envelope means we can achieve the effects they require from us," said Royal Navy Commodore Mike Utley, Commander U.K. Carrier Strike Group aboard. "Yet again, we have demonstrated the seamless cooperation between the U.K. and U.S., but more essential than that is how it will translate into future operations."

For Royal Air Force Squadron Leader Andy Edgell, lead test pilot for the trials, the first SRVL was the culmination of two years' work.

"I'm feeling an enormous release, two years of concern—have we missed anything? What did we not consider? It's overtaken our lives, to make sure the outcome today was perfect," Edgell said, who is also a test pilot with the ITF. "It couldn't have gone better and it was obvious to anyone [that] we were watching a moment in history being made for Royal Navy aviation."

"Now we will focus on putting all four of our test pilots here through the same process to achieve the widest breadth of data possible."

Written by HMS Queen Elizabeth Communications. ✈️



Royal Air Force Squadron Leader Andy Edgell, first-of-class flight trails lead test pilot, performs the second F-35B vertical landing aboard HMS Queen Elizabeth.



Edgell in his F-35B after landing aboard HMS Queen Elizabeth.



The view from the 'FLYCO' (Flight Control) as Gray makes the first F-35B vertical landing aboard HMS Queen Elizabeth.

launched the last Harrier at sea nearly eight years ago," said Commanding Officer, Royal Navy Capt. Jerry Kyd, who captained HMS Ark Royal when the last Harrier took off from it.

"The regeneration of big deck carriers able to operate globally, as we are proving here on this deployment, is a major step forward for the United Kingdom's defense and our ability to match the increasing pace of our adversaries," Kyd said.

The Queen Elizabeth-class (QEC) carriers were designed and built specifically to operate the F-35B, said Commander U.K. Carrier Strike Group, Commodore Andrew Betton. "The two offer an immensely flexible and potent combination to deliver military effect around the world. Conducting these trials is a critical and exciting step on this journey, and I applaud the many thousands of civilian and

military personnel who have played a part in bringing the strategic ambition to reality."

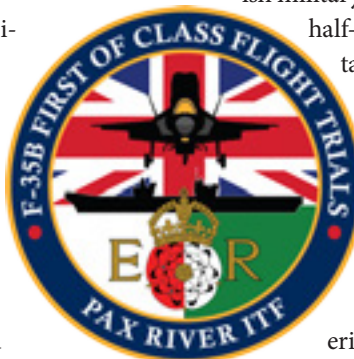
While the QEC carriers will be able to project British military power across the globe for the next

half-century, they can also provide humanitarian relief, deepen defense relationships with key allies and provide critical support to U.S. forces as they deploy across the world.

These historic flight trials come more than 100 years after the U.K.'s HMS Argus became the world's first carrier capable of launching and recovering naval aircraft safely.

HMS Queen Elizabeth remains set to deploy on global operations in 2021. Britain now has 16 of a planned 138 F-35B Lightning jets as part of its world-leading fleet of military aircraft.

Written by HMS Queen Elizabeth Communications. 🇬🇧



Mobile Shipboard Power Plant Ready for Production

By Aviation Support Equipment Program Office

A generator on wheels is going to be a critical piece of shipboard gear on carriers in the years to come.

Shipboard testing finished in May on the new Shipboard Mobile Electric Power Plant (SMEPP), which will replace the stalwart but aging A/S37A-3, a SMEPP deployed aboard Navy carriers worldwide.

The new SMEPP is an Abbreviated Acquisition Program managed by the Aviation Support Equipment Program Office, and boasts increased electrical capacity to support aircraft with increased power demands (such as the E-2D Advanced Hawkeye) and has the power type to support F-35 maintenance needs. The SMEPP also improves access for Sailors to perform on-vehicle maintenance tasks and remove sub-assembly modules. Additionally, the power plant's higher reliability will result in lower fleet support costs.

The SMEPP is a drivable power unit with various electrical outputs that support existing and next-generation aircraft aboard aircraft carriers and amphibious assault ships. It supplements deck-edge power, powering an aircraft's electrical system to support preflight and maintenance operations.

"The legacy Shipboard MEPP [A/S37A-3] is more than 20 years old,

and it has reached its lifespan in terms of parts obsolescence and availability," explained Stephen Barrett, lead Naval Air Warfare Center Aircraft Division support equipment test engineer on the program office's integrated program team (IPT).

The SMEPP went into production in April. Initial Operating Capability is forecast for December 2018, and deliveries to the fleet start in November.

The Navy has five pilot production units of the new SMEPP, which have already undergone a battery of contractor compliance tests by the manufacturer. In November 2017, program office test engineers received two of the pilot units at Naval Air Station Patuxent River to evaluate their functionality and conduct electromagnetic vulnerability and compatibility tests with aircraft. Then, three test team personnel and two of the pilot units embarked aboard USS Essex (LHD 2), which was docked in San Diego undergoing workups before deployment.

"We do tests here at Pax on selective aircraft, and then we transition to what we call FLEETEVAL," Barrett explained.

"We take the [support equipment] out and operate it with the fleet in the operational environment to validate its mission effectiveness."

During two at-sea periods totaling five weeks, IPT members trained squadron maintenance personnel from four different aircraft communities—F-35B Lightning II, CH-53E Super Stallion, MV-22B Osprey and MH-60S Seahawk—on how to operate the SMEPP, observed them as they used it to service aircraft and collected their feedback.

While deck edge power aboard USS Essex was experiencing problems, two SMEPP pilot units were used to fill that role during the FLEETEVAL for the Marine Corps' F-35 maintainers, allowing them to conduct preflight prep and maintenance on a squadron detachment of six aircraft.

"[The reception was] very positive," Barrett said. "The F-35 community, in particular, was very happy about it, because all the aircraft are just lined up on one side of the ship, and they could just roll down and gain access to one of those very quickly."

Written by Aviation Support Equipment Program Office. ✈



The new Shipboard Mobile Electric Power Plant under goes fleet evaluation aboard USS Essex (LHD 2).

TEAM 'OTIS'

90 Years Old and Going Strong

Story and Photography by Yissachar Ruas



Three years ago I visited Marine Corps Air Station (MCAS) Cherry Point in North Carolina with the purpose of covering the F-35 Lightning II, but what I discovered was one of the hardest working units in the Marine Corps—Marine Aerial Refueler Transport Squadron (VMGR) 252, or as it is known in the Marine world, Team “Otis.”

In June, Otis celebrated its unique heritage, commemorating 90 years since it was established as the first Marine Aviation squadron. Adding to that accomplishment, Otis has the record for flying the same airframe for the longest period of time, having continuously flown various C-130 Hercules models since 1961.

Now, three years after my last visit, the Marines workload hasn't gotten any lighter.

As a tribute to the versatility of their airframe, they have been constantly engaged while providing disaster relief following hurricanes in Texas and the Caribbean, while supporting Marine Corps tasking from Spain to Japan. For VMGR-252, having all hands on deck is just a regular day at the office.

I spent some time with the men and women of the squadron leading up to commemoration. During interviews with the personnel, I could see the fervent work put in by Otis crew chiefs to get their KC-130Js back into flying status.

VMGR-252 Commanding Officer Lt. Col. Brendan C. Brooks



A pair of KC-130J Hercules with Marine Aerial Refueler Transport Squadron (VMGR) 252 fly over the North Carolina coast.



Aircrew with VMGR-252 head to their KC-130J for their latest mission.



Day or night, Marine crew chiefs and maintainers work around the clock. Above, a crew chief heads to her aircraft.

emphasizes how dedicated his Marines are. The volume of operations he manages is absolutely staggering—Team Otis flies almost 7,000 hours per year and has had a detachment deployed continuously since 2005, further increasing the squadron's workload.

One of Otis's main tasks is providing a force multiplier for Marine assets both in the air and on the ground. Otis can refuel every operational aircraft in the Marine Corps inventory.

For operations officer Maj. Chuck Casey, the refueling task is a very straightforward one—keep Marine assets in the air longer so they can support Marines or other U.S. and joint forces on the ground when called upon.

I also met Lt. Zachary Weinbaum, a Team Otis pilot from Boca Raton, Florida. In addition to his duties as a pilot,

Weinbaum is also the squadron's ground training officer. To Weinbaum, the essence of Otis is being ready to go on short notice.

For example, the squadron may have to support Marines on the West Coast, and many of the pilots plan on how to get the new mission done without impacting missions that had already been approved for the week.

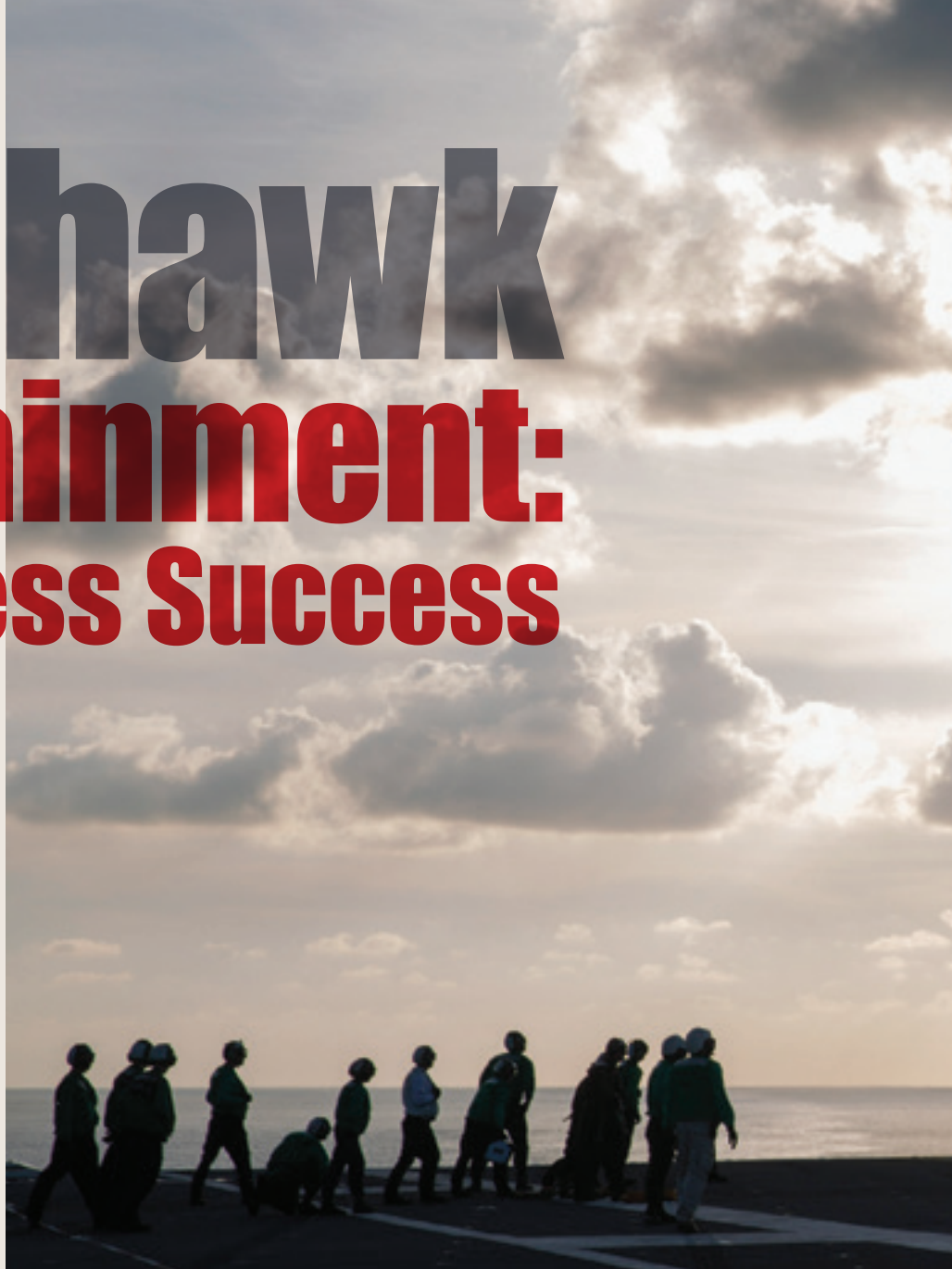
Whenever and wherever Marines are called upon, you can expect Otis—with a platform that is multi-mission capable and very flexible—to be right in the middle of it, providing Marines with logistical flexibility and firepower to boot.

Yissachar Raus is a photojournalist at Aviation Photography Digest. This article is used with permission and was first published at AviationPhotographyDigest.com. 🦅

Seahawk Sustainment: Readiness Success

By Jeff Newman

At a time when readiness and aircraft availability rank among the Navy's greatest priorities, the H-60 Seahawk is an example of a readiness success story—largely because of the program's innovative sustainment contract.



Many factors impact Naval Aviation readiness, but one of the principal degraders is the availability of spare parts and the time it takes to repair damaged components.

This is what makes the H-60 program's performance-based logistics (PBL) contract with Maritime Helicopter Support Company (MHSCo)—a joint venture of Lockheed Martin and subsidiary Sikorsky Aircraft—a “huge portion of what I think makes our readiness successful,” said H-60 Program Manager Capt. Craig Grubb.

The current five-year, \$1.3 billion

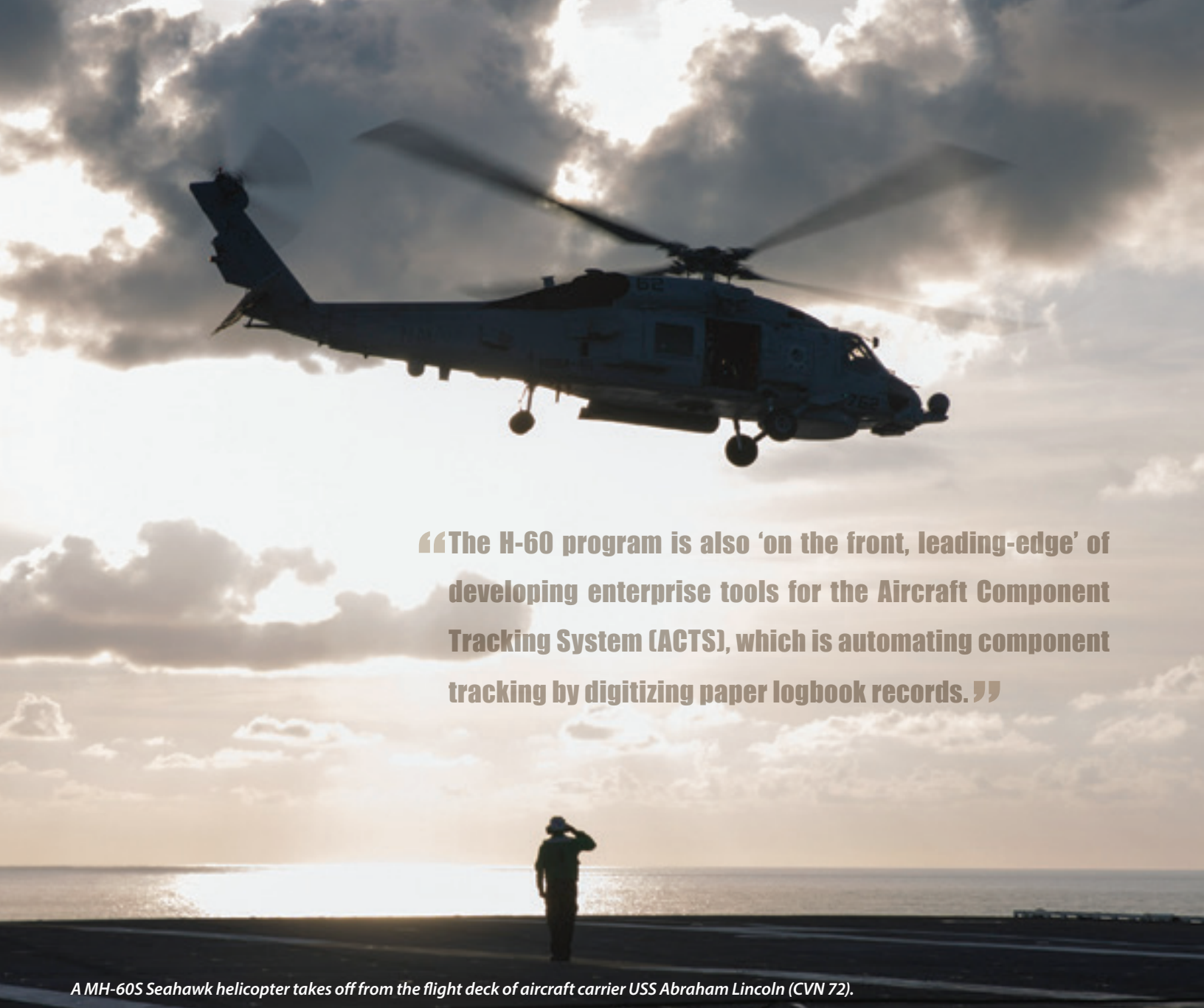
contract—awarded in February 2015 by Naval Supply Systems Command, Weapon Systems Support (NAVSUP WSS)—is the H-60 program's third PBL pact with MHSCo. It covers repairing, modifying, overhauling and replacing hardware, as well as manufacturing new material, of 1,736 H-60 components.

“There's a whole lot of work that goes into that readiness piece, and of the things that have made it successful, probably the biggest one, is a good PBL strategy and maintaining that,” said Bob Mroz, H-60 deputy program manager. “PBLs are not necessarily unique. I think

what is unique is the success of our PBL versus others.”

The platform's first “tip-to-tail” sustainment contract, signed in 2004, covered 540 components for \$417 million. Its success led to a second contract in 2011 for \$1.4 billion, with the number of components more than doubling to 1,266.

The 1,736 components covered by the current contract represent roughly half of the H-60 parts managed by NAVSUP and 65 percent of demand for new or replacement repairable items, said Capt. Mike York, director of aviation operations for NAVSUP WSS.



“The H-60 program is also ‘on the front, leading-edge’ of developing enterprise tools for the Aircraft Component Tracking System (ACTS), which is automating component tracking by digitizing paper logbook records.”

A MH-60S Seahawk helicopter takes off from the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).

U.S. Navy photo by MC1 Amber Smalley

“We’ve done a lot of homework to make sure we got the components that are most important and drive readiness,” he said. “The ones that keep the aircraft flying are in that market basket.”

York called the H-60 PBL contract “one of the gold standards for this business.” The goal of the contract is to meet a required supply response time at an 80-percent rate for the covered components. The current response time rate is 98 percent, well exceeding the goal and leading to an overall supply material availability rate just above 96 percent for all NAVSUP-managed H-60 items.

This is a great case study of a program

office knowing what’s driving the readiness challenges and having a willing partner in the original equipment manufacturer that has a proven performance record, said York.

With a goal of an 85-percent material availability rate for all parts on all Navy aircraft, York said the H-60 is one of the platforms that gives him the least amount of heartburn.

“In relation to other platforms, this one doesn’t require as much executive time to keep it on track because of the success of this PBL,” he said.

York noted that the H-60 PBL is fairly unique for NAVSUP WSS in that it’s a “whole

platform” PBL. In contrast, the bulk of the organization’s 30-some PBL contracts are system-level, meaning they’re for one specific system, such as an engine or a radar system.

The cost of the PBL contract was determined by NAVSUP WSS estimates on how much fixing or replacing H-60 components should cost over the deal’s term. Because the contract is fixed price, as is typical with PBL contracts, it is in MHSCo’s interest to reduce the number of H-60 components that need to be repaired or replaced. Under a more traditional, fee-for-service contract, the vendor would be paid per repair, meaning it would make

more money the more frequently components broke.

“With a traditional, transactional arrangement, if something breaks, you pay the contractor to fix it; the more stuff that breaks, the more they get paid to fix it. It’s the opposite with a PBL—they’re incentivized to make stuff break less,” Mroz said.

As the name suggests, PBL contracts are usually based on certain performance goals or criteria the contractor agrees to meet. The key metric on the H-60 PBL contract is response time, or “how long it takes for a repair to go in and turn back around on the other side, either with a replacement or repair,” Grubb said.

demand signal to invest in their capability to sustain this,” York said.

On the Readiness ‘Leading Edge’

In addition to the successful PBL contract, Grubb said his office plans to further boost readiness via condition-based maintenance, whereby components are inducted for repair as needed, rather than on a set schedule.

“The idea is to not prematurely replace good parts,” he said. “Instead of saying, ‘I need to replace this part after this many hours of use,’ instead the part would be

3,000 miles for decades, but now all of a sudden, you get a new car, and the manual tells you it can go 10,000 miles between oil changes, and that’s because the oil and engine components have gotten better,” Mroz said. “RCM is taking those thousands and thousands of hours of flight data and analyzing it to see where we can extend the life of components.”

The program office has also begun a multi-phased organic maintenance capability assessment, the first part of which involved inspecting intermediate-level maintenance facilities and ensuring they had all necessary support equipment and the documentation required to use it.

“We also made sure that they are properly coding and interdicting the right kind of stuff, so it’s really going out and evaluating how successful we are with the fielding of our intermediate-level maintenance capability,” Grubb said.

The H-60 program is also “on the leading-edge” of developing enterprise tools for the Aircraft Component Tracking System (ACTS), which is automating component tracking by digitizing paper logbook records, Grubb said.

The ACTS will also take into account “regime recognition,” meaning it will track a component’s condition based on the aircraft’s maneuvers, Grubb said. For instance, the system will log more load on a component in an H-60 conducting a 45-degree bank than one flying straight and level.

“We have re-baselined the lives of a lot of dynamic components based on data from the fleet on how they’re actually flying the helicopter,” Grubb said. “We initially made conservative estimates, but now that we have more data that describes how the aircraft is actually being flown and the loads being imparted to the helicopter, we can now go back and say, for instance, ‘Components that used to be [cleared for] 2,000 hours are now good for 3,000 hours,’ because we’re only flying it two-thirds as hard as we thought we would be.”

Jeff Newman is a staff writer for Naval Aviation News. 🦅



U.S. Marine Corps photo by Lance Cpl. Kenny Nunez

A Navy MH-60S Seahawk helicopter prepares to land aboard Military Sealift Command aviation logistics support roll-on/roll-off container ship SS Curtiss (T-AVB 4).

In addition, he noted, the “underlying value” to a PBL contract is that it encourages vendors to invest in improving reliability.

“They’ll actually invest in coming up with a new variation of a component that then gets fielded in place of the previous component, and it’s not just hardware,” Grubb said. “They also look at our maintenance publications and can make edits and improvements to those. So the whole continuum of the logistics associated with the piece parts that are on the contract are fair game for making improvements.”

The 14-year history of the PBL relationship also “gives the company the right

used as long as performance is within the standards.”

For example, Grubb said monitoring the vibrations of the H-60’s drive shaft can help determine its health. If its life exceeds initial estimates, the part could remain in service for longer than anticipated, increasing readiness, reducing maintenance man-hours and saving repair costs.

Mroz said the program office is also looking into reliability-centered maintenance (RCM), which uses data analysis to reset or extend maintenance intervals where appropriate.

“We’ve been changing our oil every

Additive Manufacturing, Collaboration KEEP T-6Bs FLYING

Written By Jacquelyn Milham, Photos by Anne Owens

The recent delivery of 15 T-6B Texan II dorsal assembly ribs in a matter of weeks is an example of how quickly stakeholders can increase readiness through collaboration and innovation.



*An instructor pilot preflights the last T-6B Texan II
aboard Naval Air Station (NAS) Corpus Christi.*



From left, a 3-D printed dorsal assembly rib awaits installation in a T-6B Texan. Robert Thomas, a conditional maintenance structural mechanic for Chief of Naval Air Training (CNATRA) at NAS Corpus Christi, Texas, scuff sands the rib prior to applying an adhesive. He then opens the dorsal fin access panel.

“With additive manufacturing (AM), the fleet can now get the parts in a matter of hours in addition to having an additional source of production,” said Chief of Naval Air Training (CNATRA) Assistant Chief of Staff for Aircraft Readiness Capt. Thomas Gibbons. “Establishing this capability locally could also potentially save us effort and cost.”

CNATRA decided to replace the aircraft’s ribs after a series of regularly scheduled inspections of the T-6B.

“We believed our workforce had the skills to replace the ribs at the wing, instead of taking aircraft out of service to send them to a maintenance facility,” Gibbons said.

The dorsal assembly extends from the aircraft’s rear fin toward its nose, helping provide directional stability during asymmetrical flight caused by external conditions such as crosswinds.

An initial request was sent to the Naval Undergraduate Flight Training System Program Office—which oversees T-6Bs—asking for additional instructions to the aircraft’s structural repair manual. CNATRA learned from the program

office that it could not begin work immediately even if they were granted authority to conduct the repair—industry had to manufacture the ribs first.

While waiting for a response, Gibbons spoke to the program’s primary air vehicle lead, John Myers, about the possibility of using AM to manufacture the ribs after hearing about its potential from Liz McMichael, Naval Air Systems Command’s (NAVAIR) AM/digital thread integrated product team (IPT) lead and director of innovation.

“I quickly realized AM could be used to produce the dorsal assembly ribs,” Gibbons said. “The brief described the amazing products that were produced using AM. I thought it was perfect to meet our need and even began to consider how it could be used for other requirements.”

Myers was also familiar with McMichael’s brief and engaged another stakeholder, the T-6B’s Fleet Support Team (FST), to begin the process.

McMichael is one of many experts integrating AM into Naval Aviation’s day-to-day activities. Her team is part of AIRWorks, a collection of teams within NAVAIR’s Naval Air Warfare Centers and Fleet Readiness Centers with capabilities



Thomas inserts the new rib through the access panel and positions the rib in place, then positions a fixture over the new rib to keep it in place while bonding occurs.



Thomas ensures the inner surface of the dorsal fin is clean and ready for rib installation. He then applies scrim cloth and adhesive to the new rib.

to engineer, prototype, build, install and test one-time or low-volume production solutions.

She said Gibbons' inquiry underscores the need to reach out to as many stakeholders as possible and let them know how AM can be used.

"There are 48 items pre-approved for printing so far. This means they don't have to ask for an engineering disposition. Sailors and Marines can print what they need when they need it and use it for the purpose it was designed for," McMichael said.

Items not on the list, however, need to demonstrate their airworthiness before being approved for production and installation. They must undergo AM development, which involves maturing the technology and setting standards for printing.

In the case of the T-6B ribs, after they were identified as possible AM candidates by the Jacksonville Materials Laboratory in Florida, the AM/digital thread IPT and T-6B team modeled the ribs, created laser-scanned models, tested prototypes, developed an engineering data package and approved installation instructions as part of its work to demonstrate the parts' airworthiness.

Approximately 60 days after the initial inquiry, the ribs received approval for AM production. Fifteen were printed and installed on T-6Bs at Naval Air Station (NAS) Whiting Field, Florida, and NAS Corpus Christi, Texas. The first aircraft with the AM ribs flew Aug. 1.

The entire process from request to installation took two months despite CNATRA, the program office and the OEM having limited experience with AM.

"The manufacture [of the dorsal assembly ribs] was reduced to a matter of hours and 10 percent of its original cost," Myers said. "Now that it has been approved for use, requests for six more ribs have been submitted."

McMichael said manufacturing the ribs exemplifies what is possible with AM and cross-functional teams.

"The fleet and the program office saw AM as a possible solution and reached out to us," she said. "CNATRA, the program office, engineering, FST and the original equipment manufacturer all worked together to increase speed to the fleet and provide an additional source for dorsal assembly ribs."

Jacquelyn Milham is a communications specialist supporting the Logistics and Industrial Operations Competency at NAVAIR. 🇺🇸



Thomas visually inspects his work to ensure proper bonding of the rib's faying surfaces. Heat lamps are placed on both sides of the aircraft to accelerate curing. Thomas uses a digital temperature laser gun to monitor the dorsal fin's skin temperature to ensure it doesn't exceed the recommended temperature.



FRCE workers make final preparations and safety checks prior to extracting an H-53 main gear box by crane.



U.S. Navy photos by David Marriott

Fleet Readiness Center East (FRCE) artisan Kurt Vasquez wears a bump cap while working on an aircraft. Using bump caps has reduced head injuries significantly at FRCE.

COMFRC Safety Rates Continue to Improve

By Gary Younger

Mishap rates at Commander, Fleet Readiness Centers (COMFRC) are at an all-time low, with fiscal 2018 slated to be 20-percent safer than last year.

The reduced total case incident rate (TCIR) and days away, restricted, transfer (DART) rates reflect the command's increased safety awareness and the implementation of its safety management system (SMS), said Mitch Bauman, COMFRC director for safety, quality and regulatory compliance.

The COMFRC enterprise has a TCIR rate of 2.12 and a DART rate of 1.28 through the first three quarters of fiscal 2018—the top milestone in safety metrics in COMFRC history.

COMFRC's rates are lower than the national Bureau of Labor Statistics (BLS) injury rates for aerospace depot maintenance operations, which have a TCIR rate of 3.4 and a DART rate of 2.1.



Artisans overhaul the fuselage of a Marine Corps Harrier on the FRCE AV-8 production line. In addition to the mandatory wear of bump caps, FRCE instituted a requirement for artisans to wear protective gloves. The two safety measures have greatly reduced head and hand injuries.

According to the BLS, TCIR is the generally accepted measurement of the rate of workplace injuries and illnesses within a given population in the U.S. and is tracked by the Occupational Safety and Health Administration (OSHA). TCIR is calculated based on the number of mandatory reported OSHA-recordable injuries and illnesses that occur each year at any company or workplace.

DART is another safety metric reported to OSHA to help employers determine how many workplace injuries and illnesses required employees to miss work, perform restricted work activities or transfer to another job within a calendar year.

In 2014, COMFRC established an SMS program for all commands to build a mindful safety culture. Through monthly area safety audits and leadership engagement, hazards are identified and mitigation implemented.

All intermediate maintenance sites and depots are implementing the SMS across the enterprise, with an expected completion date of Oct. 1, 2020, Bauman explained.

SMS is successful, in part, because of leadership commitment and employee engagement in the SMS process, Bauman said. "While production is important, safety, quality, schedule and cost are the priorities, in that order," he said.

Depot Initiatives

Fleet Readiness Center East (FRCE) looked beyond the numbers, conducted a trend analysis of injury data and made some changes that have reduced workplace injuries significantly, Bauman said.

Many injuries fell into two major categories—head injuries from bumping into aircraft leading edges and panels, and cutting hands from handling various materials, explained Amy Morgan, FRCE safety, quality and regulatory compliance department head.

After researching preventive measures, they discovered bump caps—protective headgear designed to protect the wearer from minor head bumps and lacerations—have been successful at other aviation facilities. FRCE then implemented a mandatory policy that bump caps must be worn when within 5 feet of any aircraft, reducing the head injury rate to nearly zero.

A similar policy required using protective gloves for all aircraft line and material handling work, with a significant drop in hand injuries because of cuts, Morgan said.

FRCE also requires a 10-hour OSHA training course for supervisors.

"We have received really good feedback from supervisors that have taken the class that it was truly an eye-opener to the hazards in the facility that they were unaware of until the training," Morgan said.

FRCE has a partnership with the OSHA office in Raleigh, North Carolina, the International Association of Machinist and Aerospace Workers, the American Federation of Government Employees and the National Association of Aeronautical Examiners to "focus on reducing and preventing worker exposure to prevalent aircraft maintenance hazards and heat illnesses, as well as hazards unique to the Navy aircraft maintenance environment."

FRC Southeast (SE) and Southwest (SW) are making similar strides in improving workplace safety.

FRCSE in Jacksonville, Florida, won CNO's Activity Excellence in Shore Safety Award for 2016 in the large industrial category. The award recognizes efficiency of operations through safety, using an aggressive SMS, as well as new ideas in mishap prevention.

FRCSW's efforts in enhancing safety began with certification and conformance to Occupational Health and Safety Management System 18001:2007, an international standard that provides a framework to identify, control and decrease the risks associated with health and safety within the workplace, as overseen by the command's SMS.

"Conforming to the international safety standard is a must in striving to improve in the processes of protecting the artisan and government property," Bauman said.

Gary Younger is a public affairs specialist supporting Commander, Fleet Readiness Centers. 🐦

NAE Leaders Tackle Readiness

Commander, Naval Air Systems Command Vice Adm. Dean Peters answers questions from Sailors and civilians at Fleet Readiness Center Western Pacific during a Boots-on-the-Ground event Aug. 9 at Naval Air Facility Atsugi, Japan.



Story and Photography By Gulianna Dunn

After months of planning, meetings and coordination, leaders from Naval Aviation Enterprise (NAE) made their way to forward-deployed naval forces (FDNF) stationed in Japan for a visit like no other.

Once in country, NAE leaders first stopped at Marine Corps Air Station (MCAS) Iwakuni as part of the Boots-on-the-Ground (BoG) Program before visiting Sailors aboard forward-deployed aircraft carrier USS Ronald Reagan (CVN 76) and Naval Air Facility (NAF) Atsugi.

BoG events allow Marine Corps and Navy leaders to implement best practices across the board, improving not only the readiness and quality of life of service members, but also saving money throughout the enterprise.

“The beauty of this whole week of visits is that it allows us to get the full picture,” Commander, Naval Air Forces (CNAF) Vice Adm. DeWolfe Miller said. “We know the elevated nature of being forward-deployed—sustainment and readiness are happening at Iwakuni, on the ship and in Atsugi—so as we collect our takeaways and prioritize what

we need to do, we [as the NAE] need to keep all of that in mind.”

Along with Miller, those in attendance included commander, Naval Air Systems Command (NAVAIR) Vice Adm. G. Dean Peters; commander, Fleet Readiness Centers Rear Adm. Michael Zarkowski; Marine Corps Assistant Deputy Commandant for Aviation (Sustainment) Headquarters Bill Taylor; Navy Supply Systems Command Weapon Systems Support Vice Commander Lynn Kohl; and NAVAIR Assistant Commander for Logistics and Industrial Operations Thomas Rudowsky.

“It’s awesome that they are doing this event here,” said Aviation Electronics Technician 1st Class (AT1) Aliya Younossi, who received the NAE’s Excellence Award in Atsugi. “To get a chance to tell leadership your work center’s issues and ideas is incredible. Any opportunity you have to question a process in order to make things better and to get that heard

by someone who may be able to help is always a good thing.”

At MCAS Iwakuni, NAE leaders spent the morning receiving command briefs on readiness issues. After lunch, they toured Strike Fighter Squadron (VFA) 115’s spaces, discovering some consumables were on order for more than a year. AT1 David Bohorquez presented an example that included the receipt of an antenna. The goal of collecting this action item is to identify a plan to fix the long wait time on parts.

“Our move from Atsugi to Iwakuni came with a lot of challenges and limitations that we predicted, but others we did not,” Carrier Air Wing (CVW) 5 Commander Capt. Forrest Young said during a brief to leadership. “Our relocation does present training opportunities, which were unavailable in Atsugi, and opens the door for a readiness-generation model, which could meet FDNF training requirements while remaining on station in 7th Fleet.”

Issues at FDNF Japan

While in Iwakuni, CVW-5 and Carrier Airborne Early Warning Squadron (VAW) 125 briefed there is a shortage of critical components for the E-2D Advanced Hawkeye, which was highlighted again during a Boots-on-Deck (BoD) visit aboard Reagan. Of the six action items, this one demonstrated a reoccurring theme for Sailors in Japan—supply lines are much slower overseas.

“There are two parts to this,” Miller said. “First, we want to increase the capabilities we have at AIMDs [Aircraft Intermediate Maintenance Departments] so that we are able to repair parts locally and get them back to you quicker. Next is, as our budgets are improving, there’s still a lag time involved, but it’s stocking the shelves, so we don’t have that one component that we have to get from Norfolk—which adds a month due to the



Navy Supply Systems Command Weapon Systems Support Vice Commander Lynn Kohl discusses readiness challenges with Sailors during the BoD.

USS Ronald Reagan

Boots-on-Deck Awardee AE1 Bill Eaton

Where are you from? “Baltimore.”

Why did you join the Navy/Marine Corps? “I really just wanted to see the world.”

How did your training/experience in your current position help you as a CPI practitioner? “One thing that has helped me in my current position has been the 5S (sort, set in order, shine, standardize and sustain) checklist that we utilize on the ship. It helps to provide a means to teach my new Sailors the basics of AIRSpeed and to ensure a smooth-running shop.”

Describe the problem you encountered and how you resolved it. What steps did you take? How did you measure its success? “The problem that was encountered onboard was a lack of experienced manning. We brought this issue up with AIRSpeed and completed a charter for the event. Upon completion of the event, the following advancement cycle saw a rise of 50-percent advancement, as well as a 15-percent reduction to the backlog of work.”

What has AIRSpeed done for you professionally? “AIRSpeed has given me a new way to look at problems and see them as ways to improve.”

What is your AIRSpeed philosophy? What impact do you want to have on your fellow Sailors, Marines and artisans or anyone who may come under your command in the future? Any advice? “My philosophy is if you find something that can be done better, do what you need to do to improve it. You don’t need a major event to fix everything. I would like to impart this philosophy to everyone.” 🚢



tyranny of distance—but we can stock these items a little better in the future. We are looking at all sorts of ways to shrink that timeline down.”

After their visit to Reagan, the NAE team made its last stop at NAF Atsugi. Commander, Fleet Air Forward (CFAF), gave multiple examples to show how Enlisted Manpower Distribution Authority could not support FDNF commands adequately with current detailing processes.

“There is no question in my mind that we are more capable today in the support we provide the warfighter than we were yesterday,” CFAF Capt. Brian

Erickson said. “What we want to focus on here is what we can do to get better and how we can improve that support by focusing on manpower, training and supplies.”

During the event at AIMD Atsugi, one work center presented a battery-powered LED black light that has been approved for use instead of the legacy individual material readiness list item, and which NAE leaders agreed would be best to incorporate fleet-wide because of its efficiency and low cost.

“This has been a great opportunity to get the providers together along with the unique local talent to look at the specific

issues for this area of operations,” Peters said. “We looked at the 30-, 60-, 90-day plans, and we realized we need to focus on the near-term piece, not to get caught up in all of the different taskers, but to handle what we can now—how we as a group can fix some of the issues now instead of trying to tackle them all at once.”

Each day concluded with a hot wash that highlighted the action items so NAE leaders can address issues and find a way forward for each challenge.

“Even though we saw a lot of readiness challenges here, we can leverage our expertise to move forward,”



Marine Corps Air Station Iwakuni

BoG Awardee Cpl. Alisher Tanimura

Where are you from? “I consider Baltimore County [Maryland] my home.”

Why did you join the Navy/Marine Corps? “I have always liked challenges, and I come from a long lineage of military service members, so I thought to myself, ‘Let’s do it.’ I was used to moving around, so it made sense.”

Describe your first encounter with AIRSpeed/CPI: “Once in a while, we get lucky enough to be able to get green-belt trained, which is a week of training where we learn what AIRSpeed is about (specifically, Lean Six Sigma, theory of constraints, those ideologies), and I really enjoyed them. I was a financial economics major in college, so

it was right down my alley. A senior NCO [non-commissioned officer] saw how passionate I was, so I was given the opportunity to work in the AIRSpeed department.”

Describe your thoughts on its value? “In the AIRSpeed department, you’re supposed to be creative and innovative, you’re supposed to think outside of the box. It was a completely different environment than what I was used to, but I think my position has allowed me to help others to question things in their work center: How can we improve this? How can we make this better? We know no one wants to make their squadron or department look bad, but we need to be more transparent so that leadership—the people who have the power to make those changes—can tackle those issues.”

What is your proudest accomplishment related to this position and why? “I was very fortunate to be able to come into this department, because normally, a lance corporal doesn’t get a position like this. There is a quote that I read this morning that says, ‘A man who asks how ends up working for the man who asks why.’ We had one project in the cryogenics department at [Marine Aviation Logistics Squadron] MALS-12, and they have arguably the most intelligent staff NCO here, but he had a problem with transporting these cylinders. The leadership was thinking big—too big—and it was solved by just doing it—a Lean Six Sigma technique. We just solved the problem by having an open and transparent discussion where rank doesn’t matter.”

What do you hope that your recognition will do for other Sailors/Marines in the fleet? “I think it’s important to recognize our junior Marines, because it helps open doors and makes them want to work harder. There are so many Marines doing incredible things, but no one is seeing them, so when we do get awarded, it’s important to everyone to advertise these things, because it definitely helps to boost morale and build a healthy competition in the ranks.” 🦅

Zarkowski said. "There's a lot of shared problems, but I think we can help out in the future."

The NAE is a cooperative partnership of Naval Aviation stakeholders focused on sustaining required current readiness and advancing future warfighting capabilities at the best possible cost. It is comprised of Sailors, Marines, civilians and contractors from across service branches and organizations, working together to identify and resolve readiness barriers and warfighting degraders.

Gulianna Dunn is a communications specialist with Naval Aviation Enterprise public affairs. 🇺🇸



Aviation Electronics Technician 1st Class David Bohorquez discusses an issue related to consumable aircraft parts with Commander, Naval Air Forces Vice Adm. DeWolfe Miller Aug. 6 at Marine Corps Air Station Iwakuni, Japan.

Naval Air Facility Atsugi

BoG Awardee AT1 Aliya Younossi

Where are you from? "Jackson, New Jersey."

Why did you join the Navy? "I was a teacher before I joined the Navy, but I always had that interest to serve. I wanted to continue to grow, but I wanted a career that would present the most opportunities. After my mother passed away at the age of 56, I realized life was too short. What was discouraging me from taking that chance? I didn't want to have any regrets or to look back at my life and continue asking myself why I didn't try it. I came in with the attitude that it was going to be a career, and I would stay in as long as I could."

Describe your thoughts on the value of AIRSpeed/CPI.

When did you realize its value? "I got to see that it's not just about money; it affects quality of life, specifically, man hours and how to be more efficient. When I was first introduced to it, people were hesitant to the change, but now we have this questioning attitude, which has helped to improve things across the board. I value that it has made changes for capabilities, to gain capabilities at a command overseas that we didn't have before. The return on investment is immense."

What has AIRSpeed done for you professionally? "It has provided me the opportunity to provide better service to our AOR [area of responsibility] for the 7th Fleet and the commands located here. I think it has made me a better Sailor, because I'm able to look at things with a different perspective. I look at processes differently in a sense that I'm going to question it if I feel there is a chance to make it better."

What is your AIRSpeed philosophy? What impact do you



want to have on your fellow Sailors, Marines and artisans or anyone who may come under your command in the future?

Any advice? "Don't be afraid to ask questions. Don't be afraid to ask why. Get out of your element and learn the processes outside of your work center. Sometimes when you step outside of your comfort zone, you'll find that you can help others solve problems within their work center or department. Improvements are always there. Don't be afraid of change; embrace it."

What are your future plans? "I plan on continuing my career as an officer. I am currently working on my LDO [limited duty officer] package, because I think my time as an enlisted Sailor has helped me to gain a better appreciation and understanding that will help those I lead in the future." 🇺🇸



FLEET READINESS CENTER EAST REPAIRS THE FLEET

Eco-friendly Engine Wash Technology Undergoes Performance Testing

By Chrystal Smith

Engineers at Fleet Readiness Centers East (FRCE) and Southeast (FRCSE) are laying the groundwork for the Naval Air Systems Command (NAVAIR) to acquire a cost-effective, more environmentally friendly technology to clean engines.

Chemist Keiko Sapp, a subject matter expert for engine cleaning at FRCE, and Kami Downey of FRCSE, are testing the performance of an engine cleaning technology by EcoPower System that could help reduce water consumption, hazardous material use and environmental waste while improving engine performance. Testing on various aircraft continues through 2019.

The project has been in the works for approximately two years, with Sapp spearheading the research and performance testing. System adoption is being considered for the engines of H-53 helicopters and the V-22 Osprey, AV-8 Harrier, P-8A Poseidon, T-34 Mentor and T-44 Pegasus.

The Navy Environmental Sustainability Development to Integration (NESDI) Program approved funds for the research project after determining it was a viable solution to an enterprise need and that the application method complied with environmental laws and standards.

The mission of the NESDI program is to provide solutions by demonstrating, validating and integrating innovative technologies, processes and materials, and by filling knowledge gaps to minimize operational environmental risks, constraints and costs while ensuring fleet readiness.

Sapp's goal was to find a more efficient engine cleaning process that would reduce



U.S. Navy photo by Chrystal Smith

An H-53 helicopter undergoes an engine wash with the EcoPower System on the FRCE flight line.

environmental impacts and improve engine performance. The process also needed to be transportable to use on ships.

The current wash process consists of applying a large volume of detergent and rinse water via a pressurized wash hose. The alkaline detergent can be problematic, because the low-pressure wash can leave residual contaminants and detergent behind in the engine, potentially leading to corrosion. The low pressure also produces larger streams of water, improper rinse and a large amount of runoff.

In contrast, the EcoPower technology uses only deionized heated water. The water is atomized, increasing wetting of the surface area and preventing re-depositing of contaminants. Testing specifically looked at total dissolved solids in the effluent, or the concentration of minerals and heavy metal elements.

The technology also offers long-term cost avoidance, along with environmental and safety benefits. Using deionized water eliminates detergent costs

and hazardous waste, while the recycle system process boosts water conservation and limits the risks of environmental impacts. Its mobility and easy setup also reduces labor costs.

The technology has helped engine performance by increasing time-on-wing, decreasing fuel consumption and improving quality of product throughput, Sapp said.

"Cleaner engines enhance environmental sustainability and flight crew safety," she said.

The Air Force has been using the technology successfully for approximately 10 years, Sapp said.

"I'm testing it to ensure this engine cleaning technology will bring overall benefits to the NAVAIR enterprise," Sapp said. "They know it works, and this is the future. This technology will improve performance, minimize corrosion, reduce maintenance man-hours and lower fuel costs—and even shipboard washing is possible." 🚁

Automated Paint Removal Strips Away Lengthy Process

By Chrystal Smith

The process of removing paint from H-53 helicopter blades will be approximately 75-percent faster for technicians at FRCE with the recent approval of the Automated Rotor Blade Stripping System (ARBSS).

Approved for use in Naval Aviation depots, ARBSS will reduce the 22-hour process of removing paint from H-53 blades to four hours or less, said Ben Thompson, FRCE electrical engineering team lead.

“It’s been a lengthy process to ensure the technology is viable, sustainable and consistent,” Thompson said.

At the start of the project, in fiscal 2006, the depot was refurbishing more than 900 blades annually for CH-53, CH-46 and H-60 aircraft. The requirement to remove paint from blades opened the door to other issues that threatened throughput quality, including damage to the blades from using orbital sanders, intensive labor methods and inconsistencies from manual blasting and cost. Also, paint removal work orders ranged from spot repair to full-blade sanding.

The primary objective was to choose and implement a cost-effective, alternative paint removal technology. The system’s design goals were to eliminate substrate damage and increase throughput while reducing the cost of the paint removal process, environmental impacts and the health and safety risks to workers.

The process spanned more than a decade, as it had to undergo testing required by the original equipment manufacturers and Naval Air Systems Command before use.

A prototype system was installed in 2009 to prove the technology concept was viable, but the system, using lasers that were, by then, already 10 years old, was somewhat obsolete.

“This project joined a lot of entities

together: academia, original equipment manufacturers, government, private industry,” said Robert Mehring, a materials engineer who worked on the project.

During the first phase of testing, engineers tested the blade’s mechanical properties, thoroughly examining its physical and mechanical structure.

There were concerns about using the thermal process on critical items such as rotor blades and whether the process was safe to use on composite materials, Mehring said. Specifically, the team was worried about what heat would do to the blade’s composite skin—which is made of thin fiberglass—and structural adhesive bonding agent.

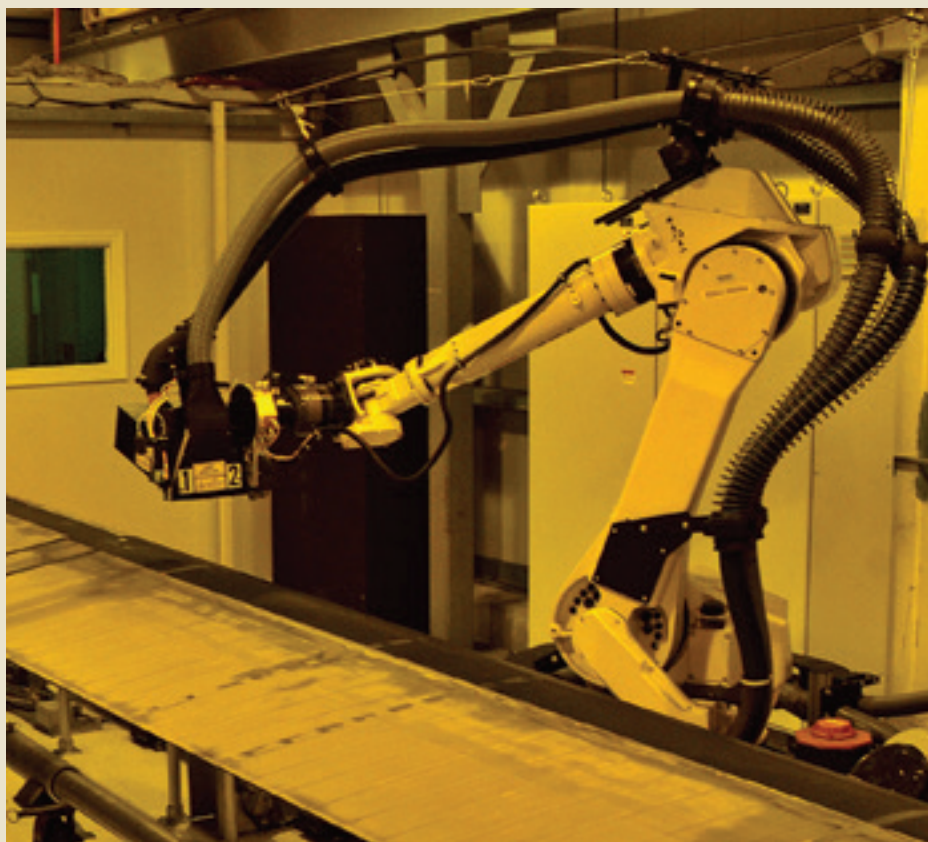
Mehring said the team tested to the worst-case scenario, with a focus on protecting the structural properties of the rotor blade materials.

The team used a trademarked technology that performs laser paint removal with color recognition to ensure the substrate or subsurface material is protected. The established recipe contained a built-in safeguard designed to make necessary passes with the laser while stopping far short from damaging the substrate, Mehring explained.

During the second phase, engineers worked with a scaled-to-concept production system, testing the software, hardware and system function.

Thompson said engineers worked through numerous challenges, including an evolving list of test requirements, securing funding, working with older technology at half-laser power and requirements for environmental permissions.

Chrystal Smith is a public affairs specialist with Fleet Readiness Center East. 🇺🇸



U.S. Navy photo

The work head of the Automated Rotor Blade Stripping System, which also includes a HEPA vacuum function, hovers above an H-53 blade as the system is being prepared for performance checks.



Aircraft mechanics, observed by quality assurance specialists, install the floorboard in the fuselage of an H-53 helicopter during the assembly phase in Hangar 3 at Marine Corps Air Station Cherry Point, N.C. Processes in the aircraft production line were targeted in completed and ongoing continuous process improvement projects.



U.S. Navy photo

AIRSpeed Site of the Year: Process Improvements Garner NAE Acclaim

By Jacquelyn Milham

The Naval Aviation Enterprise (NAE) Continuous Process Improvement (CPI) Governance Board has selected FRCE as its top AIRSpeed Site of the Year.

The award highlights FRCE's comprehensive CPI program for training, awareness, initiatives, projects and other contributions to the command on the way to realizing corporate strategic goals.

"It contributed to what I think it means to have a successful CPI program," said Mike Moore, CPI Division head. The organization worked diligently to effect a CPI culture, align actions with strategic goals—a process known as Hoshin Kanri—and ensure workforce development and training, he said.

Since its implementation in August 2016, FRCE CPI program members work among a cross-section of the workforce as coaches and mentors in process improvement and facilitates training to promote a corporate CPI mindset.

"CPI is not about three or four people doing great things," Moore said. "It's about three or four thousand doing great things. It's really about getting 4,000 people moving in the same direction on how they approach their jobs. There are 4,000 problem solvers here. CPI involves everyone, and we did a considerable effort on that."

More than 1,000 members in the workforce are at least white- or yellow-belt trained in the Six Sigma methodology. About 50 champions or project sponsors are helping complete projects throughout the command, and the division has facilitated additional CPI training opportunities for nearly 600 workers via efficiency-focused courses and software programs.

"We're generating some momentum in terms of folks volunteering and willing to take the next step in training (in process improvement)," Moore said.

The corporate effort involved a number of rapid improve-

ment events; define, measure, analyze, improve and control (DMAIC) projects; and just-do-it projects, which earned the organization notable NAE acclaim. The projects aligned with the NAE Strategic Plan and the Commander's Intent of Integrated Capabilities with focus on speed and increased readiness. The projects also supported FRCE's operations plan goals for people, products, processes and resources.


Completed CPI Projects Include

- CH-53 and AV-8 Rework Phase Variability Reduction Project reduced phase variability for AV-8 and H-53 production and quickened turnaround time for both aircraft
- FRCE Beyond Economical Repair (BER) Process improved the organization's BER process while recouping \$13 million
- Cultural Change Award Team Recognition and Awards Automated Tracker project impacted workforce morale with the creation of an awards tracker that improved the awards routing process for one of the organization's competencies

Ongoing and Future Projects Include:

- The H-53E Assembly Phase Kitting Project dealt with delays caused by incomplete kits to start the aircraft assembly phase of production. The delays had a domino effect on subsequent phases, ultimately impacting delivery to the customer. The goals to reduce process time in the assembly phase, develop and build kits to specific tasks, ensure 100-percent availability of all consumables and piece parts, and install kits immediately upon receipt from Aircraft Storage Kitting and Retrieval System (ASKARS) reduced the assembly phase of H-53 helicopters and resulted in on-time delivery to the customer.

The progress made from the CPI efforts serves as a solid foundation for the organization moving forward.

Jacquelyn Milham is a communications specialist supporting the Logistics and Industrial Operations Competency at NAVAIR. 

Professional Reading

By Cmdr. Peter Mersky, USNR (Ret.)



F-4 Phantom II, US Navy, US Marine Corps and RAF F-4J (UK)

By Charles Stafrace, Guideline Publications, Buckinghamshire, UK. 2018

Started by the energetic aviation writer and publisher Alan W. Hall in the mid-1970s, this British line of detailed monographs under the name of “Warpaint” has become a must-have series of dedicated references.

The latest title in this long-lived series is on a truly American favorite,

variants of the American legend. There are also several pages of color profiles by veteran Maltese artist Richard J. Caruana.

However, I do wish the author (who also hails from Malta and is a retired diplomat and former ambassador to several countries) and the artist had included representative missiles and bombs and other ordnance on these otherwise very good profiles to show what the individual aircraft would be carrying on a mission.

I have two early publications in this series on the A-4 and B-58, which are all black-and-white, and were for their time, the most informative on their particular subject aircraft.

Now, with the development of computer-generated layouts, technical drawings and other helpful aids to publication, it is easy to see how the Warpaint line has changed, and for the most part, improved. They are no longer the simple booklets that appeared from Alan Hall’s knowledgeable imagination and guidance. I wonder what he would have to say about this latest title.

Stafrace is planning a companion volume on U.S. Air Force F-4s. ✈️

the McDonnell-Douglas F-4 Phantom II. Filled with color and black-and-white photos of F-4s of all U.S. Navy and Marine Corps squadrons, as well as F-4Js of the Royal Air Force and the Blue Angels, there is also the usual historical text and a large foldout page of general arrangement drawings showing major



An F-4 “Phantom” attached to Naval Weapons Test Squadron, Point Mugu, California heads out to conduct weapons tests with USS Porter (DDG 78) in Caribbean waters near Naval Station Roosevelt Roads in July 1999.

U.S. Navy photo by Journalist 1st Class David Rush

***Nakajima B5N "Kate" and B6N "Jill" Units* by Mark Chambers with Tony Holmes, Osprey Publishing, UK. 2018**

Outside of Japan, very little has been written in any detail about World War II Japanese aircraft other than the Mitsubishi A6M Zero and the Nakajima Ki.43 Hayabusa—the two main fighters of the Imperial Japanese Navy and Army, respectively. Other aircraft are only mentioned in scattered paragraphs in articles and books even though Japan had a robust and very active aircraft industry before and during the war that surprised Western “experts” who had derided the products of the various companies so far away.

Osprey has gone a long way during the last 20 years in rectifying this knowledge gap in many well-produced and relatively inexpensive books, presented in several closely related series. Combat Aircraft No. 119 carries on this practice with this latest volume, which focuses on two of the Japanese Navy’s main torpedo bombers: B5N “Kate” and B6N “Jill.”

The Kate served in China and then at Pearl Harbor, seeing action after the devastating strike that brought America into the war well into the 1943 mid-war period. On Dec. 7, 1941, along



with Aichi “Val” dive bombers, Kates roared in at water level to launch their torpedoes and dropped bombs from higher altitudes, showing their unique abilities in two different roles.

Kates also served in later campaigns during 1942-1943 in the Solomons, eventually flying anti-submarine warfare (ASW) missions with rudimentary radar and as Kamikaze suicide aircraft in the last year of the war.

Although a latecomer, the Jill also saw action, flying from Japan’s few remaining aircraft carriers and shore bases as the Allies’ pushed closer to the Japanese islands. The information about late-war ASW operations

is new, complemented by photos that show radar antennae mounted on fuselages and wings of Kates and Jills, which certainly came in for their share of rugged torpedo missions against Allied ships.

Along with a selection of excellent photos, this new book has a very fine cover illustration by long-time Osprey artist Mark Postlethwaite and excellent side profiles by Jim Laurier. 🛩️

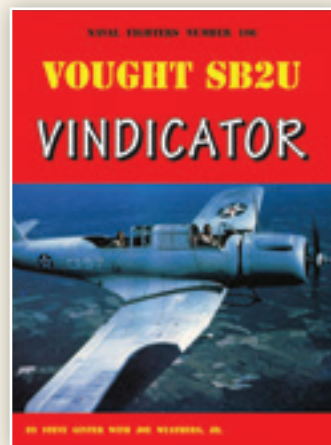
Vought SB2U Vindicator

Steve Ginter with Joe Weathers, Jr., Steve Ginter, Simi Valley, California, 2018

Number 106 in the successful Naval Fighters series, this new book is one of a few dedicated to Vought’s SB2U dive-bomber that saw very little combat but flew under at least three colors—U.S., French and British.

The SB2U is perhaps best known for its brief and violent participation in the Battle of Midway in June 1942 with the U.S. Marine Corps—one of whose pilots received a posthumous Medal of Honor. It was a late 1930s design that included two crewmen and very light defensive armament, which consisted of a single rearward facing .30-caliber machine gun and a similar weapon firing forward in the starboard wing. These light guns and its slow speed almost certainly doomed the SB2U to destruction from enemy defenses.

Following the series’ long-established format, this book shows the aircraft in all aspects. Given the number of model kits available, the later image is of admirable detail. The ambitious model builder also has the unique advantage of having a beautifully restored example at the National Naval Aviation Museum in Pensacola, Florida, where they can shoot a walk-around selection of close-up details.



This book includes quite a few first-person memories of the Vindicator, which, by themselves, place this book in a rather unique position to let the reader get to know this rare, but historic naval aircraft.

All in all, a fine addition to this open-ended series. 🛩️



Vought SB2U-1 Vindicator taking off from USS Saratoga (CV-3), 8 February 1938.

Photo courtesy of Naval History and Heritage Command

Squadron Spotlight

Helicopter Sea Combat Squadron (HSC) 11 "Dragonslayers"

Established: June 27, 1957

Based: Naval Station (NS) Norfolk, Virginia

Current Commanding Officer:

Cmdr. Matthew S. Wellman

Mission(s): *To execute anti-surface warfare, personnel recovery and maritime special operations forces support with the utmost precision and lethality while providing unparalleled fleet support to Carrier Air Wing (CVW) 1 and Carrier Strike Group (CSG) 8.*

Brief History: Established June 27, 1957, at Naval Air Station (NAS) Quonset Point, Rhode Island, Helicopter Antisubmarine Squadron (HS) 11 flew the HSS-1 Seabat and used the helicopter's dipping sonar to hunt for submarines, earning HS-11 the nickname "Sub Seekers." In 1962, the squadron transitioned to the twin-engine SH-3A Sea King and that November sailed to the Caribbean onboard USS Wasp (CV 18) to help enforce the Cuban quarantine during the Cuban Missile Crisis. Later that decade, the squadron played a leading role in astronaut recovery operations during the Project Gemini missions, plucking from the sea such famed astronauts as Ed White, James McDivitt, Jim Lovell and Buzz Aldrin. In December 1969, HS-11 became the first anti-submarine warfare (ASW) helicopter squadron to deploy as part of a modern carrier air wing with CVW-17 onboard USS Forrestal (CV 59).

In 1976, the squadron was awarded the Navy Unit Commendation for saving countless lives after two ships collided at sea. In 1989, HS-11 changed its official call sign to "Dragonslayers," and in 1994 transitioned to the SH-60F and HH-60H Seahawk, allowing the squadron to greatly expand its mission areas. In addition to ASW and search and rescue (SAR), the Dragonslayers added anti-surface warfare (ASUW), vertical replenishment, naval special warfare support, and combat search and rescue to its list of duties. In 1999, squadron SAR swimmers rescued nine men whose ship sunk during Hurricane Floyd in winds over 50 knots and seas measuring 30



feet. In September 2008, as Hurricane Ike swept through Galveston, Texas, HS-11 was the first Navy squadron on-station, just hours after the storm moved overland.

In January 2010, the squadron sailed to Haiti in support of humanitarian assistance and disaster relief operations following a 7.0 magnitude earthquake. In 2012, HS-11 embarked USS Enterprise (CVN 65) for the "Big E's" final deployment. The Dragonslayers again deployed in 2015 aboard USS Theodore Roosevelt (CVN 71) in support of Operation Inherent Resolve.

With seven aircraft aboard (three SH-60Fs and four HH-60Hs), this marked the final deployment of these two series of aircraft as well as an HS squadron.

Starting in January 2016, HS-11 moved to NS Norfolk, sundowned the HS community and transitioned to the MH-60S Seahawk. Officially redesignated as HSC-11 in June 2016, the Dragonslayers began an arduous workup cycle in 2017 in preparation for its April 2018 deployment aboard USS Harry S. Truman (CVN 75) as part of CSG-8 and CVW-1. HSC-11 is proud to be the first MH-60S squadron to deploy as part of the Dynamic Force Employment (DFE) strategy as the Navy supports the Secretary of Defense's vision of being strategically predictable and operationally unpredictable.

Aircraft Flown: MH-60S Knighthawk (Seahawk)

Number of People in Unit: 260 military

Significant Accomplishments:

- 11 Meritorious Unit Commendations
- Six Navy Unit Commendations
- Seven Navy "E" Ribbons
- Eight Armed Forces Service Medals
- Three Secretary of the Navy Letter of Commendations
- Three Navy Expeditionary Medals
- Two Humanitarian Service Medals
- Two Armed Forces Expeditionary Medals
- One Southwest Asia Service Medal





NAVAL AVIATION NEWS

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