

# NAVAL AVIATION NEWS

THE FLAGSHIP PUBLICATION OF NAVAL AVIATION SINCE 1917

FALL 2017



## ANSWERING THE CALL!

Naval Aviation Delivers Humanitarian Relief

### WHAT'S INSIDE

- ▶ Efforts to Resolve Physiological Episodes
- ▶ Super Hornets Get Life Extension
- ▶ H-1 Flight Envelope Expanded





*With this issue, we put a bow on the 100th year of Naval Aviation News, the U.S. Navy's oldest periodical. As we look to the future, we continue to encourage the fleet to submit its stories about the Naval Aviation mission. Email your ideas and contact info to [nannews@navy.mil](mailto:nannews@navy.mil), and as always, thank you for reading. —Ed.*

*An MH-60S Seahawk helicopter assigned to the "Dusty Dogs" of Helicopter Sea Combat Squadron (HSC) 7 prepares to deliver ammunition to aircraft carrier USS Dwight D. Eisenhower (CVN 69) during a replenishment-at-sea with the fast combat support ship USNS Arctic (T-AOE 8).*

U.S. Navy photo by MC3 Anderson W. Branch



# NAVAL AVIATION NEWS

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## ON THE COVER



An MV-22B Osprey with Marine Medium Tiltrotor Squadron (VMM) 162 (Reinforced), with the 26th Marine Expeditionary Unit, assists in the rebuilding of the Guajataca Dam in Puerto Rico in early October. Both Ospreys and CH-53E Super Stallions participated in the dam restoration. In conjunction with other DoD forces, Marines helped deliver 500 barriers to reinforce the spillway. (U.S. Army photo by Pfc. Deomontez Duncan)

This issue highlights Naval Aviation's peacetime role in providing humanitarian assistance and disaster relief to victims of three hurricanes—Harvey in Texas, Irma in Florida and the Caribbean, and Maria in Puerto Rico and the Virgin Islands (page 10). Read about leadership's perspective on manned aircraft, readiness and supercarriers on page 14, and their efforts to resolve physiological episodes on page 16. Marine Corps infantry are receiving small quadcopters to help execute their missions (page 26), while Marines with Marine Medium Tiltrotor Squadron (VMM) 365 (Reinforced), 24th Marine Expeditionary Unit, helped Air Test and Evaluation Squadron (HX) 21 expand the flight envelope for the UH-1Y Venom (page 28).

**On the Back Cover:** An aerial refueling-equipped E-2D Advanced Hawkeye with Air Test and Evaluation Squadron (VX) 20 conducts flight tests over the Chesapeake Bay on July 25. The E-2D celebrated the 10-year anniversary of its first flight in August. (U.S. Navy photo by Liz Wolter)

*The U.S. Navy's Oldest Periodical, Established 1917*

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# Airscoop

Compiled by Jeff Newman



U.S. Navy photo by MC Issue Escobosa

Sailors prepare an F-35C Lightning II assigned to the "Grim Reapers" of Strike Fighter Squadron (VFA) 101 to launch from the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).

## Lincoln Tests F-35C Lightning II at Sea

ATLANTIC OCEAN—The "Grim Reapers" of Strike Fighter Squadron (VFA) 101 began carrier qualification training with the F-35C Lightning II onboard USS Abraham Lincoln (CVN 72) on Sept. 3, making it one of the few ships in the fleet to trap and launch the fifth-generation fighter.

From Eglin Air Force Base, Florida, VFA-101 is the training squadron for the F-35C, the U.S. Navy's variant of the Lightning II.

"The F-35C is still in a testing phase, so it is not fully operational yet," VFA-101 pilot Lt. Cmdr. Chris Karapostoles said. "We are the training squadron for the F-35C, so we are onboard this ship conducting our carrier qualification training, qualifying pilots, landing signal officers and maintenance crews."

The launching and recovering of the F-35C presented an opportunity for the Lincoln's crew to work with a new aircraft and play a role in the development of this new fighter jet.

"Being part of the primary flight control team for the landing and launching of the F-35Cs was such a unique experience," said Aviation Boatswain's Mate (Handling) Airman Mariana Monima. "The F-35Cs are so amazing and powerful. I feel privileged to have been a part of this historic event."

The F-35C is set to reach initial operational capability (IOC) in 2018. The U.S. Air Force's and Marine Corps' variants—the F-35A and F-35B, respectively—have already reached IOC.

"I love the F-35C," Karapostoles said. "Compared to other jets, it's more powerful and really just a beast. Some of the controls are different, which can take a little bit of getting used to, but that's what we have training like this for."

According to the Joint Strike Fighter Fleet Integration Office, the F-35C will introduce next generation strike-fighter aircraft capabilities to the Navy's carrier air wings, enabling the carrier strike groups and numbered fleets to effectively engage and survive a wide range of rapidly evolving threats.

Written by Mass Communication Specialist 3rd Class Matt Herbst, USS Abraham Lincoln Public Affairs. 🐦

## Nimitz Completes Historic 100,000th Catapult Shot

ARABIAN GULF—USS Nimitz (CVN 68) successfully completed its 100,000th aircraft launch from Catapult Two Sept. 25, marking the second time since the ship's 1975 commissioning that the milestone has been achieved. Catapult One launched its 100,000th aircraft on Oct. 7, 2009.

Getting Catapult Two to this milestone was exciting for the crew who work on these catapults daily, as they know all that goes into each and every launch, said Nimitz's Aircraft Launch and Recovery Equipment (ALRE) Officer Lt. j.g. Gabriel Quinlin.

An F/A-18E Super Hornet with the "Blue Diamonds" of Strike Fighter Squadron (VFA) 146 conducted the launch, one of roughly 30 performed daily on Nimitz's flight deck.

"The reason 100,000 shots is a significant milestone is because every catapult shot requires maintenance," Quinlin said.

Quinlin has been Nimitz's ALRE officer since May 2015 and seen the tremendous work it takes to get the ship's catapults ready for the daily grind of deployment.



An F/A-18E Super Hornet, from the "Blue Diamonds" of Strike Fighter Squadron (VFA) 146, is the 100,000th aircraft to be launched from catapult two aboard aircraft carrier USS Nimitz (CVN 68).

U.S. Navy photo by MC Kennishah J. Maddux

"Catapult Two was in pieces before we left for deployment, and it took a complete overhaul and an immense amount of hard work from the crew to get it up and ready to go," Quinlin said. "Now we continue to make sure it's ready to operate safely by performing checks prior to and after each launch, in addition to our numerous daily, weekly and monthly workups."

"After 100,000 launches, 42 years of service, and this ship is still out here getting the work done," said Capt. Kevin P. Lenox, Nimitz's Commanding Officer.

*Written by Mass Communication Specialist Seaman Kennishah J. Maddux, USS Nimitz Public Affairs.* 🦅

## First CVW-5 Jet Squadrons to Relocate to Iwakuni this Fall

YOKOSUKA, Japan—The first jet squadrons from Carrier Air Wing (CVW) 5 will relocate to Marine Corps Air Station Iwakuni, Japan (MCASI) this fall.

Strike Fighter Squadrons (VFA) 115 and 195 and Electronic Attack Squadron (VAQ) 141 will relocate to MCASI at the conclusion of USS Ronald Reagan Carrier Strike Group (CSG) 5's fall patrol.

The three squadrons will join Carrier Airborne Early Warning Squadron (VAW) 125, which forward deployed to Iwakuni earlier this year. The relocation of all CVW-5 fixed-wing aircraft from Naval Air Facility Atsugi, Japan (NAFA) to MCASI is part of the Defense Policy Review Initiative, as directed in the May 1, 2006, Security Consultative Committee Document, also known as the U.S.-Japan Roadmap for Realignment. NAFA will remain the home for all CVW-5 rotary-wing aircraft.

Both VFA-115 and VFA-195 fly the F/A-18E Super Hornet, while VAQ-141 flies the EA-18G Growler.

The timing of the squadron moves is contingent upon completion of necessary squadron facilities at MCASI, some of which are still under construction. The phased relocation of the remaining CVW-5 fixed-wing squadrons will occur on a timeline agreed upon by the U.S. and Japanese governments.

Though CVW-5 fixed-wing squadrons will be based in Iwakuni, NAFA will remain a vital base for the U.S.-Japan alliance, and CVW-5 aircraft will occasionally use the installation as a divert field, or for training, refueling or maintenance.

*From Commander, U.S. Naval Forces Japan.* 🦅



A formation of F/A-18E Super Hornets assigned to Strike Fighter Squadron (VFA) 115 flies over aircraft carrier USS Ronald Reagan (CVN 76) in honor of the 75th anniversary of the squadron.

U.S. Navy photo by MC3 James Ku

## First Production Contract Awarded for CH-53K King Stallion

PATUXENT RIVER, Md.—The Naval Air Systems Command (NAVAIR) awarded a \$304 million Low Rate Initial Production (LRIP) Lot 1 contract Sept. 1 to Sikorsky Aircraft Corp. to build two CH-53K King Stallion heavy-lift helicopters. The contract provides funds for the two helicopters along with engineering and integrated logistics support, spares and particular support equipment, such as tools and support equipment specific to the CH-53K.

“I am proud of what the team has negotiated to bring this remarkable and unrivaled helicopter one step closer to the fleet,” said Col. Hank Vanderborcht, program manager for NAVAIR’s Heavy Lift Helicopters program.

The contract award follows the program’s Milestone C decision last spring,

which approved the Navy’s request for the CH-53K to enter production.

“This contract will benefit our Marine Corps’ ‘heavy lifters’ for decades to come,” Vanderborcht said. “Future Marines, not even born yet, will be flying this helicopter well into the future.”

Initial deliveries from Lot 1 are expected to begin in 2020. The contract does not include engines, which will be procured as government furnished equipment via a separate contract with General Electric.

The King Stallion is a new-build helicopter that evolved from the design of its predecessor, the CH-53E Super Stallion. Improvements to the King Stallion include increased operational capability, interoperability, reliability, maintainability, surviv-

ability and decreased cost of ownership. The U.S. Marine Corps intends to stand up eight active-duty squadrons, one training squadron and one reserve squadron to support operational requirements. The DOD’s program of record remains at 200 aircraft, a requirement validated by the Joint Requirements Oversight Council (JROC).

There are currently four engineering development model aircraft in test and one ground test vehicle, which together have logged more than 500 flight hours. Initial operational capability remains on pace for 2019 and is defined as having four aircraft, with combat-ready crews logistically prepared to deploy.

*From Program Executive Office Air ASW, Assault & Special Mission Programs Public Affairs.* 🇺🇸



U.S. Navy photo by Liz Mildenstein

Seven CH-53K King Stallion helicopters will undergo various flight quality, ground and avionics assessments as the program continues developmental testing at Naval Air Station Patuxent River, Md., where the first test aircraft arrived June 30 following a six-hour transit flight from Sikorsky’s Development Flight Center in West Palm Beach, Fla.

## 'Green Knights' Help Prepare Japan for F-35A



U.S. Marine Corps photo by Lance Cpl. Stephen Campbell

Japan Air Self-Defense Force personnel study the F-35B Lightning II during an educational tour and class led by Marine Fighter Attack Squadron (VMFA) 121 at Marine Corps Air Station Iwakuni, Japan.

IWAKUNI, Japan—The “Green Knights” of Marine Fighter Attack Squadron (VMFA) 121 hosted members of the Japan Air Self-Defense Force’s (JASDF) Third Air Wing for a Sept. 13 educational tour and class centered around the F-35A Lightning II at Marine Corps Air Station Iwakuni, Japan.

The tour was an effort by the Marine Corps to share knowledge and experiences of the F-35B Lightning II with the JASDF in preparation for their upcoming acquirement of the aircraft.

“The purpose of today’s tour was to bring some JASDF maintainers down from Misawa Air Base, who are expecting to get the F-35, and show them how we operate our maintenance department here in Iwakuni,” said U.S. Marine Corps Maj. Adam Wellington, aircraft maintenance officer for VMFA-121. “We wanted to exchange ideas and answer questions for them as they prep for the arrival of this aircraft.”

JASDF personnel were given several classes regarding maintenance, serviceability, operability and more. Afterward, they briefly toured VMFA-121’s facility, taking a peek into different departments and visiting the hangar to see, touch and study the aircraft up close.

JASDF Lt. Col. Mamoru Yamaura, F-35A Lightning II program office chief with the Third Air Wing, said even though

they’re becoming increasingly knowledgeable, they’ve reached the point where they need to see in person how to operate the aircraft.

“It is very significant for us to see, meet and talk with personnel who are already operating or supporting the F-35,” Yamaura said. “This exchange program is very instructive for us. We’ve learned a lot about the F-35 and the United States Marine Corps. I believe we should have many more exchanges like this.”

Wellington attributed the success of the bilateral event to the great questions posed by the JASDF personnel, the dialogue between all players involved and the fact that JASDF personnel are already well versed in many things about the F-35B.

He called the training a success and said it also served to deepen the relationship between the Marines and the JASDF.

“This training enhances the relationship between the JASDF and the Marine Corps at large,” Wellington said. “That’s one of the benefits of this aircraft; it’s a joint aircraft that’s going to be used by multiple partners, including Japan. So the fact that they’re going to fly the same aircraft we’re already flying is just going to further strengthen the relationship we have with the Japanese.”

Written by Lance Cpl. Carlos Jimenez, 26th Marine Expeditionary Unit. ✈️



U.S. Navy photo by Dane Wiedmann

An F-35C Lightning II test aircraft, piloted by Cmdr. Theodore Dyckman, conducts the first separation of an AGM-154 Joint Stand-Off Weapon (JSOW) from an F-35 Joint Strike Fighter.

## JSOW C-1 Achieves Full Operational Capability

PATUXENT RIVER, Md.—The Department of the Navy has declared the Joint Standoff Weapon (JSOW) C-1 ready for full operational capability.

All U.S. squadrons are now outfitted with JSOW C-1, the Navy's first air-to-ground network-enabled weapon capable of attacking stationary-land and moving-maritime targets. This latest JSOW variant includes GPS/INS guidance, terminal infra-red seeker and a Link 16 weapon data link.

“Formal declaration of full operational capability for JSOW C-1 is the final step in a phased approach to introducing this weapon and its capabilities to the fleet,” said Cmdr. Sam Messer, JSOW deputy program manager. “It is the culmination of a complete team effort to deliver not only the hardware, but the training, tactics development and support infrastructure to ensure we field a meaningful warfighting capability.”

JSOW C-1 reached initial operational capability in 2016. The program then began a series of four fleet-wide exercises that demonstrated the capabilities of the weapon in increasingly complex scenarios.

The road to full operational capability began with Rim of the Pacific (RIMPAC) Exercise 2016, where the JSOW training team executed a virtual network-enabled weapon mission during the harbor phase. The two-day training mission culminated

in the loading of Super Hornet mission cards with the appropriate keys and JSOW files for Carrier Air Wing (CVW) 9 to fly a JSOW C-1 mission.

A month later, using real-time lessons learned from RIMPAC, CVW-5 executed the first operational shots of live JSOW C-1s during the Valiant Shield 2016 Sink Exercise (SINKEX), resulting in high-order impacts and the sinking of the former USS *Rentz*.

This event included multiple firsts for JSOW, including the first-ever operational employment of an air-launched network-enabled weapon and receipt of targeting data from the Littoral Surveillance Radar System (LSRS).

In support of the SINKEX, the JSOW team delivered four Captive Air Training Missiles (CATMs) to CVW-5 in Atsugi, Japan, ahead of schedule. Naval Air Facility Atsugi was the first fleet location to receive the JSOW C-1 CATM.

Next, JSOW C-1 engaged in Northern Edge 2017, a contingency exercise that prepares joint U.S. forces—to respond to crises in the Indo-Asia-Pacific region. During this joint forces exercise at the Gulf of Alaska and around central Alaska, approximately 6,000 military members gathered to take on the most challenging scenarios in the Pacific theater.

Northern Edge 17 facilitated the network-enabled weapon kill-chain

concept of operations development at all threat levels, including the contribution of off-board joint participants in tactical scenarios.

The JSOW training team also delivered CATM training to the Navy Strike Fighter Tactics Instructor program (Topgun) and Naval Air Warfare Development Center at Naval Air Station (NAS) Fallon, Nevada, and CVW-9 at NAS Lemoore, California, in preparation for the exercise.

Following Northern Edge, the JSOW team embarked aboard USS Ronald Reagan (CVN 76) in support of coalition network-enabled weapon operations during exercise Talisman Sabre 2017. The biennial combined Australian and U.S. event is designed to train military forces in planning and conducting combined task force operations to improve the combat readiness and interoperability between the two militaries.

Twelve maritime strike exercise events were conducted employing embedded Royal Australian Air Force (RAAF) Super Hornets with JSOW C-1 CATMs alongside their U.S. Navy counterparts. RAAF Super Hornets carried JSOW C-1 free-flight vehicles, while U.S. Navy Super Hornets were outfitted with JSOW C-1 CATMs.

*From Program Executive Office (Unmanned Aviation & Strike Weapons) Public Affairs.* 🦅

# Grampaw Pettibone

Gramps from Yesteryear: September 1967

Before well-known artist Ted Wilbur first illustrated “Grampaw Pettibone” for Naval Aviation News in 1994, there was Robert Osborn, who in 1943 created the “sage of safety” character. From 1943 until he stepped down in 1994, Osborn’s illustrations could be seen in the pages of Naval Aviation News. Here is a 50-year peek back in time to 1967. —Ed.



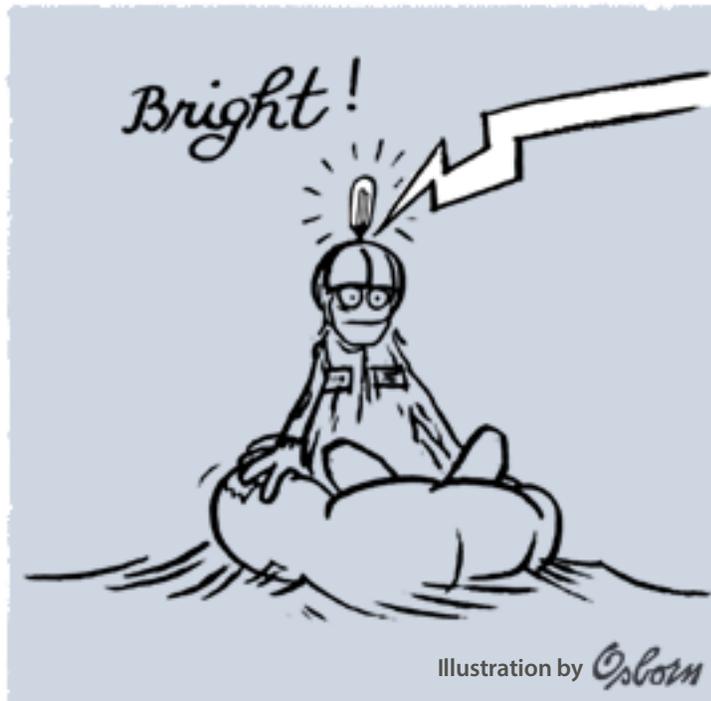
## Dire Straits

At 2130 on a dark night, the F-8 Crusader jockey took off from his Marine air station on a scheduled night radar homing mission. After an instrument climbout to visual flight conditions on top, he had some difficulty with radio communications but solved this problem by resetting the affected channels.

After completing the mission, he turned for homeplate, contacted approach control and requested a radar-controlled letdown to ground-controlled approach (GCA). Positive radar control was established 10 miles out and the driver was vectored to an inbound heading and cleared to descend to and maintain 4,500 feet.

As the Crusader pilot selected speed brakes for descent, the generator failed. Using his flashlight, he leveled off and reset the main generator. Still no electrical power. He then turned the main generator off, extended the external power package and waited five seconds for it to come up to speed. This too failed to restore electrical power and he switched to the land position which furnished power to equipment operating off the emergency bus. All attempts to regain the primary generator failed.

The unfortunate lad saw two aircraft on climbout and attempt-



ed to join them but was out-distanced. He reversed course and attempted to remain in the vicinity of his home field, but the cloud cover made it impossible to determine his position without Nav-Aids. The plagued driver then took off his helmet and attempted to use his survival radio. He made contact with one station, but communications were difficult and impossible to understand. The pilot joined a transiting C-123, but all attempts to contact it with emergency radio and flashlight met with failure.

At about 2355, the Crusader flamed out. The ill-fated driver replaced his helmet and mask, positioned himself in the seat,

trimmed the bird in a slightly nose-down attitude and pulled the curtain.

The seat and chute functioned perfectly and the pilot, not knowing whether he was over land or water, did not release his left rocket jet fitting. As things happened, he landed in water, disconnected himself from the chute, inflated the raft and climbed aboard without difficulty. Once in the raft, he activated his survival radio and strobe light, which were instrumental in his retrieval one hour later. ✈



## Grampaw Pettibone says ...

Well done, son. You did just about everything you could, but I'll be gosh darned if you weren't a victim of circumstances. Of course, ole Gramps ain't overjoyed to see an F-8 lost, but it does my old ticker good to see a feller use good common sense right up to the bitter end. ✈

# Naval Aviation Delivers



U.S. Navy photo by MC Christopher Lindahl

Naval aircrewmen (Helicopter) assigned to the “Dragon Whales” of Helicopter Sea Combat Squadron (HSC) 28 assist with a medical evacuation during Hurricane Harvey relief efforts.



U.S. Navy photo by MC Christopher Lindahl

A naval aircrewman (Helicopter) assigned to HSC-28 reassures a family after a rescue at Pine Forrest Elementary School, a shelter that required evacuation after flood waters from Hurricane Harvey reached its grounds.



U.S. Marine Corps photo by Cpl. Kimberly Aguirre

An aerial observer with Detachment A, Marine Light Attack Helicopter Squadron (HMLA) 773, 4th Marine Aircraft Wing, Marine Forces Reserve, leads a child to a UH-1Y Venom helicopter in Port Arthur, Texas following Hurricane Harvey.

Compiled by Emanuel Cavallaro

From August through October, Naval Aviation Enterprise personnel and resources aided in DOD’s responses to areas ravaged by three powerful hurricanes, supporting humanitarian and relief operations in Texas, Florida and the Caribbean.

## Texas: Hurricane Harvey

Hurricane Harvey made landfall on the Texas coast Aug. 25, bringing violent winds and catastrophic flooding. In response, U.S. Fleet Forces Command (USFF) sent amphibious assault ship USS Kearsarge (LHD 3) and dock landing ship USS Oak Hill (LSD 51) to support relief efforts by federal, state and local authorities.

After arriving in Texas, Helicopter Sea Combat Squadron (HSC) 7 and HSC-28 went on to fly 49 sorties accumulating 225 flight hours, including 65 hours at night. They combined for 358 rescues while saving 22 dogs and five cats, conducting nine personnel transfers and delivering 1,660 pounds of water and food.

On Sept. 2, with the demand for search-and-rescue (SAR) missions decreasing, Sailors assigned to HSC-7 and HSC-28 began transitioning support of Hurricane Harvey relief efforts to HSC-21 and HSC-23, which focused largely on logistics support and supply delivery.

# Humanitarian Relief



U.S. Navy photo by MC2 Nathan Wilkes

*Capt. Andrew Smith, Commanding Officer of amphibious assault ship USS Wasp (LHD 1), helps a woman exit a helicopter during relief efforts in the U.S. Virgin Islands in the wake of Hurricane Irma.*



U.S. Navy photo by MC3 Levingston Lewis

*Sailors assigned to amphibious assault ship USS Wasp transport an evacuee as part of first response efforts to the U.S. Virgin Islands in the wake of Hurricane Irma.*



U.S. Navy photo by MC Michael Lehman

*Marine Heavy Helicopter Squadron (HMH) 461 conducts flight operations with CH-53E Super Stallions from the flight deck of amphibious assault ship USS Iwo Jima (LHD 7) during humanitarian assistance efforts after Hurricane Irma.*

## Florida, the Caribbean: Hurricane Irma

Hurricane Irma made landfall Sept. 10 as a Category 4 storm and wrought devastation in Florida as well the islands of the Caribbean. In advance of Irma, Rear Adm. Bette Bolivar, commander, Navy Region Southeast, directed the evacuation of non-essential personnel and family members from Naval Air Station Key West, Florida.

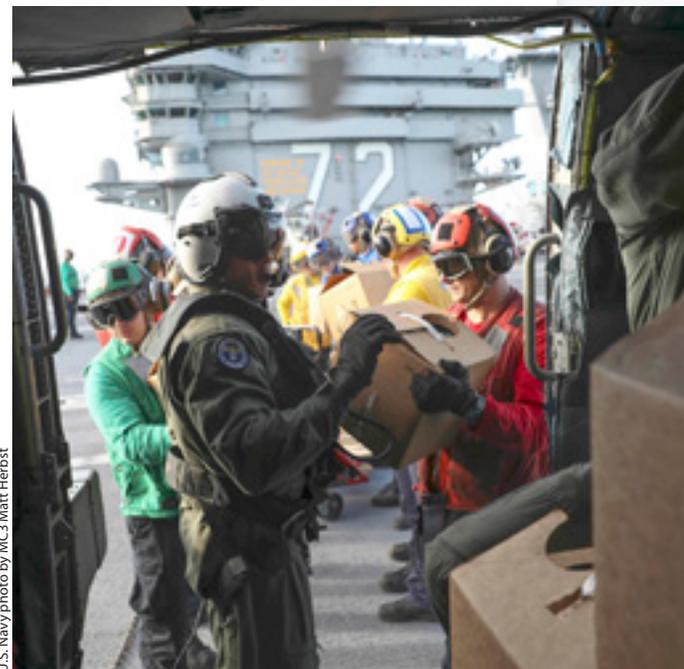
Prior to landfall, the Navy directed amphibious assault ship USS Wasp (LHD 1), Kearsarge, Oak Hill and the 26th Marine Expeditionary Unit (MEU) to support humanitarian relief efforts.

In addition, USS Abraham Lincoln (CVN 72) departed its homeport of Norfolk, Virginia, Sept. 8, for the Florida coast and was the first DOD responder on station to provide immediate SAR and medical evacuation support to civil authorities in the wake of Irma's landfall. Helicopters from Lincoln flew water and supplies into affected areas.

Wasp was the first Navy platform to arrive in the vicinity of the U.S. Virgin Islands, where it provided medium- and heavy-lift helicopters to transport people and supplies. Wasp's helicopters conducted medical evacuations for intensive care patients from St. Thomas to St. Croix and conducted site assessments of the initial damage in St. Thomas.

Also supporting relief efforts were amphibious assault ship USS Iwo Jima (LHD 7), amphibious transport dock ship USS New York (LPD 21) and their near-2,000 combined Sailors and Marines, which provided expeditionary logistic support, medium- and heavy-lift air support, medical support, maritime civil affairs and maritime security.

While on station, the two ships' Sailors and Marines worked along the



U.S. Navy photo by MC3 Matt Herbst

*Naval aircrewmembers (Helicopter) assigned to the "Spartans" of Helicopter Maritime Strike Squadron (HSM) 72 load boxes of water onto an MH-60R Seahawk from Helicopter Maritime Strike Squadron (HSM) 74 on the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).*



U.S. Navy photo by MC3 Shamira Purifoy

*Sailors assigned to amphibious transport dock ship USS New York (LPD 21) attempt to attach a grounding wand to an MH-60R Seahawk helicopter attached to Helicopter Maritime Strike Squadron (HSM) 46 during a replenishment-at-sea.*

Lower Keys, from Marathon to Key West, clearing debris from 15 miles of roadway, distributing supplies and repairing generators and critical infrastructure.

## **Puerto Rico, Virgin Islands: Hurricane Maria**

Arriving just two weeks after Hurricane Irma, Hurricane Maria devastated Puerto Rico. About 80,000 residents were still without electricity when Maria made landfall Sept. 20. Its powerful winds knocked down trees and power lines and tore roofs from homes, while heavy rainfall caused landslides, cutting off many communities in the interior of the island.

In the aftermath of Hurricane Maria, U.S. Northern Command commenced SAR and damage assessment flights in Puerto Rico and the U.S. Virgin Islands with six Navy helicopters and three U.S. Marine Corps MV-22B Osprey aircraft launched from the Kearsarge Amphibious Ready Group.

Additionally, a P-8A Poseidon maritime surveillance aircraft, launched from Naval Air Station Jacksonville, Florida, conducted an assessment of the damage in Puerto Rico.

Navy and Marine Corps forward ground elements responded at first light Sept. 21 to assist with response and recovery operations. Defense Department elements also focused on conducting airfield assessments and opening runways to facilitate the distribution of supplies.

The 26th MEU helped open the airfields at the Virgin Islands' two airports—one on St. Croix and the other on St. Thomas.

Marines worked with Army Reserve soldiers and Puerto Rican Army



U.S. Navy photo by MC3 Levingston Lewis

*A naval aircrewmen (Helicopter) assigned to Helicopter Sea Combat Squadron (HSC) 22, embarked aboard amphibious assault ship USS Wasp (LHD 1), prepares a patient's family for evacuation during relief efforts in the wake of Hurricane Maria.*

*Naval aircrewmen (Helicopter) assigned to HSC-22 prepare a patient for evacuation during relief efforts in the wake of Hurricane Maria.*

U.S. Navy photo by MC3 Levingston Lewis



National Guard to clear roads, even as the island was drenched by continuous rainfall and routes were closed by further landslides.

Repositioned from its Irma relief mission in the U.S. Virgin Islands to avoid Maria's path, Wasp deployed to Dominica, where it evacuated 126 people, delivered humanitarian aid and proved instrumental in the rescue of two survivors from a plane crash Sept. 28.

The next day, U.S. Southern Command sent Wasp to join relief efforts for U.S. territories in Puerto Rican waters. The Sailors and Marines aboard Wasp, Kearsarge and Oak Hill were among the first to lend assistance to the stricken island.

The Military Sealift Command hospital ship, USNS Comfort (T-AH 20), arrived Oct. 3 in Puerto Rico with 800 Navy medical personnel and support staff and more than 70 civil service mariners to provide medical care in support of relief efforts.

The ship received five critical patients the following day from Ryder Memorial Hospital in Humacao, after the hospital's generator failed. It received four more patients Oct. 6 from Hospital Menonita in Caguas, after its generator also failed.

By Oct. 15, Comfort had delivered more than 10 tons of food and water, 21,000 liters of oxygen and treated more than 100 patients to relieve pressure on the Puerto Rican health system.

As of Oct. 18, Comfort was operating in the vicinity of San Juan, with additional visits around the island being planned.

*Compiled by Emanuel Cavallaro from news releases by U.S. Fleet Forces Command, U.S. Northern Command, U.S. Southern Command, Navy Region Southeast Public Affairs, USS Iwo Jima, MC1 Christopher Lindahl, MC1 Ernest Scott and Commander, Carrier Strike Group 10.*



U.S. Navy photo by Petty Officer 3rd Class Sean Galbreath

*Navy Petty Officer 2nd Class Brandon Larnard carries a child off an MH-60S Seahawk helicopter in Dominica, following Hurricane Maria.*



U.S. Navy Photo by MC Ernest R. Scott

*Sailors embarked aboard the Military Sealift Command hospital ship USNS Comfort (T-AH 20), along with Puerto Rican medical professionals, transfer a patient from Menonita Hospital in Caguas, Puerto Rico, via an MH-60S Seahawk helicopter from the "Sea Knights" of Helicopter Sea Combat Squadron (HSC) 22.*



U.S. Navy photo by Petty Officer 3rd Class Sean Galbreath

*Navy Petty Officer 1st Class Erick Sotelo comforts an evacuee in flight from Dominica following Hurricane Maria.*

# MANNED AIRCRAFT, READINESS CHALLENGES, SUPERCARRIERS



Vice Adm. Mike Shoemaker, commander, Naval Air Forces, speaks Sept. 7 during the first night of the 2017 Tailhook Convention.



Adm. Harry B. Harris, commander, U.S. Pacific Command, addresses attendees at the 2017 Tailhook Convention banquet.

By Emanuel Cavallaro

It was “The Year of the Supercarrier” at the 2017 Tailhook Convention in Reno, Nevada, where Naval Aviation stakeholders from around the country gathered in September to discuss enterprise-wide challenges and ongoing efforts to address them.

**O**n the agenda for the four-day event were a variety of topics, chief among them the evolving role of manned aircraft, ongoing readiness challenges and the future of the supercarrier.

In his Sept. 9 keynote remarks, Adm. Harry B. Harris, commander, U.S. Pacific Command, struck a confident note, praising carriers and declaring that, despite the increasing reliance on unmanned systems, Naval Aviation would not abandon its human pilots.

“Reports of the demise of manned aircraft are greatly exaggerated,” Harris said.

“Just think for a moment that the mighty P-3, which first flew in 1962, is still flying missions in PACOM today, 55 years later.”

The Navy will be “flying manual aircraft, including manned fighters, for a long, long time, indeed,” he assured his audience. The aircraft carrier, too, Harris said, will remain the centerpiece of the nation’s security strategy, protecting America’s national interests around the world.

## Readiness Challenges

Naval Aviation has a ways to go in terms of readiness, but the needle is moving in the right direction, said Vice Adm. Mike Shoemaker, commander, Naval

Air Forces, who spoke during the event’s final panel discussion Sept. 9.

He provided a candid assessment of the Naval Aviation Enterprise.

“Readiness is our No. 1 priority,” Shoemaker said, noting that demand for readiness is exceeding the enterprise’s resources to meet it. “Meeting our commitments around the world is coming at the expense of our forces at home.”

Shoemaker cited the ripple effects of sequestration on defense spending as a major hindrance on readiness, but noted that future readiness will benefit from a recent request for additional fiscal 2017 appropriations and a budget increase of \$1 billion for Naval Aviation readiness.

He also cited the “additional funding coming into the pipeline” over the summer that will provide for additional tech reps and engineers on the flight line, updates to technical publications and new training equipment.

The funding, he said, will have a tangible effect on the mission-capable rate. But it won't happen overnight.

## Supercarriers

Critics of the Navy's aircraft carrier who claim that its time has come and gone couldn't be more wrong, said Capt. Craig Clapperton, who extolled the virtues of the carrier Sept. 7 during a panel discussion opening the convention.

Recounting engagements while he was the commanding officer of USS Theodore Roosevelt (CVN 71), Clapperton called the supercarrier a great source of power projection that can provide support across every sort of mission, whether it's disaster relief or security operations.

The U.S. currently has 10 Nimitz-class supercarriers, and in July commissioned the lead ship of the first new carrier class in more than 40 years, USS Gerald R. Ford (CVN 78).

The Navy's carrier strike group exerts a powerful political influence internationally by keeping the sea lanes open and

maintaining the economic viability of the U.S. and its allies, said Rear Adm. Michael Wettlaufer, who moderated the panel. Wettlaufer will soon assume command of Carrier Strike Group 3 at Naval Base Kitsap, Washington.

It was a sentiment echoed days later in keynote remarks by Harris, who argued that in today's age of contested borders and disputed seas, the 4.5 acres of sovereign U.S. territory that U.S. carriers represent are an enduring symbol of American power for which there is no substitute.

"They say imitation is the sincerest form of flattery," he said. "Look no further than China—if the carrier was so irrelevant, why are they busting a gut to build a fleet of them?"

## Tailhook '17

The event drew around 3,000 people, easily selling out the hotel, the site of the convention in Sparks, Nevada. As in previous years, video of the panels was streamed live during the event. The videos

are archived and available for viewing at Tailhook.net.

Despite some Navy personnel being unable to attend the convention due to operational commitments related to Hurricane Irma, Greg Keithley, executive director of the Tailhook Association, said the event struck the right balance of flag-level leadership in attendance.

Keithley described the convention as an annual forum that connects industry partners and junior officers with leaders like Shoemaker and decision-makers of the Office of the Chief of Naval Operations, Deputy Commandant for Aviation, Naval Air Systems Command and Chief of Naval Air Training.

"Nobody can simply just walk into the Air Boss's office, but Tailhook provides that opportunity" Keithley said. "Every year the Air Boss takes the junior officers and has a one-on-one session with them ... and he takes down all their concerns."

*Emanuel Cavallaro is a staff writer for Naval Air Systems Command Public Affairs.* ✈



Rear Adm. DeWolfe Miller, director, Air Warfare (left); Vice Adm. Mike Shoemaker, commander, Naval Air Forces (middle); and Vice Adm. Paul Grosklags, commander, Naval Air Systems Command (right) share the podium during a flag panel at the 2017 Tailhook Convention.

U.S. Navy photo by Emanuel Cavallaro

# Navy Leaders Describe Efforts to Resolve Physiological Episodes



U.S. Navy photos by Emanuel Cavallaro

By Emanuel Cavallaro

At the 61st annual Tailhook Convention, U.S. Navy leaders and experts outlined the Naval Aviation Enterprise's ongoing efforts to address challenges to readiness.

“Readiness is our No. 1 priority, and right behind that—our No. 1 safety priority—is solving the physiological episodes,” Vice Adm. Mike Shoemaker, commander, Naval Air Forces, told his audience during the convention’s final panel discussion Sept. 9.

During a safety discussion panel the previous day, moderator Rear Adm. Scott Dillon, commander, Naval Safety Center, said the center is supporting physiological episode (PE) mitigation efforts by “more effectively and more quickly providing feedback to the fleet as individual episodes are investigated.”

“We took a step in that direction in 2017 by participating in six physiological episode briefings across fleet concentration areas,” Dillon said. “And we have more plans in place for how we’re going to increase the feedback that we provide the fleet.”

A physiological episode occurs when

aircrew experience dizziness or loss of consciousness due to cabin environmental effects, contamination of breathing air or other factors in the flight environment.

The Naval Safety Center has a Physiological Event Rapid Response Team that can react quickly to an episode when it occurs, Dillon said. The team collects information about the episode in much the same way an Aircraft Mishap Board would during a mishap investigation.

The center’s staff then sends that information to aeromedical professionals, engineers and other experts who are working to determine the causes of these episodes.

Also on the panel was Rear Adm. (sel) Sara A. Joyner, the lead for the Physiological Episode Action Team, which was tasked this year to collect data, investigate occurrences of physiological episodes and coordinate with technical experts to identify and develop solutions based on root cause determinations of PEs.



*The Naval Air Warfare Center Aircraft Division Altitude Lab uses these mechanical breathing machines to simulate aircrew breathing while testing oxygen systems, such as the On-board Oxygen Generation Systems (OBOGS).*



*The above sorbent tube is a reusable metal tube that attaches to the aircrew's oxygen breathing regulator and is used to sample the oxygen flow for potential contaminants. These samples allow engineers to monitor and assess the quality of the breathing gas that was delivered to aircrew during flight.*

Joyner's team combines personnel and resources from Naval Air Systems Command, Naval Air Forces, and the fleet with submarine officers and top Navy engineers, physiologists and data scientists.

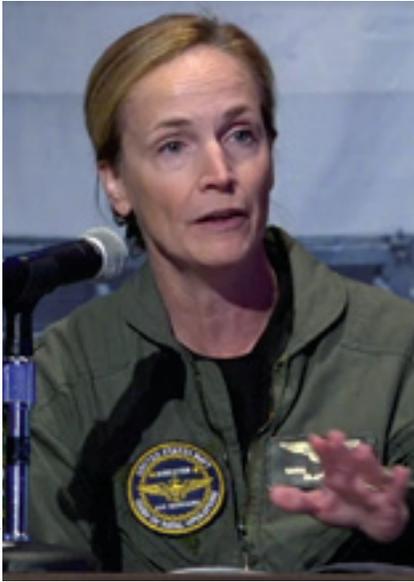
In the beginning of their review of PEs, Joyner said, she had been confident her team might find a single solution, but she quickly realized that the problem is complex and going down one path could limit discovery and success. Physiological episodes occur in every type of airframe, she noted. The issue isn't limited to a specific aircraft; it can arise whenever a human is placed in a pressurized environment and fed oxygen.

"If you want to jump to a conclusion when looking at the PE incidences, you're liable to cause an adverse outcome," she said, noting lessons from the U.S. Air Force's efforts to address the same issue in the F-22 Raptor.

"The Air Force shared their lessons



*The emergency oxygen cylinder is located in the ejection seat. It holds about 200 liters of high pressure gaseous oxygen used during an ejection and as an emergency backup to the OBOGS.*



U.S. Navy video

***“I am committed to finding a solution, but our speed has to be tempered by a solution that doesn’t adversely impact the human and aviation system. We ask a lot of our aircrew, and the aircraft they fly are highly complex and highly capable. We need to make sure both the person and the machine have what they need to successfully complete the mission.”***

**—Rear Adm. (sel) Sara A. Joyner**

learned, and we are benefitting from their experiences as we move to resolve PEs,” Joyner said.

The Physiological Episode Action Team is taking a multi-cockpit, multi-airframe approach to the issue, Joyner said. Their goals are to establish near-term, mid-term and long-term solutions by methodically examining the factors using root-cause corrective action, the same methodical and data-driven approach the Air Force used.

In the near-term, Joyner’s team is devising best practices and procedures that will mitigate the problem, while aggressively burning down risk and enhancing flight safety.

“We test [practices and procedures], we verify, and then we field them,” she said.

Realizing that physiological episodes are particularly dangerous because of their “unwarned nature,” Joyner’s team also has been working to identify signs that can be used to provide indications to a pilot before

an episode to allow the aircrew time to initiate pre-planned emergency procedures and land the aircraft safely.

“We need to make sure those warnings and indications are inside the cockpit to reduce the risk to the pilot today,” she said.

The team’s efforts have involved physiologists examining the effects of different kinds of pressurization, as well as scientists examining data collected from an engineering tool called a Slam Stick, a sensor used in aircraft to record pressure changes.

The data indicates that the relationship between pressure changes is more complicated than a simple one-to-one correlation.

“When we looked at that [Slam Stick] data, we had 145 aviators experiencing a [significant] pressure fluctuation and maybe one of them having a PE,” Joyner said.

Also speaking on the panel was Capt. David Kindley, program manager for the F/A-18 & EA-18G program office. In his remarks, Kindley split the problem into two



U.S. Navy photo by Adam Skoczylas

Ed Gassie, assistant program manager for engineering, left, observes as John Krohn, a Naval Air Warfare Center Aircraft Division (NAWCAD) engineer, swabs the Environmental Control System supply line to the OBOGS concentrator inlet of a T-45 Goshawk in April to help determine the cause of physiological episodes.



U.S. Navy photo by Adam Skoczylas

Cyndi Wade, engineer with the T-45 fleet support team, right, assists NAWCAD engineer John Krohn as he collects samples from a T-45 Goshawk in April.

categories, the first being breathing gas—a lack of oxygen in the air, not enough air or something in the air that affects the pilot’s ability to process the oxygen.

That was the major issue for F/A-18E-F Super Hornets about a year and a half ago, Kindley said. The Navy has been installing new “sieve beds” with a carbon monoxide catalyst to address the problem.

“It seems we are moving in the right direction with breathing gas issues,” he said.

The second category he described is pressurization—over pressurization, depressurization or surging pressurization. Physiological episodes related to pressurization occur across all type/model/series, he said, but they show up most often in F/A-18A-D Hornets. Kindley expressed frustration with progress on this front.

A number of components in aircraft that are responsible for feeding air into and letting air out of the cockpit are sus-

ceptible to malfunction, he said. However, simply replacing one of these components by itself when it malfunctions with a new, better component doesn’t always solve the problem. It is an entire system, influenced by a number of factors, and changing one part can affect the whole system.

Among the many strategies the Navy is exploring to address pressurization issues is a process called an Environmental Control System (ECS) reset, which involves replacing a number of components at the same time. The first part of an ECS reset calls for the replacement of the “big seven” components that have a higher likelihood to malfunction and can be replaced relatively quickly with parts on hand. “We think ECS reset will remove a significant chunk of the problem,” Kindley said.

A more extensive ECS reset calls for the replacement of 30 components, representing what Kindley called a “significant effort” requiring on the order of 400

hours of work that must be executed not by squadron maintainers but by depot artisans, albeit on the flight line.

In the meantime, his team is pursuing Joyner’s goal of providing near-term solutions for pilots by improving the altimeter, expanding the emergency oxygen bottle in the seat and changing the way the aircraft responds to certain inputs.

Ultimately, the long-term goal is to devise a system for the cockpit that will tell a pilot when something has gone awry with the cockpit’s airflow or pressurization and initiate an automatic backup system, Kindley said.

“I am committed to finding a solution, but our speed has to be tempered by a solution that doesn’t adversely impact the human and aviation system,” Joyner said. “We ask a lot of our aircrew, and the aircraft they fly are highly complex and highly capable. We need to make sure both the person and the machine have what they need to successfully complete the mission.”

*Emanuel Cavallaro is a staff writer for Naval Air Systems Command Public Affairs.* ✈️

## Slam Stick Success

Integration of a Slam Stick data logger is one initiative in the Naval Aviation Enterprise’s collect-and-analyze-data effort to address physiological episodes (PEs). Designed to measure and record vibrations, temperature and air pressure, the Navy is using the device to measure cabin pressure changes over time in F/A-18A-D Hornet, F/A-18E-F Super Hornet and EA-18G Growler aircraft. The small, lightweight sensor can be placed virtually anywhere in an aircraft. Its rugged enclosure and wide temperature operating range allow its use in tough environments. ✈️



U.S. Navy photo by Fred Flerlage



## Navy Gearing Up to Prolong Lifespan of Its Preeminent Strike Fighter

By Jeff Newman

In an effort to extend the service life of its aging fleet of F/A-18E-F Super Hornets into the 2040s, the U.S. Navy is preparing to begin a comprehensive modification program that will enable the fighter jets to fly more than 50-percent longer than originally intended.

When it debuted in theater in 2002, the F/A-18E-F's lifespan of 6,000 flight hours was expected to last about 20 years. But delays to the F-35 Lightning II program and unplanned squadron transitions from the F/A-18A-D Hornet to the F/A-18E-F mean the Navy needs the Super Hornet to last longer than initially planned.

The platform having never known peacetime and racking up flight hours more quickly than anticipated over 15 years of constant combat operations in the Middle East exacerbates the problem. The first Super Hornet to reach 6,000 flight hours is projected to do so in April, just ahead of its 15th birthday in June.

The Navy's answer to this challenge—extending the life of a platform that is aging

faster than expected—is a Service Live Modification (SLM), which will authorize the Super Hornet to fly past 9,000 flight hours while also delivering major modifications and capability upgrades.

The process begins next year with the arrival of four Super Hornets at a Boeing facility in St. Louis. By 2023, Boeing expects to induct about 50 Super Hornets into the program each year—10 in St. Louis, and 40 in San Antonio at a former C-17 hangar currently being retrofitted for the SLM.

At first, the aircraft will take about 18 months to move through—the first six Super Hornets are projected for delivery in fiscal 2020—but as Boeing nails down the process it anticipates cutting down that timeline to 12 months.

The SLM program is the result of lessons

learned from the Hornet's own Service Life Extension Program (SLEP), which is pushing the legacy fleet's lifespan from 6,000 flight hours beyond 8,000 and, in some cases, up to 10,000 flight hours. Under SLEP, the Hornet aircraft have received high-flight-hour (HFH) inspections and necessary repairs at Navy and commercial maintenance depots. But those repairs have oftentimes had to wait for engineering solutions and for parts to be ordered from and delivered by a commercial manufacturer.

“Under the legacy SLEP, we had to go through multiple parties—when the Navy depot found a failed part, it had to order a replacement from industry and wait for the part to be shipped, and most of those parts have not been produced for decades,” said Scott Dailey, the F/A-18 & EA-18G Program Office deputy program manager for air vehicle systems.

The Super Hornet began its required 10-year Service Life Assessment Program (SLAP) in 2008, midway through its expected 20-year service life. At the time, the plan



In preparation for the first four F/A-18E-F Super Hornets set to enter the Service Life Modification (SLM) program in 2018, Boeing recently despoiled—or split in half—two retired, high-use jets to examine them for fatigue and validate required maintenance.



Photos courtesy of Boeing

Boeing will examine the two Super Hornets' forward fuselages and wings, while Northrup Grumman will inspect the center aft fuselages (pictured above).



U.S. Navy photo by MC3 Kaila Peters

was for the platform to transition straight into a SLEP, but in an effort to expedite the process, the program office decided in 2016 to give the F/A-18E-F a more-comprehensive SLM, with Boeing—the aircraft’s manufacturer—responsible for the entire process. By having the aircraft, engineering resources, replacement parts and technology modifications all in the same location, the program office is expecting a significant uptick in aircraft throughput.

Under SLM, the Super Hornet will receive capability upgrades meant to counter future threats that they may not have gotten in a SLEP, along with life-extending modification “kits.”

“If it was just extending the life of the aircraft, it would be called SLEP,” Dailey said.

Throughout the SLAP, Boeing engineers have predicted which modifications and upgrades each Super Hornet will need and placed the jets into “bins” based on fatigue life—how stressed the airframe has been by its mission set—and the amount of maintenance it’s expected to require. Thus, each Super Hornet will receive a tailored SLEP kit.

But because the aircraft are aging faster

than expected, the process of extending their lifespan is also beginning sooner than planned.

“Ideally, you want the first SLEP kits ready at 6,000 hours, but that was not possible due to the Super Hornets’ high use,” Dailey said. “We have accelerated the program to accommodate as much as possible.”

Full SLEP kits will not be available until fiscal 2023; in the meantime, the Super Hornets that reach 6,000 flight hours will require a Service Life Extension Authorization (SLEA), which permits the aircraft to fly up to 7,500 hours before requiring a full SLEP kit. Super Hornets inducted before fiscal 2023 will get a partial SLEP kit, followed by a full modification post-2023.

The program office also hopes to avoid the “waves” of inspections and retrofits that could sometimes bog down the legacy Hornet’s SLEP. If the program office notices a glut of Super Hornets approaching 6,000 flight hours, it will shift some of them into SLM ahead of schedule in order to maintain a steady flow of aircraft through Boeing’s hangars.

In preparation for the SLM, Boeing engineers recently despicd—or split in half—two retired, high-use Super Hornets to examine their interior structures for anomalies and signs of fatigue—such as cracks that validate SLAP predictions. They will also inspect and analyze material condition of the aircraft, checking for things like corrosion, frayed wiring and damage to hydraulic and fuel tubing. One of the despicd jets retired with the most carrier takeoffs, landings and flight hours in the fleet, while the other accumulated the most total landings.

Boeing is examining the forward fuselage and wings, while Northrup Grumman is looking at the center aft fuselage. As of September, a total of 190 areas on the two aircraft had been accessed with no major negative findings, though minor corrosion was found on one of their dorsal decks.

“SLM is a new approach to extending the life of a platform and its initial success is receiving positive feedback from the acquisition community, and now similar initiatives are following suit,” Dailey said.

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



Each of the aircraft were among the fleet’s leaders in utilization. One, pictured above, amassed the most carrier takeoffs, arrested landings and flight hours.



The second aircraft, above, retired with the most total landings.

By Tom Church

Warfighters operating F/A-18 Super Hornet and EA-18G Growlers can anticipate improvements in survivability, situational awareness and enhanced targeting thanks to the Netted Sensors 2017 (NS17) fleet experiment in August.

**T**he series of high-priority experiments is sponsored by the commanders of U.S. Fleet Forces Command and Pacific Fleet and conducted by Navy Warfare Development Command (NWDC) as part of the Navy's Fleet Experimentation (FLEX) program.

Participating in the event were the F/A-18 and EA-18G Program Office, several Naval Air Warfare Center Aircraft Division (NAWCAD) shore test sites plus Navy aircraft and ships and the Air Force RC-135V/W Rivet Joint reconnaissance aircraft. Fleet personnel led by Carrier Strike Group 12 provided warfighting feedback on prototype tactical displays during the experiments.

The event focused on networking sensors over the new Tactical Targeting Network Technology (TTNT) data link, which provided information to warfighters on ships and in NAWCAD's Surface/Aviation Interoperability Laboratory (SAIL) as they executed long range war at sea scenarios.

Specific F/A-18 and EA-18G initiatives focused on Common Tactical Picture (CTP), Multi-Ship Electronic Surveillance (ESM), Growler Manned-Unmanned Teaming with the DASH-X/REMEDY unmanned system, and Network-Centric Collaborative Targeting (NCCT) technologies.

CTP will be implemented over several operational flight program software builds to leverage the TTNT and digital targeting processor to rapidly exchange strike fighter sensor information. This allows pilots to see the entire battle space by sharing their own aircraft's sensor-developed tracks with tracks from other aircraft, developing a more complete air picture and improving overall situational awareness. The CTP also enhances targeting capabilities, improving overall timelines and performance in the air-to-air threat environment.

The Growlers also participated in a larger demonstration of NCCT, a joint Program of Record which leverages the increased data-sharing capacity of TTNT—a viable, mature solution that satisfies DOD's airborne networking requirements—and hosts multiple fusion capabilities to improve battlespace awareness. The program is speeding the cueing of sensors and targeting through the use of joint data standards and interfaces enhance kill chain effectiveness. (A kill chain is the sequence of actions from detecting a target to engaging it in attack.) Multi-sensor geolocation events were supported by all sensor nodes in the network and enabled by “fusion forward,” with NCCT fusion engines located onboard U.S. ships for the first time.

*Tom Church is a communication specialist with the F/A-18 & EA-18G Program Office.* 🐦

# Growler NET



U.S. Navy photo

# *to Benefit from* **TESTED SENSORS '17** *Experiments*



*Two EA-18G Growlers from Electronic Attack Squadron (VAQ) 209 complete refueling off a KC-135 tanker between Hawaii and Guam.*

# NETTED SENSORS *Guides Fleet*

By Andrea Watters

This summer the Navy continued its experiments with integrating airborne, missile and ship sensors to find, fix and track surface targets.

**T**he Netted Sensors 2017 (NS17) at-sea experiment was conducted by Navy Warfare Development Command (NWDC) as part of the fiscal 2017 Fleet Experimentation (FLEX) program.

The FLEX program, executed by NWDC on behalf of U.S. Fleet Forces Command and U.S. Pacific Fleet, designs and executes collaborative and synchronized experiments to deliver products that will improve warfighting capabilities within the next one to three years.

The FLEX program's series of war games and at-sea experiments continues to examine attributes outlined in the Navy's "Design for Maintaining Maritime Superiority."

NS17's primary objectives included:

- Improving information exchanges to command and control complex engagements in a communications contested environment
- Improving warfighter ability to rapidly find, fix and track objects in the battlespace
- Allowing decision makers to identify maritime targets at greater distances
- Supporting targeting and engagement in a complex maritime environment
- Enhancing warfighters' battlespace awareness

Fleet sponsors are conducting technical data analysis, and results will influence warfighting concepts of operations, tactics development, program investment decisions and future experiments.

## Participants

NS17 brought together fleet personnel led by Carrier Strike Group (CSG) 12 as the Officer in Tactical Command, with USS Kearsarge (LHD 3) and USS Jason Dunham (DDG 109) as assigned forces. Other assets included the Deputy Assistant Secretary of Defense (DASD) Emerging Capability and Prototyping Rapid Reaction Technology Office's high-speed



*Semaphore with the Admiral's flag flying from the mast of Surface/Aviation Interoperability Laboratory (SAIL), which served as the Tactical Flag Command Center (TFCC) of an aircraft carrier for embarking Carrier Strike Group 12 staff during Netted Sensors 2017.*

U.S. Navy photo

# NSORS '17

## Modernization

test vessel, Stiletto, 13 joint and Navy aircraft and two unmanned aerial systems.

NS17 employed more than 95 emitters across the East Coast, including shore sites at Naval Air Station Pax River, Maryland, Wallops Island, Virginia, and Virginia Beach.

Naval Air Warfare Center Aircraft Division (NAWCAD) at Patuxent River provided the NWDC experiment team with range and facilities assets routinely used for test and evaluation (T&E), but tailored for the experiment.

Atlantic Test Ranges (ATR) and the Surface/Aviation Interoperability Laboratory (SAIL) provided the live, virtual and constructive (LVC) environments necessary to bring all the pieces into play.

In addition, the SAIL team reconfigured its facilities to function as the Tactical Flag Command Center of an aircraft carrier for embarking CSG-12 staff, which enabled them to find, track, target and engage targets in a distributed maritime environment. One hundred and twenty operators and technicians operated onsite at SAIL for the experiment, using a variety of processing systems that were specifically installed for the event

In addition to simulating opposing forces, ATR used its extensive T&E capabilities to provide the infrastructure for communications, data architecture, systems administration, Link-16 operations, Advanced Range Data System GPS tracking, network configurations, frequency authorizations, and fused tracks at local and off-shore locations aboard the Stiletto.

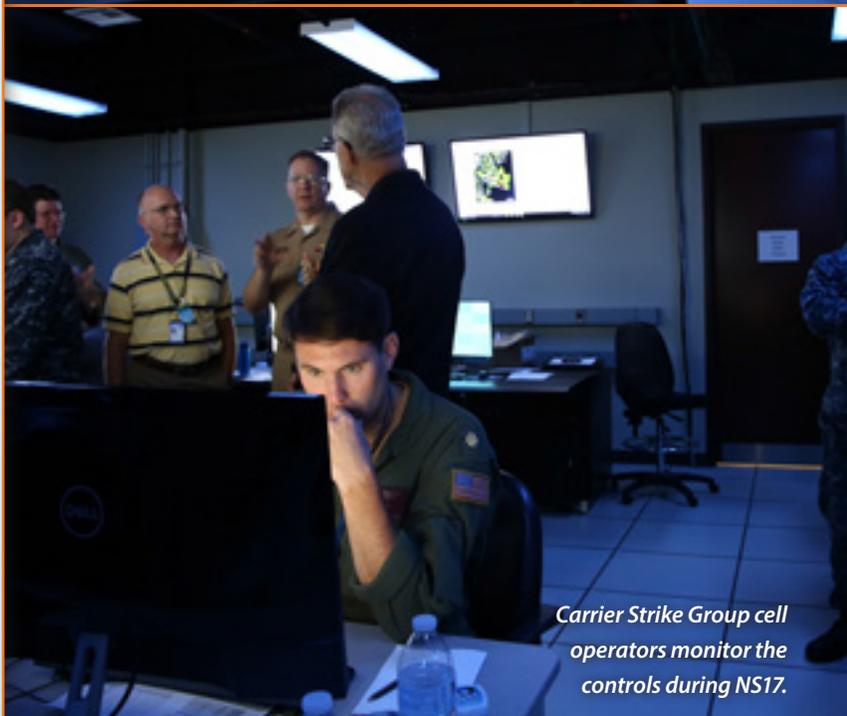
ATR and SAIL also integrated the Tactical Targeting Network Technology (TTNT) data link radios—a next-generation dynamic networking solution that is fast, flexible and reliable. TTNT's high throughput enables large amounts of data to be shared at high speed among aircraft, unmanned systems and ground forces. SAIL and ATR will be able to use this new communication technology during future test and experimentation missions.

NAWCAD is preparing for the future by supporting these larger systems-of-systems types of tests with its capabilities-based T&E resources.

*Andrea Watters is the editor of Naval Aviation News magazine.* 🦅



*Carrier Strike Group 12 staff members, Cmdr. Stephany Moore and Lt. Dwayne Stoumbough, man the TFCC during the experiment.*



*Carrier Strike Group cell operators monitor the controls during NS17.*



*Operators execute the mission from NS17 exercise control stations.*

U.S. Navy photos by Terri Thomas



*U.S. Marine Corps Lance Cpl. Ryan Skinner prepares to fly the Mark-2 Instant Eye during the Infantry Platoon Battle Course as part of a Deployment for Training.*

U.S. Marine Corps photo by Lance Cpl. Michaela R. Gregory

# QUADS FOR SQUADS

## Marine Corps Infantry Receive Small Quadcopters

By Kristine Wilcox

The Marine Corps has started equipping infantry units with small unmanned aircraft systems (SUAS) quadcopters to bring greater situational awareness to troops on the ground.

During last year's Modern Day Marine expo held in Quantico, Virginia, Commandant of the Marine Corps Gen. Robert Neller announced his desire to equip every infantry squad with quadcopter—or vertical take-off and lift (VTOL)—SUAS to help them execute missions.

Soon after, the Navy and Marine Corps Small Tactical Unmanned Aircraft Systems Program Office acted on the urgent needs request and began fulfilling the order last spring, completing phase one.

“The infantry battalion needs small UAS because it makes the most dangerous weapon—a Marine and his rifle—that much more lethal,” said 1st Lt. Joseph Paoletta, SUAS program manager 2nd Bn., 7th Marines. “The advent of widespread use of both commercial off-the-shelf and military-grade UAS by our adversaries necessitates we maintain the same level of capability.”

Phase one included the initial procurement and delivery of infantry battalion kits containing InstantEye Nano-VTOLs, PD-100 Black Hornet micro-VTOLs, commercial off-the-shelf (COTS) systems and communications-relay payloads. The second phase will begin this fall adding a slightly larger VTOL system to the kits. Weighing 0.6 ounces to just more than 5 pounds, the quadcopters provide real-time intelligence, surveillance and reconnaissance (ISR) situational awareness.

Paoletta said 2nd Bn. was already using fixed-wing ISR UAS in support of intelligence collection, but their use was largely relegated to the battalion level.

“The ease of use and the ability to have an InstantEye or PD-100 in the air in less than two minutes immediately improved the small-unit capabilities to provide organic collection and force protection in an expeditionary manner,” he said.

He said by providing the small-unit leader—whether it be the company commander, platoon commander or even squad leader—with immediate reconnaissance of a given area, they increase their situational awareness and their ability to plan and adapt to the mission set.

Paoletta said they've had a 100-percent success rate of employing VTOLs during their combat readiness evaluation.

He explained that while “under attack” during an urban environment exercise at Marine Corps Air Ground Combat Center Twentynine Palms, California, Fox Company used the PD-100 to positively identify hostile forces located within a mock town while remaining out of sight. This confirmation allowed the company to successfully assault the town. He said squad leaders used the PD-100 to view courtyards and received instantaneous feedback on potential IEDs and hostiles.

“To paraphrase Gen. Neller, we equip the Marine with a tactical, enabling machine,” said Col. John Neville, SUAS program manager. “I'm extremely proud of our team for how quickly they tackled numerous processes and contracting actions to expedite the urgent needs request so we could get these mission-enabling and life-saving systems into the hands of the warfighter.”

PD-100 Black Hornet is a personal reconnaissance system that provides users with an immediate ISR capability. Whether supporting a search and rescue, object identification, proximity surveillance or situational awareness, the PD-100 system can be airborne within one minute, is nearly inaudible and fits inside a pocket. The system consists of two air vehicles, a single-handed controller with base station and a 7-inch, sunlight-readable display unit.

InstantEye is a man-portable, battery-powered hovering SUAS designed to be deployed rapidly from the squad level to conduct local, short-term surveillance and reconnaissance for situational awareness. The standard payload for the all-environment system consists of three fixed electro-optical cameras with optional infrared illumination for night operation. Each system consists of two air vehicles, a ground control station, and spare batteries and parts.

*Kristine Wilcox provides communication support to the Navy and Marine Corps Small Tactical Unmanned Aircraft Systems Program Office.* 🇺🇸



*U.S. Marine Corps Lance Cpl. Ryan Skinner, flies the Mark-2 Instant Eye during the Infantry Platoon Battle Course as part of a Deployment for Training.*

U.S. Marine Corps photo by Lance Cpl. Michaela R. Gregory

# Test Team Pushes, Expands H-1 Envelope

*By Program Executive Office Air ASW,  
Assault & Special Mission Programs Public Affairs*

Flight test at sea occurs often, but while embedded in a forward deployed unit? That's taking flight test to a completely different level.

*The Air Test and Evaluation Squadron (HX) 21 conducts flight envelope testing of the UH-1Y Venom aboard USS Mesa Verde (LPD 19).*

A test team from Air Test and Evaluation Squadron (HX) 21 reached that level in May as they met the challenge of conducting testing required to expand the flight envelope for the UH-1Y Venom helicopter onboard San Antonio-class amphibious landing dock ship USS Mesa Verde (LPD 19).

“It all got started when a deployed fleet pilot, Maj. ‘Rudy’ Neagle, reached out directly to the HX-21 pilots asking if they could help expand the UH-1Y wind envelope,” said Kristen Finnegan, the test team’s lead engineer.

The flight envelope refers to the conditions in which an aircraft can safely operate. The UH-1Y helicopters had been operating within the restrictive generic wind envelope for six-to-seven years.

As Neagle—the aviation combat element LPD detachment officer-in-charge (OIC) from Marine Medium Tiltrotor Squadron (VMM) 365 (Reinforced), 24th Marine Expeditionary Unit (MEU)—began researching the limited flight envelope, he was looking for the lessons learned from other pilots who had faced similar challenges.

“It had not occurred to me to conduct testing on Mesa Verde while deployed,” he said. “I was looking for information to mitigate risk while flying outside the wind envelope.”

According to Neagle, during the first two months of deployment aboard Mesa Verde, about half the night sorties had to be canceled due to wind. In one instance, during the first week of May, a scheduled vertical replenishment (VERTREP) between Mesa Verde and a replenishment-at-sea (RAS) ship was canceled because of high winds outside the UH-1Y’s flight envelope.

“We launched the UH-1Y, and then the two ships came alongside, connected all their guidelines and fuel hoses,” but had to break away in order to recover the helicopter once the wind picked up, Neagle said. The RAS was ultimately completed without the VERTREP.

U.S. Navy photo

This and similar occurrences caused Neagle to begin his quest to increase the wind limits. As they looked at flight schedules, it became apparent that UH-1Y flights were frequently on the edge of the wind envelope and canceled as a result.

Neagle said they used the canceled VERTREP to highlight the wind problem and get the ship's leadership behind fixing it.

Neagle reached out to other H-1 detachment OICs to see how they had tackled the wind problem. His initial research led him to contact HX-21, which developed a test plan and received approval from the H-1 program office to proceed.

"This was the first time I had performed flight test with a deployed unit," said Marine Corps Maj. J.M. Kennedy, an HX-21 project officer and developmental test pilot. "It was a very unique and dynamic environment."

The operational environment

required the members of the test team to be more flexible and to have a fluid schedule.

"We needed to integrate with the missions assigned to VMM-365," Kennedy said.

For Eric Becker, a test engineer with HX-21, the opportunity to test and live alongside the end user brought the job into focus.

"It was a great opportunity to see how our work impacts the fleet and how it translates directly into their ability to meet the mission," he said. "While we were testing, the operational guys were fielding communications about real-world operations happening close enough that it wasn't even over the horizon. These are the people we work for. And, that is a pretty good feeling."

The test team wasted no time in analyzing their data upon returning to Naval Air Station Patuxent River, Maryland. Within nine days, it had completed a data review of more than

20 hours of flight test data and released an interim flight clearance allowing the UH-1Y to operate in a newly defined wind envelope aboard San Antonio-class LPDs.

"The expanded envelope benefits both the Navy and the Marines in the fleet," Neagle said. "It benefits the Navy due to the increased flexibility in driving the ship during flight operations. They have more room to maneuver with a larger wind envelope. It benefits the Marines because HX-21 has tested the performance of the aircraft at greater wind envelopes on each spot, providing assurance to the aircrew of the UH-1Y's performance in those conditions.

"There were many people that had to jump through hoops to turn this event around as quickly as they did. This was a team event between the Mesa Verde, 24th MEU ACE and HX-21. The credit really goes to the HX-21 team that was able to pull off all the test plan approvals and get to the ship before it left port." 🦅



The test team from Air Test and Evaluation Squadron (HX) 21 conducted flight envelope expansion testing onboard USS Mesa Verde (LPD 19) this summer. From left are Maj. Joe Kennedy, project pilot; Josh Marvin, lead dynamic interface engineer; Staff Sgt. Forest Pike, crew chief; Kristen Finnegan, lead dynamic interface engineer; Maj. Don Underwood, project pilot; Maj. Camille Lampert, project pilot; Amanda Wirz, test engineer; Erick Becker, test engineer; Justin Marut, test engineer; and Maj. Patrick Flores, dynamic interface project officer and detachment officer in charge.

U.S. Navy photo

# F-35B DEMOS SKI-JUMP FOR ROYAL NAVY



*By Tom Demerly*

**British Aerospace test pilot Peter Wilson demonstrated the F-35B Lightning II's ability to launch from a ski-jump launch ramp during phase 2 testing with a heavy external weapons load in August at Naval Air Station Patuxent River, Maryland.**

**T**he tests were conducted in anticipation of impending trials on the recently commissioned HMS Queen Elizabeth II (RO8). Wilson's demonstration highlighted the compatibility of the aircraft with the new Queen Elizabeth-class of aircraft carriers, including the future HMS Prince of Wales (RO9) to be commissioned in 2020. Both new carriers use the traditional ski-jump launch ramp employed by legacy Royal Navy ships.



*“The external weapons configuration demonstrated the broad capability of the F-35B across the entire tactical conflict spectrum.”*

*British Aerospace test pilot Peter Wilson conducts ski-jump testing of the F-35B Lightning II with Paveway precision-guided bombs and AIM-132 ASRAAM air-to-air missiles Aug. 3 at Naval Air Station Patuxent River, Md.*

U.S. Navy photo by Dane Wiedmann

“[The] F-35B ski jump was a great success for the joint ski-jump team. I’m exceptionally proud of this team,” said Wilson, BAE Systems ski-jump project lead and former Royal Navy and Royal Air Force pilot. “Their years of planning, collaboration and training have culminated in a fantastic achievement that advances the future capabilities of the aircraft and its integration into U.K. operations.”

The F-35B was configured in a “third

day of war” loadout with heavy external Paveway precision-guided bombs and AIM-132 Advanced Short Range Air-to-Air Missiles.

The external weapons configuration demonstrated the broad capability of the F-35B across the entire tactical conflict spectrum.

With a “first day of war” configuration, the F-35B would likely carry weapons internally to maintain a low radar cross-section and remain hidden

from sensors. However, as a conflict evolves and airstrikes degrade enemy air defenses—including sensors, air defense missiles, gun systems and enemy aircraft—the fight could shift to carrying large external loads to accelerate the prosecution of ground targets and overwhelm an adversary with highly effective precision strikes.

*Tom Demerly is a contributor to The Aviationist. This article was first published Aug. 24 on TheAviationist.com. ✈️*

# Artisan Relocation Continues to Reap Benefits

By Jacquelyn Milham

More than a decade after the U.S. Navy relocated many of its depot artisans to reduce costs for maintenance and repairs, the move not only saved \$200 million in fiscal 2017 but has given maintainers a chance to learn from one another.

The 2005 Base Realignment and Closure (BRAC) Commission established Commander, Fleet Readiness Centers (FRCs), merging Naval Air Depots with Aircraft Intermediate Maintenance Detachments into six centralized FRCs.

In forming the FRCs, about 100 depot-level artisans were relocated

original equipment manufacturer (OEM) for repair. Depot artisans then had to disassemble, repair and reassemble the component before repackaging and shipping it back.

Under BCMI, a failed component could remain at the intermediate facility and be worked on by both intermediate-level technicians and depot-level artisans.

exceed \$240,000, said Don Fincham, COMFRC Aviation Maintenance and Material Department Level II Readiness coordinator. Meanwhile, expenditures on labor and parts for the same radar receiver repaired through BCMI would be less than \$18,000, a 92.5-percent savings, he said.

“Cost avoidance increases are due



Sheet metal mechanic Kris Dipraseuth repairs a structural crack on an H-60 Seahawk at Fleet Readiness Center Southwest (FRCSW).



Artisan Robert Newberry installs a landing gear harness at Fleet Readiness Center Southeast (FRCSE).



Aircraft mechanic/work leader Rodney Abad operates the winch to install a gear box in a CH-53 Super Stallion at FRCSW.

between 2006 and 2008 to intermediate-level maintenance facilities closer to the flight line, an initiative known as Beyond Capability Maintenance Interdictions (BCMI). The goal was to reduce costs and increase production of ready-for-tasking aircraft at the FRCs.

Previously, if maintenance technicians at an intermediate-level facility—where Level II maintenance is performed—could not fix a failed component, it was declared “beyond capability of maintenance” (BCM) and shipped to one of three depots—which handle the highest Level III repairs—or to the component’s

This process returns components to the flight line faster than the old production model—one high-priority component—saw its turnaround time decreased from almost two years to less than two weeks, while another went from taking a year to repair to needing only 15 days.

The resulting cost avoidance can be considerable, said Chief Petty Officer Chris Almond, an aviation ordnanceman and Level II Readiness coordinator supporting FRC Mid-Atlantic.

For example, expenditures on factors like parts, labor and packaging for a radar receiver shipped to a depot would

to rising component costs across the remaining platforms as Naval Aviation replaces legacy aircraft—the CH-46 Sea Knight, F/A-18A-D Hornet and P-3 Orion—and because newer aircraft require more in-depth technical repairs that are performed by depot artisans,” Fincham said.

BCMI had its best performance yet in 2017, closing out the fiscal year with an unprecedented cost avoidance of more than \$200 million, bringing the program’s 11-year total to the initial BRAC goal of \$1.2 billion. The FRCs and Marine Aviation Logistics Squadrons (MALS)

issued about 4,800 ready-for-issue (RFI) components in fiscal 2017 for an average cost avoidance per component of roughly \$43,000.

For comparison, in fiscal 2016 and 2015 more than 4,800 and 5,100 RFI components were issued at a cost avoidance of \$118 million and \$120 million, respectively, Fincham said.

In addition to saving time and money, BCMI has also produced another benefit—the opportunity for technicians and artisans to share their knowledge and skillsets.

Thanks to working alongside depot-level artisans, the technicians in MALS-

sponsibilities and discrepancies reduces our workload, quickens our turnaround times and improves our effectiveness.”

FRC artisans like Ronald Word, an advanced composite fabricator who works alongside the technicians at MALS-11, feel it’s their responsibility to improve technicians’ skill sets and mentor the next generation.

“At Miramar, I am the only composite artisan that the Marines can go to when they have questions,” Word said. “The Marines know that they can come to me and if I don’t know the answer, I always know where or who to go to. I also give training to the Marines on a case-by-case

part inductions and variation in parts than when he was working at FRCSW.

“Being here working next to intermediate-level technicians has increased my skill level and my awareness of their challenges,” he said. “Repairs are performed faster because of the seamless transition between intermediate-level and depot-level work, especially, when a project has multiple repair levels.”

Soriano said technicians have seen faster turnaround times for repairs and replenishment of components. “We can identify [different] types of repairs and send them to the artisans quicker,” he said.

For many artisans, seeing firsthand



U.S. Navy photo



Jennifer Nunez, a materials engineer with FRCSE, uses a surface coding tester to detect the presence of conductive coating on an F/A-18E/F Super Hornet during the stripping process.

U.S. Navy photo  
Kaylee LaRocque



Aerospace engineer Nathan Cox operates the pressurization test lab control station while fellow aerospace engineer Duy Nguyen, foreground, monitors the inside of the test chamber.

11’s Structures Shop at Marine Corps Air Station (MCAS) Miramar, California, now better understand composite repair tasks and maintenance discrepancies that require more than intermediate-level maintenance.

“Many of the discrepancies that come to us require depot-level maintenance. We understand how to do them, but because of policy and established processes, we are not allowed to perform the repairs,” MALS 11 Production Control Chief Master Sgt. Rafael Soriano said. “Having a more qualified member within our division to help with some of the re-

basis. I instruct them on how to complete repairs and [critique] past repairs.”

“At [FRCSW] the artisans don’t communicate with the engineers one-on-one, but here at Miramar I have an open door policy with the F/A18 [Hornet] engineers,” Word said. “They are just a phone call away and they are always willing to assist me with any repair or help me with any questions I have. I am always learning new ways of researching repairs.”

Shawn Gubernath, a composite fabricator in the Advanced Composite Repairs Shop, said he has seen a lot more

how their work supports the warfighter evokes a sense of pride.

“The most important thing that I have learned is how important the BCMI program is, how it saves the Marines money and gets aircraft parts back to the fleet quicker,” Word said.

“I’ve been able to experience the end result of our works,” Sanchez said. “Seeing our system components fly and make mission is satisfaction that we, the artisans, are truly part of our nation’s defense.”

*Jacquelyn Milham is a communication specialist supporting Commander, Fleet Readiness Centers.* ✈️

# Sailors Earn Apprenticeships

By MC3 Weston A. Mohr

For many Sailors and Marines, the military is great for on-the-job training. They work around the clock throughout the ship in different technical fields ranging from photography to electronics and metal working.

**N**ow, through the United Service Military Apprenticeship Program (USMAP), service members can attain tangible proof to show their next employer how much experience they gained working in their various fields aboard the ship.

USMAP offers apprenticeships for most rated Sailors. The program works with the Department of Labor (DOL) to provide nationally recognized apprenticeship opportunities, which result in journeyman-level certificates of completion for members of the sea services. During their apprenticeships, service members document hours performing the duties associated with their job in the military.

Aircraft carrier USS Nimitz (CVN 68) has 813 Sailors aboard who have completed apprenticeships and 720 who are working on their certifications.

“The DOL offers programs like this in the civilian sector as well, only you have to pay for it,” said Chief Navy Counselor Desiree Rivers. “USMAP, however, does not cost a Sailor anything. It is completely free.”

The apprenticeships coincide with the work service members are already doing on a day-to-day basis. Each certificate has a certain number of hours required for completion. Once a Sailor completes the required hours and receives a certificate, they will have a leg up in the Navy, and later, an edge over their civilian counterparts.

“Inside the Navy, it shows your chain of command that you can start something and



U.S. Navy Photo by MC Chad M. Butler

Sailors assigned to the “Conquistadors” of Fleet Logistics Support Squadron (VR) 57 perform maintenance on a C-40 Clipper aircraft at Naval Air Station North Island, Coronado, Calif.

# Aboard USS Nimitz



U.S. Navy photo by MC3 Weston A. Mohr



Machinery Repairman 1st Class Carmen Vescio uses a lathe aboard aircraft carrier USS Nimitz (CVN 68).

finish it on your own time without supervision,” Rivers said. “When you separate from the military and you’re writing your resume for a new job, your resume is going to have that certification on it. So the benefits of the program are twofold.”

Machinery Repairman 1st Class Carmen Vescio received his US-MAP certificate in 2012.

“In the Navy, if you do it step by step, it will give you the tools to be great at your job by helping you with your in-rate knowledge [and] helping you with your advancement exam, while also furthering your career,” Vescio said.

Vescio advanced to 1st class petty officer within five years of joining the Navy and attributed that to everything he learned while also working on his apprenticeship.

“For people like myself, this program is huge,” Vescio said. “We get to get out of the Navy and jump right into a leadership position as a civilian, instead of being the guy fetching the tools and having to learn how to use the machines.”

Vescio received his certificate after logging 9,000 hours on the “Inside Machinist” apprenticeship, which relates directly to machinery work and repair.

“I would have to work for years as a civilian to get my journeyman,” Vescio said. “My time in the military counts as progress with my career on the outside as well. Why would you not use this program to your advantage?”

By completing an apprenticeship program through USMAP, service members can save time and money.

Working 40 hours a week allows service members to complete approximately 2,000 hours in one year. For service members underway or on deployment, they can log even more hours than that, meaning an apprenticeship is attainable in a shorter span of time.

Sailors can enroll in an apprenticeship by visiting <https://www.usmap.netc.navy.mil> and following the procedures on the website.

Mass Communication Specialist 3rd Class Weston A. Mohr supports USS Nimitz (CVN 68) Public Affairs. 🇺🇸

# Marine Mechanics Share Readiness Improvements

By Gulianna Dunn

Naval Aviation Enterprise (NAE) senior leadership visited Marine Aviation Logistics Squadron (MALS) 13 at Marine Corps Air Station (MCAS) Yuma on Sept. 27 as part of the Boots-on-the-Ground (BoG) program.

The program's goal is to resolve interdependent Naval Aviation issues by conducting visits to Navy and Marine Corps aviation sites, aircraft carriers and amphibious ships, allowing NAE leaders to engage with Sailors and Marines on readiness and quality of life.

"Every time we come to a Boots event, the two big takeaways are the innovative things that are going on and the places where we can break down barriers for Sailors and Marines," said Vice Adm. Mike Shoemaker, commander, Naval Air Forces (CNAF). "All of the young Marines that were briefing today were very polished and very knowledgeable. We were all very much impressed."

During the event, flag officers, senior

executive service civilians and subject matter experts heard candid and constructive insights from working-level Marines, such as Cpl. Michael Ruiz, who demonstrated the need for a breathing air compressor to support Marine Operational Test and Evaluation Squadron (VMX) 1 flight operations.

"It was cool to be able to present my team's problem and to have our solution approved so quickly," said Ruiz, a member of MALS-13's aircrew survival equipment team. "We have the knowledge base and the personnel to do it; we just don't have the capability and the support equipment."

The event highlighted MALS-13's unique role supporting the entire spectrum of Marine Aviation by adapting geographic constraints for repair and support capabilities. Squadron leaders showcased

their continuous process improvement (CPI) successes and innovations while discussing challenges in supporting the AV-8B Harrier II, F-35B Lightning II and other aircraft.

"This particular unit had a lot of executable recommendations which we were able to recognize, but another great outcome is the realization of the expanding requirements of this unit," said Maj. Gen. Mark Wise, commanding general of the 3rd Marine Aircraft Wing. "It's not just Harriers anymore, but this time next year, an equal number of F-35s. I don't think a lot of people really understood how much support this unit actually gives. This visibility will make things better for them now and in the future."

As the first Marine Corps operational squadron to support the F-35B, MALS-13 mechanics determined the limited service life of the aircraft's tires was an average of five landings, affecting its overall readiness.



Marine Staff Sgt. Montana Casper fields questions from NAE leadership related to MALS-13's F-35B wheel and tire rework. Casper explained a solution that authorized Marines to repair the assemblies, which aided the establishment of an RFI pool stock and increased the aircraft's readiness.



Marine Lance Cpl. Richard Happ demonstrates the redesigned AERO-74 slide hammer that allows users to remove a threaded attachment in order to avoid excessive maintenance delays. MALS-13 hopes to share this innovative idea with all type/model/series that use the AERO-74.

Only a few Marines within the division were qualified to perform the daily maintenance needed to keep the aircraft operationally ready.

Marines from the F-35B's wheel and tire division were able to obtain the proper training, tools and support equipment to repair the wheel and tire assemblies at the intermediate maintenance level, allowing for an extended life span of 8-to-10 landings. This allowed the squadron to establish a stock of ready-for-issue (RFI) tires, contributing to an increase in readiness.

Staff Sgt. Montana Casper, who briefed BoG attendees on the F-35B's wheel and tire rework, said he could see that NAE leaders were interested in learning more about each challenge presented.

Other innovative ideas included a demonstration by Sgt. Taylor Brown and Lance Cpl. Richard Happ of the MALS-13 Airborne Weapons Support Equipment work center, who showed a redesigned slide hammer of the AERO 74 bomb cradle.

Before the redesign, excessive wear of the slide hammer components led to delays in maintenance. Instead of using a welded bolt, the division moved to a removable thread attachment, allowing for easy removal and inexpensive replacements.

"The path forward is to lead the fleet as this work can be applied to all type, model and series that employ the AERO 74," Brown said.

While the Marines of MALS-13 were able to solve many of their squadron's readiness issues, they presented other challenges that allowed NAE leaders to capture action items for optimizing readiness throughout the fleet.

"Everyone involved has different resources and perspectives that are available," said Lt. Col. Luke Watson, MALS-13's Commanding Officer. "To increase situational awareness, especially on new things like the F-35B, just helps people make better decisions on what we need to do or they may have a simple fix that can lead to greater efficiencies."

*Gulianna Dunn is a communications specialist with Naval Aviation Enterprise public affairs. 🦅*



U.S. Navy photo by Gulianna Dunn

Marine Staff Sgt. Justin Ward (center) is presented the Naval Aviation Enterprise Excellence Award by Commander, Naval Air Forces, Vice Adm. Mike Shoemaker (left) and 3rd Marine Aircraft Wing Commanding General, Maj. Gen. Mark Wise (right). A member of the Marine Aviation Logistics Squadron (MALS) 13's AIRSpeed Continuous Process Improvement Site Core Team, eliminated an inspection item that saved the command more than \$200,000.

## Yuma Marine Earns NAE Excellence Award

By Gulianna Dunn

Everyday excellence may seem to go unnoticed, but one U.S. Marine's efforts were rewarded Sept. 27 at a Boots-on-the-Ground event onboard Marine Corps Air Station (MCAS) Yuma, Arizona.

Staff Sgt. Justin Ward, a member of Marine Aviation Logistics Squadron (MALS) 13's AIRSpeed Continuous Process Improvement (CPI) Site Core Team, was awarded the Naval Aviation Enterprise (NAE) Excellence Award for serving as a positive example of enterprise behavior.

A ground support equipment mechanic, Ward led and supported 22 CPI events and projects in addition to training 894 Yellow Belts and 135 Green Belts. His Green Belt project, the 100-hour Performance Hover Check Rapid Improvement, identified costs and potential savings. At the completion of this project, Ward showed that the inspection was no longer needed, saving \$165,000 in fuel costs annually and a reduction in labor costs associated with maintenance man hours by \$47,000.

"I feel like this is my niche," Ward said. "At the end of the day, seeing the benefits that the Marines get is why I got more involved in the [CPI] process. I remember when I was a junior Marine going through some of these processes that I thought were a waste. Now I'm able to give them a voice so that we can fix those things. If we can do the same job, but faster, it's a win in my book."

Throughout his 15 years of service, Ward has noticed that some aviation processes could use improvements and was given an opportunity to improve upon existing procedures through his position at Yuma's AIRSpeed Fleet Assistant Program Office.

"It's not just one thing, it's several things that he's attacking on all fronts," said Maj. Gen. Mark Wise, 3rd Marine Aircraft Wing's commanding general. "From training to procedures that just don't make sense, we need to get rid of them because they are old and outdated. That's smart work, and we need more [Marines] like him."

Previously recognized as the Enterprise AIRSpeed Master Gunnery Sergeant John Evancho Innovator of the Year in 2014, Ward stated that he is ready to move on to his next challenge.

"I plan to continually go out there every day and ask junior Marines what's giving them a headache," Ward said. "From there, I will look at how I can translate that into another project because we all prefer to work smarter, not harder. The hardest part is finding those new ideas." 🦅

# Parachute Riggers' 75th Anniversary Looks to Community's Past, Future



By Jacquelyn Milham

Aircrew survival equipmentmen from Southern Maryland celebrated the 75th anniversary of their rating Sept. 7 at Fleet Readiness Center Mid-Atlantic Detachment (FRCMA Det) Patuxent River Paraloft Division, Naval Air Station Patuxent River, Maryland. The event was one of several the community—also known as parachute riggers, or PRs—held Navy-wide in September.

According to Petty Officer 1st Class Thiwa “Tip” Thipkhosithkun, an aircrew survival equipmentman assigned to Commander, Fleet Readiness Centers, it’s tradition at the annual celebration to recognize the youngest and the oldest riggers who live in the local area.

“But for the 75th anniversary, we wanted to have the oldest and the youngest riggers from across the country participate and invited riggers at sites throughout the Navy to listen in and make history,” he said.

Thipkhosithkun said the original PR rating was changed to aircrew survival equipmentman in December 1965 to more accurately describe the types of duties riggers conduct. Sailors maintained the unofficial “PR” abbreviation even after the name change.

“PRs aren’t only responsible for maintaining parachutes,” Thipkhosithkun said. “Technicians inspect, maintain and repair survival equipment, flight gear and protective clothing; test oxygen regulators, liquid oxygen converters and safety equipment; and equip and package life rafts. PRs can

U.S. Navy photo by MC2 Charles Oki



Petty Officer 1st class Thiwa Thiphkosithkun talks with retired rigger Bob Boles, the oldest member of the parachute riggers community, via video teleconference as part of the rate's 75th anniversary celebrations.



Retired rigger Bob Boles, the oldest living Sailor who to hold the parachute rigger rating, shares a photo of himself as a Sailor in World War

also be found in the ranks of special programs, such as SEAL or explosive ordnance disposal teams, where advanced skills are required.

"In essence, PRs make successful aircraft ejections, egress, aerial operations and deliveries around the world possible."

Retired rigger Bob Boles, the oldest living Sailor who held the rating during World War II, addressed the group via video teleconferencing from his home in Jacksonville, Florida. He recounted his early days as a PR and reflected on his 22-year career.

"The PR is very unique and demands skills not required in another rating," the 94-year-old Boles said. "In my opinion, it's the best rating in the Navy."

Participants also heard from the community's youngest rigger, Airman Joshua Goddard, an aircrew survival equipment airman stationed at Point Mugu, California, who just finished "A" school.

"I'm really proud of being a part of this rating," he said. "PRs must get the job right the first time, every time. The stakes are life or death. We need to be right 100 percent of the time."

The rating was established when U.S. Navy leadership acknowledged the need for specialized training in parachute rigging during World War II and formed the Center for Naval Aviation Technical Training to provide instruction, said Chief

Petty Officer William Schisler III, an aircrew systems program manager in Naval Aviation Training Systems (PMA-205).

Before 1942, he said, Sailors could "strike"—a term used to describe when an undesignated Sailor selects and becomes qualified for a rate through self-study and on-the-job training. Today, Sailors must attend technical schools to gain the knowledge and skills necessary to achieve designation as a PR, including 12 weeks at Naval Air Technical Training Center in Pensacola, Florida, where they learn the fundamentals of maintaining emergency escape, using personal and cargo parachutes in naval aircraft and in the field, and the importance of their responsibilities.

"Lives depend on what we do," Schisler said. "The PR community has grown and matured into the professional, reliable community we are today."

The celebration concluded with a commemorative photo of active duty, retired and former PRs lining up from youngest to oldest on FRCMA Det Patuxent River's packing deck.

Boles and Goddard said they were honored to be a part of Patuxent River's commemoration.

"I'm looking forward to learning all I can as a PR," Goddard said. "PRs are pilots' last hope. If all else fails, we can't."

*Jacquelyn Milham is a communication specialist supporting Commander, Fleet Readiness Centers.* 🦋

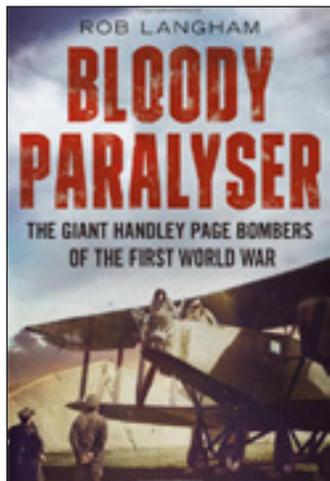
# Professional Reading

By Cmdr. Peter Mersky, USNR (Ret.)

## ***“Bloody Paralyser”: the Giant Handley Page Bombers of the First World War***

Rob Langham

Fonthill Media Limited and  
Casemate Publishers, 2016  
192 pp. \$34.95



This new book from Great War historian Rob Langham describes the design and service of one of the largest aircraft flown in World War I, the Handley Page Bombers. Only Germany's Zeppelin-Staaken R.VI had greater length and wing span.

Langham takes his title “Bloody Paralyser” from the colorful request by Capt. Murray Suerter, director of the air department of Britain's Royal Navy, for a heavy bomber to use against the Germans. According to Suerter, what they needed was “a bloody paralyser of an aeroplane.”

As the Allies considered the question of how to organize a response to the German submarine menace, the British chose to strike the enemy submarine pens with the newly introduced heavy bomber, Handley Page's huge (for the time) twin-engine bomber, the O/100, which could carry 16 112-pound bombs along with five machine guns.

The designation O/100 was a uniquely British invention. The British used an alphabetic sequence to designate new designs, and “100” indicated—in this case—the particular type's wingspan in feet. Thus, the “O” model had a 100-foot wingspan. Its maximum speed of 85 mph might not have been anything to crow about, but it was an imposing machine.

The Handley Pages were flown by the Royal Naval Air Service (RNAS). They were naval aircraft, flown at first solely by British crews. Later, American naval aviators occasionally flew sorties with the Allies, usually serving as gunners (often called “gunlayers”), but occasionally taking their turn at the wheel of the huge bombers.

Langham uses first-person quotes to share the experiences of these young aviators, who were determined to learn how to handle these huge aerial “beasts” and fly them to their important industrial targets, deliver their bombs and return safely with themselves and their valuable aircraft intact. It wasn't always that simple.

Indeed, at that early stage of aviation, the very art of flying itself was still being learned. Handling a hulking multi-seat, multi-engine design in adverse weather or combat conditions—without

the hydraulic assist that would become so common in later aircraft—called for levels of physical strength and coordination that were sometimes beyond the young aviators of the day.

Nevertheless, they were brave men, and they started flying their intended missions, namely bombing the submarine pens in Belgium, and then rail centers and airdromes (airfields) used by Gotha bombers that were bombing London. But the O/100s would go on to have a somewhat checkered career.

Poor weather, long distances and underdeveloped skills often combined to abort or change the missions, ultimately resulting in

## ***J2M Raiden and N1K1/2 Shiden/ Shiden-Kai Aces***

Izawa Yasuho with  
Tony Holmes

Osprey Publishing, Ltd.,  
2016, 96 pp. Ill. \$23



Even though the war was turning against it by 1944, Japan nonetheless produced several highly capable fighters that proved the equal of late-war American designs. The Imperial Navy fielded



*A brand-new Mitsubishi J2M3 Raiden.*

the loss of several bombers. The first mission even ended with an O/100 inadvertently landing at an enemy airdrome, delivering a brand new bomber right to a German doorstep. Another aircraft fell into enemy hands on Jan. 1, 1917, because of a navigational error on the part of the crew.

(Of course, the Allies weren't the only ones making these kinds of mistakes. In 1942, one wayward German pilot landed his equally new Focke-Wulf 190 at a British airfield, providing his enemy with a flyable example of the latest Nazi high-performance fighter.)

Langham also describes experiments using Handley Pages with increased armament as "gunships," which is reminiscent of the XB-40, up-gunned model of the B-17 during WWII used as escorts for the large fleets of Flying Fortresses flying the U.S. Army Air Forces strategic bombing campaign over Europe.

More photos would have been nice in this volume, and an index also would have been useful, but readers who are interested in WWI aviation or the development of strategic bombing in the early years of manned flight will find a lot of intriguing material in this book. ✈️

two such aircraft, the Mitsubishi J2M Raiden and the Kawanishi N1K1/2 Shiden and Shiden-Kai, the last of which was all the more unusual for having stemmed from an advanced floatplane fighter that saw limited combat.

With the aid of series editor Tony Holmes, Japanese author Yasuho Izawa has produced a very good account in "J2M Raiden and N1K1/2 Shiden/Shiden-Kai Aces" of the relatively brief but action-filled careers of these three fighters and their pilots. The book, number 129 in the Osprey Aces series, features excellent photos and equally fine artwork, which has become the hallmark of this unique series.

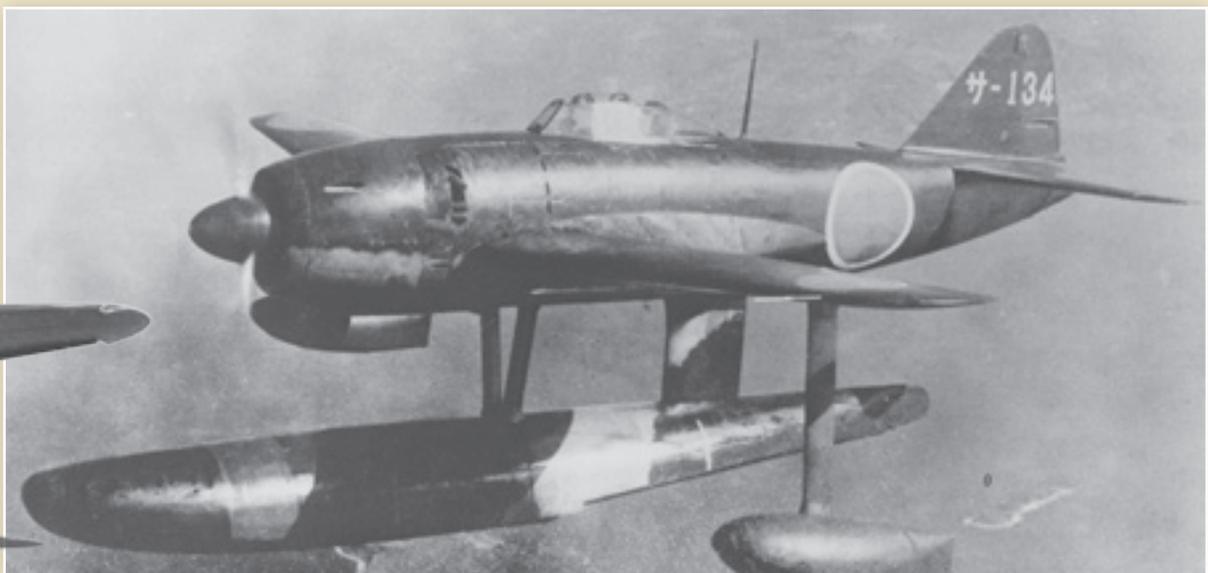
I might mention one other book that

perhaps served as a reference for Izawa—"Genda's Blade, Japan's Squadron of Aces, 343 Kokutai" by Henry Sakaida and Koji Takaki. Like that book, this one offers an in-depth look at the Imperial Navy's organization and the various personalities that made it such an effective weapon.

Anyone who has read "Samurai!" the autobiography of Japanese fighter pilot Saburo Sakai, will remember Cmdr. Tadashi Nakashima, the young Sakai's wing commander, himself an experienced combat pilot, or Minoru Honda, Sakai's irrepressible wingman. Minoru Genda, who led the 343rd Kokutai, has his own special place in World War II history as a primary planner of the Pearl Harbor attack.

Much like the Germans brought together many of their aces in single squadrons toward the end of the war in Europe, the Japanese assigned aces to elite units that would fly new aircraft and confront the growing might of U.S. Navy and U.S. Army Air Forces squadrons. Many of the pilots were veteran aces with log books that spanned service in China and the Solomons all the way to the last frantic missions against the high-flying B-29s that brought the war ever closer to Japan's doorstep.

This new addition to Osprey's Aces series goes a long way in documenting those last days of the Imperial Navy's value as a fighting force. ✈️



*Kawanishi N1K1 Kyofu floatplane fighter.*

Photos courtesy of Osprey Publishing

## *Fw 200 Condor Units of World War 2*

Chris Goss

Osprey Publishing, Ltd.,  
2016, 96 pp. Ill. \$23.00



Chris Goss's 2016 book "Fw 200 Condor Units of World War 2" details the service of a little known German aircraft that might have been among the most effective of the early 1940s—if only for its damaging psychological effects on Allied morale.

Just as the U.S. Lockheed P-3 Orion maritime patrol aircraft was derived from a Lockheed turboprop airliner of the late 1950s, the Fw 200, too, was derived from an airliner. Indeed, the P-3 and the Fw 200 were similar in design and intent, though the P-3 would go on to have a much longer and more successful career than its German counterpart.

In this work, No. 115 in Osprey's Combat Aircraft series, Goss describes the early years of the Fw 200 Condor as a German airliner and documents its wartime career when, for about three years, the Condor patrolled the convoy routes between the U.S. and Europe, skulking around in search of prey in the form of freighters loaded with Allied supplies.

During WWII, the Condor filled the Luftwaffe's need for a long-range aircraft that could intercept and take out the surface shipping traffic that was proving so vital to the Allied war effort and sustaining Great Britain as it defended itself against Germany's terrible aerial assaults while preparing for the water-borne invasion its leaders knew Hitler was planning.

In this tenuous time, Prime Minister Winston Churchill made the "notorious Focke-Wulf" (the "Fw" in the Fw 200) a constant verbal target. The aircraft even earned its share of fame when it was seen attacking American freighters as they neared (supposedly) safe harbor after a long, hazardous struggle across the Atlantic.

Action sequences in movies like "Action in the North Atlantic" and "Passage to Marseille," both starring Humphrey Bogart, made use of actual war footage of Condors or accurate models of the aircraft to give movie audiences a taste of what their men in service were fighting against.

This work by Goss isn't the only Osprey book on the Condor. In 2010, Osprey published a book in its Duel series, "Fw 200 Condor vs Atlantic Convoy, 1941-43" by Robert Forczyk. That work provides more detail on the Condor than Goss provides, but taken together, these works provide an exhaustive account of this briefly important wartime hunter.

(Another account with photos of the Condor also appeared in Manfred Griehl's "Airwar over the Atlantic" published in 2003 by Pen & Sword's Greenhill Books imprint.)

Along with the book's text, the illustrations by Chris Davis and the inspired painting on the book's cover by Mark Postlethwaite, which shows a Condor and an RAF Whitley bomber dueling, make the volume a great addition to this respected line of aerial histories. ✈



Focke-Wulf Fw 200 Condor.

Photo courtesy of Osprey Publishing

# Squadron Spotlight

## Marine Attack Squadron 231

**Established:** Feb. 8, 1919

**Based:** Marine Corps Air Station Cherry Point, North Carolina

**Current Commanding Officer:**

Lt. Col. Charles W. Del Pizzo

**Mission(s):** *Support the Marine Air Ground Task Force (MAGTF) Commander by destroying surface and airborne targets and escorting friendly aircraft, day or night, under all weather conditions, during expeditionary, joint or combined operations.*

**Brief History:** The "Ace of Spades" symbolizes some of the greatest exploits and most outstanding names in the history of Marine Aviation. With its roots in the Northern Bombing Group of France during World War I, VMA-231 was commissioned as the 1st Division, Squadron D, on Feb. 8, 1919, at Marine Flying Field in Miami, Florida. After being re-designated the First Air Squadron in 1921, the unit adopted the legendary Ace of Spades insignia. The "A" in the upper left stood for the word "Air" while the "S" in the lower right represented the word "Squadron." Eventually the squadron would move from Miami to San Diego, becoming the first West Coast Marine squadron. During this period, the squadron served in Nicaragua where it executed the first recorded dive bombing tactics against an organized enemy in support of a beleaguered Marine outpost during the battle of Ocotol.

Over the years, the squadron served under many designations including the First Air Squadron, Marine Observation Squadron 1 and 8, Marine Scouting Squadron 2, Marine Scout Bombing Squadron 231 and Marine Fighter Squadron 231. The squadron flew numerous aircraft to include the JN-4D Jenny, the DH-4B Liberty, Curtiss F8s, the Vought Vindicator, the Scout Bomber Douglas Dauntless and F4U Corsairs during World War II and the Korean War. Whatever the name or platform, the squadron could always be identified by the legendary Ace of Spades insignia.

On Aug. 31, 1962, after serving in Reserve status in Akron, Ohio,



and Grosse Isle, Michigan, VMA-231 was deactivated and its historic insignia was retired. VMA-231 was reactivated on May 15, 1973, and the Marine Corps' oldest squadron became the Corps' newest squadron flying the Corps' newest aircraft, the Hawker-Siddeley AV-8A Harrier. Throughout the 1970s, VMA-231 participated in many deployments and NATO exercises aboard U. S. Navy Landing Platform Helicopters (LPHs), amphibious assault ships and aircraft carriers in the Mediterranean, Africa and Europe. Continuing its tradition of firsts, in October 1978, VMA-231 completed

the first trans-Atlantic flight for an AV-8A. VMA-231 was the first U.S. Marine Corps Harrier squadron in Europe and the first AV-8A squadron to cross-train with Royal Air Force Harrier squadrons. On Aug. 2, 1985, VMA-231 flew the AV-8A for the last time, converting the squadron to the all-new AV-8B on Sept. 19, 1985. Once again, the Marine Corps' oldest squadron flew the Corps' newest aircraft.

Flying three different versions of the AV-8B Harrier, the Spades have seen combat in Operations Desert Storm, Allied Force, Iraqi Freedom, Unified Protector and Enduring Freedom from both land and sea bases. The new millennium also brought many training opportunities and Marine Expeditionary Unit (MEU) deployments for the squadron. VMA-231 supported the 22nd, 24th and 31st MEUs and multiple exercises around the globe. In fall 2016, the Marines and Sailors of VMA-231 deployed as a part of Special Purpose Marine Air Ground Task Force-Crisis Response-Central Command and supported Operation Inherent Resolve, the coalition fight against Islamic State militants in Iraq and Syria. In this effort, the Spades flew 4,056.1 combat flight hours and delivered hundreds of thousands of pounds of ordnance against ISIS targets, thereby adding another chapter to the proud legacy of the "first and finest" squadron in the U.S. Marine Corps.

**Aircraft Flown:** AV-8B Harrier

**Number of People in Unit:** 266 military personnel



U.S. Navy photo



# ***NAVAL AVIATION NEWS***

NAVAIR Public Affairs Office ■ 47123 Buse Road, Building 2272, Suite 346 ■ Patuxent River, MD 20670 ■ [navalaviationnews.navylive.dodlive.mil](mailto:navalaviationnews.navylive.dodlive.mil)