

NAVAL AVIATION NEWS

THE FLAGSHIP PUBLICATION OF NAVAL AVIATION SINCE 1917

WINTER 2021

LASTING IMPRESSIONS Legacy Aircraft Retire



WHAT'S INSIDE

- ▶ VMFA-314: F-35C Mission Ready
- ▶ Next-Gen Jammer Mid-Band Pod Testing
- ▶ Physiological Episodes: A Fighter Pilot's Account



An F/A-18E Super Hornet, attached to the "Royal Maces" of Strike Fighter Squadron (VFA) 27, prepares to launch from the flight deck of aircraft carrier USS Ronald Reagan (CVN 76).

U.S. Navy photo by MC2 Erica Bechard

NAVAL AVIATION NEWS

WINTER 2021

VOLUME 103, NO. 1

DEPARTMENTS

- 4 Flightline
- 7 Grampaw Pettibone
- 8 Airscoop

FEATURES

- 16 **Saying Goodbye to the C-2A:** Evolution to CMV-22B Osprey Means Sundown of 'Venerable' Greyhound
- 20 **Blue Angels Legacy Hornets Take a Bow**
- 22 **Last Call for Whiskey: AH-1W Super Cobra Retires**
- 26 **Presidential Sea King Monument to Father's Legacy**
- 28 **A Fond Farewell to 'Catbird'**
- 30 **Next-Gen Jammer Mid-Band Testing Underway:** Demonstrates Capabilities, Teamwork, Industry Collaboration
- 38 **3rd Marine Aircraft Wing Advances Air Superiority with F-35C IOC**
- 40 **Pressure-related PEs: Diagnosis, Treatment and Prevention**
- 44 **Naval Aviation's Readiness Cell Incorporates MH-60R/S Helicopters**
- 46 **Former Astronaut Recounts His Path to the Moon**
- 48 **New Flight Eval Training Program Aims to Improve Performance**
- 50 **NAWCAD Pioneers Innovation in Teletest and Maintenance**
- 52 **New Year, New Chapter in FRCE Support to Presidential Helicopter**
- 53 **Book Smarts: Tech Librarians Keep Maintenance Info Current**
- 54 **FRCSW Inducts Final E-2C Hawkeye**
- 56 Professional Reading
- Inside Back Cover Squadron Spotlight

ALSO IN THIS ISSUE

ON THE COVER



On the cover: A montage of several naval aircraft slated for retirement are discussed in this issue. Pictured, clockwise, are a C-2A Greyhound, an AH-1W Super Cobra, the C-20G Gulfstream IV Catbird, an NVH-3A Sea King and the Blue Angels' F/A-18 Legacy Hornets. (U.S. Navy photo illustration by Fred Flerlage; photographic images by Raymond Rivard, MC2 Cody Hendrix, Cpl. Darien J. Bjorndal and Adam Skoczylas)

As technology continues to evolve, this edition features fond farewells to several naval aircraft nearing the end of their service life and highlights new technologies. Naval Aviation continues evolving with the Marine Fighter Attack Squadron (VMFA) 314 declaration of Initial Operational Capability for the F-35C Lightning II on page 38, and testing of the Next-Generation Jammer Mid-Band pod on the EA-18G Growler on page 30. And we continue our coverage of physiological episodes with an article on rehabilitating naval aviators who suffer from pressure-related events and a first-hand account from a former F/A-18 pilot on their experience and recovery starting on page 40.

On the back cover: Aviation Boatswain's Mate (Fuel) 3rd Class Anthony Montufar refuels an MH-60S Seahawk, assigned to the "Eightballers" of Helicopter Sea Combat Squadron (HSC) 8, aboard USS Theodore Roosevelt (CVN 71) on Feb. 10. (U.S. Navy photo by MC3 Class Nicholas V. Huynh)

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

Director, Air Warfare

Rear Adm. Gregory N. Harris, USN

Editor in Chief

Andrea Watters, Naval Air Systems Command

Editorial Board

Stan Coerr, Headquarters, Marine Corps

Cmdr. Zachary Harrell, USN, Naval Air Forces

Marcia Hart, Naval Air Systems Command

Richard Holcomb, Air Warfare N98

FORCM Huben Phillips, USN, Naval Air Force, Atlantic

Naval Aviation News Staff

Fred Flerlage, Art Director, Naval Air Systems Command

Rob Perry, Staff Writer/Editor, Naval Air Systems Command

Contributing Editors

Emily Funderburk, Naval Air Systems Command

Melissa A. Johnson, Naval Air Systems Command

Paul Lagasse, Naval Air Warfare Center Aircraft Division

Columnists

Cmdr. Peter Mersky, USNR (Ret.), Book Review Editor

Cmdr. Bryan Dickerson, USN (Ret.), Contributing Editor

Submission Guidelines

Commands may send news and announcements such as awards, rescues, milestones and other achievements to nannews@navy.mil. Photos of Naval Aviation-oriented activities are always welcome. For longer feature articles, contact the editor in advance. Military contributors should forward articles about their commands only after internal security review and with command approval. For more information, contact us at nannews@navy.mil.

Personal Subscriptions and Address Changes

A one-year subscription (four issues) is \$23.00 domestic, \$32.00 overseas. For online orders go to bookstore.gpo.gov. For mail orders, cite *Naval Aviation News* and send check, money order, or credit card information to U.S. Government Printing Office Orders, P.O. Box 979050, St. Louis, MO 63197-9000. For fax orders, call 202-512-2104. For phone orders, call 202-512-1800, Mon-Fri, 0700-1830. For email orders, send to contactcenter@gpo.gov. For changes of address, also send to contactcenter@gpo.gov; include full name and both old and new addresses.

Official Subscriptions and Address Changes

Subscriptions to military and government agencies are provided free of charge through the Naval Aviation News office. Email nannews@navy.mil, send mail to *Naval Aviation News*, NAVAIR Public Affairs Office, 47123 Buse Road, Building 2272, Suite 547, Patuxent River, MD 20670.

Naval Aviation News (USPS 323-310; ISSN 0028-1417) is published quarterly for the Chief of Naval Operations by the Naval Air Systems Command. Periodicals postage is paid at Washington, D.C., and additional mailing offices.

The Secretary of the Navy has determined that this publication is necessary in the transaction of business required by law. The use of a name of any specific manufacturer, commercial product, commodity or service in this publication does not imply endorsement by the Navy. Any opinions herein are those of the authors, and do not necessarily represent the views of *Naval Aviation News*, the Department of the Navy or the Department of Defense.

Approved for public release: SPR No 2021-78

Postmaster: Send address changes to *Naval Aviation News*, NAVAIR Public Affairs Office, 47123 Buse Road, Building 2272, Suite 547, Patuxent River, MD 20670.

NAVAL AVIATION NEWS IS ONLINE AT
<http://navalaviationnews.navy.mil>

SEND YOUR FEEDBACK TO: nannews@navy.mil

Flightline

Naval Air Force Atlantic Marks 78th Anniversary

By Rear Adm. John Meier, Commander, Naval Air Force Atlantic

Recently we celebrated the 109th anniversary of Naval Aviation. The many achievements, sacrifices and daring acts of bravery that make up our past have a humbling effect on history and our Navy. Today, our organization continues to further the achievements of those who came before us. As our nation and world ring in 2021, here at Commander, Naval Air Force Atlantic (CNAL), we mark our 78th anniversary highlighting the contributions of our people and platforms.

In January 1943 Naval Air Force, U.S. Atlantic Fleet was established and commanded by Rear Adm. Alva D. Bernhard. It is remarkable to consider the many chapters of history our people and our aircraft have witnessed and their impacts. From the latter days of World War II, through the pioneer days of the space race, to the Vietnam Conflict, Operation Desert Shield/Desert Storm, to Afghanistan and Iraq conflicts and beyond, Naval Aviation has been at the tip of the spear.

"The unique culture of Naval Aviation and its rich diversity of thought, experience, gender and ethnicity has also matured alongside technology and organization."

While the complications of this world will continue to evolve, we are fighting the newest battle in the form of the COVID-19 pandemic—another obstacle our Atlantic team and the Navy met head-on and overcame this year. We have learned to coexist with this pandemic, and as the vaccine is made available, we will continue to press forward with our manning, training and equipping role to prepare today's naval aviators for tomorrow's challenges. The evidence of our prowess in the air is visible to me every day, and I am proud of our organization's contributions to the Navy's legacy.

To dive further into how far CNAL has come over the years, consider the evolution of our aircraft in the last 78 years. It was only six years after our formation that the first operational use of an ejection seat by Lt. Jack L. Fruin took place over South Carolina in August 1949. Assigned to Fighter Squadron (VF) 171, Fruin safely punched out of his F2H-1 Banshee at a speed of more than 500 knots and survived.

Just as Fruin did in 1949, our pilots, aircrew and other personnel put their lives on the line every day to save countless naval aviators' lives. I shared a similar history with Fruin when I ejected safely from my EA-6B Prowler during carrier qualifications in the lead up to the Persian Gulf War. I thank the men and women who played a pivotal role in continuing to improve Naval Aviation safety, but we have more work to do. I am confident we will continue to make those essential strides.

Innovations throughout our history were made not only to the aircraft we

fly but to the carriers we operate. The Atlantic Fleet participated in the first landing demonstrations with a simulated angled flight deck aboard USS Midway (CV 41) in May 1952. The angled flight deck improved pilot safety as did ejection seats, both of which protect the most precious resource in our nation's military—our people.

The unique culture of Naval Aviation and its rich diversity of thought, experience, gender and ethnicity has also matured alongside technology and organization. Our aviators, aircrew, maintenance and other support personnel have all continued to ride on that cutting edge of innovation and our nation continues to depend upon and to benefit from that evolution.

Ten years later, CNAL supported space exploration. Helicopter Anti-Submarine (HS) 3 pilots flying the HSS-2 Sea King recovered astronaut Lt. Cmdr. M. Scott Carpenter from his space capsule, Mercury-Atlas 7, after the spacecraft Aurora 7 launched from Cape Canaveral, Florida, for the second manned orbital flight in U.S. history. Carpenter's capsule overshot the planned recovery position on May 24, 1962, which resulted in the "Tridents" of HS-3 returning him to USS Intrepid (CV 11) four hours after he touched down in the water. This mission was not just another milestone for our young command, but also for the world.

We have advanced and achieved so much since the '40s, not only in capability but also in diversity. We are proud of how far we have come as a community. I have great admiration when I read about the pioneers in our community, such as Lt. Donna L. Spruill of Fleet Logistics Support Squadron (VRC) 40, who became the first woman naval aviator to qualify in a fixed-wing aircraft. Spruill completed her achievement alongside her co-pilot and Commanding Officer, Cmdr. Jerry L. Wright, in their C-1A Trader. Other women have set many milestones since, such as Cmdr. Linda V. Hutton who was the first woman to take command of a squadron in the Atlantic Fleet. She assumed command of Spruill's old squadron, VRC-40, on Sept. 4, 1992. Other pioneers include Capt. Amy Bauernschmidt, who is slated to become the first woman commanding officer of a nuclear aircraft carrier this year.

Along with our growth as a fighting force, we have stood ready in defense of our country. The challenges in the global arena have tested our men and women continuously. Take, for instance, the Cuban Missile Crisis. The Atlantic Fleet stood watch and flew thousands of sorties until Nov. 20, 1962, when the fleet was ordered to cease operations in response to the crisis. Their presence proved a powerful deterrent as the Soviets stood down their units in parallel.

We have been training for the next page in history since our establishment in 1943. The methods we have employed and the aircraft we have flown serve as benchmarks in our history. Many of today's seasoned aviators in squadrons under CNAL completed their training in the T-34C Mentor. These orange-and-white beauties were introduced to basic air training on June 24, 1976. They have since been replaced by the versatile T-6B Texan II, which is currently training our newest aviators. With these new



U.S. Navy photo

USS Midway (CV 41) underway in the Pacific Ocean, April 19, 1971.



Photo courtesy of NASA

Astronaut M. Scott Carpenter, prime pilot for the Mercury-Atlas 7 (MA-7) mission, arrives aboard the prime recovery ship, USS Intrepid (CV 11), during recovery operations following his Earth orbital mission.



U.S. Navy photo by PH Jessica Davis

Lt. Cmdr. Dennis Callahan signals an F-14 Tomcat, assigned to Fighter Squadron (VF) 103, to launch from the flight deck of aircraft carrier USS George Washington (CVN 73) July 3, 2002.

pilots filling our ranks, I am confident CNAL will continue to be in good hands.

We have seen the sundown on powerful platforms such as the mighty F-14 Tomcat, an aircraft with no small part in history. I find it remarkable that we continue to benefit from the wisdom of the Sailors who supported the platform in its final years and then retired from active duty and served as civilians within the Naval Aviation Enterprise. We benefit from their service, sacrifice and dedication to Naval Aviation. More than 46 years ago on March 18, 1974, Lt. Cmdr. Grover Giles made the first carrier landing of an F-14A Tomcat on USS Enterprise (CVN 65).

The transition continues with the F/A-18E/F Super Hornet to the F-35 Lightning II, both components of the advanced air wing. Our aviators and maintenance team are at the forefront of today's warfare.

Only recently did Helicopter Sea Combat Squadron (HSC) 22 receive the newest series of the Fire Scout MQ-8C—an advancement in the works for more than half a century. Our efforts in this endeavor come almost 64 years after the first unmanned helicopter flight, which occurred in July 1957 when Kaman Aircraft designed and built a helicopter under an Army-Navy contract.

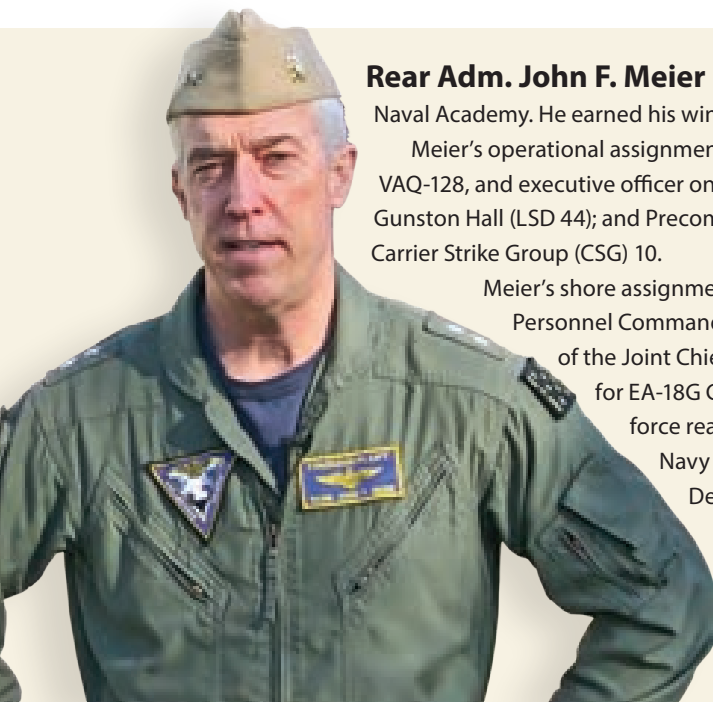
Like the Fire Scout, we are witnessing many achievements come to fruition. Airborne Command & Control Squadron (VAW) 121 now aerial refuels the E-2D Advanced Hawkeye, initial testing for which occurred on Dec. 19, 2005, as an E-2C connected to a KC-130. Today the VAW community is more capable than ever with increased range and duration to their mission set.

Looking back on the last 78 years, I hope that we continue to approach tomorrow's fight with the same pride and tenacity that

has been on display since our establishment in January 1943. I have seen firsthand the fighting spirit of our people, which pays great tribute to our past Sailors. I am confident that in the years ahead we will continue to be the world's premier Naval Aviation force. I remain optimistic that our people, which remains our greatest resource—our sons and daughters—will continue advancing today's capabilities in preparation for tomorrow's fight. 🦅



Then-Executive Officer of aircraft carrier USS Abraham Lincoln (CVN 72), Capt. Amy Bauernschmidt speaks during a Women's History Month observance March 3, 2017.



Rear Adm. John F. Meier is a native of Export, Pennsylvania, and 1986 graduate of the United States Naval Academy. He earned his wings as a naval aviator in August 1988.

Meier's operational assignments include Electronic Attack Squadron (VAQ) 141, Carrier Air Wing (CVW) 2, VAQ-128, and executive officer onboard USS Harry S. Truman (CVN 75). Command tours include VAQ-136; USS Gunston Hall (LSD 44); and Precommissioning Unit Gerald R. Ford (CVN 78). Meier most recently commanded Carrier Strike Group (CSG) 10.

Meier's shore assignments include tours at VAQ-129; EA-6B Prowler placement officer at Navy Personnel Command; senior operations officer and emergency actions officer on the Chairman of the Joint Chiefs of Staff in the National Military Command Center; requirements officer for EA-18G Growler at the Office of the Chief of Naval Operations; assistant chief of staff force readiness officer at Commander, Naval Air Forces (CNAL); assistant commander, Navy Personnel Command for Career Management; and commander, Navy Warfare Development Command.

Meier has participated in operations since Desert Storm, led Southern Partnership Station and built the crew and culture of USS Gerald R. Ford as her first Commanding Officer. He has accumulated more 4,000 flight hours and 675 carrier landings.

Meier assumed command of CNAL on May 1, 2020. 🦅

Grampaw Pettibone

Gramps from Yesteryear: September-October 2001

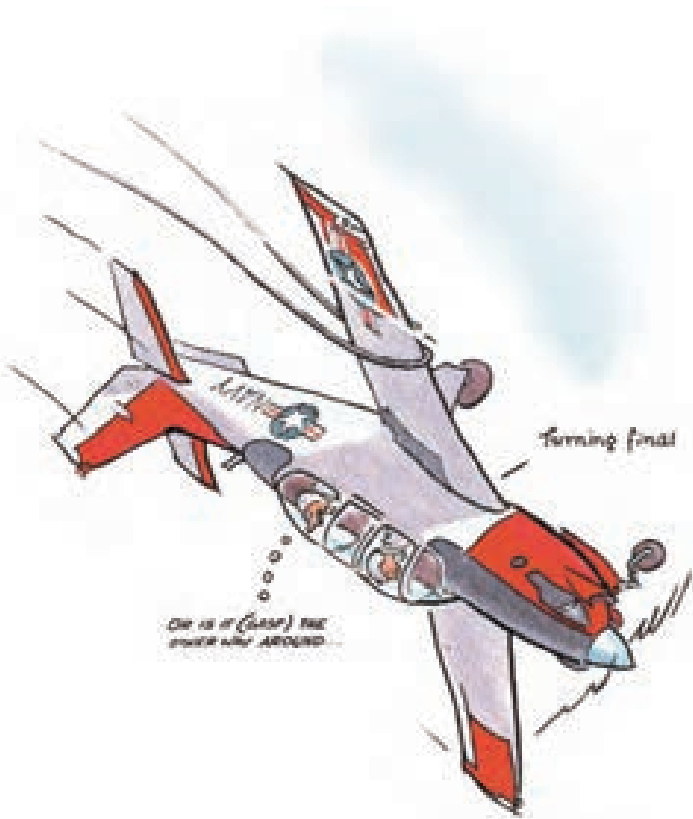
Illustration by *Ted Wilbur*

Power and Power Lines

A pilot and pilot under instruction (PUI) were on a Naval Air Training and Operating Procedures Standardization (NATOPS) check flight in a T-34C Turbo-Mentor. The PUI experienced difficulty executing simulated high-altitude power loss (HAPL) descents to an unprepared field. The instructor pilot (IP) concluded, but did not announce, that the flight was not going to be counted as a NATOPS check but rather as a NATOPS warm-up. The PUI had reached the same conclusion and announced, after several attempts at the maneuver, that he guessed he'd be "doing this again tomorrow."

On a final maneuver of the flight, the PUI initiated one more simulated HAPL to an unprepared field. Bordering the eastern edge of the selected field were power lines running north/south, extending to a height of 126 feet. The PUI maneuvered the T-34C to land to the south, paralleling the power lines, with about 500 feet of lateral separation from the lines.

The PUI neared the final portion of the HAPL at 100 feet above the ground with 80 knots airspeed. He then executed a waveoff by maintaining a 30-degree angle of bank to the right and by pulling



the nose up aggressively—while NOT adding full power. The IP was focusing on the power lines and evaluating the projected touchdown point of the aircraft as the PUI initiated his waveoff. The IP was not "shadowing" the PUI on the controls during the final stages of the maneuver.

On climbout, the rudder shakers activated rapidly and the IP took the controls. He placed the power control lever full forward and rolled wings level. When full power kicked in, the aircraft departed controlled flight with a left yaw and roll. After 60 degrees of turn in the departure, the IP regained control of the plane and began a climbout at 23 units angle of attack. The PUI called out, "Power lines," on the intercom. The IP, seeing only the power lines and

not the tension wires which were higher and smaller, said, "We're climbing. We're going to clear them."

The left wing impacted the tension wires which caused the T-34C to roll inverted and crash into the ground. The IP exited the aircraft and seeing the PUI still seated inside the plane attempted to open the canopy. Crash damage required the IP to smash the canopy to extract the PUI, who had suffered fatal injuries from blunt trauma during the impact. The IP had minor injuries. ✈️



Grampaw Pettibone says ...

Woe is us! Basic air work and situational awareness took a holiday. There were contributing factors. The PUI had a documented history of aggressive maneuvering while using less than maximum available power during climbouts in the T-34C. The IP, it turns out, did not receive adequate standardized local training as a T-34C NATOPS instructor. The PUI made incorrect control inputs in the climbout—not adding full power—and didn't realize a stall was imminent. The PUI was allowed to get too low and slow. The IP didn't have his hands resting on or around the controls, which increased reaction time. And being very low to the ground, time was a critical factor. Command doctrine had no specified altitude minimums for the HAPL maneuver. Also, why make an approach to a field so close to power lines? A sorry show—and tragic, too. ✈️

Compiled by Andrea Watters and Rob Perry



U.S. Navy photo by MC3 Brett Walker

Navy Captain Lands on Six Aircraft Carrier Classes

Capt. Cassidy Norman pilots an F/A-18E Super Hornet attached to the “Gladiators” of Strike Fighter Squadron (VFA) 106, as it lands aboard USS Gerald R. Ford’s (CVN 78) flight deck, Oct. 31, 2020.

ATLANTIC OCEAN—On Nov. 14, 1910, the U.S. Navy launched an aircraft from a ship for the first time. Roughly two months later, on Jan. 18, 1911, Eugene B. Ely landed on USS Pennsylvania, the first successful landing on a stationary warship; it would be another six years before someone landed a plane on a moving ship at sea.

These milestones may be considered the true start of Naval Aviation, which has become the backbone of the Navy’s maritime superiority and invaluable to national security.

Capt. Cassidy “Dudley” Norman, part of the Naval Aviation legacy for nearly 30 years, is one of few naval aviators who have experienced its transformation firsthand—Norman has witnessed not only the evolution of Naval Aviation but also the evolution of aircraft carriers.

On Oct. 31, he completed carrier qualifications (CQs) on USS Gerald R. Ford (CVN 78), the sixth class of supercarrier he’s flown on. Norman has also flown on USS Independence (CV 62),

Japanese Begin V-22 Flights

PATUXENT RIVER, Md.—Japanese Self-Defense Forces (JSDF) began V-22 flight operations at Kisarazu Air Field, Japan, Nov. 6, marking the first international partner to fly the U.S. military aircraft.

“The Japanese Ground Self-Defense Force is taking a big step toward integrating the V-22’s unique capabilities into its mission,” said Col. Matthew Kelly, program manager for the V-22 Joint Program Office. “Beginning with Japan’s selection of the V-22 in 2015, it has been an honor working with our international ally and partner to make this program a reality.”

The flight followed a ceremony marking the activation of the JGSDF’s Transportation Aviation Group flight operations. This major milestone follows a key

success this summer with the delivery of the first aircraft to Japan, on schedule, during a global pandemic.

Within the last few months, the program office’s international team continued to work closely with the JGSDF, completing required maintenance and expediting spares and support equipment deliveries ahead of initial flight operations. To make all of this happen members of the V-22 community came together including Marine Corps Air Station Iwakuni, Fleet Readiness Center Western Pacific, Bell Boeing and Rolls-Royce.

“The [program office] team coordinated with our partners, both industry and DOD, across the globe to ensure the JGSDF had the resources to ensure long-term success for its V-22s,” Kelly said. “I

am proud of the entire team’s achievements and dedication especially during this challenging time—it was a true ‘Team Osprey’ effort.”

In addition to the JGSDF, the V-22 is critical to three U.S. branches of military: the Air Force, Marine Corps and Navy. For the U.S. Special Operations Forces, the CV-22 supports long-range infiltration, exfiltration and resupply missions. The Marine Corps’ MV-22B provides assault support transport of combat troops, supplies and equipment during expeditionary, joint or combined operations. The CMV-22B is the Navy’s carrier onboard delivery replacement aircraft and is currently conducting flight test.

From V-22 Joint Program Office Public Affairs. ✈

a Forrestal-class carrier; USS Kitty Hawk (CV 63); USS Kennedy (CV 67); USS Enterprise (CVN 65); and multiple Nimitz-class carriers.

"I was anxious when I flew a jet aircraft out to USS John F. Kennedy 25 years ago, but after my first landing, I was very happy because I had demonstrated the operational capability that sets apart Naval Aviation," Norman said. "As part of a powerful and respected U.S. Navy, I could safely launch and recover airplanes not only at airports on land, but also on aircraft carriers at sea that operate all over the world."

In the 109 years of Naval Aviation, many advances have been made to both the aircraft and the carriers that launch and recover them.

Most aircraft carriers today rely on a steam catapult system operating on the release of pressure to launch aircraft. Aboard the Ford, the Navy's newest class, catapults have been upgraded with the electromagnetic catapult launch system (EMALS).

"Flying out and landing on the Ford was also exciting because this new class of carrier is a leap forward in many capabilities like the next-generation launching and arresting gear systems, which were immediately apparent on the flight deck," Norman said. "I thoroughly enjoyed landing on and catapulting from the most advanced version of the 11 most survivable airfields in the world."

Norman landed aboard Ford as part of a fleet replacement squadron (FRS) CQ wave with the "Gladiators" of Strike Fighter

Squadron (VFA) 106 stationed at Naval Air Station Oceana, Virginia. During his CQ, he conducted two touch-and-goes and four arrested landings using Ford's state-of-the-art Advanced Arresting Gear (AAG) to complete his curriculum. He also had the opportunity to spend some time aboard Ford to experience some of internal differences built into the Ford-class.

"It is extremely important for carrier commanding officers to regain aircraft carrier landing currency, and watching Dudley requalify on our ship brought a huge smile to my face," said Capt. J.J. Cummings, Ford's Commanding Officer. "Dudley is a career Hornet guy, flew some wicked nice passes during CQ and made it look easy, which is impressive after being out of the cockpit for several years.

"I know he was fired up to get some cats and traps on EMALS and AAG before he takes command of [USS John C.] Stennis, and we were proud to have a ready and steady deck for him and all of the FRS aviators who qualified on mighty warship 78."

This year, Ford has been the primary CQ asset on the East Coast generating readiness for the fleet.

"It has been extremely rewarding for our crew, especially given the challenges of getting underway virtually every month in this current health environment," Cummings said.

On Dec. 31, Norman assumed command of USS John C. Stennis (CVN 74).

Written by Mass Communication Specialist 1st Class Gary A. Prill, USS Gerald R. Ford Public Affairs. 🇺🇸



Photo courtesy of Japan Ground Self-Defense Force

A Japanese Self-Defense Forces V-22 begins flight operations Nov. 6 at Kisarazu Air Field located at Camp Kisarazu, Japan.

Airborne Command & Control Community Marks 60th Anniversary of First E-2 Flight

NORFOLK, Va.—While the U.S. Navy celebrated its 245th birthday in October, the Airborne Command & Control Logistics Community marked a longevity milestone: its 60th anniversary of the maiden E-2 Hawkeye flight.

On Oct. 21, 1960, the first flight of the E-2A occurred out of Bethpage, New York. Five years later, on Oct. 19, 1965, the U.S. Navy conducted its first E-2 deployment.

“For 60 years, the E-2 has been the eye in the sky for the U.S. Navy,” said Capt. Michael France, Commander, Airborne Command & Control Logistics Wing, who has flown more than 4,700 hours in 25 different aircraft. “The E-2 has continued to manage the airspace in both times of peace and in times of conflict, and we are grateful for every pilot, maintainer and aircrew who have supported this community.”

France discussed the test pilot who flew the first E-2 during an interview on Commander, Naval Air Force Atlantic, Rear Adm. John Meier’s, “All Things Naval Aviation” podcast.

“Oct. 21, 1960, was the first flight of the E-2 and was flown by test pilot Tom Attridge,” France said.

From the first test to today, the E-2 community has experienced three major transitions. “We are just over 50 percent complete with transitioning squadrons from the E-2C to the E-2D, as well as moving from E-2D to E-2D aerial refueling and the mission systems going from DSSC 2 to DSSC 3.

“An E-2D with aerial refueling and DSSC 3 will provide persistence on station with tremendous mission capability.”

Meier discussed how the advancements in the E-2 community to the E-2D Aerial Refueling serves as an example of the true strength of carrier aviation and the evolution of the air wing.

“When we talk about the evolution of the air wing and what makes a

carrier air wing so relevant is the fact that it brings its own airborne early warning, it brings its own airborne electronic attack, it brings its own organic refueling capability, and a whole host of long-range detection and command and control,” Meier said.

The all-weather, carrier-based platform has continued to increase its capability over the past six decades with the introduction of the E-2D Advanced Hawkeye in 2010. Typically, on any given deployment the E-2 is the first to launch and the last to recover on the flight deck due to the important role it serves for the carrier strike group.

“The E-2 continues its long history of deploying and providing mission-critical capabilities to the fleet,” said France, who added that the capabilities of a command and control platform are significantly advanced with the E-2D.

The technological advancements of the E-2D expand the tactical capabilities of the aircraft within its pre-existing mission set. The APY-9 radar enables detection of smaller contacts and at greater ranges, while the weapons system suite quickly processes and relays this information to the carrier strike group.

As part of the “Air Wing of the Future,” the E-2D will maximize the offensive power of the carrier air wing.

“The radar, radios and datalinks have improved significantly over the years, and with each new generation, the Navy has successfully learned how to leverage those advanced capabilities to our asymmetric advantage,” France said.

France added that having the capability to exploit Hawkeye radar technology for earlier and precise detection is a game changer.

The E-2 community supports a variety of mission sets, including airborne early warning, battle management command and control, strike and intercept control, maritime domain awareness, border and coastline protection, air traffic control, search and rescue coordination and humanitarian assistance.

From Commander, Naval Air Force Atlantic Public Affairs. 🦅

An E-2C Hawkeye, attached to the “Sun Kings” of Airborne Command & Control Squadron (VAW) 116, patrols the skies above the Arabian Sea.

France to Purchase E-2D Aircraft

PATUXENT RIVER, Md.—France became the second international customer Dec. 2 of the E-2D Advanced Hawkeye (AHE) with a signed Letter of Offer and Acceptance to procure three E-2D aircraft from the U.S. Navy for a maximum value of \$2 billion.

“The E-2/C-2 program office is looking forward to continuing a longstanding partnership with France and beginning a new chapter with the E-2D,” said Capt. Pete Arrobbio, program manager of the E-2/C-2 Airborne Command & Control Systems Program Office. “This procurement will increase interoperability among the

U.S. fleet and international partners.”

The three E-2Ds are scheduled to be delivered by 2028 and will replace the three existing E-2C Hawkeyes of the French Navy, Marine Nationale.

The E-2D AHE represents a two-generation leap in technology compared to its predecessor, the E-2C Hawkeye. The aircraft features a state-of-the-art radar and upgraded aircraft systems that improve supportability and increase readiness. The centerpiece of the E-2D AHE is the APY-9 radar system, designed specifically to provide enhanced surveil-

lance detection and tracking capability against advanced threat aircraft and cruise missile systems in the overland, littoral and open ocean environments. With the addition of aerial refueling capabilities, the E-2D remains the most advanced command and control platform in the world.

The Japan Air Self-Defense Force was the first international customer and has purchased 13 E-2D aircraft to date.

From E-2/C-2 Airborne Command & Control Systems Program Office. 🇺🇸



An E-2D Advanced Hawkeye, attached to the “Greyhawks” of Airborne Command & Control Squadron (VAW) 120.

FRCSW Returns First E-2D Advanced Hawkeye to Complete PMI-2

NORTH ISLAND, Calif.—Fleet Readiness Center Southwest (FRCSW) set another milestone Jan. 23 with the delivery of its first E-2D Advanced Hawkeye to complete periodic maintenance interval two (PMI-2).

FRCSW returned the aircraft to Airborne Command & Control Squadron (VAW) 120, headquartered at Naval Station Norfolk, Virginia. The Hawkeye was inducted in August 2018.

Developed to replace the Navy’s existing E-2C airborne early warning system aircraft, the E-2D is the fourth variant and manufactured by Northrop Grumman.

FRCSW performs two levels of scheduled maintenance on the airframe: a light periodic maintenance interval one (PMI-1) which is done at FRCSW Site Point Mugu, California, and FRC Mid-Atlantic, and PMI-2, or a heavy maintenance, at Naval Air Station North Island, San Diego, California.

FRCSW is the Navy’s sole provider of PMI-2 events on the E-2 airframe, and the 135-member staff assigned to the program will add the maintenance of the E-2D to their existing E-2C workload.

PMI is based upon a 96-month cycle: PMI-1 completed every 48 months, followed by PMI-2 48 months later.

PMI-1 targets specific areas of the airframe (primarily the tail) where artisans inspect for corrosion, cracks, mechanical and electrical issues. The procedure requires about a 45-day turnaround time.

Though not a complete overhaul, PMI-2 is a major disassembly of the aircraft to the fuselage. Artisans remove the aircraft’s wings, engines, landing gear and tail. The aircraft’s corrosion preventive



An E-2D Advanced Hawkeye, attached to the “Bluetails” of VAW-121, maneuvers into launching position on the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).

paint is removed and an in-depth metal assessment is performed targeting cracks, corrosion, exfoliation and other surface anomalies.

If customers authorize repairs that are outside of the scope of specification, the work is classified as an in-service repair (ISR). ISRs are funded separately and normally completed during the PMI event.

ISR work involving the replacement of some fiber optic lines in the VAW-120 aircraft was completed, while artisans also performed an age-exploration analysis to the landing gear and rotodome.

FRCSW is currently performing PMI-2 on a second VAW-120 aircraft and recently inducted another E-2D from Air Test and Evaluation Squadron (VX) 20, based at Naval Air Station Patuxent River, Maryland.

From Fleet Readiness Center Southwest Public Affairs. 🇺🇸

HSC-9 Sailor Receives Navy and Marine Corps Medal for Heroic Actions

NORFOLK, Va.—A U.S. Navy Sailor who was at the right place, at the right time in October 2019 was recognized for his heroic actions with the prestigious Navy and Marine Corps Medal on Dec. 1 aboard Naval Station Norfolk.

Naval Helicopter Aircrewman 1st Class George Parsons III, assigned to Helicopter Sea Combat Squadron (HSC) 9, was at his Elizabeth City home on Oct. 24, 2019, when a police officer came through his neighborhood chasing an assailant. When he saw that the assailant was trying to take the officer's weapon, Parsons sprang into action and helped detain the suspect.

Parsons has received other accolades for his bravery, such as recognition from the Elizabeth City Mayor, Bettie J. Parker who awarded him with a Mayoral Certificate of Appreciation last November thanking him for his assistance in aiding the Elizabeth City Police Department.

"I am honored to receive an award like this," said Parsons, who had no idea the

squadron was set-up in a formation to recognize him for his bravery.

During the ceremony, Rear Adm. John Meier, Commander, Naval Air Force Atlantic, presented the Navy and Marine Corps Medal to Parsons in front of his entire squadron and upper echelon leadership.

"The fact that you responded so immediately without thinking about your own personal safety and only thinking about how to defend that law enforcement officer truly reflects credit on yourself, on our Navy and Naval Aviation, and the squadron," Meier said. "I am honored to be here to today to meet you and present the award."

Cmdr. Michael Marks, HSC-9 Commanding Officer, who served as the executive officer at the time Parsons rendered assistance to the Elizabeth City police officer, emphasized the importance of receiving this prestigious award for his Sailor's actions.

"Amazing to see this award come to fruition," Marks said. "I have never seen this award presented before. It is the highest non-combat decoration awarded for heroism."

Marks added that Parsons is the best embodiment of our all-volunteer service who make up less than 1 percent of the U.S. population who serve.

HSC-9 employs the MH-60S in a variety of missions to include anti-surface warfare, strike coordination and reconnaissance, intelligence, surveillance and reconnaissance, maritime interdiction operations, helicopter visit board search and seizure, anti-terrorism force protection, personnel recovery, combat search and rescue, search and rescue, plane guard, special operations, medical evacuation, non-combatant evacuation, vertical replenishment and disaster relief.

From Commander, Naval Air Force Atlantic, Public Affairs. 🦅



Rear Adm. John Meier, Commander, Naval Air Force Atlantic, awards Naval Helicopter Aircrewmen 1st Class George Parsons III, assigned to Helicopter Sea Combat Squadron (HSC) 9, the Navy and Marine Corps medal.

U.S. Navy photo by MC3 Sam Jenkins



Photo courtesy of The Boeing Company

The first jet to undergo Service Life Modification at The Boeing Company's San Antonio site taxis to the runway in preparation for return to its squadron in January.

Service Life Modification on Super Hornets Ramps Up

PATUXENT RIVER Md.—The U.S. Navy received delivery of the fourth and fifth F/A-18E/F Super Hornet to undergo Service Life Modification (SLM) in January—and the first completed at The Boeing Company's second modification line in San Antonio, Texas.

The three previous jets underwent the series of modifications in St. Louis, Missouri, returning to the fleet fully mission capable, with flight hours extended. The Navy expects delivery of the next completed jet out of St. Louis later in February.

"With two lines now conducting SLM, the Navy will be able to have more updated Super Hornets in the inventory, further bolstering readiness," said F/A-18 and EA-18G Program Manager Capt. Jason Denney.

Between the two locations, there have been 25 aircraft

inducted to date and the program continues to apply lessons learned along the way while reducing costs and increasing efficiency, said Sarah Banagan, the Navy's SLM Lead.

SLM efforts are expected to continue for several years, with inductions increasing over time. In the future, the San Antonio line will handle a higher portion of the jets slated for SLM.

"The SLM lines are the Navy's key enabler to minimize strike fighter shortfalls and will position the Navy to extend the life of the EA-18G Growler as well," said Ann Wood, deputy program manager for F/A-18E/F.

The latest modified Super Hornet has been delivered to Strike Fighter Squadron (VFA) 122 at Naval Air Station Lemoore, California.

Written by Carrie Munn, F/A-18E/F and EA-18G Program Office Communications Support. 🇺🇸

First Woman Will Command Aircraft Carrier

SAN DIEGO, Calif.—The Navy announced in December that Capt. Amy Bauernschmidt will assume command of USS Abraham Lincoln (CVN 72), marking the first time a woman commanding officer will lead the crew of one of the Navy's 11 nuclear-powered aircraft carriers.

Bauernschmidt will take command of Lincoln this summer, upon completion of the nuclear power, aviation and leadership training required of aircraft carrier COs.

"I am incredibly honored and humbled to be selected," Bauernschmidt said. "I love leading Sailors and I take that responsibility extremely seriously."

Bauernschmidt was also the first woman to serve as the executive officer aboard an aircraft carrier, a position she held from September 2016 to January 2019, also on the Lincoln.

Bauernschmidt is a native of Milwaukee, Wisconsin, and graduated from the United States Naval Academy in May 1994, the first graduating class in which women were allowed to serve aboard combatant ships and aircraft. She was designated as a naval aviator in 1996 and served with several helicopter squadrons throughout her career. She has previously commanded the "Spartans" of Helicopter Maritime Strike Squadron (HSM) 70 and amphibious transport dock USS San Diego (LPD-22).

From Naval Air Force Pacific, Public Affairs. 🇺🇸



U.S. Navy photo by MC1 Benjamin K. Kittleson

On March 2, 2020, Capt. Amy Bauernschmidt, then-Commanding Officer of San Antonio-class amphibious transport dock ship USS San Diego (LPD 22), observes sea and anchor detail on the bridge of the ship.



U.S. Navy photo

The Tactical Combat Training System Increment II (TCTS II) pod successfully completed its initial hardware qualification testing with an F/A-18F Super Hornet at Naval Air Station Patuxent River, Md., in December.

Navy Tests Next-Generation Air Combat Training System on Super Hornet

PATUXENT RIVER, Md.—The Naval Aviation Training System and Ranges Program Office recently began testing its next-generation air combat training system, the Tactical Combat Training System Increment II (TCTS II), on an F/A-18F Super Hornet at Naval Air Station (NAS) Patuxent River.

The second flight test with two F/A-18E aircraft followed in quick succession.

Air Test and Evaluation Squadron (VX) 23 conducted the flight tests and the program office test team collected and analyzed the data in real time with its industry partner, Collins Aerospace Systems.

“Our team faced software, COVID and platform challenges but worked with urgency to stay on track for low-rate initial production decision

in April. The fact that the date has not changed since contract award in 2017 speaks volumes of not only our team but also the level of support from the Navy to field this capability,” said Capt. Lisa Sullivan, Training System and Ranges program manager.

The TCTS II system is an open architecture system enabling highly secure air combat training between aircraft, replacing and advancing the existing range training infrastructure. The TCTS II system is the first certified encrypted, multi-level security training pod that communicates with both airborne and ground equipment.

“This is the first time the team has been able to see the system in use in a real-world environment using an operational platform. These tests provide valuable insight into system perfor-

mance, including pod-to-pod and pod-to-ground datalink performance, positional accuracy and weapon simulations,” said Jake Kiehlmeier, TCTS II lead test engineer.

The Air Force joined the Navy’s TCTS II program, leveraging investments made by the Navy and delivering training capabilities sooner and at a lower cost. The services are working together to develop and use this system to train against real-world threats.

“This is just the beginning of how this system and integration of additional live, virtual, constructive capabilities in the portfolio will revolutionize training for the U.S. Air Force and the Navy alike,” Sullivan said.

From Program Executive Office (Common Support) Public Affairs Office. 🦋

F-35 Simulator Building Unveiled

MIRAMAR, Calif.—The Marine Corp’s 3rd Marine Aircraft Wing (MAW) dedicated its inaugural F-35 Lightning II simulator building Jan. 21 aboard Marine Corps Air Station Miramar. This marks the next step in streamlining the training process of the fifth-generation joint strike fighter.

In addition to providing a much more efficient means of producing highly trained pilots to operate the stealth fighter, this simulator will allow 3rd MAW aviators to train, rehearse and refine their integrated abilities alongside the Navy and other Marine Corps allies operating across the globe.

“The building is a result of the teamwork and dedication of Marines that everyone talks about,” said Maj. Gen. Christopher Mahoney, 3rd MAW Commanding General. “This allows us to take another step against our adversaries, and my hat’s off to this team.”

Flight simulators are an essential tool and an integral part of Marine Aviation training that allow 3rd MAW squadrons to

hone critical skills in simulated environments while refining their ability to conduct operations with a variety of aviation platforms in multiple environments from a centralized location.

“Distributed mission training will have the ability to integrate with other Navy and Marine Corps assets that are off site,” said Jennifer Moore, Training and Operations Manager for Lockheed Martin. “We’ve got the F-35 simulators here on site that we’re going to be able to link with Navy air wing operations they’re going to be flying with in combat, as well as integrates other Marine Corps units, and be able to have everybody join on the same simulated environment. The Air Force has their own distributed mission training network and the next step would be to get connected and let all the services play in the same domain.”

Written by 1st Lt. Charles Allen with 3rd Marine Aircraft Wing. 🇺🇸



Maj. Gen. Christopher Mahoney, 3rd MAW Commanding General, stands in front of the F-35 Lightning II Simulator Building at Marine Corps Air Station Miramar, Calif.

U.S. Marine Corps photo

SAYING GOODBYE

EVOLUTION TO CMV-22B OSPREY MEANS SUNDOWN OF 'VENERABLE' GREYHOUND

By Rob Perry

When the Navy officially announced the introduction of the CMV-22B Osprey as the future of carrier onboard delivery (COD) in 2015, it did not come as a great shock to those who knew its predecessor inside and out.

A C-2A Greyhound, assigned to Fleet Logistics Squadron (VRC) 30, banks prior to landing.

With the stand up of a new CMV-22B-dedicated wing and squadron on the West Coast—and plans to stand up another squadron on the East Coast—the sundown of the C-2A Greyhound is well underway.

Whenever there has been a need to deliver personnel or equipment from shore to ship, the Navy has looked to the C-2A as its COD workhorse for more than four decades.

"They are Grumman products—they're sturdy, fairly reliable," said Cmdr. Adam N. "Angry" Heil, former Commanding Officer of Fleet Logistics Squadron (VRC) 40, who

has spent his entire flying career piloting the C-2A with more than 3,500 hours behind the stick.

"[The C-2A] is basic, it's a simple aircraft. You don't have many complex systems to it," said Aviation Electronics Technician Senior Chief Randy Hoag, quality assurance lead with Fleet Logistics Multi-Mission Squadron (VRM) 30. Hoag has spent six years maintaining the Greyhound. "That is what has kept it going for so long; it was pretty easy to maintain."

Production of the C-2A began in 1965 and it became part of the Navy's logistics team in 1966. Since then, the Greyhound has transported countless tons of supplies,

mail, high-priority cargo and Sailors between shore bases and deployed aircraft carriers. The aircraft was re-procured from 1985-1990. Over the next several decades, the aircraft underwent modifications and service life extensions, keeping it service-worthy through 2028.

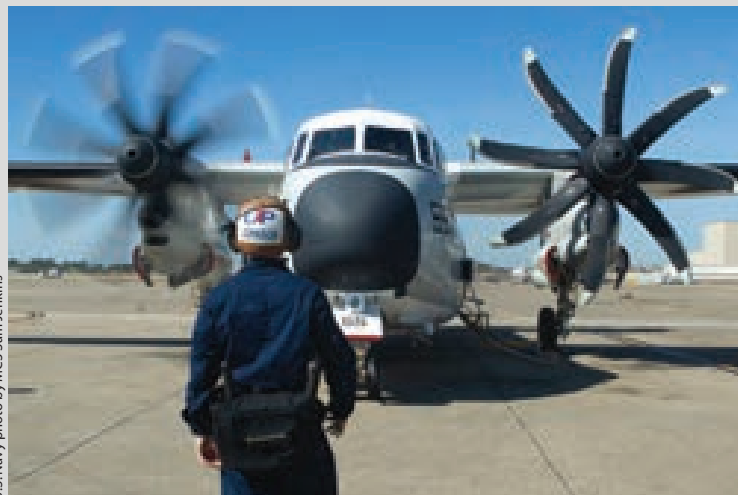
In addition to its age, one of the major factors in retiring the C-2A is its inability to carry the massive engine power module for the F-35C Lightning II, which the CMV-22B allows. As the fifth-generation F-35C prepares for deployment this year, the relatively new CMV-22B—a modified version of the Marine Corps MV-22B—will deploy in support. Testing

TO THE C-2A



U.S. Navy photo by MC3 Sam Jenkins

Aviation Machinist Mate (AD) 1st Class Terrell Williams, with VRC-40, inspects the propellers for damage on a C-2 on the flight line onboard Naval Station Norfolk, Va.



U.S. Navy photo by MC3 Sam Jenkins

Naval Air Crewman (Mechanical) (AWF) 3rd Class Michael Johnson, with VRC-40, prepares a C-2 for launch on the flight line.

the Osprey's ability to take over COD missions began in 2016 and the first CMV-22B was delivered to the Navy in February 2020. After testing, the CMV-22B arrived at North Island for operational use in June 2020. As of January, six CMV-22Bs have been delivered to the fleet with fleet delivery scheduled to continue until all are delivered.

The CMV-22B will be capable of transporting up to 6,000 lbs aircraft gross weight of cargo and/or personnel over a 1,150 nautical mile range. The increased range is a result of two new 60-gallon tanks installed in the wing for an additional 120 gallons of fuel and the redesign of the forward sponson tanks for additional capacity. The Osprey's ability to take off and land vertically, as well as short-takeoff-and-land, makes it more versatile than the stalwart C-2A, further allowing the Osprey the flexibility to serve any shore or sea base as well as aircraft carriers and amphibious ships.

"The nice thing about the Osprey is

that we're able to load everything into the back end with a forklift and roller rail systems, which makes things a lot quicker and less back-breaking for the aircrewmembers," Hoag said.

"If you ask 10 different pilots you are going to get 10 different answers," Heil said when asked the about differences between the C-2A versus the CMV-22B. "If you look at how much the two types of aircraft can carry, and how far and how fast they can carry it, the capabilities are roughly the same. The bigger point is the flexibility the CMV-22B brings to the fight. The Osprey does not require a large shore airport and has the ability to land on ships other than aircraft carriers."

The CMV-22B also offers better creature comforts than the Greyhound. "Because the V-22 lands just like a helicopter instead of using a tail hook, crewmen and distinguished visitors are not getting jarred around so much in there," Heil said.

'OLD FAITHFUL'

When Heil began flying Greyhounds in 2003, there was already talk of moving on from the aircraft.

"It takes so long to decide on a new aircraft—to plan it, to test it, to field it," Heil said. "I knew from the beginning we were eventually going to replace the C-2A, and we knew it was either going to be a rebuilt version of the C-2A by Northrop Grumman, or the V-22 by Bell Boeing."

The reliability of the C-2A and its relative ease of maintenance has extended its service life into the 21st century.

"One of the biggest advantages you have with the C-2A platform is the commonality with the E-2 Hawkeye," Heil said. "The C-2A was a modification of the E-2, and while both platforms have diverged a bit, they're very similar, which means some parts are interchangeable. More importantly, maintainers who work on the E-2 are usually also qualified to work on the C-2A, which reduces the size of the ship's maintenance detachment. We can rely completely on the E-2 squadrons to do our shipboard maintenance."

The ability of the C-2A to dispatch in a hurry stood out for Heil, particularly during his first deployment aboard USS Abraham Lincoln (CVN 72) in 2004.

Photo courtesy of Raymond Rivard

A mega-earthquake under the Indian Ocean on Dec. 26 triggered a tsunami that struck Sumatra, Indonesia, killing hundreds of thousands of people and costing billions of dollars in damage. With U.S. Navy personnel nearby, the speed of aid to the victims was incredible. When the tsunami struck, Lincoln was in Hong Kong and Heil's squadron was in Okinawa, Japan.

"We got a call the day after Christmas saying, 'We need you in Singapore,'" Heil recalled. "Within 24 hours, we had everything packed up and we flew to Singapore, and 24 hours later we were conducting relief missions to Indonesia and Thailand

That's pretty much what made it a great, reliable aircraft for so long."

"Of course, like everything, once it starts getting older, you start seeing more and more things start failing on it," Hoag said. "But even so, it's still a good aircraft. When my maintainers and I are flying in it, everyone has trust and faith in it."

ON TO THE OSPREY

VRM-30 was the first CMV-22B squadron and was stood up at Naval Air Station North Island, Coronado, California, in 2018. A year later, the Navy established Fleet Logistics Multi-Mission Wing (COMVRMWING) at North Island. The

CMV-22B squadrons and will gradually sundown the Greyhound squadrons as the new squadrons come up to strength through 2024. The VRC squadrons must remain online completing their mission until relieved by the VRM squadrons. VRC-30 is scheduled to be the first Greyhound squadron to start the stand down process next summer.

"Our role stays the same," Heil said. "The only difference is that some of our pilots and maintainers will be going to the new platform. Currently about half of the departing VRC-40 pilots end up going to the CMV-22B. Eventually, they'll all have to go."



Photo courtesy of Raymond Rivard

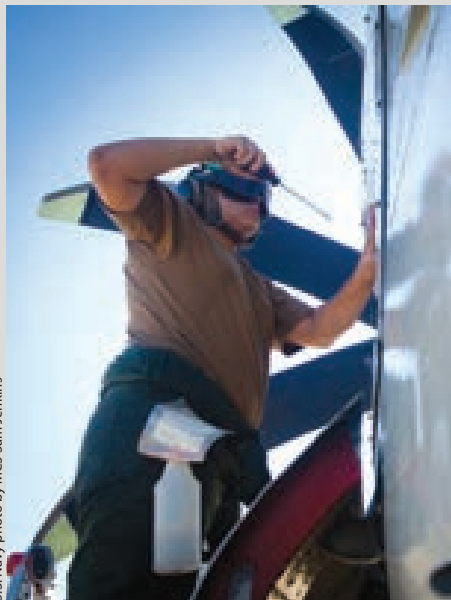
Aviation Electronics Technician Senior Chief Randy Hoag, quality assurance lead with Fleet Logistics Multi-Mission Squadron (VRM) 30, poses with a CMV-22B Osprey.

almost 'round the clock. We did that for over a month."

"The ability to pick up at a moment's notice and make a difference immediately is, I think, unique to the C-2A," Heil said. "We were doing logistics well before the larger assets could get there. For the first week or so, we were the only ones getting supplies and relief into the area."

Hoag said the Greyhound's reliability and sturdiness made it "Old Faithful."

"The C-2A is awesome," he said. "It's pretty basic on the inside, there isn't a lot of stuff that could really go wrong with it.



U.S. Navy photo by MC3 Sam Jenkins

AD3 Diego Cenicerros, with VRC-40, performs a daily inspection on a C-2A engine.

current COD squadron at NAS North Island, VRC-30, is in the process of transitioning personnel and logistics to support the CMV-22B. The East Coast VRM squadron, VRM-40, will be established in fall 2021 and temporarily based at NAS North Island with a planned move to Naval Station Norfolk in 2023. VRC-40, based at Norfolk, is also making transition moves to support the Osprey.

Rather than introduce CMV-22Bs to existing COD squadrons and transitioning the pilots and maintainers to the new aircraft, the Navy opted to stand up new



U.S. Navy photo by MC3 Sam Jenkins

Aviation Electronics Technician (AT) Airman James Stith, with VRC-40, lubricates the landing gear on a C-2A.

To date, 18 C-2A pilots have completed Osprey training. Ultimately, the goal is to train about 115 C-2A pilots on the new platform by the time it is at full operational capacity and deployed to the fleet.

Regarding the transition of maintainers to the new platform, Heil says there is a delicate balance with talent as the Navy continues to maintain the C-2A while transitioning to the CMV-22B, though VRC-40 has not had much difficulty in maintaining that balance so far.

Hoag, who made the transition from

VRC-30 to VRM-30, trained on the MV-22B with Marine Medium Tiltrotor Squadron (VMM) 164 at Marine Corps Air Station Camp Pendleton in California. Having spent 18 years working on helicopters, the transition to the Osprey was smooth.

“When you’re first jumping into it, you don’t know what you are getting into, but I was excited to do that,” Hoag said.

Hoag pointed out that the CMV-22B can do more than fly logistics missions. “We can do search and rescue and take troops into combat zones if need be,” he said. “It changes our mission up quite a bit. We’re a lot more versatile now.”

“With the assistance of Commander, Naval Air Forces, the U.S. Marine Corps, the V-22 Program Office, OPNAV N98, Bell-Boeing and the Airborne Command & Control and Logistics Wing, we have been able to stay very close to plan despite schedule, budget and pandemic concerns. This is a true testament to the men and women committed to the success of the VRM community. We’re excited to witness the flexibility the CMV-22B will bring to the fleet and the carrier strike group,” said Capt. De-won “Chainsaw” Chaney, Commodore, COMVRMWING.

One aspect of the C-2A community that Heil hopes carries over to the new platform is the culture that has been built over the Greyhound’s many decades of service.

“An airplane is just an airplane. It is the culture of the community that I think is unique in Naval Aviation. The VRC community has a fairly unique skillset, and we’ve built a culture over the years that I hope is continued in VRM,” Heil said. “I think that is more important than the actual aircraft. The mission is going to get done, the plane is going to perform, they’re going to go out and deploy and do great things, but the more important thing is to keep that professional expertise and that culture that we’ve built going.”

Rob Perry is editor and staff writer for Naval Aviation News. 🦅

LAST C-2A UNDERGOES FINAL MAINTENANCE CYCLE

Fleet Readiness Center Southwest (FRCSW) has been extending the service life of the C-2A Greyhound transport through a variety of maintenance plans and modifications since 2001.

FRCSW’s mission to keep the airframe active is winding down with the arrival last summer of the last C-2A to undergo planned maintenance interval three (PMI-3), the final interval in the maintenance cycle.

The C-2A is serviced under an 83-month, three-cycle program. The PMI-1 and 2 maintenance events take about 30 days each to complete, while PMI-3, the most comprehensive assessment, requires 270 days, costs just under \$4 million and includes evaluation, disassembly, repair and painting of the aircraft.

“Other C-2As will induct for the much smaller PMI-1 and 2 events and most likely will also have in-service repairs. Field events for PMI-1 and 2 are scheduled out to fiscal 2022,” said Jorge Gutierrez-Lopez, FRCSW Props IPT program scheduler.

The depth of some of the maintenance and repairs performed during PMI-3 are similar to those of the C-2A Service Life Extension Program (SLEP) established by the Navy 19 years ago. SLEP extended the operating service life of the airframe by more than 4,000 catapults and trappings, and approximately 15,000 flight hours.

“During SLEP the wing center section (WCS), which the outer wing panels attach to, was removed from the fuselage. The fuselage would rest on bucks in the hangar and the WCS went in the back shop for repairs. The upper skin was also removed from the WCS for major repairs and reinforcement. Complete rewire inside the fuselage was also done at this time,” Gutierrez-Lopez said.

The procedure targeted the structural integrity of the airframe and replaced the wing hinge fittings and installed stronger fasteners along the longerons to enhance support of the fuselage.

A significant rewire to the airframe occurred in 2009 with the installation of the Communications, Navigation, Surveillance/Air Traffic Management System, which was an upgraded avionics and navigation system required for aircraft operating in international airspace.

—From Fleet Readiness Center Southwest Public Affairs. 🦅



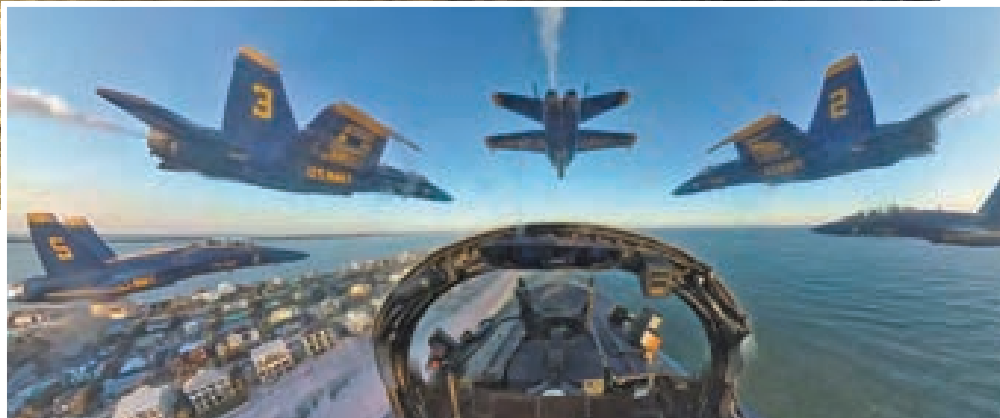
The final C-2A Greyhound transport to undergo PMI-3 at Fleet Readiness Center Southwest prepares for its induction flight to check the aircraft’s vital systems including the engine, hydraulics and radar at the command’s test line.

Blue Angels Legacy Hornets *Take a Bow*

The U.S. Navy Flight Demonstration Squadron, the Blue Angels, conducted their final flight in the F/A-18C/D "Legacy" Hornet along Pensacola Bay near their home base at Naval Air Station (NAS) Pensacola, Florida. This Nov. 4 flight marked the Blue Angels' official transition to the F/A-18E/F Super Hornet platform after 34 years of flying the Hornet. In January, the team began conducting their winter training at Naval Air Facility El Centro in California to prepare for the 2021 season. They are flying roughly 30 formation flights per week in their new Super Hornets as they gear up for their 75th show season. 🦋



U.S. Navy photo by MC2 Cody Hendrix



U.S. Navy video capture by PO1 Jess Gray



U.S. Navy photo by MC2 Christopher Gordon

Blue Angels Train at Patuxent River

In December, Blue Angels pilots and support officers traveled to NAS Patuxent River, Maryland, to train in the Naval Air Warfare Center Aircraft Division's Manned Flight Simulator (MFS) as part of their transition to the F/A-18E/F Super Hornet. The team conducted maneuver training and practiced emergency procedures in effort to maintain the strict safety standards of the flight demonstration.

The MFS facility provides high-fidelity, hardware-in-the-loop flight simulation capabilities and expertise supporting research, development, test and evaluation of Navy and Marine Corps aviation platforms. Areas of support include live-virtual-constructive simulation, interoperability testing, avionics software development and regression testing, flight test mission rehearsal, flying qualities and performance evaluations, human factor evaluations, accident investigations, rapid prototyping and pilot currency. ✈️

U.S. Navy photo by MC2 Christopher Gordon



U.S. Navy photo

Lt. Cmdr. James Haley, the right wingman for the 2021 Blue Angels, practices in the Super Hornet Manned Flight Simulator for the 2021 show season.

LAST CALL FOR WHISKEY

AH-1W Super Cobra Retires

By Joy Shrum

After more than 30 years of service, the U.S. Marine Corps retired the AH-1W Super Cobra, affectionately called “Whiskey,” during a sundown ceremony at Naval Air Station Joint Reserve Base New Orleans, Oct. 14.

Marine Corps Lt. Col. Charles Daniel, executive officer for Marine Light Attack Helicopter Squadron (HMLA) 773 Detachment A, and Maj. Patrick Richardson conducted the final flight of the Marine Corps’ last AH-1W.

Both pilots said it was an honor to be selected to fly the final flight. For Daniel, the flight was a culmination of the aircraft’s career and his own.

“I’m set to retire in the spring, and I have flown the Whiskey my entire career,” Daniel said. “The aircraft has done everything I’ve ever asked it to do and brought me back safely.”

During the sundown flight, Daniel and Richardson were joined by an AH-1Z and a UH-1Y as they flew around New Orleans. Richardson said it was a bittersweet time in the air.

“I never thought I’d be one of the last

guys to fly the Whiskey. It was an honor,” Richardson said.

AH-1 History

The AH-1W Super Cobra is a twin-engine, tandem-seat attack helicopter. Designed to provide armed escort, the Whiskey provided support to warfighters since the mid-’80s. The distinct thumping sound of the two overhead rotor blades offered assurance to Marines conducting both land- and sea-based operations and formed the backbone of the Marine Corps’ air-ground task force.

In addition to escort support, the Whiskey’s primary roles were to provide fire support and security of forward and rear area forces; conduct point-target/anti-armor and anti-helicopter operations; provide armed escort, control and coordination for assault support operations; control, coordinate and provide terminal guidance for supporting arms including artillery,



U.S. Navy Capt. Todd Marzano, Commanding Officer of San Antonio-class amphibious transport dock ship USS Arlington (LPD 24), pilots an AH-1W Super Cobra attack helicopter with the 22nd Marine Expeditionary Unit (MEU).

U.S. Marine Corps photo by Staff Sgt. Andrew Ochoa



Two AH-1H Super Cobra helicopters from Marine Medium Helicopter Squadron (VMM) 163, attached to the 13th MEU (Special Operations Capable), fly adjacent to one another during Exercise Bright Star in 2008.

U.S. Marine Corps photo by Cpl. Summer S. Dowding



A U.S. Marine Corps AH-1W Super Cobra, assigned to Marine Aviation Weapons and Tactics Squadron (MAWTS) 1, fires rockets during an evolution at Mt. Barrow, Chocolate Mountain Aerial Gunnery Range, Calif., in 2016.

An AH-1W Super Cobra helicopter from VMM-262 (Reinforced), 31st MEU, flies over the Pacific Ocean during a fire support training exercise in 2016.



U.S. Marine Corps photo by Cpl. Darien J. Bjorndal

mortars, naval surface fire support and close air support; and conduct armed and visual reconnaissance.

The Super Cobra carries two tandem pilots, can reach a maximum speed of 175 miles per hour and has a range of 358 miles.

The development of Bell Helicopter's AH-1 HueyCobra dates back to the 1960s when American forces in Vietnam needed a light, fast and armed escort designed to target enemy forces with unmatched accuracy. The AH-1 evolved from the UH-1, using the same rotors, drives and engines. It originally received the designation of UH-1H but was changed to "A" for attack. The aircraft then became the AH-1G because it was a variant of the H-1 line, resulting in the "G" series letter but retained the Cobra nickname.

The Cobra went from design to first flight in six months and entered combat in September 1967.

The Marine Corps used the AH-1G in Vietnam for a short time but desired a twin-engine version to increase survivability, particularly in a maritime environment. The Marines also wanted a more potent turret-mounted weapon. In May 1968, Bell was awarded a contract for 49 twin-engine AH-1J SeaCobras that included a more powerful gun turret.

In the 1970s, the Marine Corps requested greater load carrying capability in high temperatures for the Cobra. Bell developed the AH-1T Improved SeaCobra, which had a larger main rotor, lengthened tailboom and fuselage and upgraded transmission and engines.

In the early 1980s, the Marines requested a more powerful version of the AH-1T, including modified fire control systems to carry and fire AIM-9 Sidewinder and AGM-114 Hellfire missiles. The new version received the AH-1W Super Cobra designation.

The Super Cobra continued to serve the Marine Corps as one of the most versatile and capable platforms. Bell delivered a fleet of 179 Super Cobras for the Marine Corps between 1986 and 1999. During three decades of support, the Super Cobra racked up 933,614 flight hours, deploying around the world.

The Whiskey deployed in the Gulf War in the early 1990s. The aircraft flew more than 1,200 sorties with zero losses. The Super Cobra was also credited with destroying 9,700 tanks, 104 armored personnel carriers and other vehicles.

The Super Cobra continued to serve with distinction through the Gulf War, Operation Iraqi Freedom, Operation

Enduring Freedom, Eyes Over Mogadishu (Somalia), Haiti and the Balkans.

Richardson started flying the Whiskey in 2007 and completed three combat deployments with the aircraft, one to Iraq and two to Afghanistan, and can speak to the direct impact the Whiskey had on the battlefield.

"For the majority of 'troops in contact' or 'Urgent MEDEVAC' escort missions we flew, the mere presence and distinctive sound of the Whiskey arriving overhead of the battlefield would bring the fighting to an end, with the enemy withdrawing or ceasing fire. This led the Marines on the ground to develop a love affair with the Whiskey, and reliance not only on its lethal fire power, but its presence in the overhead to keep them safe," Richardson said.

Richardson credits the tireless work ethic, dedication, professionalism and pride of the Marines who maintained the aircraft, both at home and while deployed to combat, for the aircraft's reliability.

"It's been a phenomenal aircraft. I have a lot of great memories and friends I've made along the way," Richardson said. "The Marines that maintained the aircraft have been phenomenal."

When reminiscing about their years flying the aircraft, both pilots agreed it was unlike flying anything else.



U.S. Marine Corps photos by Master Sgt. Robert Brown

Maj. Patrick Richardson, a pilot with Marine Light Attack Helicopter Squadron (HMLA) 773, and Lt. Col. Charles Daniel, executive officer of HMLA-773, stand by prior to the final flight for the AH-1W Super Cobra on Oct. 14 at Naval Air Station (NAS) Joint Reserve Base New Orleans.



The AH-1W Super Cobra takes its final flight during the Whiskey Sundown Ceremony in New Orleans Oct. 14.

"You don't strap into the aircraft, you strap the aircraft on to you," Richardson said. "When you're in the aircraft, you feel like you're a part of it."

The Super Cobra underwent several major upgrades over its 34 years of service. It was the first attack helicopter to qualify both the Sidewinder air-to-air missile and the Sidarm anti-radiation missile.

The AH-1W included a night-targeting system with a forward-looking infrared, low-light TV laser-designator/rangefinder and an auto-track system. An embedded GPS/inertial navigation system integrated the helicopter's navigation and weapons system to provide accurate targeting to the crew.

The Marine Corps Light/Attack Helicopters Program Office, located at Naval Air Station Patuxent River, Maryland, manages the cradle to grave procurement, development, support, fielding and disposal of its rotary-wing close-air support, anti-armor, armed escort, armed/visual reconnaissance and fire support program systems.

Program Manager Col. David Walsh spent many hours in the pilot seat of the AH-1W.

"I have experienced firsthand the privilege and thrill of flying and fighting in this

magnificent machine," Walsh said. "It has served me, and hundreds of other AH-1W pilots, faithfully during decades of deployments and combat operations around the world. I can't think of a better platform to have flown—except for the AH-1Z!"

AH-1 Future

The H-1 legacy continues with the new, more advanced, AH-1Z Viper, which reached Initial Operational Capability status in 2011 and has been gradually replacing the aging Super Cobras.

The AH-1Z has a four rotor-blade system, upgraded landing gear, performance-matched transmission and a fully integrated glass cockpit. The Viper is equipped with an integrated advanced fire control system and has the capacity to support multiple weapons configurations.

The upgrades also allow the aircraft to carry more fuel enabling the pilots to get to troops faster and stay longer. It shares 86-percent parts commonality with the UH-1Y, resulting in reduced life-cycle costs and the aircraft's logistics footprint, while increasing the maintainability and deployability.

"The AH-1W Super Cobra has served admirably for 35 years and leaves a tremendous legacy of on-time, on-target attack he-

licopter support for our Marines. Although the AH-1W chapter is closing, the AH-1Z Viper stands ready with even greater capability to support our Marines for years to come," Walsh said.

Richardson has transitioned from the Super Cobra to the Viper. He said aside from the advanced avionics, the biggest difference is that the pilots can do everything from both seats.

"You have a lot more information at your fingertips with the glass cockpit," he said.

As the Marine Corps advances into the future with the AH-1Z, Richardson said he will never forget flying the AH-1W.

"It's been an absolute joy to fly. I'll miss going out and flying it every day," Richardson said.

Daniel agreed and added he will miss supporting the Marines on the ground.

"It feels like an extension of your body and I'll miss flying it," Daniel said. "And the guys on the ground, they seem to love us, and I'll miss all of that."

The AH-1Ws will continue to serve abroad with Iran, Taiwan and Turkey with the possibility of more foreign customers purchasing them in the future.

Joy Shrum is a communication specialist with the H-1 Program Office. 🍁



Presidential Sea King Monument to

By Paul Lagasse

After a 32-year career supporting the development of new fleet technologies, a historic Sikorsky NVH-3A Sea King helicopter assigned to Air Test and Evaluation Squadron (HX) 21 at Naval Air Station (NAS) Patuxent River, Maryland, has flown its last mission—and a program executive with a special tie to the aircraft is looking for a new permanent home where its story can be shared.

While 614 is well-loved by the men and women of HX-21, the aircraft has a unique meaning to Glenn Perryman, deputy program executive officer for Air Anti-Submarine Warfare, Assault and Special Mission Programs (PEO(A)). From 1971 to 1974, Perryman's father, Col. James Perryman Jr., served as commanding officer of Marine Helicopter Squadron (HMX) 1, and flew 614. In fact, Col. Perryman flew President Nixon twice on 614.

The dark-green Sea King, known universally as "614"—in reference to its military serial number, 150614—rolled off the Sikorsky Aircraft assembly line in 1962 as a Sikorsky HSS-2 then later redesignated SH-3A. A decade later, the aircraft was assigned to HMX-1, where it was redesignated VH-3A and served for four years as a presidential helicopter for Presidents Richard Nixon and Gerald Ford. After a brief stint with Helicopter Combat Support Squadron (HC) 6, the Marine Corps transferred 614 to the Military Aircraft Storage and Disposition Center at Davis-Monthan Air Force Base in Arizona. There it rested for seven years, after accumulating a mere 4,500 hours of flight time.

In 1984, the aircraft was pulled out of storage and underwent



U.S. Navy photo by Adam Skoczylas

Glenn Perryman, deputy program executive officer for Air Anti-Submarine Warfare, Assault and Special Mission Programs, stands in front of Sikorsky NVH-3A Sea King BuNo 150614, which his father flew as Commanding Officer of Marine Helicopter Squadron (HMX) 1.

depot maintenance, and in 1988 arrived at the then-Naval Air Test Center (NATC) at NAS Patuxent River. Given the one-of-a-kind designation NVH-3A, 614 spent the next 25 years as a testbed for innovations in sensors, avionics, radios, computer hardware and software, composite rotor blades and more. It even hosted the Navy's first successful demonstration of satellite Wi-Fi in a rotary wing aircraft.

After 614 was stripped to its metal bones in 2013 for a cockpit



Father's Legacy



Photo courtesy of Glenn W. Perryman

Col. James Perryman Jr., Commanding Officer of HMX-1 from 1971 to 1974, is shown standing in the doorway of Sikorsky NVH-3A Sea King BuNo 150614, which was later assigned to HX-21 at Naval Air Station Patuxent River, Md.

modernization project that was canceled before the aircraft could be refitted, HX-21's Presidential Helicopter Maintenance Team and flight test team undertook an unprecedented effort to return the aircraft to service as a VH-3D testbed. They installed a new power plant, drivetrain, rotors and landing gear, as well as new electrical, avionics and fuel systems, and machined more than 200 custom parts. On April 4, 2017, the fully rebuilt aircraft took to the air once again.

For three more years, 614 flew in support of a wide range of innovative test programs at NAS Patuxent River, including secure wide-band line-of-sight communications technologies, night vision equipment for the executive transport mission, high-speed rotor and engine shaft track and balance functions, and test flight exercises with U.S. Naval Test Pilot School students. But on Oct. 22, 2020, 614 made its final flight and the aircraft now rests inside one of HX-21's hangars, awaiting the next chapter in its storied life.

The elder Perryman served two combat tours in Vietnam before joining HMX-1—and 614 was the first VH-3A he flew at his new squadron. By the time he completed his squadron commander tour, Col. Perryman had made 48 flights in 614 totaling just over 66 hours' flying time. Col. Perryman died on New Year's Eve 2013 at the age of 80—the same year that the younger Perryman joined PEO(A) as its deputy program executive officer.

Bringing his family history full circle, Perryman had an opportunity to fly in 614 in January 2018. Vice Adm. Dean Peters, commander of Naval Air Systems Command, was also on board for that flight, Perryman recalls.

"It was phenomenal," Perryman said. "To have the opportunity to fly in the same helicopter that my father flew almost 50 years ago, to sit in the same cockpit where he sat, is something that I'll never forget, quite frankly. Not everyone gets that kind of opportunity."

Perryman said his father's time at HMX-1 was the source of many childhood memories.

"The squadron dominated our lives, as you can imagine," he said. "Wherever the president went, my dad would have to go. My brother and I thought it was the neatest thing in the world that our dad flew the president."

It was this combination of the aircraft's unique history and his personal connection to it that spurred Perryman to action when he heard HX-21 planned to retire the aircraft.

He also believes that 614 hasn't used up its nine lives yet.

"It's in superb mechanical condition right now, and if it can be preserved in some way, it will last even longer," he said. "I'm doing everything I can to facilitate that. I would be happy to donate my father's log books to go along with the aircraft. I have some Nixon memorabilia, too. Wherever it ends up, I hope it will be preserved."

"I cannot think of a more symbolic representation of what we do at the Presidential Helicopters Program than aircraft 614," said Col. Eric Ropella, program manager. "This aircraft gives a full, rich history as both a no-fail mission aircraft that flew Presidents Nixon and Ford, and as a test bed for delivering the newest capabilities to the presidential fleet. It seems only fitting that we try and find a place of honor for 614 and its 32 years of service here in front of the Presidential Helicopters Support Facility as a static memorial and display."

Paul Lagasse is a public relations specialist with Naval Test Wing Atlantic. ✶

A Fond Farewell to 'Catbird'

From Executive Transport Detachment Sigonella



On Nov. 29, Catbird 151, a C-20G Gulfstream IV assigned to Executive Transport Detachment (ETD) Sigonella, departed Sicily, Italy, for the last time to be retired from naval service.

For nearly 61 years, the name Catbird has been attached to the Navy's executive transport aircraft based in Europe to fly the Navy's top brass to engagements across the continent.

Prior to 1958, Commander in Chief Allied Forces Southern Europe (CINCSOUTH) was flown in a R6D-1Z Douglas DC-6. This aircraft was transferred to Fleet Logistics Support Squadron (VR) 1 in 1958 and replaced with the first Catbird, a R4Y-1 Convair C-131 aircraft, bureau number (BUNO) 141020.

CINC held a contest within the office to come up with a name for it. At that time, Adm. C.R. Brown was serving as CINCSOUTH. A much beloved officer, he acquired the nickname of "Cat" as a youngster and was known by it during his long and illustrious naval career. The name Catbird won the contest, and

the call sign was officially changed to Catbird 1020.

In December 1959, Lt. David Young wrote to Walt Disney's public relations director and asked if the art department could provide him with several sketches of both a "leaping" and "Halloween" type cat. In February 1960, Hazel Garner with the Walt Disney Public Relations Department replied with two sketches of cats along with two separate licenses for each sketch. These licenses granted the U.S. Government exclusive use and the right to reproduce the sketches as long as the Walt Disney Copyright notice appeared along with the design. The government paid \$1 for each drawing. In March 1960, after a little arm twisting, the admiral agreed to have the cat insignia painted on both sides of the vertical stabilizer of the Catbird.

In 1982, the R4Y-1 was replaced by a VP-3A aircraft. A converted P-3 anti-submarine

warfare aircraft was outfitted with executive workspaces, communications suite, staff area, bunks, galley and head. Three VP-3A aircraft since have served as Catbird.

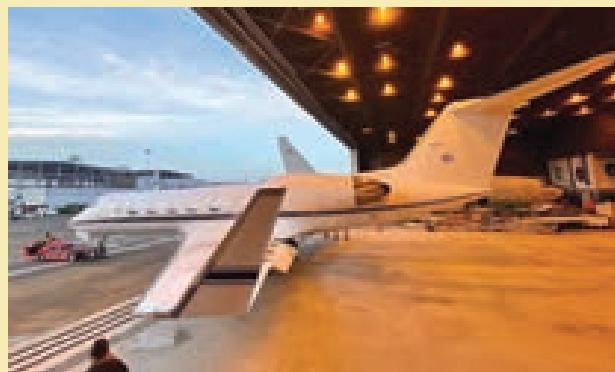
In 1999, there was renewed interest in the historic value of Catbird. With the help of a local Italian aviation enthusiast and the Walt Disney archives, the original Catbird design was found. The Catbird name and original design from Walt Disney was then presented to Adm. James O. Ellis with a request to reapply the art onto the aircraft for the 40th year anniversary of the Catbird unit. Not only did Ellis agree to the reapplication, but he also sent two brand new \$1 bills as a renewal payment to the chairman of Walt Disney, thanking him for the "act of kindness" which created the logo 40 years earlier. The reintroduction of the art on the aircraft preserved both the history of the unit and a naval tradition.



U.S. Navy photos

The last Catbird, a C-20G Gulfstream IV, has been in service since Dec. 17, 1994, flown 22,517.7 hours and made 11,123 landings.

Catbird 151 exits the Executive Transport Detachment Sigonella hangar in Sicily, Italy.



A side view of the original Catbird insignia designed by Walt Disney Productions.



Reproduction of the original Catbird sketch supplied to Lt. David Young by Hazel Garner with the Walt Disney Public Relations Department in 1960.

In 2005, a VP-3A aircraft was replaced by a C-20A aircraft, a Gulfstream III. In 2015, Catbird was upgraded once again to a C-20G aircraft, a Gulfstream IV, which has provided outstanding operational service throughout Europe, Africa and other destinations around the world. One of only a few Gulfstream aircraft with a cargo door, Catbird has been in service since Dec. 17, 1994, flown 22,517.7 hours and made 11,123 landings.

During the last 12 months, the unit has successfully supported a variety of customers across a broad range of multiple continents in addition to supporting their principal customer, Commander, U.S. Naval Forces Europe-Africa.

ETD Sigonella also shifted gears for a 120-day period and provided logistical support to Task Force 63, transporting COVID-19 test samples from several European bases to Ramstein Air Base,

Germany, for processing at Landstuhl Regional Medical Center, then the only Department of Defense COVID-19 testing facility in Europe.

In 2021, ETD Sigonella will close its doors and its mission will be continued by Fleet Logistics Support Squadron (VR) 1 from Naval Air Facility, Washington, D.C.

"ETD Sigonella is extremely proud to have been entrusted with the responsibilities which come with the air transportation of our nation's senior leaders as they conduct their affairs throughout the world," said Cmdr. Tim Topping, Officer in Charge. "With the retirement of Catbird 151, we say farewell to an old friend on behalf of all who flew her, maintained her and served in her."

Reprinted from The Signature, published by Executive Transport Detachment Sigonella, Italy. 🐦

Catbird's Future

The Tactical Airlift Program Office has been responsible for the life-cycle support and sustainment of the Naval Air Station Sigonella Catbird since 2005. In 2015, the program office found a new home for the C-20A Catbird as a trainer at Southern Illinois University, and the current C-20G Catbird looks to be heading to NASA this coming year as a letter of intent was submitted this month.

"It is our sincere hope that the C-20G aircraft will have a continuing mission with NASA" said Capt. Steven Nassau, program manager. "Our Executive Lift Team has been proud to support this aircraft and takes great pride in being part of its historic mission."

Fair Winds and Following Seas, Catbird.

— Tactical Airlift Program Communications. 🐦

Next-Gen Jammer Mid-Band

Demonstrates Capabilities, Teamwork

By Kristine Wilcox, Lt. Jonathon



Well into the developmental flight test acquisition phase at Naval Air Systems Command, the Next-Gen Jammer Mid-Band (NGJ-MB) pod will enhance the Navy's airborne electronic attack capabilities against enemy communication systems. The following feature highlights the latest milestones, test results and efforts of months of planning and testing to ensure the success of the program.

Band Testing Underway

Network, Industry Collaboration

by “Zoloft” Parry and Bob Kaper



Salty Dog 533, an EA-18G Growler with Air Test and Evaluation Squadron (VX) 23, conducts its first flight test of the Next-Generation Jammer Mid-Band (NGJ-MB) pod Aug. 7 at Naval Air Station (NAS) Patuxent River, Md.

U.S. Navy photo by Erik Hildebrandt

Systems Command facilities across the country, the Next-Generation Jammer network capabilities to disrupt, deny and degrade enemy air defense and ground operations—fleet maintainers validated maintenance procedures—along with the successful first flight of the NGJ-MB aboard the EA-18G Growler.

Sailors Test NGJ Maintenance Plans

Fleet maintainers and technicians gained first-hand experience while testing the validity of maintenance plans and technical manuals on the Next-Generation Jammer Mid-Band (NGJ-MB) pod during a logistics demonstration at Naval Air Station (NAS) Patuxent River, Maryland, in October.

With the NGJ-MB program in the developmental flight test phase of acquisition, Sailors performed maintenance procedures on an NGJ-MB engineering development model test pod, which included removing and reinstalling components inside the pod. They also verified step-by-step procedures from the technical manuals, validated and tested new support equipment and provided feedback to the program office team.

“The demo has been invaluable, and for some of us who have been part of the airborne electronic attack (AEA) community for so long, it’s an honor to have the opportunity be a part of this and provide input and subject matter expertise,” said Aviation Electronics Technician 1st Class Larry Basham, Airborne Electronic Attack Weapons School (HAVOC), in NAS Whidbey Island, Washington. “It has

been great to have the engineers here who designed this and the maintainers who understand the real-world application.”

In compliance with COVID-19 restrictions, the demonstration was conducted in two parts throughout the month with a reduced team of 13 members. Participants included Navy aviation electronics technicians and maintainers from Commander, Electronic Attack Wing Pacific (CVWP), located at NAS Whidbey Island, and Naval Air Weapons Station China Lake, California; along with personnel from Raytheon Intelligence and Space; Support Equipment Team from Lakehurst, New Jersey; Airborne Electronic Attack Systems Program Office; F/A-18 & EA-18G Program Office; and the NGJ Integrated Test Team, located at NAS Patuxent River.

The purpose was to allow Sailors who had not seen the NGJ-MB pod to receive classroom training and then run through the procedures and manuals, while maintaining safety of the pod, aircraft and the people, said Danielle Raffa-Schubert, Supportability Test and Evaluation lead, who coordinated the demo.

“Having the maintainers and the technicians performing all the tasks, we were able to see when there were difficulties and when tasks were performed with ease,” Raffa-Schubert said.

“There are always rumors about what the [NGJ] pod is and that it will be easier to work on than the ALQ-99 [Tactical Jamming System currently used by the fleet], but they are completely different,” Basham said. “Things that I thought would be hard based on the manuals and classroom training were easier and some things you thought would be easier weren’t.”

The NGJ-MB system is part of a larger NGJ system that will augment, and ultimately replace, the legacy ALQ-99 currently used on the EA-18G Growler. NGJ-MB is an external jamming pod that will address advanced and emerging threats using the latest digital, software-based and Active Electronically Scanned Array technologies and will provide enhanced AEA capabilities to disrupt, deny and degrade enemy air defense and ground communication systems.

— Kristine Wilcox

Aviation Electronics Technician (AT) 2nd Class Jean Fernandez and AT Airman Michael Acker conduct maintenance procedures on the aft section of a NGJ-MB pod during a logistics demonstration at Naval Air Station Patuxent River, Md. in October.



U.S. Navy photo by Kristine Wilcox

NGJ-MB Takes First Flight

The program entered the developmental flight test phase in August with the first flight of the NGJ-MB pod on an EA-18G Growler at NAS Patuxent River.

“It was an incredible day for the U.S. Navy, our Australian partners and the Airborne Electronic Attack (AEA) community,” said Capt. Michael Orr, AEA Systems Program manager. “We witnessed a successful first flight with the NGJ-MB capability fully integrated onto the EA-18G Growler, validating the last four years of development and the extensive efforts of these last several months in preparation. I’m extremely proud of the entire government and industry team.”

The first flight, conducted by Air Test and Evaluation Squadron (VX) 23, was a Safety of Flight checkout to ensure the pods can be safely flown on the EA-18G aircraft for follow-on test flights.

“There was a lot of discussion on how the NGJ-MB pod would affect how the Growler handles and it was exciting to have the jet feel like any other flight,” said Lt. Jonathan Williams, the VX-23 test pilot who flew the first flight. “We have a great test team to thank for making today happen and I look forward to seeing how the Growler team brings out the full potential of the NGJ-MB pod.”



Salty Dog 533 takes off from NAS Patuxent River for its first flight with the NGJ-MB pod.

The NGJ Integrated Test Team (NGJ-ITT) spent months planning and rehearsing for the first flight, while software and hardware necessary to make the NGJ-MB compatible with the Growler’s system was upgraded. The air-

craft and pod also had to undergo open-air testing and ground-based testing at the Air Combat Environment Test and Evaluation Facility (ACETEF) at NAS Patuxent River before taking flight.

— Kristine Wilcox

Integrated Test Team Lays Groundwork

To ensure success, the NGJ-ITT meticulously planned and studied every test point carefully before rehearsing the profile multiple times in the Manned Flight Stimulator.

“This flight was a crucial first step in a robust flight test program, and we have a great deal of exciting work ahead,” said Lt. Cmdr. Joshua Hattery, government flight test director.

The Navy achieved Initial Operational Capability (IOC) with the ALQ-99 Tacti-

cal Jamming System in 1971, which has served as the primary offensive electronic attack weapon system for multiple platforms. In 2009, the EA-18G Growler achieved IOC and began replacing the aging EA-6B Prowler. In 2010, the electronic attack community deployed with Growler for the first time, bringing increased lethality and survivability to the air wing and Joint Force. The Navy’s AEA community began forming requirements that eventually led to creation

of the NGJ-MB that specifically took advantage of the capabilities offered by the Growler.

“NGJ-MB is a significant step to further advance the Navy’s electronic attack capabilities and ensure spectrum dominance well into the future,” said Lt. Cmdr. Michael “Tugsy” Dixon, a test pilot for the NGJ-MB who was a junior officer during the Growler’s first carrier deployment.

The NGJ-ITT is now sprinting to clear

NEXT-GEN JAMMER MID-BAND

NGJ-MB for the entire EA-18G carriage envelope and ensure required functionality is delivered to the fleet by the targeted IOC date in 2022.

“In addition to the critical mission systems testing with NGJ-MB, we have to evaluate the compatibility of this new jamming platform with the EA-18G,” said Tim Marge, NGJ-MB aeromechanical test lead. “To that end, we have established an extensive air vehicle test program aimed at evaluating the aeromechanical effects of the entire system so that we can provide our recommendations of the final fleet envelope.”

The team will be working hard to put the NGJ-MB through its paces.

“We will first demonstrate the pod’s basic abilities and then move on to its advanced capabilities, which will really highlight the technological ingenuity that the partnership between the Navy, the government, Boeing and Raytheon can bring to bear,” said Christopher Lovelace, Boeing test engineer.

Once the NGJ-MB capability is delivered to the fleet, the experts at HAVOC will create new tactics, techniques and

procedures to guide the warfighter on the employment of the NGJ-MB.

—Lt. Jonathon “Zolof” Parry



U.S. Navy photo by Kristine Wilcox

Capt. Michael Orr, Airborne Electronic Attack (AEA) Systems Program manager (center), talks with VX-23 test pilot Lt. Jonathon Williams (left), and Chris Lovelace, Boeing test engineer (right), after the successful first flight of the NGJ-MB on the EA-18G Growler.

Ensuring Software Compatibility



U.S. Navy Photo by Kimberly Brown

In support of the NGJ-MB developmental test, Owen Finch, AEA Systems NGJ test engineer, prepares the High-power Electronic Attack Technique Radiation (HEATR) calibration antenna system in the HEATR chamber at NAS Point Mugu, Calif.

The Advanced Weapons Lab (AWL) and aircrew from VX-31 in China Lake, California, along with the High-power Electronic Attack Technique Radiation (HEATR) chamber at NAS Point Mugu, California, have been part of the NGJ-MB development from day one, ensuring the EA-18G Growler software was compatible with the NGJ-MB pod.

The most significant software upgrade was the System Configuration Set H16, which is used to employ NGJ-MB, said Ellie Avery, AWL’s NGJ acquisition product lead.

“In order to communicate with the new pods, the jet software had to be updated,” Avery said. “Our job was to make sure the correct jet modifications (hardware and

software) were made to ensure successful jet-to-pod and pod-to-jet integration, then test for validation.”

The AWL team of civilian software integration and development engineers has supported NGJ-MB since its inception in 2004. The team, which focuses on high-fidelity mission systems integration to execute representative mission

testing in the lab and flight test, assisted with requirements definition and initial contract technical evaluations.

“Our goal is to mature aircraft software and deliver operationally functional and current capabilities to the fleet to keep up with emerging threats,” Avery said.

As mission essential employees, the teams at China Lake and Point Mugu are

adhering to DOD-mandated COVID-19 protocols as they continue to advance the critical radar jamming capability. In the HEATR lab, where the NGJ-MB pod is tested at full power to focus on electronic attack techniques, the government and industry team are working efficiently and effectively despite the unprecedented environment.

—Kristine Wilcox

Open-Air Testing

Preparing for the NGJ-MB’s first flight initiated a multi-year program of open-air testing at Naval Air Warfare Center Aircraft Division (NAWCAD)’s Atlantic Test Ranges (ATR) with a unique combination of advanced technologies assembled specifically for testing the EA-18G Growler’s new jamming system.

“We’ve put over \$30 million in the last eight years getting ready for this,” said Bill Darden, ATR Chief Engineer.

Test teams typically put new sys-

tems through two types of flight testing. Aeromechanical testing measures pod vibration, noise and loads on the aircraft. Mission-systems testing measures how well the system performs its mission of jamming enemy radar and communications.

Most of ATR’s investment was in three new technologies for mission-systems testing: open-air version of the Next-Generation Electronic Warfare Environment Generator (NEWEG), Broadband

Emitter Antenna Measurement System (BEAMS) and the Joint Avionics Workstation (JAWS).

NEWEG supports threat simulation improvements for all services, but the Navy is leading the way with efforts at NAWCAD. Both the anechoic chamber and ATR use NEWEG to simulate enemy radar and communications signals.

“The goal is to stimulate the aircraft’s sensors and test the inner workings of the system,” said Neil Compton, ATR’s



U.S. Navy photo by Erik Hildebrandt

Salty Dog 533 carries the NGJ-MB pod under the right wing.

electronic warfare operations and sustainment team lead. “We’re testing in the open air, with real-world clutter in the actual environment. That gives a much better sense of how the system will perform in theatre.”

BEAMS picks up the NGJ-MB’s response to the signal from NEWEG. BEAMS was created with NGJ-MB in mind because previous range instrumentation could not meet the unique requirements of the new jammer program.

“With BEAMS the test team can determine if the jammer meets the same requirements in flight that it met in the

anechoic chamber, but with actual in-flight test considerations,” said BEAMS team lead Bart Hoskins.

Each Growler flight aims to meet multiple test points. “The pilot will try certain maneuvers,” he said. “For example, if the aircraft banks right, does the jammer keep the power up to the same level? If it doesn’t, that’s a big deal.”

JAWS was developed to improve data analysis in both ground and flight testing and is pushing the envelope for NGJ. “It shows the status of the pod and what it ‘thinks’ it’s transmitting,” said JAWS team lead Dave Rollins.

JAWS processes both aircraft and jammer communications traffic. The test team views JAWS output on front-row displays in ATR mission control rooms. JAWS is also the primary display system at the anechoic chamber for NGJ-MB testing, providing common displays during ground and flight tests.

JAWS, NEWEG, BEAMS and the chamber’s multi-jammer characterization (MJC) “magic” wall are part of an innovative ground- and flight-testing environment developed at NAWCAD to evolve and improve electronic warfare capabilities.

—Bob Kaper

Ground-Based Testing

Months of indoor ground-based testing took place at ACETEF, where unique ground tests emulated what takes place in the air. But instead of flying, the pod-equipped Growler is suspended inside NAWCAD’s large anechoic chamber. The first chamber tests ran

from November 2019 through February 2020 and evaluated basic functionality, electromagnetic environmental effects (E3) and performance.

“E3 testing supports flight clearance,” said Jeffrey Miller, AEA lead at NAWCAD’s Integrated Battlespace

Simulation and Test Department. “It verifies that a new system doesn’t cause problems with existing aircraft systems.”

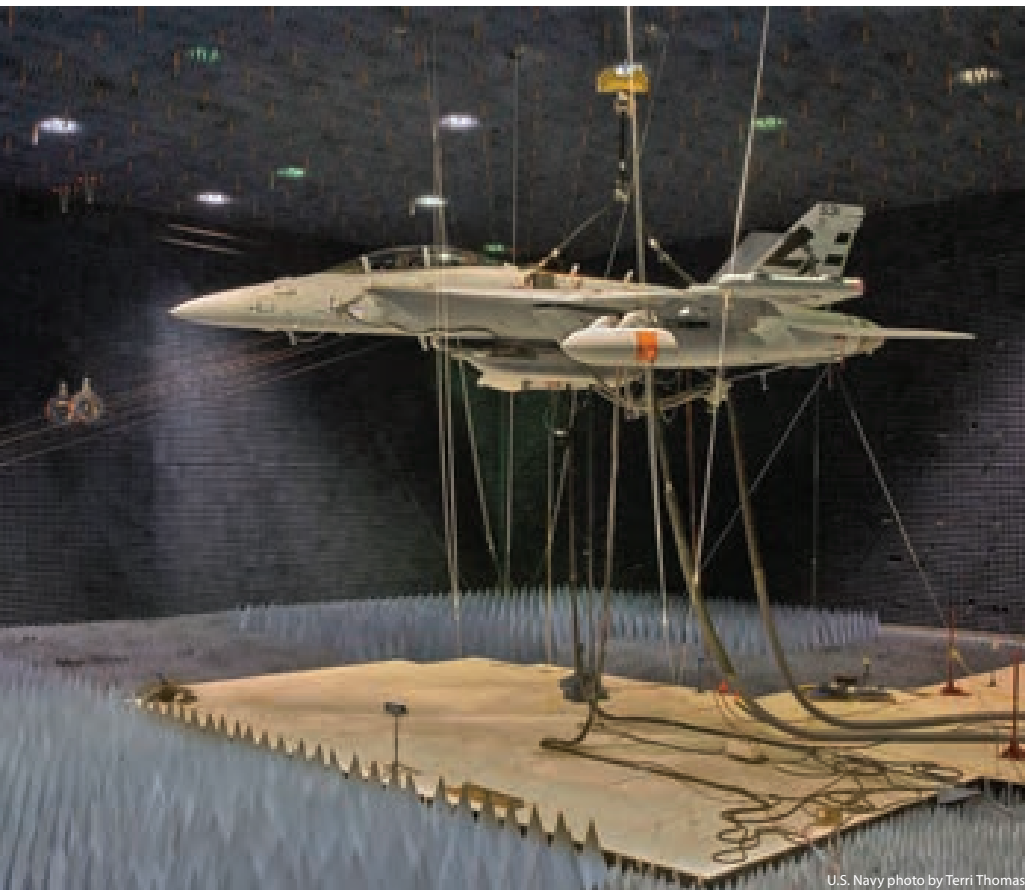
Testing resumed June 2020 in the mammoth chamber, which holds the Navy’s largest aircraft with room to spare.

U.S. Navy and Australia Strengthen Ties with NGJ

From left, U.S. Navy Lt. Jonathan Williams, VX-23 test pilot; U.S. Navy Capt. Michael Orr, AEA Systems Program manager; Royal Australian Air Force Flight Lieutenant Gary Harvie, NGJ cooperative partner representative; and Chris Lovelace, Boeing mission systems operator and NGJ project officer, display the program office’s U.S. and Australian flags flown on the maiden NGJ-MB pod test flight Aug. 7.



U.S. Navy photo by Kristine Wilcox



U.S. Navy photo by Terri Thomas

An EA-18G Growler, equipped with a pair of NGJ-MB pods, hangs from the ceiling of the Naval Air Warfare Center Aircraft Division's large anechoic test chamber at NAS Patuxent River.

VX-23, along with chamber engineers and technicians, conducted performance testing using the MJC payloads in both receiving and transmitting modes to verify the pod reacts appropriately. The payloads transmit representative radar or communication threat signals generated by the NEWEG system. The jammer pod then radiates specific “techniques” in response.

Commonality with the Atlantic Test Range allows the team to assess performance issues early on the ground and transition seamlessly into flight testing.

—Bob Kaper

Kristine Wilcox supports Airborne Electronic Attack Systems Program Office Communications.

Lt. Jonathon “Zoloft” Parry is the Project Officer at Air Test and Evaluation Squadron (VX) 23.

Bob Kaper is a senior technical writer for Atlantic Ranges & Targets. 🦅

Joint Partnership

By Royal Australian Air Force Wing Commander Russ Barton

Partnering with the U.S. Navy on the Next-Generation Jammer (NGJ) weapon system reflects the strong and long-standing relationship between the U.S. and Australia. The technological and industrial cooperation enabled by these arrangements deepens the alliance, enhances capability and provides the opportunity for both nations to build broader, more robust supply chains and support systems.

Similar to the U.S. Navy, the Royal Australian Air Force (RAAF) EA-18G Growler fleet enhances the survivability and lethality of Australian forces, with capabilities further strengthened as NGJ capabilities come online.

Maintaining a common configuration with the U.S. Navy promotes significant interoperability benefits, allowing seamless integration with U.S. forces as an allied partner on exercises and operations. This common configuration and Australia's continued contribution to NGJ-Mid-Band development enable access to the cutting-edge technologies needed to protect our interests in the Indo-Pacific region.

The anticipated benefits of cooperative support to sustainability and future capability enhancements are also impressive.

Australia sees many advantages in contributing early and throughout the acquisition life cycle, side-by-side with the U.S. Navy, sharing the risks and rewards. Aside from allowing early access to leading edge technology, the partnership also facilitates enhanced understanding of the capability, allowing efficient integration into our force structure.

Australia and the U.S. have a strong and trusted relationship founded in the Foreign Military Sales F/A-18 Program since the mid-1980s and reinforced through cooperative programs like P-8A Poseidon and NGJ.

Australia looks forward to continuing this special relationship and further enhancing and expanding cooperation on other similar capabilities in the future.

Wing Commander Russ “MAX” Barton is the Australian Deputy Project Manager for the NGJ Joint Program Office. 🦅



3rd Marine Aircraft Wing Advances Air Superiority with F-35C IOC

By 1st Lt. Charles Allen

In a time characterized by rapidly evolving tactics and modernized equipment, the Marine Corps has taken the next step in maintaining air superiority as Marine Fighter Attack Squadron (VMFA) 314 declares Initial Operational Capability (IOC) for the F-35C Lightning II.

OC declaration marks a significant accomplishment for 3rd Marine Aircraft Wing (MAW), enabling the “Black Knights” of VMFA-314 to deploy the F-35C on aircraft carriers where they will be able to support combat operations anywhere in the world.

“The F-35 is an expeditionary platform that extends the reach of our Marines and machines, and increases our ability

to support joint and allied partners at a moment’s notice,” said Maj. Gen. Christopher Mahoney, 3rd MAW commanding general. “By effectively employing the F-35, MAGTF [Marine Air-Ground Task Force] commanders have the potential to dominate our adversaries in a joint battlespace, in the air and out at sea.”

Having the most advanced stealth fighter jets the world has ever seen is only

the beginning. A strategic and tactical understanding of how to operate and properly maintain the F-35 and its advanced capabilities is essential to its employment in an increasingly non-permissive maritime domain.

To receive this qualification, squadrons must meet the Headquarters Marine Corps standards, which define the minimum number of trained Marines, mission-ready aircraft and trained pilots needed for a squadron to become IOC complete.

“Our maintenance department was critical to the success of IOC. In addition to accepting and inspecting the multiple aircraft that arrived throughout the year, the Marines maintained a high level of aircraft readiness,” said Lt. Col. Duncan French, VMFA-314 executive officer. “Those mission-capable aircraft allowed the pilots to train in the appropriate missions required of IOC, as well as contributed toward the readiness metrics of IOC.”



After declaring Initial Operational Capability for the F-35C Lightning II, Marine Fighter Attack Squadron (VMFA) 314 pilots prepare for takeoff at Marine Corps Air Station Miramar, Calif. Below, an F-35C pilot with VMFA-314 conducts a preflight check.

The F-35's ability to combine advanced stealth capabilities, integrated avionics and the most powerful sensor package ever developed allows it to operate in contested areas and gives the Marine Corps an unparalleled ability to maintain air superiority in dynamic, unpredictable and competitive environments.

"VMFA-314's declaration of IOC is a significant milestone not only for 3rd MAW but also the Marine Corps," French said. "VMFA-314 is the first F-35C squadron in the Marine Corps. The F-35C's unique capabilities, compared to the F-35B and legacy aircraft, provide the Marine Corps with a complementary increase in combat projection and the ability to operate from U.S. Navy's aircraft carriers."

As tactics and equipment used in the current battlespace continuously change, 3rd MAW commander's willingness to develop their understanding of emerging technologies and to utilize them empowers the Marine Air Combat Element with the



U.S. Marine Corps photos by Lance Cpl. Juan Anaya

flexibility to solve dynamic problems that Marines will face in the future.

"This achievement ultimately would not have been possible without the hard work and dedication of the Marines, Sailors and civilian contractors assigned to VMFA-314," said Lt. Col. Brendan Walsh, VMFA-314 Commanding Officer. "The successful transition of the Black Knights to the F-35C culminating in this IOC declaration is a testament to the squadron's distinguished legacy of pioneering new aircraft."

The capability to employ the F-35 along-

side 3rd MAW's other capabilities further enables support of fleet Marines and joint and allied partners and preserves 3rd MAW's ability to dominate the battlespace for the MAGTF and joint commanders.

3rd MAW continues to "Fix, Fly, and Fight" as the Marine Corps' largest aircraft wing and remains combat-ready, deployable on short notice and lethal when called into action.

1st Lt. Charles Allen is with the 3rd Marine Aircraft Wing Communication Strategy and Operations Office. ✈

Pressure-related PEs: Diagnosis, Treatment and Prevention

By Andrea Watters

By discovering the similarity of symptoms between blast victims with post-concussion syndrome (PCS) and naval aviators who experienced pressure-related physiological events (PRPEs), a Veterans Affairs physician and the Navy Medicine's Aeromedical Action Team's (AMAT) aerospace medicine specialist developed a treatment plan to evaluate and rehabilitate aircrew.

PRPEs are one of two types of physiological events (PEs) identified by the AMAT with the second type being breathing-related physiological events (BRPE). The AMAT works side by side with the Navy's Physiological Episodes Action Team (PEAT), both of which were established to investigate and mitigate Naval Aviation's No. 1 safety priority after reports spiked in 2017. PEs occur when aircrew experience adverse physiological symptoms, such as headache or cognitive degradation which may impair their ability to perform cockpit duties, caused by an aircraft or aircrew life support systems malfunction or suspected malfunction.

Non-pressure-related events involve in-flight breathing dynamics which may result in hypoxia (a decrease in alveolar and blood carbon dioxide) or atelectasis (partial collapse of the lung from lack of nitrogen). The PEAT and AMAT instituted new operating procedures in October, such as strategic air breaks or periodic breathing techniques to improve aircrew respiratory function. (Naval Aviation News covered non-pressure-related PEs and mitigation efforts in the Summer 2020 and Fall 2020 issues.)

The two types of PEs have different symptoms and outcomes, according to Cmdr. Allen "Doc" Hoffman, naval flight surgeon, AMAT chair and Aerospace Medicine branch head with the U.S. Navy Bureau of Medicine and Surgery.

"We found that all of the aviators with chronic, long-term

symptoms and career impacts had experienced multiple flights with pressure fluctuations in the aircraft," Hoffman said.

"We also found the non-pressure-related symptoms resolved in the cockpit or shortly thereafter. In the pressure-related events, especially for those aviators experiencing events in multiple flights, the symptoms lasted for days, weeks, months, and even years in one patient," he said.

PRPEs leading to aviators being medically downed for long periods of time—greater than two weeks—are rare, with only a handful of cases out of the initial 764 reported events of both PRPE and BRPE, Hoffman said. Pressure-related symptoms include headache and neck, joint, sinus and chest cavity pain or discomfort, which results from changes in the barometric pressure in flight.

"One of the key concerns I had when I began working on the PEAT was 'what are we doing for these individuals with long-term symptoms?' Answering that question has been our greatest success on the medical side," he said.

All active-duty aircrew have been rehabilitated and returned to some class of flight status but some fly in different aircraft.

Early in the PEAT's investigation, Naval Aviation implemented maintenance improvements and created the diagnostic tool Hornet Health Assessment and Readiness Tool (HhART) to mitigate component failures in the Environmental Control



"One of the key concerns I had when I joined the PEAT was 'what are we doing for these individuals with long-term symptoms?' Answering that question has been our greatest success on the medical side."

— Cmdr. Allen "Doc" Hoffman

Systems of the F/A-18A/D Hornets, F/A-18E/F Super Hornets and EA-18G Growlers.

Diagnosis and Treatment

Dr. Steven Scott, chief of Physical Medicine and Rehabilitation Services at the Tampa Polytrauma Rehabilitation Center, Department of Veterans Affairs, said he recognized that naval aviators, who experienced pressure-related PEs, had similar etiologies and symptoms to those soldiers and special operations specialists diagnosed with PCS.

Scott is a trauma specialist who has worked at the rehabilitation program in Tampa since 1996. Early in the Afghanistan War in 2001, Scott and his colleagues started treating service members affected by improvised explosive device (IED) blasts using a holistic approach that included injury prevention and wellness training.

While working with blast victims, doctors found the injuries affected multiple parts of the body, such as loss of vision in addition to pain. Their work led to a focus on the diagnosis and treatment of polytrauma—traumatic injuries in which more than one organ or part of the body is impacted.

"A lot of the veterans were in pain, but we couldn't see their pain. We started to call these 'invisible wounds of war,'" Scott said.

To learn more, they evaluated veterans from World War II, the Korean and Vietnam wars, and found many had concussions and

related problems that the medical community did not pick up on, he said.

This led to the establishment in 2008 of the Post-deployment Rehabilitation Evaluation Program (PREP), which treats service members and veterans with PCS, post-traumatic stress and pain. The center's proximity to U.S. Special Operations Command (SOCOM) and U.S. Central Command (CENTCOM) across Tampa Bay also increased visibility and participation in the PREP, Scott said.

Scott and his team learned much from treating individuals from SOCOM, who served in multiple deployments and were exposed to different types of events including direct energy impacts and testing of high explosives, such as those used by breachers and their instructors. "Not only did they have post-concussion syndrome, but often they had trauma from the war. We used evidenced-based practices and pain management approaches in what we call a biopsychosocial model to rehabilitate them."

Although naval aviators were not a part of the original PREP, Scott invited them to Tampa Polytrauma for evaluation in 2019.

Initially apprehensive about how the aviators would relate to the special operations patients, Scott watched them develop a "band of brothers" comradery. "They showed mutual respect for one another's skills and experience whether they were flying a plane or parachuting out of one," he said.

Shared symptoms included confusion, dizziness, difficulty

“Once we corrected their balance, their vision and ability to fixate improved; as their vision improved, so did their balance. Improved balance in turn helped reduce their anxiety and stress.”

—Dr. Steven Scott

focusing and concentrating, vision problems and trouble seeing in bright light, headaches, balance issues, pain, anxiety and stress, trouble sleeping and some form of ringing in the ears.

“In finding out they had similar symptoms, they realized it wasn’t all in their head,” he said.

The aviators were diagnosed with PCS based on the number of symptoms and their persistence for more than three months, which is the normal healing time for a concussion, Scott said.

Scott and his colleagues hypothesize that the aviators experienced PCS as a result of “acquired brain injury.”

“These are brain injuries that aren’t a result of a specific event, but the accumulation of mild trauma that results in brain injury. That’s my hypothesis we’ve been working on here in Tampa,” Scott said.

Treatment Protocols

The rehabilitation process starts with a thorough evaluation of the patient’s physical and emotional issues which builds a sense of trust, Scott said. The results of the evaluations are explained so they understand what is going on in their body and mind before they are offered treatment management.

For example, a neuro-optometrist evaluates their vision and diagnosis and treats neurological damage to their vision system. Therapy includes retraining the eye muscles through fixation exercises (the ability to maintain one’s gaze on a single location) along with combinations of dynamic eye movement. “We train the eye much like you would train your muscles in the gym,” Scott said.

“Aviators also suffer a lot of neck and back pain from the whiplash effects of taking off and landing on a carrier,” he said. “We found many had weakness of the neck and core muscles. We

A Fighter Pilot’s Account

Editor’s Note: A former Navy F/A-18 Hornet and Super Hornet pilot who is now a pilot with the Navy Reserve details their experience with physiological events (PEs), symptoms, likely causes, diagnosis and treatment as well as offering advice for fighter pilots.

I experienced three pressure-related PEs in the in the F/A-18C Hornet and F/A-18E Super Hornet in a span of three years, so my history likely made the third incident more catastrophic for me than it would have been for someone without previous insults.

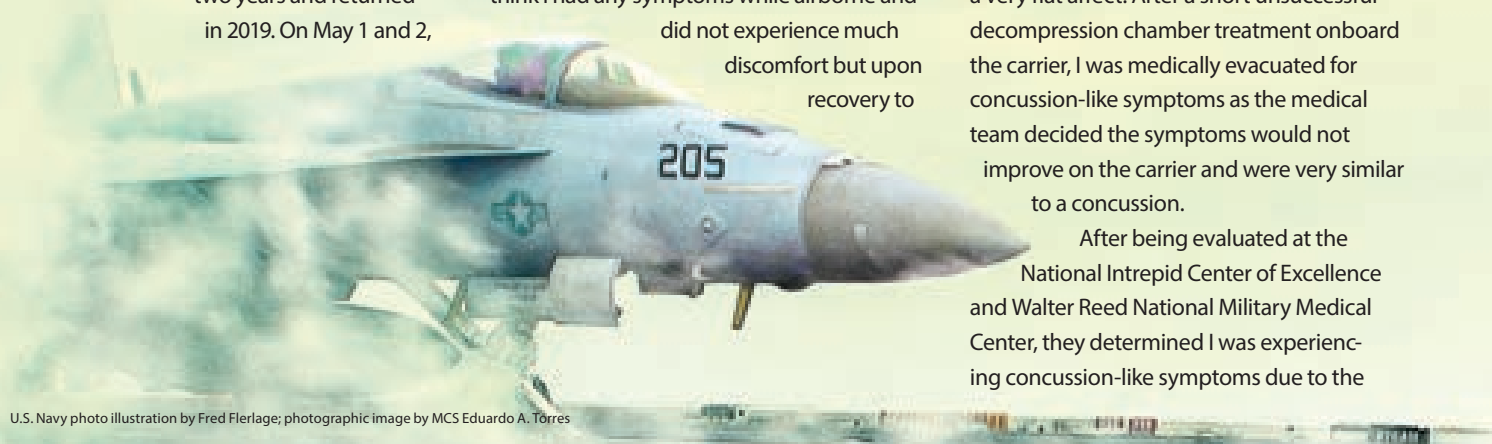
After having a PE in 2016 and being treated for type 2 decompression sickness, I took a break from the cockpit for two years and returned in 2019. On May 1 and 2,

2019, I experienced two flights [my final ones in an F/A-18] in the span of 36 hours where the cabin pressure rapidly fluctuated +/- 500 feet for the entire flight. At the time, this was within Naval Air Training and Operating Procedures Standardization (NATOPS) limits and seemed very minor; in hindsight and knowing what we now know about acquired brain injuries, flying a second time and experiencing a repeated exposure should not have happened. I did not think I had any symptoms while airborne and did not experience much discomfort but upon recovery to

the carrier from the second flight, my wingman noticed I had very slow speech and seemed tired. I had difficulty filling out my post-flight paperwork. I met with the flight surgeon and did some basic neurological tests. He observed slow speech and slowed cognition, but I passed all the basic neurological exams.

Over the next 48 hours my symptoms worsened. I had difficulty finding words, was very tired, slept an unusual amount and had a very flat affect. After a short unsuccessful decompression chamber treatment onboard the carrier, I was medically evacuated for concussion-like symptoms as the medical team decided the symptoms would not improve on the carrier and were very similar to a concussion.

After being evaluated at the National Intrepid Center of Excellence and Walter Reed National Military Medical Center, they determined I was experiencing concussion-like symptoms due to the



U.S. Navy photo illustration by Fred Flerlage; photographic image by MCS Eduardo A. Torres

treated their musculoskeletal pain with specific strengthening exercises. Once we corrected their balance, their vision and ability to fixate improved; as their vision improved, so did their balance. Improved balance in turn helped reduce their anxiety and stress.”

The center’s holistic approach addresses emotional issues as well, such as anxiety and stress, by offering art and music therapies to help them express their feelings, he said.

Prevention and the ‘Rehab Circle’

While the symptoms of PCS seem to be invisible and mild initially, it starts to take its toll, Scott said.

“We expect our aviators and special ops specialists to perform their mission at the highest peak—physically, mentally and emotionally. They can compensate initially but after a while they start to break down. That’s what we’ve observed repeatedly.

“This is where the readiness component is so important. We’re learning that there’s a limitation physically, mentally and psychologically to the human body that will eventually have to be compensated for over time,” Scott said.

Now that they have a better understanding of what naval

aviators are experiencing, Scott and his team are working with Hoffman and the AMAT to develop a preventative program that would include strength and conditioning training of the body’s core as well as the frontal region of the brain to maintain balance and coordination. Scott also wants to focus on improving brain health, which includes good sleep habits and proper nutrition.

He envisions a program that would improve readiness by starting with prescreening and a baseline evaluation, plus strength and conditioning coaching and a dashboard to help individuals monitor their health and fitness, he said. If they do have symptoms, they could be treated early and return to the fight without the fear of being ineligible to fly.

“My rehabilitation philosophy is to get people not just back to normal but enhance their performance. If you have a little headache, we want to get rid of the headache and help people avoid getting headaches in the future. We need to look at enhancing performance.

“I call it the rehab circle, we want to help them serve again,” Scott said.

Andrea Watters is editor in chief of Naval Aviation News. 🦅

repeated pressure fluctuations in the cockpit. My acute symptoms did not improve for six to eight weeks and I struggled with feeling visually overwhelmed in bright lights and crowded/cluttered rooms, sensitivity to noise, migraine headaches, and unusual amounts of sleep, short term memory issues and difficulty reading. The doctors prescribed a concussion protocol with rest, relaxation and avoiding over-stimulating environments. While the speech issues and word-finding improved, I suffered from cognitive exhaustion, chronic headaches and memory issues for months following the incident. Seven months later, I started the Post-deployment Rehabilitation Evaluation Program (PREP) at the Tampa Polytrauma Rehabilitation Center on Dec. 2, 2019.

The doctors in Tampa were wonderful. They wanted to help us heal and provided tailored therapies. They were accustomed to dealing with elite military Special Forces, so they understood the cognitive and performance norms of elite soldiers and pilots. It was the first time I felt like the doctors did not have a preconceived outcome in mind—they just treated the symptoms I had. They were extremely thorough, took a very detailed history of my career and previous pressure insults, and had a multi-disciplinary approach to evaluating all symptoms and treatment options.

The most effective therapy I received was from the combination of injections for pain management to reduce the tension in my neck triggering continual migraine headaches, and vision therapy to treat the brain-vision processing issues. The vision therapy was difficult and exhausting but yielded huge improvements and a decrease in my headache frequency and severity. I also did cognitive therapy and continued cognitive rehab after the Tampa program. The overall treatment was two months in Tampa and another two months completing out-patient therapy before I felt better.

I was not cleared to return to the F/A-18, but I did receive an up-chit to fly service group 3 aircraft (dual-piloted, land-based). I received a waiver from NAMI [Naval Aerospace Medical Institute] one year after the last incident in May 2020. I transitioned to the Navy Reserve in October 2020 and am currently flying the C-40A Clipper.

I agreed to share my story with Naval Aviation News to help other pilots who may have experienced similar issues. My advice to current aviators is to educate yourself about the Environmental Control System [ECS] and known issues in your jets. We know so much more about pressure-related injuries in pilots than we used to. Take it seriously; if you have

a pressure event in the jet, rest and follow the protocols before returning to flight, even if you think you feel fine. Peak neural inflammation occurs 48-72 hours post insult—it can take a few days for symptoms to develop—and the worst thing you can do is have a repeat exposure in that timeframe. Know what symptoms to look for (concussion-like symptoms) and don’t hesitate to seek help from resources like the Tampa VA if you have lingering symptoms.” 🦅

How to Seek Treatment

Post-concussion syndrome symptoms include the following: confusion, dizziness, difficulty focusing and concentrating, vision problems and trouble seeing in bright light, headaches, balance issues, pain, increased anxiety and stress, trouble sleeping or some form of ringing in the ears.

If you’re a veteran or former aviator experiencing more than one of these symptoms, contact your Veterans Affairs physician or medical provider and discuss your case. Mention the Tampa Polytrauma Rehabilitation Center program and request a case review.

Naval Aviation's Readiness Cell Incorporates MH-60R/S Helicopters

From Commander, Naval Air Force Atlantic Public Affairs

Naval Air Force, U.S. Pacific Fleet (CNAP) and Naval Air Force Atlantic (CNAL) expanded the scope of Naval Aviation's Maintenance Operations Center (MOC) Jan. 5 to include the MH-60R Seahawk and MH-60S Knighthawk helicopters.

The MH-60 joins the F/A-18E/F Super Hornet, EA-18G Growler, E-2C Hawkeye, E-2D Advanced Hawkeye, C-2A Greyhound and P-8 Poseidon aircraft in the collaborative MOC.

The MOC initiative was part of the Naval Aviation Enterprise's (NAE) implementation of the Naval Sustainment System-Aviation (NSS-A) to identify and resolve Naval Aviation's readiness challenges. NSS-A was launched in response to a 2018 memo from then-Secretary of Defense James Mattis' directing the Navy, Air Force and Marine Corps to improve mission-capable rates of strike fighter aircraft.

Based at CNAL headquarters in Norfolk, Virginia, the MOC enables long-term collaboration among Naval Aviation stakeholders by bringing together maintenance, supply, engineering and depot experts from across the NAE to improve aircraft operational readiness through planned maintenance intervals and identifying barriers for resolution.

"We are expanding the scope of the MOC with the end goal of improving and sustaining the number of mission capable MH-60 aircraft," said Capt. Rich Grove, MOC director. "We will provide that same focus to all of the platforms to continue improving the lethality of Naval Aviation as a whole with continuous improvements to the entire [readiness] chain."

Grove added that the MOC will improve supply and logistics channels, component repair and squadron-level maintenance activities for the Navy's helicopter community.

"The MOC is a huge improvement to the way we do business and is one of many Naval Aviation success stories," said Rear Adm. John Meier, CNAL. Expanding the MOC to other types of aircraft increased mission-capable rates for forward-deployed, fleet replacement and test and development squadrons.

"Maintenance leaders from each squadron participate in the teleconferences to run through the list of individual aircraft, addressing each constraint and identifying solutions on the spot, in real time,



U.S. Navy photo by MC2 Taylor DiMartino

Sailors chock and chain an MH-60S Seahawk helicopter, attached to the "Archangels" of Helicopter Sea Combat Squadron (HSC) 25, Detachment 6, during deck landing qualifications on the flight deck of amphibious dock landing ship USS Germantown (LSD 42).

with every person in the room sharing the same goal—to take ownership of constraints that fall under their responsibility,” said Dave Ferreira, MOC deputy director. “Since its inception, the MOC has returned hundreds of mission-capable aircraft to the flight line.”

At any given time, 40 aircraft that have flown in the past year and are scheduled to fly within the next 30 days are under review by the MOC, Ferreira said.

“In coordination with commercial industry best practices and lessons learned from the Super Hornet and Growler sustainment initiative, the Naval Aviation Enterprise has developed a proven process that identifies barriers to achieving mission capability, vigorously swarms those barriers and delivers results,” said Vice Adm. Kenneth Whitesell, Commander, Naval Air Forces and CNAP. “This culture change is being rolled out across all naval type/model/series aircraft and will drive the velocity and scale required for cost transformation. We must deliver warfighting readiness in a less costly fashion.”

In November, Whitesell visited CNAL and observed the MOC in action.

“This is my top priority,” Whitesell said during his visit. “My unit-level commanders want to be ready to fly, fight and win when called upon, and efforts like NSS-A and MOC are critical in ensuring they will be.”

DOD-mandated COVID-19 mitigation measures were implemented throughout the visit, during which Whitesell and Meier participated in the weekly MOC readiness teleconference for East Coast strike fighter squadrons (VFA) and received an overview of the Super Hornet’s mission-capable status, as well as a predictive readiness outlook.

Throughout the teleconference, representatives from VFA squadrons discussed maintenance-related issues impacting their aircraft while other specialists identified parts needed for repairs and formed plans to achieve and maintain “full mission capable” status for the aircraft. Teleconferences focusing on West Coast VFA squadrons, as well as Growler and Poseidon squadrons, took place later in the day.

Capt. Bret Washburn, director of aviation materiel readiness at CNAL, discussed the contributions of the MOC.

“Over the last 24 months, the MOC has evolved into a synergy cell comprised of readiness and sustainment stakeholders that provide ‘speed to need’ by resolving maintenance needs in less time to produce mission-capable aircraft while identifying barriers for resolution,” Washburn said. 🛩️



U.S. Navy photo by MC3 Jairus P. Bailey

Aviation Structural Mechanic (AM) 3rd Class Sierra Roper and AM2 Travis Sims conduct pre-flight maintenance on an MH-60R Seahawk, attached to the “Swamp Foxes” of Helicopter Maritime Strike Squadron (HSM) 74, aboard Arleigh Burke-class guided-missile destroyer USS James E. Williams (DDG 95).



U.S. Navy photo by MC3 Dace Wilson

Sailors attach a cargo pendant to an MH-60R Seahawk, attached to the “Magicians” of HSM-35 on the flight deck of guided-missile destroyer USS Sterett (DDG 104).



U.S. Navy photo by MC3 Benjamin Crossley

Airman Joyce Cruz checks for a clear deck before signaling to an MH-60R Seahawk, attached to the “Raptors” of HSM-71 to take off from aircraft carrier USS John C. Stennis (CVN 74).



Former Astronaut Recounts His Path to the Moon

by Emily Funderburk

An 8-year-old boy built a rocket ship out of a cardboard box, dreaming he could fly to the moon.

That boy was Dr. John Herrington, who grew up to become the first American Indian (Chickasaw tribe) NASA astronaut, flying to space with STS-113 Endeavor in 2002. A retired Navy commander and graduate of the United States Naval Test Pilot School (USNTPS), Herrington shared his story at Naval Air Systems Command's (NAVAIR) national virtual American Indian Alaskan Native Heritage Month event Nov. 5.

"My ancestors—my parents, my grandparents—were able to make decisions that allowed them to survive," he said. "My heritage, based on making good decisions, allowed me to do what I've done. It's influenced my life greatly. My ancestors have given me the opportunity to walk the earth and fly above it."

Herrington made decisions that took him down an unorthodox path of becoming an astronaut. Both his parents loved to fly; he received his first flying lesson from his father at age 10. After graduating early from high school in Texas (but subsequently suspended from college for poor grades), he turned to something entirely different: rock climbing.

Learning to calculate heights, navigate sharp angles and solve puzzles on how to place his body to avoid falling, Herrington realized in the process he was becoming adept at mathematics.

"I learned [trigonometry] on the side of a cliff," he said. "I saw the practical nature of mathematics." Spurred on by his hiking partners, he re-enrolled at the University of Colorado.

"I had a motivation to learn something I'd only seen in a textbook," he said.

He joined the Navy and graduated from USNTPS in 1988.

"I took my math background and applied it to fly airplanes in USNTPS," he said. "[At USNTPS], you're the bridge between the engineering world and the operational world."

He later became an aeronautical engineering duty officer and earned a master's degree in aeronautical engineering from the U.S. Naval Postgraduate School. He was selected by NASA in 1996 and formed part of the largest class of NASA selectees. Nicknamed "the Sardines," their motto was "Space is no problem."

That motto proved true for Herrington, who fulfilled his childhood dream and logged more than 330 hours in space, including close to 20 hours performing space walks during the 16th Shuttle mission to visit the International Space Station. In honor of his heritage, Herrington brought a hand carved flute and eagle feather on the voyage; both are now displayed at the National Museum of the American Indian in Washington, D.C.

For Herrington, diversity and inclusion are imperative to mission success.

"Honor and respect people of all ethnicities; we're all on this team together and have the same goal," Herrington said. "Honor them for who they are and what they're capable of doing and what they believe in."

Emily Funderburk is a public affairs specialist with Naval Air Systems Command Corporate Communications. ✈️

New Flight Eval Training Program Aims to Improve Performance

By Anne Owens

The first 33 students graduated Oct. 14 from the Navy's new Naval Introductory Flight Evaluation (NIFE) program aboard Naval Air Station (NAS) Pensacola, Florida.

NIFE, launched in September, combines and replaces the Aviation Preflight Indoctrination (API) and Introductory Flight Screening (IFS) programs, which have been in place for decades.

NIFE is the first step in the undergraduate aviation-training pipeline for every student naval aviator and student naval flight officer (NFO) in the Navy, Marine Corps and Coast Guard. It is designed to provide students with fundamental aviation knowledge, introduce military procedural-based training and performance standards, provide aeronautical adaptability screening, decrease attrition later in the training pipelines, and improve overall student performance during primary flight training.

Naval Aviation Schools Command (NASC) facilitates the 8 ½-week program, delivering students to Chief of Naval Air Training (CNATRA) for their first flight experience in Navy aircraft.

While students will still get their first flight hours in civil aircraft with mostly civilian flight instructors, NIFE introduces students to military procedures earlier than ever before. NIFE also incorporates military flight instructors (MFIs), who provide flight instruction, serve as mentors and oversee students' progress throughout the program. This allows MFIs to manage students' expectations of primary training requirements, provide assistance to underperformers earlier and lay the foundation of students' military aviation knowledge so they feel confident moving through the pipeline. Working with MFI mentors and applying appropriate study techniques early on is

expected to reduce the number of initial progress checks, ready room UNSATs and reduce academic failure overall.

"The restructuring of NIFE is a major step forward in CNATRA's vision for the Naval Aviation Enterprise," said NIFE Director Cmdr. Mark Yates. "Students are briefing, pre-flight and executing procedures in flight just like they would in primary, advanced and the fleet. When NIFE students arrive in primary, they will be very comfortable with how to prepare and execute sorties. We have essentially moved the learning curve to the left with expectations of higher performance in primary."

NIFE is divided into two parts: ground school and flight. The first is what was formerly known as API. It covers the gamut from physiology and water survival to aerodynamics, weather and engineering. The program includes five academic exams. Students then progress to the flight phase where they review primary-styled course material, conduct briefings, aircraft pre-flight inspections and execute airborne procedures just as they would in primary flight training and beyond. Instruction has a greater focus on Naval Air Training and Operating Procedures Standardization (NATOPS) and relies less



U.S. Navy photo

Ensign Jacob Rozelle, a student naval aviator, releases an aircraft tie down before a training flight as part of the Naval Introductory Flight Evaluation (NIFE) program.



U.S. Navy photos



Rozelle removes wheel chocks from his aircraft and conducts a preflight cockpit check before a training flight.

on commercial-off-the-shelf (COTS) flight training programs. The goal is to develop a more confident and successful flight student throughout the remainder of training.

The aeronautical adaptability-screening portion allows the earlier application of Naval Aviation processes to identify active and passive airsickness. Students who are unable to achieve success due to physical considerations will know earlier to pursue alternate career choices, reducing primary attrition and instances of airsickness.

“NIFE represents a generation leap in preparing students for success in primary,” said CNATRA Assistant Chief of Staff for Training Capt. Steven Hnatt. “The program will shift skill set development to the left, reducing time to train and increasing competency for the officer beginning primary. This permits opportunity to train to a more challenging primary, advanced and [fleet replacement squadron] phase. We are training for victory in the high-end fight—each level of training becomes more sophisticated from year to year. The demands on skill sets and required competencies continue to increase based on the threat we train to as directed in the National Military Strategy.”

Ensign Kyle Roberts is currently enrolled in NIFE. He attended Florida Gulf Coast University in Fort Myers, Florida, and before commissioning via Officer Candidate School in Newport, Rhode Island. He has already completed the ground school portion of NIFE and three of seven scheduled flights in a Cessna 172 Skyhawk, a single-engine high-wing civil aircraft.

“My favorite part has been the academic challenge,” Roberts said. “My degree is not in a related field so this is all new to me. I’m learning so much about aviation in general and it has been really fun.”

Roberts is on track to become an NFO and will report to the “Wildcats” of Training Squadron (VT) 10 at NAS Pensacola for primary flight training in a T-6A Texan II turboprop aircraft.

VT-10 graduates can either select jets and go on to operate in EA-18G Growlers or F/A-18F Super Hornets or select “big-wing” aircraft and go on to operate the P-8 Poseidon, EP-3 Aries, E-2C/D Hawkeye or E-6 Mercury.

Written by Anne Owens with Chief of Naval Air Training Public Affairs for Naval Education and Training Command. ✈️

NAWCAD Pioneers Innovation in Teletest and Maintenance

By Kaitlin Wicker

Long before COVID, the engineers of the Naval Air Warfare Center Aircraft Division (NAWCAD) saw the future of aviation maintenance and testing. Over the past few years they have leveraged technology to create the capability for conducting aviation maintenance and test remotely.

The rapidity with which COVID-19 forced civilian and government organizations to accommodate a distributed workforce gave NAWCAD engineers an opportunity to show the possibilities for today and tomorrow much earlier than anticipated.

Born out of an effort to decrease risk and cost, NAWCAD engineers across the warfare center set out to leverage technology and develop programs that allow pilots and engineers to test an aircraft without it ever leaving the ground.

Virtual Sea Trials

The Dynamic Interface Virtual Environment (DIVE) is a modeling and simulation tool that allows for air-wake analysis and testing of rotorcraft for shipboard take-off and landing. DIVE can simulate sea state, wind conditions, weather, ship motion, aircraft rotor thrust and ship/aircraft air-wake. Everything that needs

to be measured and accounted for can be simulated. These simulations are based on data that has already been gathered either by live flight test or through advanced computational models. Once the models are developed, data from at-sea testing will be used to validate the simulation product.

“Currently, when we need to develop or expand a flight envelope, we have to go to the ship for testing, which can be expensive, difficult to schedule and risky,” said NAWCAD’s Air Vehicle Engineering Director Steve Donaldson. “While our test pilots are the best in the business, we ask them to expand the envelope of aircraft operational limitations. Modeling and simulation changes the game, allowing greater insight into what to expect as we expand aircraft limitations in advance of testing, which ultimately improves test efficiency, and keeps our test pilots safer.”

A flight envelope defines the opera-

tional limits of an aircraft created during initial tests and expanded over time.

DIVE allows engineers to take information from the initial envelope and simulate it with differing variables to broaden capabilities and provide the warfighter limits that are reflective of the aircraft’s true capabilities.

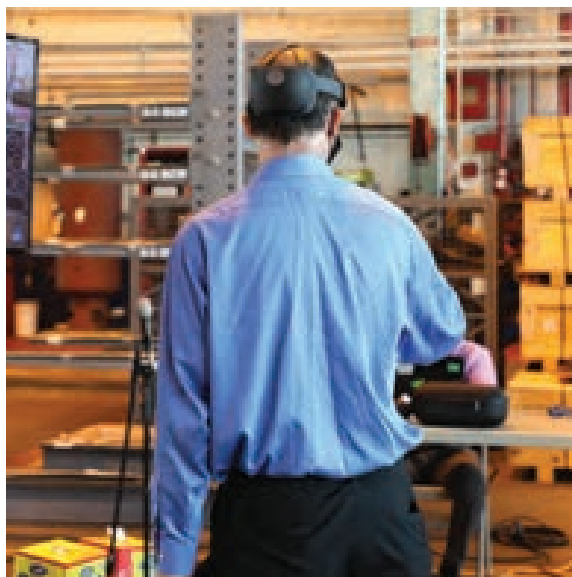
“Accuracy and fidelity are paramount in the type of simulation we use in the engineering and test environment, different than traditional training simulation. To the greatest extent possible every detail of the model has to be physics based and the mathematics and engineering have to be right,” Donaldson said, “So far, the data we’ve collected matches what we have modeled. The consequences of modeling errors due to assumptions, and not physics, can result in unsafe operations if not understood from the outset.”

While the V-22 Osprey is the first vehicle leveraging the DIVE program, the capability is intended to be applied to all rotorcraft and ship combinations.

Helping collect data for the DIVE program is the fixed elevated platform at Naval Air Station (NAS) Patuxent River. Developed by warfare center engineers, the structure is a surrogate amphibious ship that stands in as both a ship deck and hangar front for testing.

Shane Copey, lead project engineer for the platform, said, “Our department

Aristides Staikos, Naval Air Warfare Center Aircraft Division Lakehurst electronics engineer and developer of the Augmented Reality Remote Maintenance Simulation Service (ARRMSS), showcases its capabilities during a live demonstration between Patuxent River Naval Air Station, Md., and Joint Base McGuire–Dix–Lakehurst.



U.S. Navy photos



typically works on marine-related projects—old ships that need to be modified so they can be used as targets. This was the largest land construction project our department has ever created.”

Using an in-house surveyor to map out the footprint and pouring their own footer, the department’s crew made sure the platform was perfect.

“If we had just put this on the ground, even a small pebble on one side could have made inches of difference in the end,” Copsey said. “This construction project was like putting together a big puzzle with a crane.”

Data gathered during rotorcraft landings using the platform will validate and verify the DIVE model.

“It’s not unusual for our division to receive project requests that are not target related—projects that need both engineering and skilled fabrication. The ACRT facility’s high bays, material handling capability and proximity to the airfield, combined with ATMO’s skilled fabricators, made the perfect team for this project,” said Jason Stewart, NAWCAD’s Atlantic Targets & Marine Operations head.

With clearance from the Federal Aviation Administration (FAA) the platform has already been used for more than 15 hours of testing, securing 400 individual test points for the V-22 Osprey.

Maintenance Across the Miles

NAWCAD engineers found that what is good for remote test is also good for remote maintenance. Like something out of a video game, the Augmented Reality Remote Maintenance Simulation Service (ARRMSS) offers a glimpse into the future of Naval Aviation maintenance. ARRMSS allows a maintainer in one part of the world to troubleshoot maintenance issues with an engineer in another. The wireless headset features recording capabilities, is compatible with other communication systems, and is comfortable and easy to use.

The headset is worn by the maintainer giving eyes to a remote engineer who can see everything the maintainer sees. Through his computer, the engineer can highlight and circle things in view of the maintainer and upload documents the maintainer can access through the headset. The engineer can also give verbal step-by-step instructions on how to troubleshoot the issue.

“To think of the time and incorrect diagnoses, which can lead to unnecessary maintenance and aircraft downtime, the capability and readiness this brings is incredible,” said Aristides Staikos, NAWCAD electronics engineer and ARRMSS developer. “When a maintainer is stuck on an issue and unsure what to do next, an engineer is only a video chat away.”

Engineers have only tested the technology on support equipment, between two land based sites (Naval Air Engineering Station Lakehurst and Naval Air Station Patuxent River). The next test for the system is a ship to shore test that will take place in March. Use of the technology is currently being tested with support equipment maintainers. NAWCAD is gauging the value of this capability during initial tests before making it available to maintainers on a larger scale.

“It’s perfect for the new generations of maintainers. The technology is not new to them, it’s just our processes and equipment catching up with what they already use in their personal lives,” Staikos said.

The technology was developed completely in-house and mitigates the challenges surrounding data rights belonging to industry partners. So far, ARRMSS is fully functional at low bandwidth, which is promising ahead of testing shipboard.

Amid challenges brought by COVID-19, the pandemic was a catalyst in accelerating technology already on the horizon and has shown the DOD very real scenarios where the technology is not only effective but necessary.

“We have to always keep in mind the art of the possible,” Staikos said.

Kaitlin Wicker is a communications specialist for Naval Air Warfare Center Aircraft Division Public Affairs. ✈



Staikos assists attendees as they try out ARRMSS. The demonstration between Pax River and Lakehurst was the first long distance test of the system.



Fleet Readiness Center East recently completed work on the last T58-GE-400B presidential helicopter engine supporting Marine Helicopter Squadron (HMX) 1 and the Marines who provide executive transport of the president, vice president, cabinet and foreign dignitaries. The current version of the presidential helicopter, the VH-3D Sea King, pictured here, is scheduled to be replaced by the VH-92A© in 2021.

New Year, New Chapter in FRCE Support to Presidential Helicopter

From Fleet Readiness Center East Public Affairs

Fleet Readiness Center East (FRCE) marked the end of an era when artisans recently boxed up the last T58-GE-400B presidential helicopter engine and shipped it to the Marines who provide safe and timely transportation of the President of the United States.

The current version of the presidential helicopter FRCE supports, the VH-3D Sea King, is scheduled to be replaced by the VH-92A© presidential helicopter in 2021.

The maintenance, repair and overhaul center located aboard Marine Corps Air Station Cherry Point, North Carolina, has worked with the Presidential Helicopter Program, also known as the Gold Plate Program, for more than five decades.

Based on FRCE's experience and reputation for quality products, the program is already in motion to transition FRCE support to the VH-92A©.

"I am very proud of FRC East's long history of supporting

the Presidential Helicopter Program," said FRCE Commanding Officer Capt. Mark E. Nieto. "Our workforce has supported this very important mission with a great deal of pride and distinction. We are looking forward to supporting the new platform."

FRCE began working with the presidential helicopter in 1967, when the organization was known as the Naval Air Rework Facility (NARF). The General Electric T58-GE-8C engines produced at the facility powered the VH-3A version of the Sea King helicopter in support of Marine Helicopter Squadron (HMX) 1. The VH-3A helicopter was a modified version of the Sikorsky H-3 Sea King antisubmarine helicopter designed to provide short-range helicopter transportation to the president.

Since then the program has transitioned through two engine upgrades before adopting the T58-GE-400B in 1985, which is the configuration still in use today.

Many of the aviation maintenance professionals who have worked with the Gold Plate Program said the importance of the mission gave them a great sense of pride and accomplishment.

"As a mechanic, when you build something, watch it get tested and pass inspection and watch it go out and do what it's designed to do—that's satisfaction," said Charles Morgan, a pneumatics systems mechanic who started with the program in 2005. "It's the pride in knowing that you had a part in the helicopter that's flying the president." 🇺🇸

Book Smarts: Tech Librarians Keep Maintenance Info Current

By Kim Koonce

Aviation maintenance professionals at Fleet Readiness Center East (FRCE) always work by the book. Mechanics are required to consult maintenance manuals as they perform their repair and overhaul tasks on military aircraft, and it's critical that those manuals contain the most current information.

Keeping these paper and electronic manuals up to date is top priority for the data management technicians and librarians in FRCE's Technical Library.

Between production lines, machine shops and engineering offices, more than 7,600 manuals and 440 computer-based systems are used daily to ensure that maintenance procedures are being followed correctly. The 10-person library staff ensure those manuals, drawings and portable electronic maintenance aids (PEMA) are current.

The librarians take that responsibility seriously, according to Melisa Jones, Technical Library supervisor.

"We try to instill in the librarians that every day when you do your job, you need to do it accurately, correctly and in accordance with all guidelines, processes and procedures that we have in place,"

Jones said. "The safety and quality of our products depend on it."

Publication updates can take the form of technical directives, airframes changes, engineering bulletins, drawings or other input. Data managers in the library are notified by the Naval Air Technical Data and Engineering Service Command about required changes and updates on any of FRCE's many aircraft platforms.

"When we get an interim rapid action change, or IRAC, we have to incorporate it into the paper publication by annotating the manual," Jones said. "When they open it up, it will say 'see IRAC,' and they know to refer to the IRAC."

Jones said other types of changes can affect as many as 50 to 100 pages within a publication, and each new page must be substituted for the corresponding old one.

Some librarians work in close proximity to their assigned aircraft programs, while others can log several miles a week traveling between aircraft lines to update PEMAs and manuals for the FRCE Detachment at Marine Corps Air Station (MCAS) New River, North Carolina, and MCAS Beaufort, South Carolina.

Brandon Fone, data management technician, said he enjoys the daily interaction with the production shops he supports.

"A big part of my job is customer service, making sure that the people on the floor can be confident that what they're seeing is current and correct," Fone said. "

The facility has about 440 laptop systems or PEMAs, which hold digital copies of the technical manuals. PEMAs are stored in large electronic cabinets, and information can be pushed to up to 21 units at a time while they are connected to the cabinet.

"We put our pin numbers into the cabinet and check out a PEMA, just like a tool," said Alexander Elftmann, V-22 work leader. "We bring it out, pull up the task we're assigned, and follow it, step by step."

Jones said the H-1 and V-22 programs have used interactive electronic technical manuals, or IETMs, for several years. She said the H-53 program should be converting to electronic manuals sometime next year, while the F-35 program is using a hybrid of paper and electronic manuals.

The library is conducting a pilot program to reduce the number of paper manuals. Artisans say they appreciate the immediacy of the electronic manuals as long as a paper copy is available in case of a technical glitch.

"The best thing about electronic manuals is you've always got the most up-to-date copy," said Robert Durst, test cell artisan in the Pneudraulics Branch. "You pull it off the computer, and you have the most current information available. The down side is if the system's down, you have nothing. That's the double-edged sword."

According to Patricia Barr, data management specialist, the library staff is working with supervisors to find the mix



U.S. Navy photo

Choy Littleton, drawing technician, prints a technical drawing from the Joint Engineering Data Management Information Control System (JEDMICS).

between paper and digital information that works best for each shop.

“We discuss the plan with the supervisor and get their concurrence. Also, we can add digital copies of the publications to the laptops, so it’s no problem if the internet goes down,” Barr said.

Librarians acknowledge that the conversion from paper to digital is an ongoing process, and they appreciate the responsibility they have to ensure that all technical information is correct.

“The mechanics on the floor refer to the copies as their bible. They don’t do

any work without it being open,” Fone said. “Essentially if they’re not working off the correct data, they’re doing incorrect work, which has a direct result on the safety of the aircraft.”

Kim Koonce is a public affairs specialist with Fleet Readiness Center East. 🐦

FRCSW Inducts Final E-2C Hawkeye

By Jim Markle

On the heels of inducting its last C-2A Greyhound for planned maintenance interval three (PMI-3), Fleet Readiness Center Southwest (FRCSW) welcomed its final E-2C Hawkeye to undergo PMI-2 last fall.



U.S. Navy photo by Jim Markle

An E-2C Hawkeye aircraft is pictured in the Building 460 hangar onboard Fleet Readiness Center Southwest where it will undergo PMI-2.

The airborne early warning system E-2 is the sister airframe to the C-2 transport. The Grumman Aircraft Company developed the airframe in the mid-1960s and both remain in service aboard aircraft carriers.

Production of the E-2C variant began in 1973. With its detachable 24-foot diameter rotodome radar system, the Hawkeye’s ability to guard against airborne threats remains the standard for protection of carrier battle groups.

Inducted from Airborne Command & Control Squadron (VAW) 123, the Hawkeye was transported to Building 460 where FRCSW performs in-depth maintenance.

The airframe undergoes two levels of scheduled maintenance: a light periodic maintenance interval (PMI)-1 at FRCSW Site Point Mugu and FRC Mid-Atlantic, and PMI-2, or a heavy maintenance, at Naval Air Station (NAS) North Island, California.

PMI-1 is scheduled to continue at both locations through

fiscal 2023, according to Jorge Gutierrez-Lopez, FRCSW Props Integrated Production Team program scheduler.

During PMI-1, artisans assess the attachment points of the flight control surfaces on the body of the aircraft, the engines and other areas identified in the maintenance specification. Sheet metal repairs are made and worn parts replaced, but if a larger repair is needed an in-service repair (ISR) is generated.

ISRs are funded separately and usually completed during the PMI procedure.

As the Navy’s sole provider of PMI-2 events on the airframe, FRCSW employs a staff of 173, comprised of 120 artisans and 53 indirect support personnel, at its primary hub at NAS North Island.

Though not a complete overhaul, PMI-2 is a substantial disassembly of the aircraft down to the fuselage. Artisans remove the aircraft’s wings, engines, landing gear and tail.

Jim Markle is a public affairs specialist at Fleet Readiness Center Southwest. 🐦

The U.S. Naval Test Pilot School educates the **WORLD'S FINEST** developmental test pilots, flight officers, and engineers in the design, risk management, execution, and communication of aircraft and systems testing.

**APPLY TODAY!
SEATS ARE LIMITED**

REACHING

FLIGHT



UNITED STATES NAVAL TEST PILOT SCHOOL

USNTPS

USNTPS OFFERS CURRICULA IN:

- Fixed Wing
- Rotary Wing
- Airborne/Unmanned Systems (NFO)

HOW TO APPLY

SUBMIT YOUR APPLICATION:

Navy Personnel Command
www.public.navy.mil/bupers-npc
Click on Boards - Administrative - Test Pilot

Mark These Dates on Your 2021 Calendar

June Selection Board for January Class

- Application announcement Issued: March/April
- Applications accepted: Up to mid-May
- Board convenes: Mid June
- Results posted: Early July

Expected arrival dates for pre-arrival training:

- Fixed Wing: August 1
- Rotary Wing: November 1
- Systems: December 1

Dates subject to change

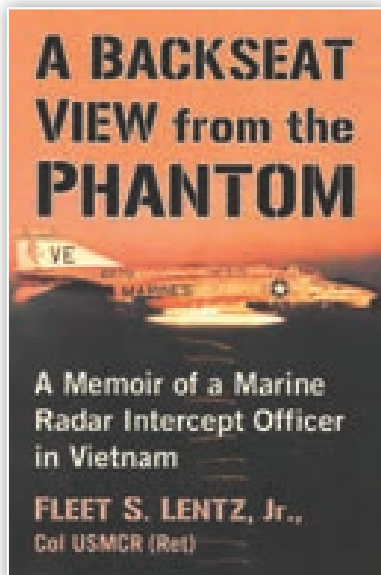
For more information on
the U.S. Naval Test Pilot School
visit: navair.navy.mil/nawcad/usntps

Professional Reading

By Cmdr. Peter Mersky, USNR (Ret.)

A Backseat View from the Phantom: A Memoir of a Marine Radar Intercept Officer in Vietnam

By Col. Fleet S. Lentz Jr., USMCR (Ret.), McFarland & Company Inc., North Carolina. 2020. 219 pages. Ill.



This small publisher has put out a few interesting books recently and this is one of the best. Although there has been a lot written about the Vietnam air war, very little, if anything specific, has covered the

somewhat unique situation that developed after the January 1973 ceasefire had brought the main fighting to an end and allowed most of the long-held American prisoners of war to be repatriated. However, fighting continued in Laos and Cambodia as the communist forces in these adjacent countries tried to consolidate their positions in Southeast Asia. While American sea and land forces largely withdrew from the area, the Marines kept one squadron each of F-4s and A-4s in-country well into the summer of 1973, operating from the Royal Thai Air Base at Nam Phong, fondly referred to as "The Rose Garden," in wry reference to a popular country song where the lead lyric stated, "I beg your pardon, I didn't promise you a rose garden." That rang true because the base offered little in amenities for the long-suffering Marine aviators and their ground troops.

From the moment they arrived, the

Silver Eagles of Marine Fighter Attack Squadron (VMFA) 115 struggled to maintain their big fighters as well as their morale, while flying almost daily missions into areas that still promised major enemy defense fires, largely anti-aircraft artillery (flak, of all calibers). The squadron had been involved in the previous major campaigns from 1965, flying from bases in South Vietnam along with other services.

First Lt. Lentz, a newly minted radar intercept officer (RIO), arrives and eventually flies 131 missions with the veteran pilots who had preceded him. Mainly close air support in nature, but occasionally against enemy ground targets, these flights prove to be just as dangerous as any in the main war. His writing is superb and brings the reader—whether he be without any personal knowledge of these experiences, or

A-4 Skyhawk vs North Vietnamese AAA, North Vietnam 1964-72.

By Peter E. Davies, Osprey Publishing, Oxford, UK. 2020. 80 pp. Ill.

No. 104 in Osprey's highly successful Duel Series, this new book from prolific author Peter Davies is definitely one of his best. It showcases his ability to research and absorb history and facts, figures and first-person impressions to synthesize the information into a readable history on aviation during the Vietnam War. It is also one of the most technically complicated of this series' books

The book describes how the North Vietnamese used their array of various anti-aircraft guns, their development and dispersal around the North Vietnamese landscape. Included is how various U.S. Navy and Marine Corps A-4 squadrons and their pilots defended themselves against these dangerous ground-to-air weapons at the height of the long war.

While the other defenders, namely the vaunted SA-2 and SA-3 surface-to-air missiles and the squadrons of MiGs, accounted for their share of losses of all Allied aircraft and crews, the various flak guns presented what was arguably the most

consistently “productive” of the curtain of defense devised by the North Vietnamese, assisted by their Russian and Chinese advisors and sponsors.

Davies' account goes inside the North Vietnamese organizations, getting unique first-person information on what it was like to confront an incoming raid of Navy Skyhawks, often preceded by Iron Hand A-4s armed with Shrike missiles and ECM-equipped EKA-3s that also functioned as aerial tankers standing by to help struggling A-4 pilots low on fuel exiting the target area. Early on, EA-1F Spads contributed their own valuable brand of ECM.





An F-4B of VMFA-115 drops bombs over Laos in 1973. Note the open chaff door just above MARINES.

perhaps a veteran aviator who has seen much of the same thing—right into the Southeast Asia air war.

We meet several characters who take the new RIO on his first combat missions, each with their unique call signs by which the author still remembers

them. Most are senior to him and have logged much more combat time as he struggles to keep up with them and learn as much as he can and as fast as he can. As he gains experience and confidence, he finds himself advising pilots as they

struggle through missions. One example involves aerial tanking, which is not an easy part of the overall flight. His pilot is a full colonel and in command of the aircraft group. Although a good bomber, he admits that the difficult exercise of plugging into a tanker's basket is not his strong suit and he proceeds to prove it.

As their big fighter's engines continue to gobble up their remaining fuel, the senior pilot struggles to plug into the tanker's basket as time is quickly passing. The now-experienced RIO shows his value and calms the pilot down leading him to successfully plug into the KC-130 tanker. After the mission, the colonel quickly expresses his profound gratitude in a simple manner that means more to the young officer who flew behind him.

Lentz also describes the late-war attitude to fighting enemy MiG fighters. Even at the end of the war, the Marine crews hoped they would find and engage the still-dangerous MiGs that had played such a highly publicized role in the

So many different aircraft and their brave crews were part of the Skyhawk story over Vietnam. Many authors have tried to tell this story, which includes the wide-ranging activities of the communities, aircraft, ships and different personalities that fought this long-lasting conflict that affected how we fight today.

Davies has done a fine job pulling all of these threads together to weave that story into one multi-colored fabric. The book is supported by fine graphics and photos that have become so much of the traditional product we expect from Osprey, which is competently supported by creator and editor, Tony Holmes, who designed Osprey's *Duel*, *Aircraft of the Aces* and *Combat Aircraft* series. The company has gone to great lengths to tell the stories of these aircraft and their people spanning the early years of aviation to the present. ✈️



In 1967, an Iron Hand VA-155 A-4E taxis up the flight deck of the USS Coral Sea (CVA 43) armed with AGM-45A Shrikes and AGM-12A/B Bullpups on the outboard and inboard pylons, respectively.

previous war. Navy and Air Force crews had shot down many MiGs, but Marine aviators had tallied only three kills, two of which while on exchange tours in Air Force squadrons, and one with a Marine crew in a Marine Phantom.

With the legends of people like Pappy Boyington and Joe Foss behind them,

Vietnam Marines still hoped for that a chance to add to the list of scores. However, with the war winding down around them, the chances for even seeing a MiG dissipated and having a ground controller offer a simple “vector” to a bandit, even if it soon proves impossible to “make the kill,” became a morale booster

for the men still engaged in fighting the remnants of the war.

Quite a few Vietnam veterans are now writing their stories and this new book is one of the best I have seen, focusing on a period of the war about which many people know little. 🛩️

Grumman F2F/F3F and Civilian Variants

By Richard S. Dann, Steve Ginter, Simi Valley, California, 2020. 192 pp. III.

Readers who have seen several pre-World War II movies—such as the iconic color film “Dive Bomber” (1941) or the black-and-white squadron epic “Flight Command” (1940)—or those who built Monogram’s 1/32nd scale model of Al Williams’ Gulfhawk with its quirky prop-connected-to-retractable-landing-gear arrangement that definitely frustrated this reviewer’s attempts to assemble, will be familiar with Grumman’s definitive biplane naval fighters of the late 1930s, the F2F and the F3F, before the U.S. military began giving official names to its aircraft.

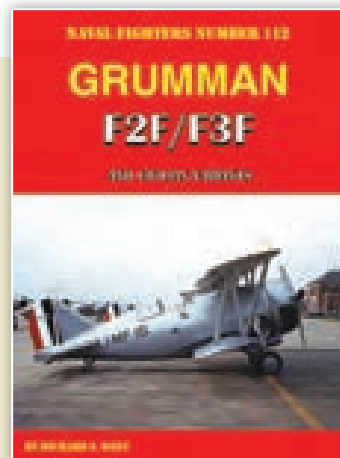
Retired Navy Capt. Rich Dann has assembled a great collection of photos of the F3F and its predecessor, the F2F, to create No. 112 in the highly successful Ginter Naval Fighters series. There are still several kits available that feature these two aircraft, and the book’s up-close detail photos as well as period shots of many squadron aircraft will satisfy most enthusiasts and modelers.

Both aircraft served in the Navy and Marine Corps into the early 1940s, sometimes flying with the so-called “Neutrality Star” prominently displayed on their forward fuselages to defend against any possible encounters with potential enemy fighters before America’s entry into WWII after Pearl Harbor in December 1941.

Although quickly withdrawn from frontline service, the F3F served briefly as an advanced trainer in wartime gray and would make an interesting subject for the enterprising modeler, using a few photos supplied by Dann in this new book.

The two biplane fighters served in the heyday of the Navy’s complicated but definitely colorful period where naval aircraft displayed different bright colors on individual aircraft in a squadron to denote each aircraft’s position in formation as well as the identity of the pilot it was assigned to and to which carrier the particular aircraft was assigned. In its civilian “Gulfhawk” identity, the F3F was also well known in the late 1930s as the mount of Al Williams who flew it for a time in demonstrations and occasionally serving in various capacities and military assignments.

Besides the usual squadron and aircraft information, the book closes with an assembly of various model kits in different scales that make up these two aircraft, with the pride of place going to the F3F in both its Navy and Marine Corp colors and Gulfhawk identity. This is definitely a worthwhile addition to the Naval Fighters series. 🛩️



U.S. Navy photo

An F2F of Fighting Squadron (VF) 5 in July 1938.

Squadron Spotlight

Helicopter Sea Combat Squadron (HSC) 12

Established: March 7, 1952

Based: Naval Air Facility Atsugi,
Kanagawa, Japan

Commanding Officer:
Cmdr. Justin R. Ott

Mission: *To effectively employ the versatility and lethality of the MH-60S aircraft off the aircraft carrier into the darkest of nights and contested areas to recover personnel and enable combat logistics.*

Brief History: The “Golden Falcons” were established March 7, 1952, as Helicopter Anti-Submarine Squadron (HS) 2 in San Diego, California, flying the HRS-2 Chickasaw, giving HSC-12 the distinction as the oldest rotary wing squadron in the U.S. Navy. HSC-12’s multi-mission capability has been put to the test in many ways throughout its history, including the 1964 flood rescue operations in Northern California and the 1966 recovery of the Apollo Saturn 202 Command and Service Module. HS-2 then shifted gears to become the first Navy helicopter squadron to execute a night combat search and rescue mission in North Vietnam in 1965. The squadron was responsible for 10 overland and five coastal rescues of pilots in North Vietnam during 1967. Also in 1967, HS-2 was called upon to provide relief support to snowbound Native Americans in Arizona.

HS-2 led the way in modern carrier airborne anti-submarine warfare by transitioning to the SH-60F Seahawk and accepting the HH-60H in 1990. The Golden Falcons deployed in support of Operation Desert Storm in 1991. In 2003, the squadron conducted combat operations during Operation Iraqi Freedom and supported critical Naval Special Warfare missions during the opening days of the conflict.

In May 2009, the Golden Falcons transitioned to the new MH-60S



airframe. In the process, HS-2 became HSC-12. In late 2012 through early 2013, HSC-12 became the first MH-60S squadron to be forward deployed, conducting a historic move from San Diego, to NAF Atsugi, Japan, where it supported Carrier Air Wing (CVW) 5 on USS George Washington (CVN 73), later transitioning to USS Ronald Reagan (CVN 76) where HSC-12 operates today. HSC-12 also stood up its first Executive Transport Detachment (DET ONE) on USS Blue Ridge (LCC 19) in support of Commander, U.S. 7th Fleet. Today, HSC-12 continues to operate as an effective part of ever-changing tactical, political and humanitarian scenarios.

Aircraft Flown: 10 Sikorsky MH-60S helicopters

Number of People in Unit: 220 enlisted, 40 officers

Significant Accomplishments: In 2020, HSC-12 flew 3,682.7 hours to include 1,328.5 hours at night in support of its mission

Despite the global pandemic in 2020, the Golden Falcons still performed and executed their mission. In April, the squadron sent Sailors into pre-deployment sequestration (PDS) to support sea trials onboard CVN-76. After the successful sea trials, the rest of the squadron entered PDS in May and completed a six-month deployment at sea. The Golden Falcons rose to the challenge and executed continuous flight operations throughout the deployment completing more than 2,500 flight hours in support of CVW-5 and CVN-76. During this time, HSC-12 participated in Operation Valiant Shield and Operation Keen Sword utilizing joint force integration to increase warfighting readiness in an all domain environment.

Back home in NAF Atsugi, the Golden Falcons are preparing to provide a detachment to Kadena Air Force Base in Okinawa, Japan, to execute critical weapon qualifications and training for the pilots deploying onboard CVN-76 in 2021. The Golden Falcons remain the Navy’s premier lifesaving, rotary-wing anti-surface warfare, personal recovery and naval special warfare squadron.



U.S. Navy photo

I AM NAVAL AVIATION

Navy Aviation Boatswain's Mate (Fuel) 3rd Class
Anthony Montufar, CVN-71



NAVAL AVIATION NEWS