NAVAL AVIATION NEWS

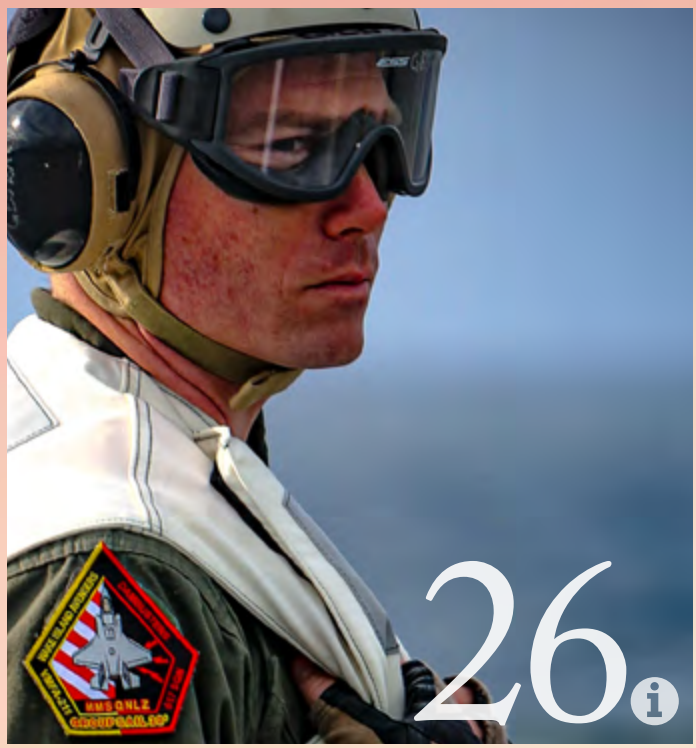
THE FLAGSHIP PUBLICATION OF NAVAL AVIATION SINCE 1917

SPRING 2024

A MOMENTOUS HAUL

CH-53K Carries F-35C from Maryland to New Jersey

WHAT'S INSIDE



The Wasp-class amphibious assault ship USS Bataan (LHD 5) sails in the Mediterranean Sea, Dec. 31, 2023.

U.S. Navy photo by MC2 Nolan Pennington

NAVAL AVIATION NEWS

SPRING 2024 VOLUME 106, NO.2

DEPARTMENTS

FEATURES

ALSO IN THIS ISSUE

ON THE COVER

On the Cover: *Teams with Air Test and Evaluation Squadron (VMX) 1 and Naval Air Station Patuxent River, Maryland, collaboratively work to accomplish a lift and aerial refuel of an F-35C Lightning II, CF-1, from the Pax River F-35 Integrated Test Force by a CH-53K from VMX-1 April 24. The lift was conducted in preparation for the aerial transport of CF-1 from NAS Patuxent River to Lakehurst, New Jersey. (U.S. Navy photo by Kyra Helwick)*

In this issue of Naval Aviation News, *on page 34 read about the spectacular collaborative effort that resulted In the aerial transport of an F-35C Lightning II airframe from Naval Air Station Patuxent River, Maryland, to Lakehurst, New Jersey, via a CH-53K King Stallion, which was also refueled In the air by a KC-130T Hercules during the flight. The Chief of Naval Air Training has devised an app to prevent head, neck and back injuries. Read about this innovative approach on page 22. And on page 26, read why Maj. Brian Kimmins, an AV-8B and F-35B trained LSO, established a Marine Corps F-35B STOVL LSO school at Marine Corps Air Station Beaufort, South Carolina.*

On the back cover: *Marine Corps Lance Cpl. Isaiah Maez, a fixed-wing aircraft mechanic with Marine Fighter Attack Squadron 242, Marine Aircraft Group 12, Japan, signals to an F-35B Lightning II aircraft during the Fiscal Year 2023 Korea Flying Training at Gwangju Air Base, Republic of Korea, April 13, 2023. KFT 23 is a combined training event focused on tactical execution of combat missions and is part of the ROK-U.S. alliance's routine, annual training program. (U.S. Marine Corps photo by Cpl. Raymond Tong)*

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

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Naval Aviation News (USPS 323-310; ISSN 0028-1417) is published quarterly for the Chief of Naval Operations by the Naval Air Systems Command. 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.

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Approved for public release: SPR No. 2024-0408
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Airscoop

Compiled by Rob Perry

U.S. Naval War College Alumni Join Next Generation of Astronauts

NEWPORT, R.I.—U.S. Naval War College (NWC) alumni Cmdr. Jack Hathaway and Lt. Cmdr. Jessica Wittner graduated as astronauts in NASA's Artemis program at the Johnson Space Center in Houston, Texas, March 5.

The two career naval aviators were among 12 candidates selected by NASA to participate in the Artemis training program. Now, having graduated, they have earned their astronaut wings, securing eligibility for spaceflight, including assignments to the International Space Station (ISS), future commercial destinations, and missions to the Moon and Mars.

Inspired as a child by movies and books on Apollo astronauts and the incredible bravery they displayed in accomplishing their mission, Wittner said it was exhilarating to hear the news that she was accepted to the program.

"It changed everything," Wittner said. "And the program has just been wonderful. Now, today, I'm graduating."

For Hathaway, the call came in while he was working aboard his ship, the aircraft carrier USS Harry S. Truman (CVN 75).

"It was a pretty surreal experience, and it was just awesome to be with my Navy family when it happened," he said. "I just loved that I was about to do something else that I was going to love."

A 2004 graduate of the U.S. Naval Academy (USNA) and 2016 graduate of NWC, Hathaway credits his professional military education (PME) experience for enabling him to apply strategy and creative thinking to his training as an astronaut and naval career as a leader.

"There are a lot of challenges associated with spaceflight. A lot are more technical, and a lot of them are people-related, involving leadership and team membership," he said. "The Naval War College really made me think about why things are happening the way they do and how to get a group of people to move strategically in the direction necessary to achieve the goal," he stated.

Wittner echoed similar sentiments, having earned a master's degree in aerospace engineering from the U.S. Naval Postgraduate School (NPS) in 2018 and a Joint Professional Military Education (JPME) I certification from NWC's College of Distance Education (CDE) in 2021. She attributes her ability to value different leadership perspectives and problem-solving approaches to her military education.

"Everybody in our class, everybody in this office, is a leader in his or her respective field," she said. "The War College really helped set me on that path too because it was another steppingstone towards honing different leadership skills and growing into this as a more senior role."

Wittner offered that her exposure to varying leadership styles came specifically from reflecting on readings and case studies allowing her to critically examine her current and future leadership styles. She advises current PME students and all those wishing to be successful in their military careers not to remain static in their thinking, but rather to foster an open and curious mind.

NASA photos by James Blair

Astronaut graduates Lt. Cmdr. Jessica Wittner, left, and Cmdr. Jack Hathaway.

Now that they have graduated, both Hathaway and Wittner are looking forward to donning their NASA Extravehicular Mobility Suits (EMUs) and readying themselves for the critical missions that lie ahead. But the impact of their training will stick with them forever. For Hathway, the best part of the experience has been the sense of community established via shared experience.

"You just never encounter someone who's here by accident," he said. "Everyone is of the same mindset that he or she wants to be part of the team supporting the nation in pushing boundaries and exploring space, and it's pretty cool to be surrounded by that level of enthusiasm."

Wittner concurred, adding that it was wonderful collaborating with so many people from diverse backgrounds to solve problems and reminding those with a dream that there is no one set path to NASA.

"We're surrounded by academics, phone engineers, doctors, etc.," she said. "Everyone brings something to the table."

In their educational and professional accomplishments, both graduates follow in the footsteps of lauded astronaut, Alan Bartlett Shepard Jr., a naval aviator, graduate of NWC and the USNA and the first American and second individual to travel into space. Fascinated by flight, Shepard was also the fifth and oldest person to walk on the Moon at the age of 47.

NASA continues its work aboard the ISS, which has maintained more than 23 consecutive years of human presence. The agency also is enabling the development of new commercial space stations where crew members will continue conducting science to benefit Earth and deep space exploration.

As part of NASA's Artemis campaign, the agency will establish the foundation for long-term scientific exploration at the Moon; land the first woman, first person of color and its first international partner astronaut on the lunar surface; and prepare for human expeditions to Mars for the benefit of all.

NWC delivers excellence in education, research and outreach, informing today's decision-makers and educating tomorrow's leaders. The college provides educational experiences and learning opportunities that develop students' ability to anticipate and prepare strategically for the future, strengthen the foundations of peace, and create a decisive warfighting advantage.

From U.S. Naval War College.

U.S. Navy photo illustration

NPS Accepted into USSPACECOM Academic Engagement Enterprise

MONTEREY, Calif.—U.S. Space Command (USSPACECOM) has accepted the Naval Postgraduate School (NPS) into its Academic Engagement Enterprise (AEE), a select partnership of 48 colleges and universities throughout the United States.

The AEE is an alliance of public and private academic institutions contributing to current and future USSPACECOM domain superiority by collaborating with academic institutions for workforce professional development, increased space-relevant research, expanded space-focused partnerships and strengthened space dialogue. USSPACECOM announced the establishment of the AEE in September 2022.

Acceptance within the AEE marks yet another major milestone for NPS and its Space Systems Academic Group (SSAG). For more than four decades, the SSAG has coupled NPS space-related research with the graduate education of military officers.

"Space Systems at NPS is pleased to join the AEE to ensure that we stay abreast of the rapid developments in the space arena as it becomes, once again, a geopolitical symbol of technological accomplishment and capabilities—and for the first time, a contested environment that has significant defense advantages for the countries that are able to operate there, from low earth orbit to geosynchronous orbit to cislunar orbit," said Dr. Jim Newman, SSAG chair and a former NASA astronaut.

NPS, which was accepted into the AEE in October 2023, joins 47 other civilian and military academic partner institutions. In addition to NPS, AEE partners include the Air Force Institute of Technology (AFIT), the Army War College, the Army Space and Missile Defense School and the Marine Corps War College.

Through its participation in the AEE, NPS faculty will receive defense-level space learning outcomes, competencies and behaviors that will enhance curricula, student programs and collaborative applied research. Additionally, NPS will benefit from discussions with USSPACECOM subject matter experts, participate in AEE symposiums and senior leader discussions, technology integration, student internships and exercise integration. AEE members will also gain from NPS, including student operational experience and faculty insights to help understand and support naval needs in space, and can leverage NPS' long history and expertise in CubeSat miniature satellites for defense applications, with the next two NPS CubeSats due for launch in the spring and fall of 2024.

NPS has a long and distinguished history with our nation's military and civilian space programs and its most senior leaders—including the current Secretary of the Navy Carlos Del Toro, who as a young Navy officer graduated with a master of science degree in Space Systems Engineering. Other Space Systems graduates have gone on to great success in leadership and service positions throughout the Department of Defense, from flag and general officers to the Deputy Secretary of Defense.

In March 2023, Del Toro hosted the inaugural Naval Space Summit at NPS, giving senior leaders from throughout the DOD a venue to examine the challenges, needs and opportunities of space operations unique to the maritime domain.

Additionally, as of 2023, 44 NPS graduates have gone on to become NASA astronauts—more than any other postgraduate institution in the U.S.

From Naval Postgraduate School Public Affairs.

NRL Participates in International Campaign Investigating Polar Low Phenomena

WASHINGTON, D.C.—U.S. Naval Research Laboratory (NRL) research meteorologist James Doyle, Ph.D., recently joined an international team of scientists to investigate meteorological processes associated with Arctic cold air outbreaks.

From late February through early April, the 45-day international field campaign CAESAR, short for Cold-Air outbreak Experiment in the Sub-Arctic Region, focused on cold-air outbreaks that occur as cold Arctic air flows-out over warmer open waters between northern Norway and the Arctic ice edge.

Cold-air outbreaks, or CAOs—one of the most extreme meteorological air mass transformations on Earth—can occur when cold Arctic air flows over frozen land masses or sea ice to over much warmer open ocean waters resulting in the formation of convective boundary layers that produce hazardous winds and seas, and spawn small-scale, intense "polar lows."

"Despite the profound impact that CAOs have on atmospheric and oceanic circulations in the Arctic, as well as the important implications for Navy operations, surprisingly little is known about the nature of intense surface flux impacts on the atmosphere and ocean boundary-layer structure," Doyle said. "The nature of the air-sea-ice interaction and cloud processes in CAOs are rapid with abrupt transitions, which have been a roadblock to process understanding and model predictions."

CAOs pose challenges to Navy operations because of the severe environmental conditions and the rapid changes in the atmosphere and ocean boundary layer properties that impact electromagnetic and acoustic propagation characteristics. The CAESAR mission seeks to investigate the marine atmospheric boundary layer characteristics and shallow, precipitating clouds that form during CAOs, as well as the mesoscale circulations that lead to polar low developments.

"Under favorable conditions the air-sea interaction intensifies, triggering shallow and vigorous convective cells that produce hazardous winds and seas, and under some conditions lead to the genesis of small-scale, intense polar lows," Doyle said. "Conventional theories and model parameterizations in Arctic CAOs have been lacking this vital data and CAESAR will provide a detailed characterization that will form the basis for NRL boundary layer and coupled modeling studies."

Based in Kiruna, Sweden, the CAESAR team will utilize the National Science Foundation (NSF)/National Center for Atmospheric Research (NCAR) center's C-130 Hercules aircraft, with in situ and remote sensors and dropsondes for sampling the Arctic air mass—from the CAO origin at the ice edge through the transformation—as the boundary layer gets modified downstream. The C-130 suite of instruments also include airborne radar, LiDAR, and aerosol and cloud precipitation probes activated during CAO events.

CAESAR will also make use of Norwegian ground-based radars and instruments located on Norway's Bear Island.

Written by Daniel Parry, U.S. Naval Research Laboratory.

U.S. Naval Research Laboratory photo

The National Science Foundation/National Center for Atmospheric Research C-130 aircraft right before its first mission in Kiruna, Sweden, during the Cold Air Outbreak Experiment in the Sub-Arctic Region (CAESAR) field campaign. The CAESAR team will fly the C-130 through Arctic conditions to collect data on marine cold air outbreaks and Arctic cloud behavior. The purpose of the field project is to better understand the warming in the Arctic.

VMFA-542 Achieves Full Operational Capability as Marine Corps' First East Coast F-35 Operational Squadron

MARINE CORPS AIR STATION CHERRY POINT, N.C.—Marine Fighter Attack Squadron (VMFA) 542, 2nd Marine Aircraft Wing (MAW), achieved full operational capability April 3 as the Marine Corps' first East Coast F-35 Lightning II Joint Strike Fighter squadron in the Fleet Marine Force.

Full operational capability means that VMFA-542 is ready for full operations and completed its transition from a legacy tactical-aircraft platform to the F-35B Lightning II. The squadron is now capable and eligible to deploy globally in support of planned or contingency operations. As 2nd MAW's first operational fifth-generation fighter-attack squadron, they can fulfill their mission essential tasks (METs) in support of the Marine Air-Ground Task Force (MAGTF). These METs include close-air support, strike, strike coordination and reconnaissance, offensive anti-air warfare, suppression of enemy air defenses, electronic attack, electronic support and active air defense.

"Achieving full operational capability is a testament to the exceptional hard work and professionalism from the Marines of VMFA-542," said Lt. Col. Brian Hansell, commanding officer of VMFA-542. "This milestone marks the addition of a battle-ready aviation squadron with unmatched combat lethality and survivability to the Marine Expeditionary Force. We are ready and able to conduct missions globally in support of the MAGTF as we continue to prepare for the next challenge."

The F-35 is a fifth-generation fighter jet with advanced stealth, agility and maneuverability, sensor and information fusion, and provides the pilot with real-time access to battlespace information. It is designed to meet an advanced threat while improving lethality, survivability and supportability. The F-35B Lightning II is the short-takeoff and vertical-landing F-35 variant. This capability allows the aircraft to operate from amphibious assault ships and expeditionary airstrips less than 2,000 feet long.

VMFA-542 began its transition to the F-35B Lightning II in December 2022 and received its first F-35B on May 31, 2023. The squadron then achieved initial operational capability, Feb. 5, before receiving its 10th aircraft, March 25, and achieving full operational capability, April 3.

The squadron also recently participated in Exercise Nordic Response 24 in Norway, which was a two-week exercise with NATO allies and partners demonstrating military prowess across land, maritime and aviation domains against challenging arctic and mountainous conditions. During the exercise, VMFA-542 conducted a distributed-aviation-operations event at Kallax Air Base in Lulea, Sweden, March 13, marking the first time a U.S. F-35 Lightning II aircraft landed in Sweden, the first time any F-35 operated at Kallax Air Base, and one of the first training events conducted by Sweden as a NATO member.

VMFA-542 is a subordinate unit of 2nd MAW, the aviation combat element of II Marine Expeditionary Force.

Written by 2nd Lt. John Graham with the 2nd Marine Aircraft Wing.

Marine Corps pilots with Marine Fighter Attack Squadron (VMFA) 542, 2nd Marine Aircraft Wing, stage in formation at Marine Corps Air Station Cherry Point, North Carolina, Feb. 13.

U.S. Marine Corps photo by Lance Cpl. Madison Blackstock

First East Coast-Assigned Navy CMV-22B Osprey Arrives to Norfolk

U.S. Navy photo by MCSN Sylvie Carafiol

The first East Coast-assigned Navy tiltrotor vertical/short takeoff and landing (V/STOL) aircraft CMV-22B Osprey lands at Naval Station Norfolk, April 5.

NORFOLK, Va.—The first East Coast-assigned Navy tiltrotor vertical/short takeoff and landing (V/STOL) CMV-22B Osprey aircraft, assigned to Fleet Logistics Multi-Mission Squadron (VRM) 40, arrived to Naval Station Norfolk, Virginia, on April 5.

"Naval Aviation is ecstatic to welcome the first CMV-22B Osprey to Norfolk," said Rear Adm. Doug Verissimo, commander, Naval Air Force Atlantic (CNAL). "This first aircraft's arrival symbolizes an evolution and change in Naval Aviation as we look toward the future. The event represents the hard work and stamina of our aviators, aircrewmen, maintainers and sustainment personnel in the VRM community."

The CMV-22B will provide the fleet's medium-lift and long-range aerial logistics capability, eventually replacing the C-2A Greyhounds of Fleet Logistics Support Squadron (VRC) 40 over the next several years. The squadron's relocation to Naval Station Norfolk is part of their permanent duty station change from Naval Air Station (NAS) North Island, California, in preparation to provide fleet logistic aviation assets to the Atlantic Fleet beginning in 2025.

The VRM-40 "Mighty Bison" were established aside their existing sister squadron, VRM-30, and the training squadron, VRM-50, aboard NAS North Island in March 2022.

All squadron personnel have been officially stationed in Norfolk since Feb. 1, 2024. The remaining VRM-40 aircraft will begin to arrive to Hampton Roads in the summer of 2024.

VRM-40's leadership consists of Cmdr. Matthew Boyce, commanding officer; Cmdr. Mason Fox, executive officer; and Command Master Chief Bradley Wissinger.

"We are proud to join the Commander, Naval Air Force Atlantic team and eager to lean forward into our next phase of stand-up," Boyce said.

Fox discussed the importance of standing up a new squadron on the East Coast.

"We're excited to be in our permanent home at Naval Station Norfolk and focused on continuing to build the squadron to execute our mission—delivering high priority people and parts to carrier strike groups at sea," Fox said. "The Osprey is an extremely capable aircraft and will be critically important to the way the Navy fights for many years to come."

In addition to VRM-40, a type wing detachment was established onboard Naval Station Norfolk earlier in 2023 to provide local representation of Commander, Fleet Logistics Multi-Mission Wing (CVRMW), based at NAS North Island.

CVRMW's mission is to provide Pacific and Atlantic Fleet VRM squadrons the ability to sustain lethality for carrier strike groups of the future through the timely, persistent air logistics missions our nation demands any place in the world. The CMV-22B is the Navy's long-range/medium-lift element of the intra-theater aerial logistics capability responsible for transporting personnel, mail and priority cargo from shore logistics sites to ships at sea.

From Commander, Naval Air Force Atlantic.

ARTEMIS Program Receives First Repatriated Swiss F-5

CECIL FIELD, Florida—The first of 22 repatriated Swiss F-5 Tiger II aircraft arrived at the Tactical Air Support facility at Cecil Field in Jacksonville, Florida, March 21 for the second phase of the Avionics Reconfiguration and Tactical/Modernization for Inventory Standardization (ARTEMIS) program.

The aircraft, which arrived via a Marine Corps C-130J from Marine Aerial Refueler Transport Squadron (VMGR) 234, marks a milestone that is the culmination of several months of engineering and maintenance efforts performed by the Tactical Air Support team in close coordination with Navy and Marine Corps stakeholders, said Capt. Greg Sutton, Specialized and Proven Aircraft Program Office program manager.

"Expansion of the F-5 program ensures future success in training Navy and Marine Corps aviators," Sutton said.

In 2020, the U.S. Navy and the Swiss Government entered into an agreement to repatriate 22 Swiss Air Force F-5 aircraft into the Navy and Marine Corps Adversary fleet. As part of the ARTEMIS Program, the Tactical Air Support subcontractor, RUAG, located in Emmen, Switzerland, performs the program's first phase with aircraft inspection, maintenance, structural component replacement, and engine modification and overhaul. Upon completion of this phase, the aircraft are transferred to Tactical Air Support's facility to begin phase 2. During this phase, aircraft inspections, maintenance and repair continue while integrating a new glass cockpit, modern avionics and other safety modifications.

Initial deliveries of the 22 aircraft are planned by mid-2025 with program completion in 2028 adding 11 F-5 Adversary aircraft to the each to the existing inventory of Navy and Marine Corps.

From the Specialized and Proven Aircraft Program Office.

U.S. Navy photo

The first of 22 repatriated Swiss F-5 Tiger II aircraft arrived at the Tactical Air Support facility at Cecil Field in Jacksonville, Florida, March 21 for the second phase of the Avionics Reconfiguration and Tactical/Modernization for Inventory Standardization (ARTEMIS) program, ferried by a U.S. Marine Corps C-130J from Marine Aerial Refueler Transport Squadron (VMGR) 234.

U.S. Marine Corps photo by Lance Cpl. Orlanys Diaz Figueroa

Marines with Marine Unmanned Aerial Vehicle Training Squadron (VMUT) 2 conduct familiarization training with an MQ-9A Reaper unmanned aircraft at Marine Corps Air Station Cherry Point, North Carolina, April 11.

Building the Eye in the Sky: VMUT-2 Begins Assembly of First MQ-9A Reaper for 2nd MAW

MARINE CORPS AIR STATION CHERRY POINT, N.C.—Marine Unmanned Aerial Vehicle Training Squadron (VMUT) 2, 2nd Marine Aircraft Wing (MAW), began the assembly of 2nd MAW's first MQ-9A Reaper, April 10, as part of the Marine Corps' continued transition from the legacy RQ-21A Blackjack in accordance with Force Design initiatives.

"The delivery and build of VMUT-2's first MQ-9A aircraft is yet another successful milestone in the transition of VMUT-2 to become the MQ-9A Fleet Replacement Squadron, responsible for the world-class training of the Marine Corps' MQ-9A pilots and sensor operators," said Lt. Col. Michael Donlin, commanding officer of VMUT-2.

Many of the parts for the aircraft were delivered to VMUT-2, known as the "Night Owls," aboard Marine Corps Air Station (MCAS) Cherry Point, North Carolina, from General Atomics in March, making 2nd MAW the third and final MAW to receive the aircraft. Marine Unmanned Aerial Vehicle Squadron (VMU) 1, 3rd MAW, procured the first MQ-9A Reaper for the Marine Corps in August 2021, and VMU-3, 1st MAW, was the first VMU to achieve initial operational capability with the MQ-9A platform in August 2023.

The MQ-9A Extended Range Marine Air-Ground Task Force (MAGTF) Unmanned Expeditionary (MUX) Medium-Altitude, High-Endurance (MALE) aircraft is a medium-altitude, long-endurance Block 5 remotely piloted aircraft, enabling future Marine Corps, naval and joint force operating concepts by providing multi-sensor surveillance and reconnaissance; data gateway and relay capabilities through an aerial layer; and enabling or conducting the detection and engagement of targets during expeditionary, joint and combined operations. The aircraft will provide intelligence, surveillance, reconnaissance and targeting as well as performing additional missions such as: maritime domain awareness, airborne network extension, airborne early warning and electronic support.

With a range of more than 1,600 miles and the ability to operate for more than 20 hours, the unmanned aircraft is designed to provide intelligence, surveillance and reconnaissance in support of 2nd MAW and wider Marine Expeditionary Force missions. This extended range is possible through the Marine Corps' addition of external fuel tanks to the aircraft that are capable of holding 1,300 pounds of fuel.

These capabilities will allow the MQ-9A Reaper to support future Marine Corps operating concepts, such as distributed maritime operations, littoral operations in a contested environment, and expeditionary advanced base operations as part of Force Design initiatives. The capabilities that the MQ-9A Reaper will provide represent an enhancement to 2nd MAW's intelligence, surveillance and reconnaissance, and data and communications network capabilities. The arrival and assembly of this aircraft represents a milestone in 2nd MAW unmanned aircraft systems' support for future operating concepts and represents an additional milestone in VMUT-2's continued transition from the RQ-21A Blackjack platform that served as 2nd MAW's primary unmanned aircraft system until July 2023.

"Our ability to rapidly and safely build these aircraft sets the stage for flight operations in the near future and is a testament to the hard work of the 'Night Owl' maintenance department and the program office over the last 10 months," Donlin said. "Night Owls don't quit."

Written by 2nd Lt. John Graham, 2nd Marine Aircraft Wing.

Marine Corps XQ-58A Valkyrie Completes Second Successful Flight

U.S. Air Force photo by Master Sgt. John McRell

A Marine Corps XQ-58A Valkyrie, highly-autonomous, low-cost tactical unmanned air vehicle, soars overhead during its second test flight at Eglin Air Force Base, Fla., Feb. 23.

EGLIN AIR FORCE BASE, Fla.—The Marine Corps' XQ-58A Valkyrie, a highly autonomous, low-cost tactical unmanned air vehicle, successfully completed its second test flight Feb. 23, at Eglin Air Force Base, Fla.

The XQ-58A provides the Marine Corps with a testbed platform for developing technologies and new concepts in support of the Marine Air Ground Task Force, such as autonomous flight and unmanned teaming with crewed aircraft. The Marine Corps' continued experimentation with the XQ-58, sponsored under the Department of Defense's Rapid Defense Experimentation Reserve program, which accelerates the delivery of capabilities to the joint force.

The successful flight is a key milestone in implementing Project Eagle, the service's aviation modernization strategy in support of broader Force Design modernization efforts. The XQ-58A and other Project Eagle research and experimentation platforms will inform capabilities needed in future conflicts out to 2040.

The Marine Corps Warfighting Lab and the Deputy Commandant for Aviation's Cunningham Group, an internal working group responsible for planning and implementing Project Eagle, played an instrumental role in coordinating across the Department of Defense for support for the flight.

"The future battlespace demands new aviation platforms that embrace the austere environment and bring the fight to the enemy at a place of our choosing," said Lt. Col. Bradley Buick, future capabilities officer for the Cunningham Group.

This joint collaboration was supported by the Office of the Undersecretary of Defense for Research and Engineering; the U.S. Air Force's 40th Flight Test Squadron; the U.S. Air Force's 96th Test Wing; the Naval Air Systems Command; and the Naval Air Warfare Center Aircraft Division's AIRWorks. This broad team facilitated ongoing research, development, test and evaluation for the aircraft for its first two flights.

"Working alongside our naval and joint partners is a testament to joint innovation as Marine aviation adapts and evolves to the changing character of conflict," said Lt. Col. Gavin Robillard, lead aviation strategy and plans officer for the Cunningham Group. "Aligning these test flights with Project Eagle informs future support to the Marine Air Ground Task Force, which guides the foundation for the next Marine Aviation Plan."

Future test flights of the Marine Corps XQ-58A Valkyrie play an integral role in the Marine Corps' efforts to modernize and enhance capabilities in a rapidly evolving security environment. The XQ-58A has a total of six planned test flights which will evaluate the effectiveness of autonomous electronic support to crewed platforms like the F-35B Lightning II and the potential for AI-enabled platforms to augment combat air patrols. The XQ-58A is envisioned to provide capability to the Marine Air Ground Task Force that ranges from electronic warfare support to delivering or supporting lethal fires and kill chains—key contributions to other service-level research and development programs such as the Penetrating Affordable Autonomous Collaborative Killer Portfolio.

Written by Capt. Alyssa Morales, Communication Directorate with Headquarters, U.S. Marine Corps.

2nd LAAD Battalion Marines Put Counter-UAS Concepts to the Test

MARINE CORPS AIR STATION CHERRY POINT, N.C.—Marines with 2nd Low Altitude Air Defense (LAAD) Battalion, Marine Air Control Group 28, 2nd Marine Aircraft Wing (MAW), conducted a scenario-driven training April 15-17 for counter-unmanned aircraft systems (CUAS) aboard Marine Corps Base Camp Lejeune, North Carolina.

The purpose of the training was to assess, refine and validate counter-UAS tactics, techniques and procedures and to build confidence among 2nd LAAD Battalion Marines in conducting counter-UAS missions. Events such as this give 2nd LAAD Battalion the opportunity to train, educate and eventually provide subject-matter experts in support of establishing counter-UAS programs across 2nd MAW. These counter-UAS programs will be critical for 2nd MAW's ability to identify and defeat adversary intelligence, surveillance, reconnaissance and targeting platforms, contributing to counter-reconnaissance efforts and enabling stand-in forces to persist inside of an enemy's weapons-engagement zone. Counter-UAS is core mission essential task for 2nd LAAD Battalion. Second LAAD Battalion will seek to continue to assess, refine, and validate their tactics, techniques and procedures to meet the demands of the modern battlespace in the ever-changing UAS environment and the proliferation of unmanned aircraft systems.

"Today's training gives LAAD a way to develop tactics, techniques and procedures for us to conduct active air defense against small UAS when we are integrated with the infantry," said 2nd Lt. John Osment, the unit readiness coordinator for 2nd LAAD Battalion. "It also gives the infantry a chance to see standard operating procedures that we employ so that when LAAD is not there to support them, they can conduct force protection on their own with weapons that are organic to the infantry battalion."

During this training, Marines were tested on their ability to shoot, move and communicate in a counter-UAS scenario while directly engaging single-person operated drones with direct fire weapons, such as shotguns, machine guns and rifles, while conducting patrols and occupying defensive positions. The Marines were presented with three different scenarios. After a drone was detected in the field of fire from an unknown location, the Marines were required to process reports for tracking the drone, take up their designated firing positions, and engage with the drone until it was destroyed or the course of fire was completed.

The Marines credit their success to the planning and rehearsals they received leading up to the live-fire portion of the training. Before the live-fire portion of the training event, the Marines spent several days conducting sand-table exercises and immediate-action drills, familiarizing themselves with the range's terrain and conducting dry-fire rehearsals to build their confidence before firing live ammunition. Small-unit leaders were tasked with ensuring their Marines were fully prepared to put their training into practice and conduct their counter-UAS mission.

"The proliferation of UAS employment in modern conflict necessitates our Marines to shoot, move and communicate in a UAS-dominant environment," said Lt. Col. Bradley Creedon, commanding officer of 2nd LAAD Battalion. "Today's training gives us the opportunity to put our CUAS tactics, techniques and procedures to the test and build the confidence of our Marines in conducting CUAS gunnery."

Written by 2nd Lt. John Graham with the 2nd Marine Aircraft Wing.

U.S. Marine Corps photo by Lance Cpl. Anakin Smith

Marine Corps Master Sgt. Todd Grindstaff, a weapons and tactics training chief with Headquarters and Service Battery, 2nd Low Altitude Air Defense (LAAD) Battalion, operates a drone during a counter-unmanned aircraft system (UAS) range on Marine Corps Base Camp Lejeune, North Carolina, April 16.

VUP-19 Welcomed to NAS Sigonella, Celebrates New MQ-4C Triton Hangar

NAVAL AIR STATION SIGONELLA, ITALY—Unmanned Patrol Squadron (VUP) 19 "Big Red" held a ribbon cutting ceremony March 2, to celebrate the inaugural deployment of its second forward-deployed detachment and the opening of a new MQ-4C Triton hangar at Naval Air Station Sigonella, Italy.

"This ceremony demonstrates Naval Aviation's continuing efforts to develop new concepts and technologies, and integrate them efficiently into the fleet," said Vice Adm. Daniel "Undra" Cheever, Commander, Naval Air Forces. "The MQ-4C Triton will be an essential platform for the future of maritime patrol and reconnaissance, with advanced warfighting technology to put more players on the field."

Leading up to the ceremony, Rear Adm. Adam Kijek, Commander, Patrol and Reconnaissance Group, also toured the hangar and held a separate All Hands Call with VUP-19 Sailors, who showcased the MQ-4C Triton, the Navy's newest Intelligence, Surveillance and Reconnaissance Maritime Patrol asset.

"We are excited to honor the legacy of 'Big Red' with our newest detachment here in Sigonella," said Lt. Cmdr. Cory Solis, officer-in-charge, VUP-19. "My team has been working extremely hard to stand up this detachment, so to witness them overcome so many barriers and participate in this ribbon cutting ceremony is a major victory for all of us."

VUP-19 is the first and only unmanned patrol squadron and will set a baseline for training Sailors and officers on the tactics, techniques and procedures of operating the MQ-4C Triton for future warfighting.

"We are happy to have VUP-19 on deck and look forward to supporting the squadron as it strengthens the fleet's readiness and capability in the U.S. 6th Fleet area of operations," said Capt. Aaron Shoemaker, commanding officer, NAS Sigonella. "The addition of the Triton to Sigonella's unmanned systems capabilities is also a strategic win because it augments the capabilities of our P-8 Poseidon detachments to provide broad area, intelligence, surveillance, reconnaissance and targeting capabilities."

New Aircraft Arrives at NAS Corpus Christi to Replace Aging T-44C Pegasus

U.S. Navy Photo by Anne Owens

A T-54 multi-engine aircraft sits on the flightline of Naval Air Station (NAS) Corpus Christi, Texas.

CORPUS CHRISTI, Texas—Two T-54A multi-engine aircraft landed aboard Naval Air Station (NAS) Corpus Christi, Texas, April 18. The arrival of the T-54A heralds a new generation of naval aviators who will use the trainer to earn their wings of gold as they prepare to fly such aircraft as the P-8A Poseidon, E-2D Hawkeye and C-130 Hercules. The T-54A replaces the T-44C Pegasus, an aircraft that has been in naval service since 1977.

The Navy awarded a contract to Textron in early 2023 to acquire up to 64 King Air 260 aircraft that will be designated as T-54A in the Navy's training fleet. T-44C Pegasus is the Navy's designation for the aging fleet of Beechcraft King Air 90 aircraft. The T-44C has successfully served generations of naval aviators after continuously supporting Training Air Wing (TAW) 4 efforts to routinely exceed naval aviator production requirements each year. Most recently, TAW-4 effectively employed the T-44C in achieving 110 percent of fiscal year 2023 requirements for naval aviator production. But, as aviation and maritime warfare continue to evolve, the T-54A has arrived to better help Student Naval Aviators prepare for the future.

Capt. Michael Albus, commander TAW-4, will oversee the introduction of the T-54A into the Navy's two premier

While the Sigonella detachment is VUP-19's newest addition, the squadron can date its modest beginnings to Reserve Patrol Squadron 907, which was established July 4, 1946. After many re-designations, VUP-19, as it is known today, was officially established Oct. 1, 2013, and later commissioned Oct. 28, 2016.

VUP-19 is currently homeported in Florida at Naval Air Station Jacksonville and Naval Station Mayport, with a detachment at Andersen Air Force Base, Guam.

Naval Air Station Sigonella provides consolidated operational, command and control, administrative, logistical and advanced logistical support to U.S. and other NATO forces. The installation's strategic location enables U.S., allied, and partner nation forces to deploy and respond as required, ensuring security and stability in Europe, Africa and Central Command.

Written by Petty Officer 2nd Class Kelsey Culbertson, Naval Air Station Sigonella, Italy.

U.S. Navy photo by MC2 Sebastian Portieleslopez

Capt. Ronald H. Rumfelt Jr., commanding officer, Unmanned Patrol Squadron (VUP) 19 "Big Red" (left), Vice Adm. Daniel "Undra" Cheever, Commander, Naval Air Forces (center), and Capt. Aaron Shoemaker, commanding officer, Naval Air Station (NAS) Sigonella (right), participate in a ribbon cutting ceremony to celebrate the inaugural deployment of VUP- 19's second forward-deployed detachment, and the opening of a new MQ-4C Triton hangar at NAS Sigonella, Italy.

multi-engine training squadrons, Training Squadron (VT) 31 and VT-35.

"We produce the best multi-engine pilots in the world," Albus said. "The T-54A will be the training aircraft to carry that legacy into the future. With its ProLine Fusion avionics suite, combined with increased range, speed and altitude, the T-54A will ensure that our aviators are well-prepared to operate complex fleet aircraft, and are ready for tomorrow's challenges in a multi-domain environment."

The arrival of the first multi-engine training system (METS) replacement in over 45 years is not just historic for TAW-4, but for the entire naval air training enterprise. This aircraft is the first of the Chief of Naval Air Training's (CNATRA) entire fleet of over 650 aircraft to include a glossy grey paint scheme. This paint scheme, announced alongside a "Midway" blue paint coat for CNATRA's T-6B Texan II aircraft, is an effort to reconnect students and instructors with the fleet. The glossy grey color of the T-54A reflects similar paint coats of the P-8A Poseidon and E-2D Hawkeye.

"The T-44C Pegasus trained generations of naval aviators seeking to fly multi-engine platforms. So the arrival of the T-54A is a truly historic moment that signifies the Navy's commitment to training our future pilots," Albus said. "Many will quickly notice that the new aircraft is not painted orange and white like the previous 70 years of naval air training. The new grey paint scheme is designed to bolster pride not only in our students but in our instructors."

Two crews ferried the aircraft back to NAS Corpus Christi after the Navy took possession of the aircraft days earlier in Wichita, Kansas. Cmdr. Kerry Bistline, TAW-4's officer in charge of METS fixed wing training, was the flight leader for both crews.

"This is a culminating moment for me as a TAW-4 flight instructor. Being able to see this program grow from the acquisition phase to delivery is a highlight for my 27-year career. It's been a long process to ensure that the METS team got this right. I look forward to seeing this trainer fly in the local Corpus Christi area for many years to come."

Other crew members included Lt. Mike Stengel, naval aviator and instructor pilot who volunteered to help ferry the aircraft back home on its maiden voyage as an official naval aircraft.

"The T-54A will be a great addition to the TAW-4 family. This aircraft will lead the way for the next generation of multi-engine aviators. It has been a very rewarding and humbling experience to be a part of the METS team and it will be one of the highlights of my career."

As more T-54A aircraft arrive, the T-44C Pegasus will slowly begin to phase out. Combined with the gradual repaint of T-6B Texan II aircraft, less and less orange-and-white aircraft will appear in the South Texas sky. Increasing numbers of new students in the advanced stage of training for multi-engine platforms will immediately begin to train in the T-54A as other students and instructors lead the T-44C to sundown.

CNATRA trains, mentors and delivers the highest quality naval aviators who prevail in competition, crisis and conflict. Headquartered at NAS Corpus Christi, CNATRA comprises five training air wings in Florida, Mississippi and Texas, which are home to 17 training squadrons. In addition, CNATRA oversees the Navy Flight Demonstration Squadron, the Blue Angels, and the training curriculum for all fleet replacement squadrons.

From Chief of Naval Air Training public affairs.

2nd Marine Aircraft Wing Marines Receive Last AV-8B Harrier Pilot Designations

MARINE CORPS AIR STATION CHERRY POINT, N.C.—The AV-8B Harrier II Fleet Replacement Detachment (FRD), Marine Aircraft Group (MAG) 14, 2nd Marine Aircraft Wing (MAW), graduated March 29 the final two pilots to receive the 7509 Military Occupational Specialty (MOS) at Marine Corps Air Station (MCAS) Cherry Point, North Carolina.

Capt. Joshua Corbett and Capt. Sven Jorgensen completed their final training flight at the FRD in order to receive the 7509 MOS, which is reserved for AV-8B Harrier II qualified pilots. The flight, a low-altitude close air support training sortie, represents the culmination of the Marines' training at the FRD.

"The significance of the last replacement pilot training flight in the Harrier community is that it is the beginning of the end for us as a community," Corbett said. "The Harrier, more than many aircraft than I have come across, elicits an emotional response. For members of the public, members of the aviation community, members of the Marine community, and especially members of the Harrier pilot community, it's bittersweet. All good things have to come to an end, and it's our turn soon, but not yet."

The Harrier is a vertical/short takeoff and landing (VSTOL) tactical attack aircraft. The first AV-8B Harrier II arrived at MCAS Cherry Point in January 1984. In their 40-year presence in the eastern North Carolina region, 2nd MAW Harriers, and the 7509s that pilot them, have supported numerous operations across the globe, including Operation Desert Storm, Operation Allied Force in 1999 in the former Yugoslavia, Operation Enduring Freedom, and Operation Iraqi Freedom. Corbett's and Jorgensen's designation represents 2nd MAW's continued operational transition from legacy fixed-wing tactical aircraft, such as the Harrier.

As the Harrier transitions out of the Fleet Marine Force, its role is being filled by the F-35B Lightning II. Marine Attack Squadron (VMA) 223 will be the last Harrier squadron in the Marine Corps and is set to continue operating the platform through September 2026. Until then, the platform will continue to call MCAS Cherry Point home and execute deployed operations as part of Marine Expeditionary Units.

"I am incredibly proud of the legacy of the AV-8B, both within Marine Aviation and here in eastern North Carolina," said Lt. Col. Nathaniel Smith, the Commanding Officer of VMA-223. "Our platform is part of the fabric of eastern North Carolina, as countless Marines, sailors and civilians have contributed to our success for decades. It is exciting to see our last two students graduate from the FRD and hit the fleet. Our team

Navy Delivers First P-8A Poseidon Aircraft for Increment 3 Block 2 Modifications

The Navy delivered the first P-8A Poseidon aircraft to be modified with Increment 3 Block 2 capabilities to Boeing on March 27. Modifications are expected to be complete in late 2025.

U.S. Navy photo

PATUXENT RIVER, Md.—The Navy delivered the first P-8A Poseidon aircraft to be modified with Increment 3 Block 2 capabilities to Boeing on March 27, enabling the fleet to be outfitted with the full anti-submarine warfare (ASW), anti-surface warfare (ASuW), and intelligence, surveillance and reconnaissance (ISR) capabilities outlined in the P-8A

U.S. Marine Corps photos from video by Staff Sgt. Theodore Bergan

Capt. Joshua Corbett

Capt. Sven Jorgensen

of pilots, maintainers, and supporting staff have done outstanding work in supporting both the FRD and VMA missions here at VMA- 223, and I look forward to us continuing to support 2nd MAW and the MAGTF at home and overseas."

Both pilots will report to VMA-223 after completing the FRD syllabus.

Written by 2nd Lt. John Graham with the 2nd Marine Aircraft Wing.

program's evolutionary acquisition strategy.

The P-8A is the Department of Defense's only long-range full-spectrum ASW, cue-to-kill platform, with substantial armed ASuW and networked ISR capabilities. Increment 3 Block 2 provides a significant upgrade to the P-8A airframe and avionics systems, and includes new airframe racks, radomes, antennas, sensors and wiring. The modification incorporates a new combat systems suite with an improved computer processing and higher security architecture capability, a wide band satellite communication system, an ASW signals intelligence capability, a track management system, and additional communications and acoustics systems to enhance search, detection and targeting capabilities.

"Increment 3 Block 2 brings the capability that the P-8A was made for. These modifications will allow aircrews to search, locate and track the most advanced submarines in the world, enabling the fleet to pace the threat with the required capability and capacity to win the fight," said Capt. Erik Thomas, program manager for the Maritime Patrol and Reconnaissance Aircraft Program Office. "This delivery demonstrates the team's outstanding work ethic, professionalism and dedication to the fleet."

Increment 3 Block 2 related modifications will begin at Boeing's Maintenance, Repair and Overhaul hangar at Cecil Airport in Jacksonville, Florida. The first fleet aircraft modification is expected in January 2025.

"P-8A Increment 3 is the next step in the spiral evolution of Poseidon. By design, and through the efforts of NAVAIR and industry teaming, Increment 3 Block 2 represents the baseline configuration the Navy needs to address tomorrow's high-end threat," said Rear Adm. Adam Kijek, Commander, Patrol and Reconnaissance Group/Patrol and Reconnaissance Group Pacific.

In response to evolving threats around the world, future P-8A modifications will be implemented via a sequence of rapid capability insertion efforts that build upon this new Increment 3 Block 2 baseline.

As of March 2024, Navy fleet squadrons have taken delivery of 119 P-8A aircraft. P-8A active duty and reserve squadron transition training is complete for all 14 fleet squadrons and one fleet replacement squadron. In addition, the P-8A fleet has flown for more than 503,783 flight hours and recorded more than 440,558 landings.

The Maritime Patrol and Reconnaissance Aircraft Program Office manages the acquisition, development, support and delivery of the Navy's maritime patrol and reconnaissance aircraft.

From the Maritime Patrol and Reconnaissance Aircraft Program Office.

Navy, Air Force Fighters to Train as a Joint Force in NAWCAD's Joint Simulation Environment

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION, PATUXENT RIVER, Maryland—Navy and Air Force fighter pilots will begin training as a joint force at the Naval Air Warfare Center Aircraft Division (NAWCAD)'s Joint Simulation Environment (JSE) starting in 2024.

NAWCAD installed a division of four Air Force F-22 Raptor cockpits into the Navy's premier simulation test and training facility alongside its division of eight F-35 Lightning II cockpits in January.

"When America is engaged in conflict, the DOD will bring joint capability to bear from every service across all domains," said NAWCAD Commander Rear Adm. John Dougherty IV. "We've replicated this ability in the Joint Simulation Environment, a force multiplier helping aviators deter aggression and—if necessary—prevail in conflict."

The new addition of fifth-generation fighter simulators brings Navy, Marine Corps, Air Force and allied partners into the hyper-realistic digital range that consists of cockpits, domed simulators with 4K projectors and aircraft software to enable pilots to fly wartime scenarios in a near-exact virtual environment. Tactical groups training in NAWCAD's JSE fly more sorties over one week than they do over a year on open-air ranges.

"Open-air ranges are extremely constrained with safety limitations that prevent warfighters from training like they'd fight," said NAWCAD JSE Director Blaine Summers. "The JSE is where fifth-gen fighters train to hone their tactics and fight like their lives depend on it."

Developed by Navy engineers and industry partners, NAWCAD's JSE is a powerful training and test facility designed to adapt and grow, utilizing hardware and software from actual DOD aircraft, weapons and other defense systems. The JSE has all the equipment and experts needed to keep the facility running smoothly from its cockpits, to its software and simulators, to its mission debriefing rooms where pilots get feedback on their performance during training.

In this highly realistic digital range, aviators experience

USS John C. Stennis Leaves Dry Dock, Begins Second Phase of Refueling and Complex Overhaul

The Nimitz-class aircraft carrier USS John C. Stennis (CVN 74) is moved to an outfitting berth in Newport News, Virginia, April 8.

U.S. Navy photo by MC2 Simon Pike

WASHINGTON NAVY YARD—USS John C. Stennis (CVN 74) undocked from drydock April 8, completing a significant milestone during its multi-year Refueling and Complex Overhaul (RCOH) at HII-Newport News Shipbuilding (NNS) in Newport News, Virginia.

Commissioned in December 1995, the nation's seventh Nimitz-class nuclear-powered aircraft carrier entered RCOH in May 2021, under a $3 billion contract with NNS. The overhaul is now more than 65 percent complete and tracking for redelivery in October 2026.

Aircraft carriers enter refueling complex overhauls at the mid-point of their 50-plus-year lifespan, incorporating upgrades to propulsion equipment, infrastructure and electronic systems. After NNS flooded the dry dock with more than 100 million gallons of water, the ship moved to the shipyard's outfitting berth, where shipyard workers and crew will complete the installation and testing of major components and combat support systems.

Rear Adm. Casey J. Moton, Commander, Program Executive Office Aircraft Carriers, recognized the important milestone, adding that the next phase of the ship's overhaul will deliver impressive

U.S. Navy photo by Terri Thomas

A pilot tests an Air Force F-22 Raptor cockpit simulator headed for installation in the Naval Air Warfare Center Aircraft Division's Joint Simulation Environment. The Navy installed a division of four Raptor cockpits alongside a division of eight F-35 Lightning cockpits in its advanced tactical trainer so Navy and Air Force fighter pilots can train as a joint force starting in 2024.

the consequences of their mistakes, including mission failure, loss of systems and even loss of life. The JSE enables pilots to learn those hard lessons, immediately adjust, fly again and continue the learning process to become a highly capable tactical aviator.

The JSE was initially designed to support F-35 Lightning's operational testing as there was no way to safely and adequately represent real-world conflict on an open-air range. Today, the DOD is scaling the Navy's technology for additional digital range facilities supporting programs like F-35, F-22 and E-2D. In addition, the DOD has made training in the JSE a formal part of the Navy's Strike Fighter Tactics Instructor Program—commonly known as TOPGUN.

Over the next year, NAWCAD will incorporate additional test and training cockpits including the F/A-18 Hornet, EA-18 Growler and E-2 platforms to train fighters for future flight lines. The warfare center will also deploy its second training system onboard a Navy carrier, USS Abraham Lincoln (CVN 72).

From the Naval Air Warfare Center Aircraft Division public affairs.

new technologies to support the Navy's warfighters, enabling John C. Stennis to meet operational taskings during another 25-plus years of service.

"When John C. Stennis redelivers, she'll be the most technologically advanced Nimitz-class aircraft carrier in the Navy," Moton said. "She'll bring to the fleet the highest level of capability across all mission sets."

Moton also acknowledged that the shipyard and Navy team have been navigating several challenges and working under an extended redelivery schedule due both to mandatory growth work following ship condition assessments, as well as industrial base challenges.

"The Navy-Industry team is dealing with the lingering effects of a post-COVID industrial base—one that includes a reduced or unstable capability and capacity along with challenges in workforce recruitment, retention and proficiency. However, the bottom line is that fleet operators need us to deliver these capital assets to our warfighters ready for tasking, so we are working on a daily basis with our industry partners and within the Navy to accelerate problem solving and to speed production on the deck plates—all focused on delivering readiness. I am proud of our entire team for achieving this important production milestone towards redelivering USS John C. Stennis to the fleet."

Capt. Mark Johnson, manager of the PEO Aircraft Carriers In-Service Aircraft Carrier Program Office, said that the Navy-Industry team is leveraging lessons learned from the Navy's previous RCOHs, especially on USS George Washington (CVN 73), which was redelivered in May 2023.

"Recognizing the changing workforce demographics coming out of the COVID pandemic, the combined Navy/Shipbuilder team has taken measurable steps to improve the level of support to the mechanic or sailor actually performing work on the ship by leveraging new digital management tools and processes," said Johnson.

More than 25 million total man-hours of work will go into John C. Stennis' RCOH, with crews refitting and installing a new square and tapered mast, accommodating state-of-the-art defense and communications systems, updates to the ship's shafts, refurbished propellers, and modernized aircraft launch and recovery equipment.

"RCOH construction enhances nearly every space and system on the carrier, beyond the most critical requirement to defuel and refuel the ship's two nuclear reactors and to repair and upgrade the propulsion plant," Johnson said. "We work on every part of the ship, from the hull, screws and rudders to more than 600 tanks; thousands of valves, pumps and piping components; electrical cables and ventilation; as well as combat and aviation support systems. It's demanding, complex work that challenges every member of the planning team, shipyard crews and ship's force."

During the upcoming outfitting and testing phase, shipbuilders will complete the overhaul and installation of the ship's major components and test its electronics, combat and propulsion systems. This period will also focus on improving the ship's living areas and the general quality of life for the sailors, including crew living spaces, galleys and mess decks.

From Program Executive Office Aircraft Carriers Public Affairs.

Weapon Systems Support Achieves Engine Readiness Goals

U.S. Navy photo

The F414 engine is used in several U.S. military aircraft including the Navy's F/A-18E/F Super Hornet and EA-18G Growler.

PHILADELPHIA, Pa.—Naval Supply Systems Command (NAVSUP) Weapon Systems Support (WSS) led the charge to ensure the Navy's F414 engines meet engine readiness goals in support of the overarching 80 percent mission-capable strike fighter goal.

The F414 engine is used in several military aircraft including the Navy's F/A-18E/F Super Hornet and EA-18G Growler.

"These engines are critical in ensuring our aviators are able to accomplish their missions," said Navy Capt. Andy Henwood, director of NAVSUP WSS aviation operations.

In October 2018, the Secretary of Defense established the readiness goal of having 80 percent of the Navy's F/A-18 E/F Super Hornets Mission Capable. This increased the minimum engine requirement by several hundred engines overnight. The newly increased minimum engine requirement meant engine readiness goals were not being met.

This challenge has taken several years to solve, and a huge effort on the part of many different team members. Team members had to work with contractors and Navy organizations to rapidly increase the number of ready for issue engines. That meant meetings to explain the new mission requirements and looking for ways to increase the velocity of engine output, said Marine Corps Maj. A.J. Dobson, NAVSUP WSS engines Integrated Weapon System Team director.

"This challenge required us to bring in all the stakeholders to deliberately address the current barriers," Dobson said. "We held multiple standing meetings per week, went on dozens of visits to vendors and sub-vendors...all to build relationships and fix the problem."

"This was an example of the entire team embracing the red and refusing to settle for status quo," Henwood said. "We continued to pressurize the system and compress timelines to ensure we returned the fleet to the required level of readiness."

Henwood is proud of the team and acknowledges that—while this was a finish line of sorts—the effort needs to be continued to maintain the newly achieved readiness.

"This shows what can be accomplished and the power of the team," he said. "When you start communicating, there's power. What looks like an insurmountable goal—one that we thought would take years to accomplish—we were able to complete."

The effort was a collaboration between vendors, NAVAIR and Fleet Readiness Center Southeast (FRCSE).

NAVSUP WSS is one of 11 commands under Commander, NAVSUP. Headquartered in Mechanicsburg, Pennsylvania, NAVSUP employs a diverse, worldwide workforce of more than 22,500 military and civilian personnel. NAVSUP and the Navy Supply Corps conduct and enable supply chain, acquisition, operational logistics and Sailor and family care activities with our mission partners to generate readiness and sustain naval forces worldwide to prevent and decisively win wars.

Written by Angela King-Sweigart, public affairs specialist with Naval Supply Systems Command.

Grampaw Pettibone

Gramps from Yesteryear: September/October 2004

Illustration by Ted Wilbur

Brownout

A UH-1N "Huey" was scheduled for an on-call night armed reconnaissance mission to support ground operations at a forward operating base in a combat zone. The aircrew received an operations duty officer brief at 1400 followed by their own briefing, which was condensed due to the similarity with previous missions flown by the crew. Because of "brownout" conditions caused by sandstorms common in the area, the briefing items included an instrument takeoff. The aircraft commander (pilot) explained the coordination portion of the Naval Air Training and Operating Procedures Standardization brief in general terms, but did not delineate specific aircrew responsibilities as they related to backing up one another, such as instrument scan and situational awareness.

The aircraft was in the on-call status for eight hours when it was finally alerted to start up at 2200. Fifteen minutes later, the aircraft crew was told to shut down and to slide launch time to 2245. During this time the base went into a high state of alert due to suspected enemy penetration of the perimeter defenses. As they waited for launch, the aircrew could hear heavy weapons fire coming from the perimeter.

Finally, the UH-1N was cleared to proceed but was ordered to make two laps around the defensive perimeter to help locate the enemy before continuing on its assigned mission. As the launch commenced, rotor wash created a powdery sand brownout around the aircraft that obscured all ground references. The pilot nosed over two degrees below the horizon and pulled excessive torque (104 percent) initially, then reduced power to 100 percent.

The pilot did not scan the attitude gyro, heading indicator, radar altimeter, turn needle or ball after the initial power pull and attitude setting for the instrument takeoff. The copilot remained fixated on the torque gauge and did not scan the other gauges in order to back up the pilot.

The pilot noticed the aircraft did not break out of the dust cloud in the normal four to five seconds, but neither he nor the copilot recognized that the helo had begun a slow right-hand drift. The crew chief suspected the aircraft was heading to the right but never voiced his concern or let the pilot know he had lost ground reference. The aerial observer also sensed right drift but did not give voice to the concern. Ten seconds after takeoff, the pilot noticed the ball displaced three quarters to the left and immediately corrected with left rudder. The crew chief, located on the right side of the cabin, called "Pull it up, pull it up" as he saw the ground rushing up and the UH-1N in a right wing-down descent.

The pilots then noted the attitude gyro indicating 10 to 15 degrees right wing down and tried to level the aircraft and add power. The corrections were too late, and the right skid impacted the ground with the aircraft heading nearly 90 degrees to the right of the takeoff course. After striking the earth, the aircraft rolled 270 degrees and came to rest on its left side. All crew members survived. The crew chief was thrown from the aircraft as it rolled, while the aerial observer was thrown back into the cabin's center seat and held on. Once all violent motion stopped, he egressed from the cabin. Both pilots unstrapped and exited through the pilot's door. Additional damage occurred when a portion of the UH-1N's blades broke off and ripped through the tail boom of a nearby helicopter. Seconds later a fire erupted, destroying the aircraft.

Grampaw Pettibone says…

Long wait. Wild ride. Lost aircraft.

Ole Gramps is very sympathetic to those who undergo the tedium and hardship of standing by for hours in an on-call status before launching on a mission, especially in the combat zone. But to go forth knowing a brownout takeoff was a sure thing, and not properly scanning the gauges during the execution of same, earns no sympathy. Aircrew coordination took a holiday, probably due to inadequate coverage in the briefing. Both pilots failed to scan properly until it was too late, and the demon of lost situational awareness took hold and dashed the helo to the ground.

When you can't see outside the cockpit, better consult the gauges inside the bird for safety's sake.

Making

Lt. j .g. Milo Sawczyn, assigned to the El Centro strike training detachment, enters the cockpit of a T-45C Goshawk jet aircraft on the flight line onboard Naval Air Facility (NAF) El Centro, Calif.

U.S. Navy photo by MC3 Aleksandr Freutel

Injury Prevention a HABIT

First-Of-Its-Kind Virtual CNATRA App to Aid in Head, Back Injury Prevention

By Anne Owens

Chief of Naval Air Training (CNATRA) has renewed focus in researching, developing and implementing leading edge training technologies in the production of naval aviators. Throughout the history of naval air training, pilots utilized continuously evolving tools, hardware and wearable protective gear unique to the aviation profession.

Pilots are routinely exposed to physical stressors and demands when flying throughout the course of their careers. These demands can result in an elevated chance to develop physiological issues including neck and back pain, or more serious injuries years later. In an effort to reduce and mitigate these issues at the outset of each pilot's career, CNATRA partnered with some of the Navy's top aeromedical safety officers (AMSO) to implement a virtual injury prevention program that is the first of its kind in Naval Aviation.

The Head and Back Injury Training (HABIT) program seeks to increase mission performance by providing flight instructors and Student Naval Aviators (SNA) with the resources and training necessary to reduce the chance of injury by adequately preparing their bodies for cockpit environment. This includes a collection of stretches, exercises and workouts specifically developed to enhance mobility and address the stressors frequently experienced by pilots and aircrew. The HABIT program is governed by CNATRA Instruction 6200, which requires these procedures be included as part of the pilots' briefing. By developing a virtual exercise program within the Navy App Locker to supplement this program, HABIT workouts can be incorporated into pre- and post-flight briefs with the goal of injury prevention and long-term health support for Naval Aviators.

Lt. Cmdr. Taylor Burton, CNATRA aeromedical safety officer and deputy surgeon, saw many neck and back injuries during his time in the EA-18G Growler community. These aircraft, along with the F/A-18, utilize an Improved Joint Helmet-Mounted Cuing System (IJHMCS) helmet that weighs 22 pounds. This weight, in addition to G-force, creates a strain for neck muscles during high performance maneuvers. Over time, the exposure to repeated neck strain can result in a higher likelihood of chronic neck and back pain. Burton expanded his research to the strike fighter wing community and found similar issues.

"Aircrew didn't want to stop flying, so they would often ignore physical symptoms and not seek help," Burton said. "There wasn't a mechanism in place in Naval Aviation to prevent these symptoms from developing. While physical therapy was an option, the information wasn't adequately distributed so enough pilots would seek help through physical therapists."

Using volunteers as a study group, and utilizing the knowledge of Navy physiologists, an effort known as "prehabilitation" emerged to strengthen, stretch and improve physiology before and after flights with the goal to ultimately reduce the development of neck and back pain or injuries.

> **The HABIT program is divided into two options: the 'High G Series,' completed in 12 minutes, and the 'Relative Flight Series,' completed in eight minutes. Each set of stretches and movements can be incorporated into specific Naval Air Training and Operating Procedures Standardization (NATOPS) checklists.**

"With prehabilitation, we will use the Navy App Locker to ensure every Navy pilot has access to CNATRA HABIT," Burton said. "We all have mirror motor neurons, which are specialized nerve cells that enable someone to mimic a movement with 85 percent accuracy. If our pilots have access to a catalog of tested and approved exercises and movements that can help them reduce the chance of injury, we have that 85 percent chance that they will get the movements right and it improves with practice."

The HABIT program is divided into two options: the "High G Series," completed in 12 minutes, and the "Relative Flight Series," completed in eight minutes. Each set of stretches and movements can be incorporated into specific Naval Air Training and Operating Procedures Standardization (NATOPS) checklists. Instructors and students can perform these exercises whenever access to a tablet allows. Most stretches are simple movements performed while seated in a chair or in a space large enough to fit a yoga mat.

Lt. Tyler Grubic, an aerospace/operational physiologist with Marine Aircraft Group (MAG) 13, lent his extensive research and perspective with strength and conditioning in order to develop the exercises within the HABIT app.

"My background allowed me to treat athletes and learn how to make them bigger, faster and stronger," Grubic said. "When I started training professional athletes at the Olympic level, it was a matter of keeping them injury-free and healthy. With prehabilitation, we make sure injuries don't happen by warming up the body and strengthening smaller muscles around the big movers. Something I noticed from the beginning in aerospace physiology is that aircrew and pilots all deal with the prevalence of neck and back pain."

Grubic collaborated with other physical therapists and naval physiologists to review all published literature and research on neck and back pain associated with Naval Aviation. With those findings, they developed a succinct 10-minute routine.

"Pilots are sent into very dynamic flights under high G-force, or long flights where pilots sit with poor posture in a way that their vest or helmet is weighing them down," Grubic said. "We worked with the test pilot community in numerous aircraft to help pilots stationed there improve their health and get back into the cockpit. During my time at MAG-13, I have worked with F-35 pilots who have a large helmet, about 5 pounds, also flying dynamic flights anywhere up to 7 to 7.5 Gs. That is a lot of force on the body even without added weight of the helmet."

Several pilots who endured back and neck pain reduced their flying hours due to those stressors. As Grubic began to train them, strengthening the spine and overall body, they built their base strength, corrected posture and increased durability of the body, especially around the spine.

"We have already seen a big turnaround and success with

U.S. Navy photos by MC3 Aleksandr Freutel

Lt. Jacob Cummins, assigned to the El Centro strike training detachment, dons an oxygen mask in a T-45C Goshawk jet aircraft on the flight line onboard Naval Air Facility (NAF) El Centro, Calif.

A T-45C Goshawk jet aircraft taxis on the flight line onboard Naval Air Facility (NAF) El Centro, Calif.

those pilots who build their bodies up and incorporate these exercises into their flight plan," Grubic said. "AMSO's have vastly different backgrounds, some are biochemists, some are researchers, and a lot are athletic trainers. That diverse background lets us assist pilots as well. As a physiologist, we frequently fly with the aircrew. We have a unique opportunity to hear their concerns, build trust with them and then encourage them to begin strength training, taking care of their bodies. When we share their successes with other pilots and aircrew, they will want to participate as well."

Initial testing of the HABIT app by pilots, physiologists and physical therapists makes the HABIT app as user-friendly as possible. Allowing for personalization, HABIT app users can measure their pre- and post-workout pain scales, and track their strength as it improves. Depending on what physical stressor a pilot experiences, they can select, from the app, the type of pain or location on the body and be shown a series of movements to alleviate that pain. Exercises are designed for all, but can be scaled for different ability levels by utilizing resistance tools and techniques to strengthen problematic muscle groups gradually without causing soreness. This creates a personalized strength-training program with supporting data for pilots and aircrew to share with their medical caregivers. Additionally, the app will be able to track use, provide analytics, and collect feedback to continually improve service and support.

"In the long term, we are hoping that our seasoned pilots and aircrew who have experience with neck and back pain will utilize HABIT and upon seeing improvement, be able to attest to its effectiveness," Burton said. "We hope to meet in the middle with those who have existing pain and hard-to-reverse pain from injuries and new pilots who look to their mentors for guidance and example. We would like to see a culture change towards shifting tolerance for pain levels, utilizing the Navy PTs [physical therapists] early to address back and neck issues rather than waiting until the end of your career and filing a claim with the VA to try to reverse years of damage."

"I just want to see people get better," Grubic said. "Giving people the tools in their own hands so they can put in the work, strengthen themselves to be resistant to these injuries, this will be an invaluable resource. It's amazing that CNATRA is taking this research under their wing to give pilots an avenue to take care of themselves."

CNATRA's mission is to train, mentor and deliver the highest quality Naval Aviators who prevail in competition, crisis and conflict. Headquartered at NAS Corpus Christi, CNATRA comprises five training air wings in Florida, Mississippi and Texas, which are home to 17 training squadrons. In addition, CNATRA oversees the Navy Flight Demonstration Squadron the Blue Angels and the training curriculum for all fleet replacement squadrons.

Anne Owens is the Chief of Naval Training deputy public affairs officer.

Marine Major Innovates Mission-Critical F-35B C

From the 3rd Marine Aircraft Wing

On March 13, 2003, a flight of three AV-8B Harriers launched from the amphibious assault ship USS Bataan (LHD 5) on a night combat sortie. Sometime after launch, the Operation Southern Watch mission was scrubbed due to a sandstorm that swept across Kuwait and over the Northern Arabian Gulf headed toward the ship. The Harriers were dangerously low on fuel and had failed attempts to break out of the weather to find the ship.

Moments from fuel starvation, the landing signal officer (LSO) aboard ship directed a pilot, "turn your landing light on." The LSO picked up the Harriers half a mile from the ship and directed the pilots' eyes safely onto the deck one-by-one.

LSOs are pilots trained to guide fixed-wing, carrier-based aircraft to safe landings aboard ship. They work closely with the ship's captain and air boss to maintain launch and recovery timelines and address any delays or issues that may arise during operations. They are often referred to as "paddles" on the radio because early Navy LSOs used large colorful paddles to visually communicate with aircraft landing on carriers.

Today, paddles for short takeoff and vertical landing (STOVL) aircraft are more critical than ever. In the case of the F-35B Lightning II, STOVL LSOs are sourced from experienced pilots and have the same responsibilities as their Harrier predecessors, but LSO training is adapting to the Marine Corps' expanding role of the F-35B Lightning II for maritime operations. The F-35B is designed to operate from landing helicopter assault and landing helicopter dock amphibious assault ships, as well as expeditionary airstrips less than 2,000 feet long. STOVL LSOs enable the F-35B's expeditionary nature.

Maj. Brian Kimmins is an AV-8B and F-35B trained LSO leading the establishment of a Marine Corps F-35B STOVL LSO school at Marine Corps Air Station Beaufort, South Carolina, to increase the quality and quantity of trained LSOs.

Kimmins received his naval aviator wings in 2012 and was assigned to the AV-8B Harrier. He gained professional experience within the 3rd Marine Aircraft Wing. Most notably, Kimmins joined Marine Attack Squadron (VMA) 211, Marine Aircraft Group 13, 3rd Marine

, Develops Course

Maj Brian Kimmins with Marine Fighter Attack Squadron (VMFA) 211 observes pre-flight checks aboard Her Majesty's Ship (HMS) Queen Elizabeth at sea on Sept. 27, 2020.

U.S. Marine Corps photo

A Marine with Marine Fighter Attack Squadron (VMFA) 211 prepares to launch an F-35B Lightning II Joint Strike Fighter from the deck aboard Her Majesty's Ship (HMS) Queen Elizabeth at sea on Oct. 10, 2020.

U.S. Marine Corps photo

U.S. Marine Corps Maj. Brian Kimmins prepares to launch an F-35B from HMS Queen Elizabeth for a historic cross-deck operation with USS America in the Pacific Ocean on Aug. 20, 2021.

U.S. Marine Corps photo

Aircraft Wing, as a Harrier Pilot in 2013, transitioned to the F-35B in 2019 and returned to Marine Fighter Attack Squadron (VMFA) 211 in 2021 as an F-35B pilot. Kimmins deployed with multiple Marine Expeditionary Units, conducting flight operations at sea and earning Division Leader, Mission Commander and Training Landing Signal Officer qualifications. He has supervised more than 1,000 field carrier landing practice and shipboard vertical landings as an LSO and conducted 250 ship landings himself.

"The F-35B is the force's modern STOVL-capable fighter jet," Kimmins said. "The fifth-generation fighter incorporates advanced technology including stealth capabilities, advanced weaponry, and advanced sensors, providing a MEU with a more capable aircraft than its AV-8B predecessor."

Since 1985, the AV-8B Harrier served as the Marine Corps' vertical or short takeoff and landing (V/STOL) capable fighter jet that typically operated from large-deck amphibious ships. The Marine Corps is whittling its Harrier fleet and expects full retirement by fiscal year 2027, according to the Marine Aviation Plan.

Marine aviators have historically received LSO training for both the Harrier and F-35B platforms on-the-job. The Navy operates an LSO School at Naval Air Station Oceana, Virginia, that trains Navy and Marine Corps personnel embarking on nuclear-powered aircraft carriers. The Marine Corps used to send carrier-based F/A-18 squadron LSOs to train at NAS Oceana and now sends LSOs for the carrier capable F-35C Lightning II. Four pilots from Marine Fighter Attack Squadron (VMFA) 314 have trained as LSOs at NAS Oceana since the "Black Knights" stood up as the Marine Corps' first F-35C squadron in 2020. In 2022, VMFA-314 deployed aboard Nimitz-class aircraft carrier USS Abraham Lincoln (CVN 72) as part of Carrier Air Wing 9.

Until recently, there was not a formal school for F-35B LSOs deploying with MEUs.

"On-the-job training largely takes place with MEUs, where pilots conduct qualifications over the course of a six to eight month deployment," Kimmins said, referencing the Marine Corps deployments aboard Navy amphibious assault ships that F-35B squadrons support. "Because of the limited number of LSOs in the community right now, you have some LSOs doing back-to-back ship deployments."

The Marine Corps F-35B STOVL LSO school fills the training gap for future LSOs aboard amphibious assault ships. The school is hosted at Naval Air Station Patuxent River, Maryland, centering around the F-35 Integrated Test Force Manned Flight Simulator Facility.

"Modernizing LSO training with a dedicated simulator significantly reduces cost and increases throughput and quality of training," Kimmins said.

The simulator is a dome and projector setup where the environment replicates standing in primary flight control on an amphibious assault ship. It is capable of simulating launching and recovering an aircraft both day and night, in all weather conditions, and can simulate emergency procedures specific to the ship environment.

"The simulator provides the ability to monitor and control more shipboard launches and recoveries over the course of two days than you'll see in an entire week at the ship," Kimmins said, "The enormous effort of the leaders and engineers at the F-35 Integrated Test Force are the reason we've maintained momentum in formally establishing a schoolhouse."

A leap forward in capability, efficiency and realism, the simulator enhances readiness because it can produce LSOs at a much faster rate with a higher quality of training than before. Kimmins led the first course in June 2023 to prepare 3rd MAW pilots for a MEU deployment.

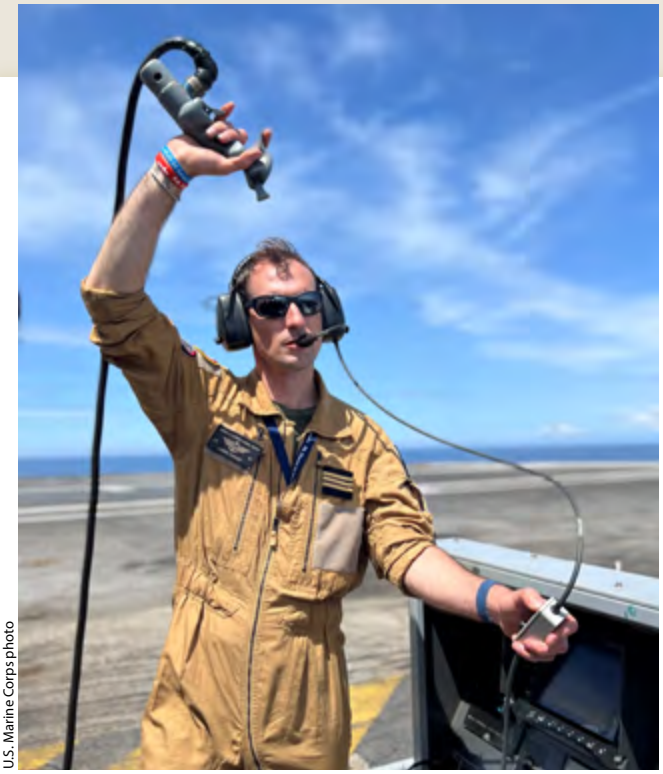
"Feedback has been that the simulator training before going to the ship was invaluable," Kimmins said. "Prospective LSOs felt more comfortable about going to the ship to control F-35B launches and recoveries, having already seen the environment in a simulator."

Marine Corps Force Design and modernization requires Marines who have critical thinking skills and mental dexterity. More than simply modern technologies and equipment, the Marine Corps values leaders like Kimmins who are adaptable and innovative problem solvers.

Looking forward, Kimmins envisions an LSO School with the capability to train partner nation F-35B LSOs, furthering interoperability and integration.

"My long-term vision is an LSO school where we teach F-35B LSOs to become subject matter experts in shipboard and expeditionary advanced base operations integration for their squadrons," Kimmins said. "The training will lay the foundation for team building with partner nation LSOs."

From the 3rd Marine Aircraft Wing.



U.S. Marine Corps photo

French navy Lt. Adrien Tosser.

French LSO Instructor Expresses Benefits of U.S.-France Alliance

The Landing Signal Officer (LSO) School is the launching pad for all LSOs in the Navy. The school provides their initial training on providing safe and expeditious landings of aircraft on aircraft carriers.

The LSO School has been training U.S. Navy pilots for 79 years. Though they often welcome foreign pilots to train with them, French navy Lt. Adrien Tosser has inked his name into the history books as the school's second French instructor, continuing that legacy of opportunity.

Tosser was assigned to Naval Air Station (NAS) Oceana's LSO School in 2022 to extend his experience as an LSO, while simultaneously strengthening bonds between the United States and France.

Tosser's assignment is a representation of the longstanding alliance between the United States and France. Both nations are proud members of NATO, which celebrates its 75th anniversary this April. One of the purposes of NATO is to build relationships that enhance security, and Tosser understands the importance of fostering those relationships.

"Sometimes you see U.S. pilots coming on the French carrier, and they see some of the friends they had in flight school that they hadn't talked to in years, and they're like 'Hey! You're here?!' It's great," Tosser said.

Having been on almost all carriers on the East Coast, Tosser has gained invaluable experience. He credits advancements on the catapult systems on both French jets, and the French navy aircraft carrier, the Charles de Gaulle, with increasing interoperability between the navies. These changes enable pilots to land on both U.S. and French flight decks while at sea—further enhancing security worldwide. This additional training platform also enables French pilots to achieve their flight qualifications quicker, and provides U.S. pilots too with additional experience in landing methods.

"We still have barriers, but the goal is to erase those [barriers] and continue to move forward and build interoperability and relationships even more than in the previous generations," Tosser said.

Tosser is an example of the commitment NATO and its members have had to each other for the past 75 years. As he prepares his lessons for his students, Tosser provides this reminder.

"You can't think you know everything and just sit on your knowledge," Tosser said. "Every day there are new things to learn. Every day is different. Keep the will to learn."

Written by Information System Technician 2nd Class Megan Roberts, Naval Air Force Atlantic Public Affairs.

EA-6B PROWLER HONORED

By Tim Gantner

Naval Air Warfare Center Weapons Division (NAWCWD) held a dedication ceremony April 17 at Point Mugu, California, to commemorate the EA-6B Prowler's nearly five decades of service as the premier electronic attack platform for the Navy and Marine Corps.

Nearly 100 people gathered to honor the iconic Prowler at Missile Park. Veteran and current aviators in their flight jackets shared stories with civilians whose expertise forged the aircraft's legacy. The ceremony featured the unveiling of a bronze plaque—a lasting tribute to the aircraft and the Point Mugu personnel who ensured its long and storied service from 1971 to 2019.

For some, this dedication was a long-awaited dream, finally coming to fruition.

Dr. Ron Smiley, who retired in 2020 after years heading up electronic warfare efforts for NAWCWD and Naval Air Systems Command, began working at

Rear Adm. Keith Hash, commander of NAWCWD, speaks during the EA-6B Prowler dedication ceremony at Missile Park at Point Mugu, California, April 17.

U.S. Navy photo by Rob Grabendike

AT POINT MUGU

Point Mugu in the early 1970s, coinciding with the Prowler's initial operational deployment. Over the years, he witnessed the aircraft's evolution and the tireless efforts of the Point Mugu team to keep the Prowler at the forefront of electronic attack.

"I have waited many years for this dedication," Smiley said. "As I stand here before you today with this beautiful aircraft behind me, four words come to my mind: venerable, iconic, symbolic and a legacy."

Between 1966 and 1991, a total of 170 EA-6B Prowlers rolled off the assembly line at Grumman's Calverton, New York, facility on Long Island. These versatile aircraft quickly transitioned to active duty, with the first arriving at Electronic Attack Squadron (VAQ) 129 at Naval Air Station Whidbey Island, Washington, in December 1971. The Prowler's baptism by fire came quickly in Vietnam. They flew combat missions as part of Operations End Sweep and Linebacker II in 1972. The Prowler's legacy continued throughout the decades, proving its worth in conflicts like the Persian Gulf War and the War on Terror.

No EA-6B Prowler was ever shot down in combat. The Prowler's ability to suppress enemy defenses

U.S. Navy photo by Drew Verbis

Dr. Ron Smiley, who retired in 2020 after years leading the electronic warfare efforts for NAWCWD and NAVAIR, speaks during the EA-6B Prowler dedication ceremony at Missile Park at Point Mugu, California, April 17.

made it a linchpin for ensuring the safety of U.S. and coalition forces. When it came to strike missions, pilots never wanted to leave the carrier, or "mom," as the aviators dubbed it, without an EA-6B or two to protect them.

"There are several types of combat strike missions against enemies with effective air defenses, particularly early in combat like the first few days or weeks, that EA-6B support was required or the mission would not happen," said Michael Szczerbinski, a former EA-6B pilot. "Some missions actually required multiple EA-6Bs, or the mission was a 'no-go.'"

The Prowler's electronic warfare capabilities were so crucial that strike operations often would only launch with its support. The Navy and Marine Corps relied heavily on the EA-6B, affectionately nicknamed the "flying drumstick" or "family truckster," to shield their aircraft from enemy fire.

"Fighter pilots always wanted EA-6Bs there to protect them. We were like their good luck charm of electronic attack Armageddon," Szczerbinski said. "We joke now that the cool kids needed the 'flying drumstick.'"

This dedication celebrates the deep connection between Point Mugu and the legendary Prowler. The base played a pivotal role in the aircraft's development, upgrades, and enduring success throughout its decades of service.

After countless missions flown from iconic carriers like the USS Abraham Lincoln (CVN 72), USS Nimitz (CVN 68), USS Carl Vinson (CVN 70) and USS George H.W. Bush (CVN 77), this particular Prowler made its final journey in June 2015, landing at Point Mugu, which sustained its extraordinary career. Now, in Missile Park, it represents the remarkable partnership between the aircraft and the skilled personnel of Point Mugu.

"The EA-6B depended on the experts here, whose work was enabled and supported by Point Mugu's resources and infrastructure," said Rear Adm. Keith Hash, NAWCWD commander.

The relationship between Point Mugu and the Prowler dates back to 1973 when the base became the designated EA-6B Aircraft Computer Systems Software Support Activity.

Protection, deception, disruption: These were the tools in the Prowler's bag of electronic tricks. By blinding enemy radar with electronic interference, the Prowler suppressed air defenses. Its actions also allowed for gathering critical intelligence, ensuring the survivability of U.S. and coalition forces in combat.

"Point Mugu was critical to the Prowler's effectiveness over the years, actually improving capability as the plane aged,"Szczerbinski said. "Professionals at Point Mugu pioneered several series of electronic upgrades that improved sensor systems and their integration with jamming capabilities and pilot interface."

This expertise was vital, especially after the Air Force retired the EF-111A Raven in 1998. The Prowler was the only dedicated electronic warfare

Point Mugu's Prowler Legacy

- Established the Jammer Technique Optimization team in 1984.
- Released the first EA-6B software version in 1987.
- Developed successive ICAP II upgrades through the late 1980s and 1990s.
- Opened the Electronic Combat Simulation and Evaluation Lab in 1991.
- Established ICAP III Software Support Activity in 1999.
- Continued ICAP III upgrades and support through the Prowler's 2019 retirement.

aircraft until the Navy introduced the EA-18G Growler in 2008.

"In Iraq and Afghanistan, the Prowler was one of the most effective platforms against modern telecommunications and cell phones," Szczerbinski said.

The Prowler's adaptability was especially evident in Iraq and Afghanistan, where it evolved to meet new threats. One example of this was the aircraft's ability to disrupt improvised explosive devices by jamming the communication signals used to detonate them remotely. This crucial capability, developed in response to the growing IED threat, made the Prowler one of the most effective platforms for protecting ground troops in these conflicts.

"The 'flying drumstick' with a 'ground-seeking nose' holds a special place in my heart, especially as it has gotten me home safely many times, hundreds of miles from anything resembling 'safe,' over Afghanistan getting shot at," Szczerbinski said.

During the ceremony, one EA-6B alum retired Navy Capt. Jeff Chism shared his own journey with the Prowler, from a young kid inspired by the aircraft at an air show to a seasoned pilot who flew the EA-6B in combat. His heartfelt thanks highlighted the deep bond between the Prowler and those who flew it. For Chism and many others, the Prowler was more than just an aircraft—it was a trusted partner that protected them and their fellow service members in the face of danger.

"Thank you for the countless lives you saved through your black magic of electronic warfare, dominating the electromagnetic spectrum, and the number of sailors that allowed you to grace, caress and maintain you," he said.

The EA-6B Prowler displayed at Missile Park also represents Pont Mugu's continuing excellence in electronic warfare support. Innovations pioneered for the Prowler laid the foundation for the Growler, ensuring a seamless transition and continued excellence in electronic warfare.

"The EA-18G Growler was effective on day one because of the legacy that was carried over from the Prowler," said Harlan Kooima, NAWCWD's director of Research and Development.

A bronze plaque, unveiled during the dedication ceremony, pays a fitting tribute to an extraordinary aircraft and the dedicated professionals who kept it at the forefront of electronic warfare for nearly half a century. Its place in history is now cemented at Point Mugu for generations to come, a reminder of its vital role in protecting U.S. forces and ensuring mission success.

U.S. Navy photo by Rob Grabendike

A bronze plaque commemorating the EA-6B Prowler was unveiled during a dedication ceremony at Missile Park at Point Mugu, California, April 17. The plaque honors the Prowler's service from 1971 to 2019 as the U.S. Navy and Marine Corps' premier electronic attack aircraft.

Dedication on Plaque

From 1971 to 2019, the EA-6B Prowler, managed by PMA-234 and manufactured by Northrop-Grumman, served as a premier electronic attack aircraft for the US Armed Forces.

This specific USN ICAP II Prowler, bearing Bureau Number (BUNO) 163890 and affiliated with VAQ-134, played a pivotal role in military operations across the Middle East. Its illustrious career culminated in participating in the official Navy Prowler retirement ceremony at NAS Whidbey Island before making its final transit to Point Mugu on 27 June 2015, and is now part of the esteemed collection of the National Naval Aviation Museum.

This venerable EA-6B Prowler is dedicated to all the military and civilian personnel at NAWCWD Point Mugu, whose unwavering dedication and expertise contributed significantly to the development and delivery of unparalleled electromagnetic warfare capabilities and services for the Prowler for almost 50 years. Their commitment ensured that Fleet Warfighters received the very best support and technology.

May this display stand as a tribute to the legacy and remarkable contributions of the EA-6B Prowler and the individuals who shaped its storied history.

"I say to you who are here and have been part of the EA-6B e-warfare workforce, thank you for all you have done. Thank you for helping the Prowler become the machine that changed the world of e-warfare," Smiley said.

Tim Gantner is a public affairs officer with Naval Air Warfare Center Weapons Division.

Marine's New CH-53K Helicopter Transports F-35 Airframe Between Test Sites in Maryland, N.J.

By Michael Land

Marines flying a CH-53K King Stallion heavy-lift helicopter transported April 24 an F-35C Lightning II airframe from the F-35 Integrated Test Force at Patuxent River (Pax ITF) to a Navy unit located at Joint Base McGuire-Dix-Lakehurst, New Jersey.

A Marine aircrew from Marine Test and Evaluation Squadron (VMX) 1 flew the most powerful helicopter in the Department of Defense, carrying the inoperable airframe—which was without mission and propulsion systems, outer wings or additional equipment—to the Prototype, Manufacturing and Test (PMT) Department of the Naval Air Warfare Center Aircraft Division (NAWCAD) Lakehurst for use in future emergency recovery systems testing.

NAWCAD Lakehurst provides unique, full-service, test expertise, from test planning, setup and configuration to test execution and data analysis for all varieties of Aircraft Launch and Recovery Equipment (ALRE).

"I just think this is a great opportunity for the Marine Corps, the joint force, and the world to see that the Marine Corps has a capability that no other force in the in the world has, in this case the CH-53K," said Marine Lt. Col. Adam Horne, lead pilot and officer in charge of the CH-53 Detachment, VMX-1, at Marine Corps Air Station New River, North Carolina.

VMX-1, headquartered at Marine Corps Air Station Yuma, Arizona, is the Marine Corps' Operational Test & Evaluation squadron called upon to create and refine tactics, techniques and procedures for the service's aviation platforms and systems.

U.S. Navy photo by Kyra Helwick

Members of the HST from the Marine Corps Combat Logistics Battalion 26 sit poised atop CF-1, a non-flying F-35C airframe from the NAS Patuxent River F-35 Integrated Test Force, waiting to hook the airframe to sling hoists lowered from a CH-53K being flown by Marines from VMX-1. The airframe, lifted and transported via CH-53K, was flown from NAS Patuxent River, Maryland, to Joint Base McGuire-Dix-Lakehurst, New Jersey, April 24 to support future testing of emergency recovery systems.

Marines with the Helicopter Support Team (HST) from Combat Logistics Battalion 26 attach a non-flying F-35C Lightning II airframe from the Naval Air Station Patuxent River F-35 Integrated Test Force to a sling beneath a hovering CH-53K King Stallion, operated by Marine pilots from Marine Test and Evaluation Squadron (VMX) 1, at NAS Patuxent River, Maryland, April 24. After being secured to the sling, the airframe was transported via CH-53K to Joint Base McGuire-Dix-Lakehurst, New Jersey, for use in future testing operations.

Marine Corps members of the Helicopter Support Team from Combat Logistics Battalion 26 attach a non-flying F-35C airframe from the NAS Patuxent River F-35 Integrated Test Force to a sling beneath a hovering CH-53K, operated by Marine pilots from VMX-1, at NAS Patuxent River April 24.

A CH-53K piloted by Marines from VMX-1 hoists a non-flying F-35C from the NAS Patuxent River F-35 Integrated Test Force April 24 to transport the airframe from NAS Patuxent River, Maryland, to Joint Base McGuire-Dix-Lakehurst, New Jersey, where the airframe will be used in future emergency recovery systems testing. The successful operation was coordinated and carried out through extensive collaboration of multiple teams across NAS Patuxent River, JB McGuire-Dix-Lakehurst, the Marine Corps, the Navy, New Jersey State Police and Naval Air Warfare Center Aircraft Division.

"Marine Corps Aviation teams coordinated and planned extensively with the F-35 Pax ITF team to execute the evolution safely and successfully, and both teams worked with the Pax River Cargo Lab, whose gear the Marine helicopter support team (HST) used to sling the airframe."

Minutes after 11 a.m., the almost 100-foot long helicopter lifted the approximately 22,000-pound airframe from the airfield at NAS Patuxent River, briefly headed west, and then turned southeast and headed out over the Chesapeake Bay to begin the 305 nautical mile transport. The CH-53K is currently cleared to conduct lifts up to 36,000 pounds.

During the transport, the CH-53K aerial refueled with a KC-130T Hercules multi-mission medium-lift tactical tanker/transport aircraft.

"Air-to-air refueling is critical to the Expeditionary Advanced Base Operations (EABO) concept, and proving this capability on the CH53K King Stallion significantly increases the combat potential for the U.S Marine Corps' newest workhorse in its stable," Horne said.

He added that VMX-1; Air Test and Evaluation Squadron (HX) 21, the rotary-wing and tilt rotor aircraft test squadron; Marine Aviation Weapons and Tactics Squadron Once (MAWTS-1), and Marine Heavy Helicopter Squadron 461 (HMH-461) are expanding the capabilities of the King Stallion every day.

"The CH-53K provides capability not seen anywhere else across the Marine Corps, but also for the joint force and any potential foreign military sales (FMS) customers," Horne said.

"The CH-53K is not only able to lift more and for longer distances, but it can communicate across a large spectrum and will feed information from the battlespace back to the Marine Air-Ground Task Force (MAGTF) commander. Its increased maintenance efficiencies will allow it to be more available and operate longer with less logistical support."

Marine Corps Aviation teams coordinated and

A CH-53K, piloted by Marines from VMX-1, flies along the coast of Ocean City, New Jersey, with a non-flying F-35C test airframe from the NAS Patuxent River F-35 Integrated Test Force carried beneath it April 24 during an aerial transportation of the test aircraft from NAS Patuxent River, Maryland, to Joint Base McGuire-Dix-Lakehurst, New Jersey.

Marines from Marine Test and Evaluation Squadron (VMX) 1 piloting a CH-53K helicopter conduct aerial refueling from a C-130T Hercules operated by the Navy's Air Test and Evaluation Squadron (VX) 20 while carrying a non-flying F-35C test airframe from the Naval Air Station Patuxent River F-35 Integrated Test Force on April 24. The flight was conducted to transport the non-flying airframe from NAS Patuxent River, Maryland, to Joint Base McGuire-Dix-Lakehurst, New Jersey, where it will be used in future emergency recovery systems testing.

U.S. Navy photo by Kyra Helwick

Marines from VMX-1 pilot a CH-53K helicopter over the Chesapeake Bay in Maryland, conducting aerial refueling from a C-130T operated by Navy's VX-20 while carrying a non-flying F-35C test airframe from the NAS Patuxent River F-35 Integrated Test Force on April 23. The flight was conducted in preparation for the aerial transport of the non-flying F-35C airframe from NAS Patuxent River, Maryland, to Joint Base McGuire-Dix-Lakehurst, New Jersey, the following day.

planned extensively with the F-35 Pax ITF team to execute the evolution safely and successfully, and both teams worked with the Pax River Cargo Lab, whose gear the Marine helicopter support team (HST) used to sling the airframe.

In short, teamwork was the hallmark of the mission.

Key to success was "all the prior coordination and the goodwill of each team," Horne said. He identified the NAWCAD Cargo Lab at Pax River; HX-21; Air Test and Evaluation Squadron (VX) 23, the fixed-wing tactical aircraft test squadron; VX-20, the naval force aircraft test squadron, who they tanked with on the way up; the New Jersey State Police; and the NAWCAD Lakehurst team.

Additionally, he said the work of Marines on the helicopter support team "was a big help," ensuring "everything went smoothly for the 53K."

The HST, which was comprised of landing support specialists, or "Red Patchers," from the Combat Logistics Battalion 26 (CLB-26), traveled from Marine Corps Base Camp Lejeune, North Carolina.

"The real juice, meat and potatoes that we came here for…was this lift," said Marine Sgt. Joe Padilla, who had a safety role during the connection. Other Marines had roles of grounding the helicopter, the "static," and connecting the cargo, the "hook."

"Our team has been looking for something challenging, something big for us…and I think the best part was being able to accomplish our team's dreams," he said. "They came out here, and they did phenomenally."

The route included over-water and over-land portions. While flying over the Garden State, the New Jersey State Police Aviation Bureau provided crucial aerial support, as troopers from the Field Operations Section were on the ground orchestrating traffic slowdowns with precision. This synchronized effort ensures an additional layer of safety, seamlessly complementing each other to fulfill the mission.

The CH-53K is the U.S. Marine Corps' heavy lift replacement for the CH-53E Super Stallion.

The CH-53K is a new-build helicopter that will expand the fleet's ability to move more material faster throughout the area of responsibility using proven and mature technologies. The helicopter provides advanced technology and unmatched heavy lift capabilities, and can lift nearly three-times more than its predecessor. Michael Land is a public affairs officer with the Patuxent River F-35 Integrated Test Force.

Michael Land is a public affairs officer for the Naval Air Station Patuxent River, Maryland, F-35 Lightning II Integrated Test Force.

U.S. Navy photo by Kyra Helwick

Marine Corps pilots from VMX-1 flying a CH-53K helicopter lower a non-flying F-35C airframe from the NAS Patuxent River F-35 Integrated Test Force onto the runway at Joint Base McGuire-Dix-Lakehurst, New Jersey, on April, 24, after transporting the F-35C airframe from NAS Patuxent River, Maryland. The transportation of the airframe will enable future testing at Lakehurst of emergency recovery systems.

A CH-53K from Marine Test and Evaluation Squadron (VMX) 1, carrying a non-flying F-35C airframe from the Naval Air Station Patuxent River F-35 Integrated Test Force, makes a turn over the Atlantic City coastline in New Jersey as beach-goers stop to watch the unique sight. The April 24 flight was conducted to transport the non-flying F-35C test airframe from NAS Patuxent River, Maryland, to Joint Base McGuire-Dix-Lakehurst, New Jersey, for future testing operations.

FRCE Receives 2024 SECNAV Environmental Award

The Office of the Secretary of the Navy (SECNAV) recently recognized Fleet Readiness Center East (FRCE) for its continued commitment to environmental stewardship, awarding the command the 2024 Secretary of the Navy Environmental Award for Sustainability in the Industrial Installation category.

SECNAV environmental awards recognize installations, teams and individuals for their accomplishments in innovative and cost-effective environmental management strategies supporting mission readiness.

This is the fifth time FRCE has received a SECNAV Environmental Award. According to FRCE Commanding Officer Capt. James M. Belmont, this continued recognition highlights the role of the depot's workforce in maintaining FRCE's successful environmental record.

"Being a good steward of the environment is important to us at FRC East," Belmont said. "We don't just work in the community, we live here and are a part of it. Every member of the FRC East team is committed to maintaining environmental quality and compliance while delivering capable and quality aircraft to the fleet."

Andrew Krelie, director of the Environmental Division at FRCE, said the depot has been achieving or exceeding its annual environmental goals for many years now. He attributed the depot's win to workforce engagement and active participation.

"This is a depot-wide effort," Krelie said. "This is not an Environmental Division award, it is an FRC East award. The whole facility earned this and deserves credit for increasing our recycling rates, reducing our energy consumption and reducing industrial waste water generation. These are the three large goals that we have had for over a decade now, and continue to improve on those due to the efforts and commitment of our workforce."

FRCE aims to divert 62 percent of its solid waste by 2025, far exceeding the requirements established by Commander, Fleet Readiness Centers. In fiscal year 2023, the depot maintained an average landfill diversion rate of 61 percent.

The depot has also set out to reduce industrial wastewater generation 36 percent by 2025. In fiscal year 2022, the calculated goal was 92.6 million gallons. FRCE reduced influent flow rates to less than half that with 56.5 million gallons eliminated.

FRCE's goal for energy conservation is to reduce energy consumption 25 percent by 2025. The depot is installing green fixtures and coordinating with Marine Corps Air Station (MCAS) Cherry Point, North Carolina, Headquarters Marine Corps, Naval Facilities Engineering Command, and Duke Energy to identify aging infrastructure, propose measures to eliminate redundant electrical systems and establish significant energy conservation measures at FRCE.

U.S. Navy photo

Sean Maher, an aircraft electrician on Fleet Readiness Center East's (FRCE) UH-1N production line, utilizes a battery-powered generator while conducting checks on a UH-1N helicopter.

Krelie cited FRCE's membership as an Environmental Steward of the North Carolina Department of Environmental Quality's Environmental Stewardship Initiative (ESI) in playing a significant role when setting the depot's environmental goals.

The ESI is designed to promote and encourage superior environmental performance in North Carolina's regulated community. FRCE was one of the earliest organizations in the state to earn the title of Environmental Steward in 2004. The depot is the only Department of Defense facility serving as an ESI member.

"We're moving in sync with the overall goal of the Navy but we have gotten aggressive enough to increase the percentages and output of what we expect from the facility," Krelie said. "Our goals are pretty aggressive but that is part of being an Environmental Steward. Setting aggressive goals is a requirement."

In addition to FRCE's ESI membership, the depot stays engaged with the community through a variety of community outreach activities focusing on environmental sustainment.

For Earth Day 2023, FRCE provided outreach at Childcare Development Centers on MCAS Cherry Point. Children were given an overview of why it is important to protect the environment each and every day and decorated recycling containers to be used throughout the FRCE facility.

The depot also provides environmental mentorship to United States Coast Guard Aviation Logistics Center Elizabeth City.

"The outreach efforts are rewarding because we see how other organizations are doing things," said Stephen Azok, program coordinator for FRCE's Environmental Management System (EMS). "We also show how we do things, often without using as much capital. Some of the organizations outside the gate reach out to us. They're interested in what we do, especially how our workforce is involved."

According to Azok, FRCE has many success stories to share. He said the depot's UH-1N Huey production line exemplifies how FRCE's workforce contributes to achieving the command's environmental objectives.

In 2023, the UH-1N line swapped out diesel-powered generators for battery-powered units, making FRCE the first adapter of this technology within the Naval Aviation community. These self-contained battery systems replaced the diesel operated generators that are utilized as auxiliary power units for the Huey.

Utilizing these systems reduced harmful air emissions generated by the burning of fossil fuels and the transport equipment needed to move diesel-powered generators. Not only is the impact to the environment decreased and energy conservation increased, work areas are safer for team members in the area.

"Without the UH-1N team's understanding of our environmental goals and their efforts to improve performance, we would not have won this award," Azok said. "This initiative had positive impacts which went far beyond just improving their processes. It shows that our workforce is actively involved. They're looking at these challenges and finding the solutions."

Azok credits FRCE's leadership over the years for instilling the importance of environmental compliance at the depot. He said the depot's emphasis on workplace safety stresses the importance of personnel looking after each other.

"Safety is a very important part of the culture here at FRC East," Azok said. "Our environmental program integrates well with this because it's also about protecting the workforce, especially the health of the people 10, 20 or 30 years down the road. What we are doing now protects the future health of our personnel as well as safeguarding the environment they live in."

Azok said FRCE's environmental efforts have garnered an impressive list of accolades that highlight the depot's commitment to being good stewards of their environment.

In addition to receiving five SECNAV Environmental Awards, the depot has also received the Secretary of Defense Environmental Award, two Secretary of Defense honorable mentions, eight Chief of Naval Operations Environmental Awards and the North Carolina Department of Environmental Quality's P2 Award for pollution prevention, in addition to two Sustainability Awards from the state.

Despite these past successes, Krelie said the depot remains focused on current and future environmental objectives and mandates.

"Ultimately, we have an obligation to meet all of our environmental regulatory commitments," Krelie said. "This goes beyond meeting regulations and complying with instructions. We have an obligation to our local community and to the warfighter. Meeting our environmental commitments ensures that we are protecting our community and providing our warfighters with capable and combat-ready aircraft. Everyone at FRC East takes this responsibility very seriously."

FRC Southeast Debuts Electrical Discharge Machining Device on F-5 Aircraft Production Line

Recently, artisans assigned to the Fleet Readiness Center Southeast (FRCSE) F-5 Production Line propelled the organization into the next generation of industrial aviation maintenance with the single pull of an electrical discharge machining (EDM) trigger.

After more than a year of careful training and testing on composite structures, FRCSE has finally employed the E-Drill on metallic structures. The event marks the first time the technology was used on an aircraft within the Naval Air Systems Command (NAVAIR) enterprise. FRCSE's F-5 Production Line is the first to utilize the E-Drill and if all goes according to plan, every aircraft production line at the command will possess the new technology in the not-too-distant future.

"The E-Drill is a variation of electric discharge machining that has been around the machining industry for 30 years or more," said Dr. Luis Carney, FRCSE's senior materials engineer and team lead. "FRCSE has taken a bit longer to introduce this technology because it took time to get our own unit, set it up, write the instructions, develop non-destructive inspection techniques, demonstrate the viability of the operation without harm to the structure, and finally obtain the authority to execute."

Considering many aerospace rework facilities, including FRCSE, remove aircraft fasteners the conventional way—by hand with a drill and hammer or punch—once fully rolled out, the E-Drill system will significantly reduce the time it takes to remove the thousands of rivets touched during routine aircraft maintenance and repair.

The tool uses a computer-controlled electric arc, or spark, between the device's electrode and an aircraft fastener. After localizing to a fastener's shank axis, the E-Drill uses a pulse-cutting technique that measures, cuts, re-measures and cuts a second time—ultimately weakening the fastener, punching out the head and simultaneously flushing the opening with water to reduce the risk of damage from to molten material. The device also vacuums the area to remove foreign object debris (FOD).

The E-Drill was used on the F-5's Vertical Stabilizer (V-stab), a static part of the vertical tail that stabilizes and balances the aircraft in flight, and the heat shield—or the titanium panels in the boat tail that protect the structural, mechanical and electrical components from the high temperatures produced by the engine and exhaust.

On some aircraft, V-stab removal is required, and its leading edge is full of fasteners—about 130 on the F-5—and removing them by hand can take upwards of 16 hours. When the E-Drill is used on areas like the V-stab, it will save time—and a lot of it. The device takes a 16-hour job and reduces it to about three—a decrease of better than 80 percent.

Where removing fasteners on the V-stab is straightforward, the heat shield presents complexity.

The heat shields are curved and thin, but what's more, they are also full of problematic steel fasteners that are difficult to remove because of spinning. When executed by hand, the process takes longer and forces workers to use larger drill bits.

"These steel fasteners have been the source of countless discrepancy work orders," said Jeff Cavanaugh, FRCSE's F-5 Production Line Lead. "When drilling, we have to attack these fasteners from various angles because of the spinning, and that can cause damage and deformation of the holes. When artisans punch the fasteners out, it's not uncommon to crack the heat shields, which are not repairable. Purchasing new heat shields creates delays and further stresses an already strained supply system."

While the technology is exciting and promising, learning the best way to balance the power of the E-Drill with the complexity of the contours and fragility of the heat shield requires more development before full implementation.

"While we have been slow in our roll-out of this device, it was methodical because understanding the device and

U.S. Navy Photo by Toiete Jackson

making sure each artisan is thoroughly trained is vital," Cavanaugh said. "FRCSE's Materials Engineering Lab and Quality Assurance Branch developed a special process certification that's imperative for artisans handling the E-Drill."

The introductory training is expected to take about eight hours and will be followed by on-the-job training before artisans are ready to use the device alone, but they are already lining up to learn.

Time reductions are far from the only benefit the command will see. Substantial decreases in FOD, artisan injury, noise exposure and significant cost savings are also expected.

"The E-Drill significantly reduces work-related musculoskeletal disorders and hearing loss risks because, contrary to conventional drilling, there is no vibration or noise," said Nancy Chung, an F-5 and P-8 process engineer with FRCSE. "It also vacuums all metallic shavings, virtually eliminating FOD."

Further, FRCSE's experts also anticipate big savings in consumable and direct labor costs.

Despite the command's sheet metal artisan's expert-level skill, the human element is a major factor. One minor misalignment can cost thousands of dollars and hundreds of hours of labor. Even the most frugal carbide-tipped drill bits come in at $2 per hole if everything goes smoothly, but as mentioned, old fasteners are often tough to remove, so it is not unusual for drill bits to break during conventional drilling. Whereas the E-Drill is pinpoint precise, and the electrode costs about $1.

While the E-Drill has only begun to make its cautious and calculated FRCSE debut, when it does become commonplace at command, the device is expected to revolutionize how maintenance actions are completed.

"Once the training, process control, and non-destructive inspection methods have been established, E-Drill is destined to be a common part of all aircraft production lines and component repair shops," Carney said. "Eventually, I expect 15 to 20 of these per depot and at least one at every squadron and intermediate-level facility."

Charles Newton, a senior materials engineer with Fleet Readiness Center Southeast (FRCSE), uses an E-Drill system to remove fasteners on an F-5 Tiger II horizontal stabilizer. FRCSE's F-5 Production Line is the first to implement the E-Drill within the NAVAIR enterprise. The device will significantly reduce the time it takes to remove the thousands of rivets typically replaced during in-depth depot-level maintenance.

U.S. Navy photos

Jason Gaskill, an H-53 airframe production support engineer with the Maintenance, Repair and Overhaul Engineering Production Line Support Division at Fleet Readiness Center East (FRCE), examines successive rounds of impressions left by pressure-sensitive film while checking contact surfaces on the mount feet of an H-53 spar fitting.

Michael Wells, a sheet metal worker in the H-53 Aircraft Components Shop at Fleet Readiness Center East (FRCE), prepares a plate used to check an H-53 spar fitting's mount feet for excessive gaps.

New Process Helps Improve Results for H-53 Fitting at FRCE

A process developed and refined at Fleet Readiness Center East (FRCE) is producing positive results in the maintenance, repair and overhaul of the CH-53E Super Stallion and MH-53E Sea Dragon heavy-lift helicopters serviced at the depot.

A team of engineers and artisans from the H-53 Aircraft Components Shop worked together to improve the manner in which the aircraft's spar fittings are evaluated for fit, resulting in a higher acceptance rate and faster turnaround times for the components. The spar fittings fasten the helicopter's horizontal stabilizer to the tail pylon, allowing the horizontal stabilizer to prevent the helicopter from experiencing excessive up-and-down pitching during flight.

The new process uses a pressure plate and pressure-sensitive film to clearly identify high and low areas on the mount feet of the two inboard metal spar fittings in the horizontal stabilizer, which affix to corresponding mating surfaces on the tail pylon. These mount feet must make 80 percent contact, with no gaps larger than two-thousandths of an inch, said Jason Gaskill, an H-53 airframe production support engineer with the Maintenance, Repair and Overhaul Engineering Production Line Support Division at FRCE. Spar fittings that cannot meet the required tolerances must be removed from inventory and replaced with new fittings, which are either purchased from commercial manufacturers or produced by FRCE's machine shop.

These tight tolerances require an incredible level of precision work from the machinists who blend the surfaces of the reworked fitting; the bright pink dye left behind following a fit check using the pressure-sensitive film gives the machinists a visual indication of exactly where they need to grind. It works in much the same way as dentists use articulating paper, also known as bite paper, to identify where teeth contact during biting and grinding, he said.

"Many of these fittings have undergone years of maintenance, from removing superficial corrosion with a scouring pad to machinists grinding and blending to remove minor corrosion," Gaskill said. "If it's not a new fitting straight from the manufacturer, somebody has removed minor corrosion at some point. And when you're talking measurements of a thousandth of an inch, the machinists don't have a way to judge exactly which areas of the fitting they're removing material from, or whether they've removed the exact same amount of material from one of the surfaces compared to the other one."

Because the human eye is not able to measure increments that small, Gaskill said, the team sought to develop a process to let the machinists know exactly what type of work needs to be done to the stabilizer side of the fitting.

"Now we can give them a visual representation of what areas require blending and how much needs to be taken off," Gaskill said. "We wanted to put in place a good, solid process so we know that what the shop is putting out is a good product without 100 percent replacement of these fittings."

The process for using pressure-sensitive film to verify contact

U.S. Navy photo

Shevaun Jones, a sheet metal worker in the H-53 Aircraft Components Shop at Fleet Readiness Center East (FRCE), uses a feeler gauge to check for excessive gaps on the mount feet of an H-53 spar fitting.

on the stabilizer side fittings, for both leading and trailing faces, has been rigorously tested by engineers at FRCE and written as a temporary engineering instruction, which means it is now approved for use within the H-53 Aircraft Components Shop.

Saving the reworked fittings that are brought into tolerance has multiple benefits, Gaskill noted. It saves taxpayer dollars by avoiding the cost of a new fitting and reduces turnaround time for the H-53 aircraft in work on the depot's H-53 production line.

Amy White, an aircraft examiner on the depot's H-53 line, said the cost of replacing the spar fittings could run as high as $150,000.

"Before, if the gaps were bad, we just had to replace them," White said. "Now we're able to save many of them, between what the machinists are doing by sanding down the pink, taking another impression and seeing where we are, maybe sanding some more.

"Once we get to that 80 percent contact, we're good to go and we've saved those fittings," she said. "And we spent labor hours working on it, instead of $150,000 in materials plus the labor cost of replacing the fittings within the components."

Paul Guthrie, sheet metal work leader in the H-53 Aircraft Components Shop, said the new process also supports an improvement in personnel utilization.

"Instead of having to change out that fitting, we can spend a few hours checking the spar fitting and sanding it down in hopes of saving it," Guthrie said. "We can do three to four impressions with the pressure-sensitive film as the process goes along and, if by that point, the fit check hasn't reached 80 percent contact or at least shown significant improvement, that's when a decision is made. If we don't see a major improvement or it's too far out of tolerance or specification, then we have to get a new fitting."

This verification of flush mating surfaces on the spar fittings' mount feet also helps reduce overall turnaround times for H-53 aircraft maintenance at FRCE, Guthrie said.

An out-of-tolerance spar fitting leads to fitment issues when it's time for the H-53 production line to connect the stabilizer to the helicopter's tail pylon, which in turn slows down production on the aircraft line as the fitting has to be reworked or discarded and a new one procured or produced, Gaskill said.

"That's why I really wanted a process that could address this in the back shop," he said. "Because if we don't address it in our shop, then when the H-53 line is ready to install the stabilizer and it doesn't install properly, that holds up their work. It's a hard stop.

"I feel really good about this process," Gaskill said. "It gives the components shop the ability to say they know the stabilizer side of the fitting is not the problem, and they have the technical data to back that up. And it allows us, as engineers, to know we need to look elsewhere to address the issue. One of the things we like to do as engineers is eliminate things that aren't the problem so we can focus on what it could be, rather than every potential possibility."

Gaskill said the team developed the initial idea for the process after discussing the spar fitting fitment issues with a senior engineer, who mentioned that the depot's composite shop used the pressure-sensitive film to check for gaps between the composite layers of bonded tee caps, another fitting found on the H-53. While the spar fittings involve metal-to-metal contact rather than composite materials, Gaskill thought the same concept could work.

"I was trying to think of a way to get all of the high spots on the fittings sanded at one time and, with this, we didn't have to reinvent the wheel. We've got a source of supply for the film. We had the plate from another process, although we are now working on getting a plate just for this specific use. We started with some trial runs and it turns out that this just works really, really well."

MRO Engineering Department Head Thomas Osiecki said the development of this process provides an excellent example of how cooperation between MRO Engineering and the depot's production elements leads to improvements that benefit both the FRCE workforce and the nation's military aviators.

"It's exciting to see the success that Jason and the FRC East team have experienced in establishing this method of identifying and correcting gaps on H-53 spar fittings, and the positive impact it's having on cost and turnaround time for H-53 maintenance," Osiecki said. "This is just one example of what our FRC East MRO Engineering Department team members do every day—they support the fleet by helping improve maintenance outcomes in our component shops and aircraft lines. The FRC East teamwork on display with this effort helps speed delivery of components and aircraft back to our warfighters."

Looking forward, Guthrie said he hopes other entities within the depot and beyond might be able to look at what the H-53 Aircraft Components Shop has done with the pressure-sensitive film and find uses for it within their own areas, as well.

"This film is a pretty readily available commercial product, it's fairly easy to use and is giving us great results," he said. "There may be someone out there in the facility or even in the fleet that will say, 'Hey, we could do that too' – just like our engineers picked up the idea from composites," he said. "And if someone else has this same type of problem, they could easily try this process and see if it works."

In fact, the H-53 Components Shop is now conducting trials of the process on the tail pylon spar fittings, and hope to see an approved temporary engineering instruction released in the near future.

"Of course, those fittings have never been checked this way, either," White said. "And that's important, because we can bring all these stabilizer fittings into tolerance but, if the fittings on the tail pylon are out of tolerance, it's not going to matter what we're doing to the stabilizer side. Using this process on the tail pylon side is another way to save time and cost for both FRCE and our customers in the Fleet."

For Gaskill, the best part of this process development is knowing the artisans in the components shop are turning out the highest possible quality product for the H-53 line and customers in the Fleet.

"When we finish that horizontal stabilizer, we know that it's good to go for mounting to a tail pylon," he said. "And I just can't praise the artisans enough. They took a process that they've never done before, and now they're able to get these done so efficiently. They're doing such a great job, and this process wouldn't be where it is without them."

FRCE Helps Blue Angels Ensure Fat Albert Ready for Shows

Fleet Readiness Center East (FRCE) recently welcomed aviation icon Fat Albert and its team for scheduled inspections and maintenance, which gave FRCE a unique opportunity to learn from the "best of the best."

FRCE's Minor Depot Inspection (MDI) Team worked alongside the Blue Angels Fat Albert Maintenance Team to complete annual maintenance and inspections on Fat Albert, the Blue Angels' C-130J Super Hercules support aircraft.

According to Staff Sgt. Patrick Angles, who serves as both the Fat Albert maintenance staff noncommissioned officer in charge and engine mechanic, working with FRCE's MDI Team reduced time spent on the aircraft's maintenance and inspections by 50 percent.

"We have seen how working with them has made the process considerably

U.S. Navy photo

Members of Fleet Readiness Center East's (FRCE) C-130 Minor Depot Inspection Team stand with the Blue Angels Maintenance Team members in front of Fat Albert, the Blue Angels' C-130J support aircraft. Fat Albert recently visited FRCE for routine maintenance to ensure mission readiness. The Blue Angels use Fat Albert for transportation to their many airshows throughout the year, and it is the only aircraft of its kind.

faster," Angles said. "It typically takes a bit longer as we are all 'one of ones,' meaning we only have one airframer, one engine mechanic, one flight equipment mechanic and so on. Having the extra hands has helped tremendously."

Not only did working alongside the Blue Angels team decrease the turnaround time for the aircraft's inspections, but it also provided FRCE employees with beneficial exposure, according to Mike Edwards, relief supervisor for the C-130 platform.

"We've learned a lot. They are very knowledgeable, the top of their class," Edwards said. "We have a lot of younger employees who are still learning and, in this situation, they get to learn from the best of the best. That can only help us as a facility because if we are being trained, and trained the right way, then that can have a domino effect."

FRCE's MDI Team regularly performs maintenance on C-130 aircraft, but this is their first time working on Fat Albert. As a transportation aircraft used for airshows and not designed for carrier operations, Fat Albert has a different capability set than typical C-130s, making this a unique experience for FRCE employees.

"There are just a few things Fat Albert does not have that a typical C-130 would, for tactical use," Edwards said. "For example, Fat Albert does not have in-flight refueling capabilities. But, as far as inspection processes, they are the same. We still check flight controls, brakes, landing gear and counter warfare measures."

Affectionally known as "Bert" by many of the aircraft's crewmembers, Fat Albert plays an important role in the Blue Angels' mission. Angles said Bert is more than just an aircraft with a unique paint job, so ensuring the aircraft is well-maintained and properly prepared for each trip is important.

"Bert is our main source of transportation and is responsible for getting us everywhere we need to go," Angles said. "Every weekend, we will pack up 48 Blue Angels and 40,000 pounds of gear and we go from show site to show site; we make sure everything gets where it needs to go."

U.S. Navy photo

Members of Fleet Readiness Center East's (FRCE) C-130 Minor Depot Inspection Team stand with the Blue Angels Maintenance Team members in front of Fat Albert, the Blue Angels' C-130J support aircraft. Fat Albert recently visited FRCE for routine maintenance to ensure mission readiness. The Blue Angels use Fat Albert for transportation to their many airshows throughout the year, and it is the only aircraft of its kind.

Blue Angels Fat Albert Maintenance Controller Sgt. Payton Lopez said he hopes the Blue Angels get to work alongside FRCE's MDI Team again next year.

"As successful as we have been while here for inspections, we hope to continue working alongside the MDI Team at FRC East," Lopez said. "We cannot thank them enough for letting us work alongside of them and making it easy for us, but also being there if we need anything. I can't stress that enough."

Lopez said having FRCE's help with the annual inspections helps the Blue Angels increase mission accomplishment and readiness.

"Anything that makes the C-130 fly, we are checking during this inspection," Lopez said. "We do this to ensure Bert is good for the rest of the air show season that starts in March."

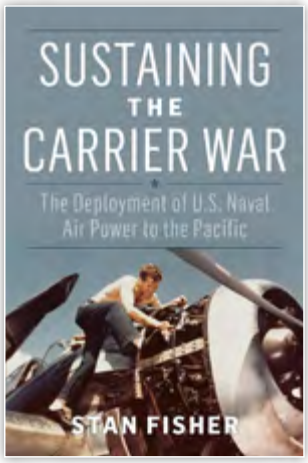
As a part of the United States Navy Flight Demonstration Squadron, the Blue Angels' mission is to showcase the teamwork and professionalism of the Navy and Marine Corps by inspiring a culture of excellence and service to the country through flight demonstrations and community outreach, according to the Blue Angels' website.

Earlier this year, the Navy named FRCE the future depot source of repair for Navy C-130 aircraft, making this experience even more beneficial. The depot could begin the new C-130 workload as soon as the end of the fiscal year 2026.

Fat Albert and the Blue Angels Team will return to Cherry Point for the MCAS Cherry Point Air Show in early May.

Professional Reading

By Cmdr. Peter B. Mersky, USNR (Ret.)



Sustaining the Carrier War: The Deployment of U.S. Naval Air Power to the Pacific

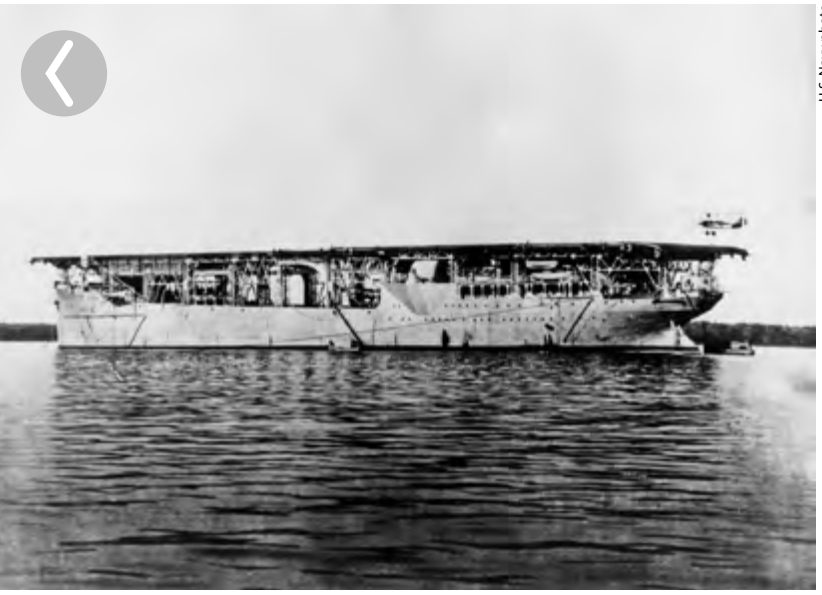
By Stan Fisher, Naval Institute Press, Annapolis, MD. 2024. 258 pp. Ill.

Authors seldom address this subject when writing about military aviation in World War II, but particularly U.S. Naval Aviation aboard aircraft carriers far away from shore-based support. This new book is written by a serving captain and former SH-60 helicopter aviator, who is now an instructor professor at the U.S. Naval Academy at Annapolis, Maryland, with a Ph.D. in American history, with special emphasis in naval history.

While it is of great interest, the text tends to be somewhat long-winded and in drastic need of attention to terminology, such as the use of "bi-wing" when referring simply to "biplanes." Nonetheless, the author describes the development of much-needed organizations that served the growing fleet of aircraft carriers, especially following the Japanese attack on Pearl Harbor on Dec. 7, 1941, that thrust America into what had largely been a "European War." However, the war was spreading, indeed, taking over most of the world thanks to the success of Nazi Germany and the Japanese Empire and their allies.

The occasional inclusion of little-known aircraft such as the Curtiss F4C-1, a one-off type that really did not belong as a main type of the period shown, particularly in a graph on page 25, is an example, and I wonder just where he found it. The F4C-1 was a minor development of the short-service (circa 1922-1927) TS-1, which was designed specifically for America's first carrier, the USS Langley (CV-1). The Langley was originally a collier named Jupiter, built in the days when ships used coal as a source of power.

Fisher mentions the Grumman F3F, the last biplane fighter from that company, but not the earlier F2F, nor the fact that the following F4F-3 Wildcat had fixed wings and only four .50 caliber machine guns in the wings, or that the F4F-4 incorporated innovative folding wings with three .50 caliber guns in each wing. The F4F-4 was the only Navy and Marine Corps fighter



U.S. Navy photo

USS Langley (CV-1), originally built as the collier USS Jupiter (AC-3), served mainly as a training ship for all carriers, their aircraft and aircrews that were to come after. Without the characteristic island on its flight deck, the Langley received the nickname "Covered Wagon," recalling the equally legendary "land schooners" of the 19th century that brought so many of U.S. pioneers and hopeful settlers to new homes in the west. Barely discernible, an Aeromarine 39 crosses the aft end of the flight deck. The Aeromarine was a somewhat minor but available type that served during WWI and carried on briefly after the war. On Oct. 26, 1922, Lt. Cmdr. G. DeChevalier (Naval Aviator No. 7) flying an Aeromarine 39-B made the first landing aboard the U.S. Navy 's first aircraft carrier.

Photo by Lt. Gustave Freret, USN/Naval History and Heritage Command (NHHC)

Several Boeing F2B-1 fighters crowd the hangar deck of the USS Langley (CV-1) circa 1928. Early black-and-white film did not show several insignia colors properly, hence the blue of the national insignia's circle on the wings became a light gray, while the dark red circle in the middle of the white star showed up as black.

Photo courtesy of NHHC

A Curtiss TS-1 fighter of Fighter Squadron (VF) 1 crashed on the Langley's flight deck in 1924. Originally designated as a TS or "turret scout," the TS-1 was originally designed to fly from platforms on the gun turrets of the various battleships of the 1920s. However, they were never used in that capacity. Indeed, the best that can be said of the little fighter, which was also designed to fly in a floatplane configuration, was it did give early American carrier aviators their initial experience operating from carriers.

available to meet the onrushing Japanese after Pearl Harbor on anything approaching equal terms until mid-1943 when Grumman's F6F Hellcat went into combat in late August 1943. All of which added to growing maintenance and supply-chain concerns in the early months of the Pacific war aboard ship or at far-flung Marine shore bases like Wake Island (late December 1941) and Guadalcanal (mid-1942 through early 1943).

A lengthy discussion concerns the developing requirements of maintaining and repairing the first aircraft that entered early military service, as well as the same problems during the First World War using the large number of Naval Air Reserve mechanics who had been called to active duty. However, little consideration had been given to the growing need for even more enlisted maintainers because of building the fleet in Europe and what it foreshadowed for American needs if the Navy was eventually drawn into the conflict, which we now know was inevitable after Pearl Harbor.

By 1941, the Navy had established a better-defined system of training sailors as skilled seamen who were learning a trade in specific areas in their rate, or rank. It was a somewhat complicated sequence at first, but it eventually paved the way to a highly-skilled system that became what we know today with even more complex systems and aircraft.

Fisher certainly had his work cut out for him, digesting all his obvious research, then describing the training in different schools, accompanied by thousands of student sailors in different geographic locations. The training eventually produced the amazing number of highly-skilled mechanics in such a short time who went out with the many air groups in their many carriers and other air-capable ships that were rolling down the ways at different yards to service all the different aircraft that were slowly but surely bringing the war closer to Japan.

We are reminded of what Japanese Adm. Yamamoto feared

U.S. Navy photo

Minneapolis Naval Air Reservists check their Grumman SF-1's retractable landing gear, a real novelty in the mid-1930s. During the pre-WWII decade, Grumman produced several one- and two-seat aircraft based on the same general design. The SF-1 was a two-seat scout, several of which were attached to the USS Lexington (CV-2) before the war. It was armed with one forward-firing .30 caliber machine gun, while the observer in the rear seat had two .30 caliber machine guns by mid-war. Retractable landing gear remained both a novelty as well as a problem especially for flight crews to remember before landing.

on the day of the attack on Pearl Harbor: that the attack, though an immediate success, was really doomed from its conception if and when America could martial its great industrial might.

In another related but growing vital area, the increasing tempo of all U.S. military recruitment, as well as production, quickly saw the formation of groups of female mechanics to

Photo courtesy of NHHC

Students train on an SBD Dauntless at the Naval Air Technical Training Center, NAS Memphis, Tennessee. Having the real thing to train on was always important.

service the rising number of aircraft and their internal systems that could not be addressed only by existing groups of men, especially those squadrons at sea, and in combat. Increasing the number of women to serve in shore-based installations could release men to go to squadrons aboard carriers and other air-capable ships.

An unusual, then-little-known aspect of this interesting note was the establishment of female units, eventually becoming large organizations collectively titled WAVES—Women Accepted for Volunteer Emergency Service—considered a combined unit of the Navy, which included a second membership, Women Marines. A similar membership developed in England, taking the acronym WREN (Women's Royal Naval Service). Members underwent training in normally male roles. Finally, "black" units in the U.S. trained in the same positions but were generally kept in shore-based billets, ostensibly maintaining the country's segregated policies.

U.S. Navy photo

The rear-seat gunner of an SBD dive bomber could have a single, or in this case, two .30 caliber machine guns (later in the war) to defend his aircraft and others in his formation. Note the single Japanese kill flag below him. Coordination and dependability were the hallmarks of these two-man crews.

U.S. Navy photo

The flight deck of the USS Santee (ACV-29) has several SBDs and F4Fs during Operation Torch in November 1942, the Allied invasion of North Africa, one of the first major Allied operations of the war.

The book's single folio of photographs is fine, but a second collection would have been useful, with the emphasis on the various personalities—American, Allied and enemy—the writer mentions throughout the text.

Oddly, the "list of Illustrations" on page XI shows tables, not photos, that are in the single folio of photos. I have never seen such a mistaken listing. For an expensive discussion of the magnitude of this book, one collection of 22 black-and-white photos, and including one good color picture on the cover is not anywhere sufficient to support the narrative text. Surely, there are more photographs available of personalities mentioned on both sides as well as more images of the many different types of aircraft that were such a part of the growing number of squadrons and air groups that fills out the burgeoning number of carriers and other air-capable ships of the book's title.

When Fisher begins noting TBM Avengers, while addressing FM Wildcats (only in an endnote) that filled out air groups in the growing number of small-carriers, especially the mass-produced escort carrier (CVE), he fails to adequately explain that the automobile giant General Motors was tasked to build these particular aircraft—hence the TBM and FM designations—so Grumman could concentrate on building the F6F Hellcat that was changing the war in the air against such enemy aircraft as the veteran Mitsubishi Zero (and perhaps noting that Mitsubishi competitor Nakajima was doing the same thing in Japan). As always, this is where a knowledgeable and alert editor would and should have been a major part of a book's team.

As the book moves toward its conclusion, the author describes the development of the Aviation Supply Office (ASO) and Beneficial Suggestion Programs, known as "Benny Suggs," which fill out two interesting developments that may be remembered by readers of a more recent generation. As the author notes, the ASO concept created a veritable "Sears catalog" (page 159) of what was available from the Aviation Supply Depot (ASD) that was established in October 1944 as the far-flung fleets were supporting island-hopping campaign's trek closer to the Japanese Home Islands.

Benny Suggs was a program intended to generate interest in individual members of the Navy to get personally involved by coming up with specific "inventions" resulting in monetary

Photo courtesy of National Archives and Records Administration (NARA)

Aboard the USS Lexington (CV-16) in early December 1943 an Aviation Machinist Mate First Class works on a Hellcat's Pratt & Whitney engine during fleet operations against the Japanese. The photographer, Cmdr. Edward Steichen, was well-known in the civilian world, but like many successful individuals from baseball players to artists, writers and movie actors, he added his talents on active duty with American branches. The original carrier Lexington was sunk at the Battle of the Coral Sea in May 1942. Typically, the Navy named another ship in honor of the one lost and to carry on its traditions.

rewards from small value such as War Bonds to numbers as high as $5,000.

When referring to Japanese aircraft in WWII, the author uses "code names" the Allied code system developed in January 1942, but was not in general use until late 1942, a common error, or misconception by many authors, even those writing histories of a particular subject.

I have to say the worst error of the book—again, one that should have been definitely caught by an editor—involves an enlisted Navy technician who, while working on an SBD Dauntless on the flight deck during a Japanese attack jumped into its rear cockpit and unlimbered the dive bomber's single .30 caliber machine gun to fire back at the enemy planes on Feb. 1, 1942. The author mistakenly uses the name "Devastator" to refer to the SBD. Devastator was actually the name of the Douglas TBD torpedo bomber that was still in use in some air groups in the early months of the war, and is mainly known for its role in the Battle of Midway in June 1942 when many of the TBDs in the battle were shot down, including all those of VT-8 flying from the USS Hornet (CV-8). He also notes the technician (whose name he apparently does not know but was, in fact, Machinist's Mate Bruno Gaido) was firing 7.62mm bullets in a single machine gun, which is also an error I have never seen but was actually a size of bullet used in Europe, not the U.S., where a .30 caliber bullet was slightly more potent than the European round. Perhaps the author and editor might have been forgiven this error, but honestly, it indicates how much the degree of an editor's knowledge by an editor is so important.

He compounds his error by confusing it with a similar action involving LSOs (Landing Signal Officers) aboard the USS Enterprise (Lt. James G. Daniels III and Lt. Robin M. Lindsey) months later, on Oct. 26, 1942, at the Battle of Santa Cruz, by which time, their SBDs were equipped with twin machine guns. So, there were actually two such incidents involving two different carriers, and an enlisted man in the first incident, two lieutenants in the second, and two different dates with nearly nine months between them.

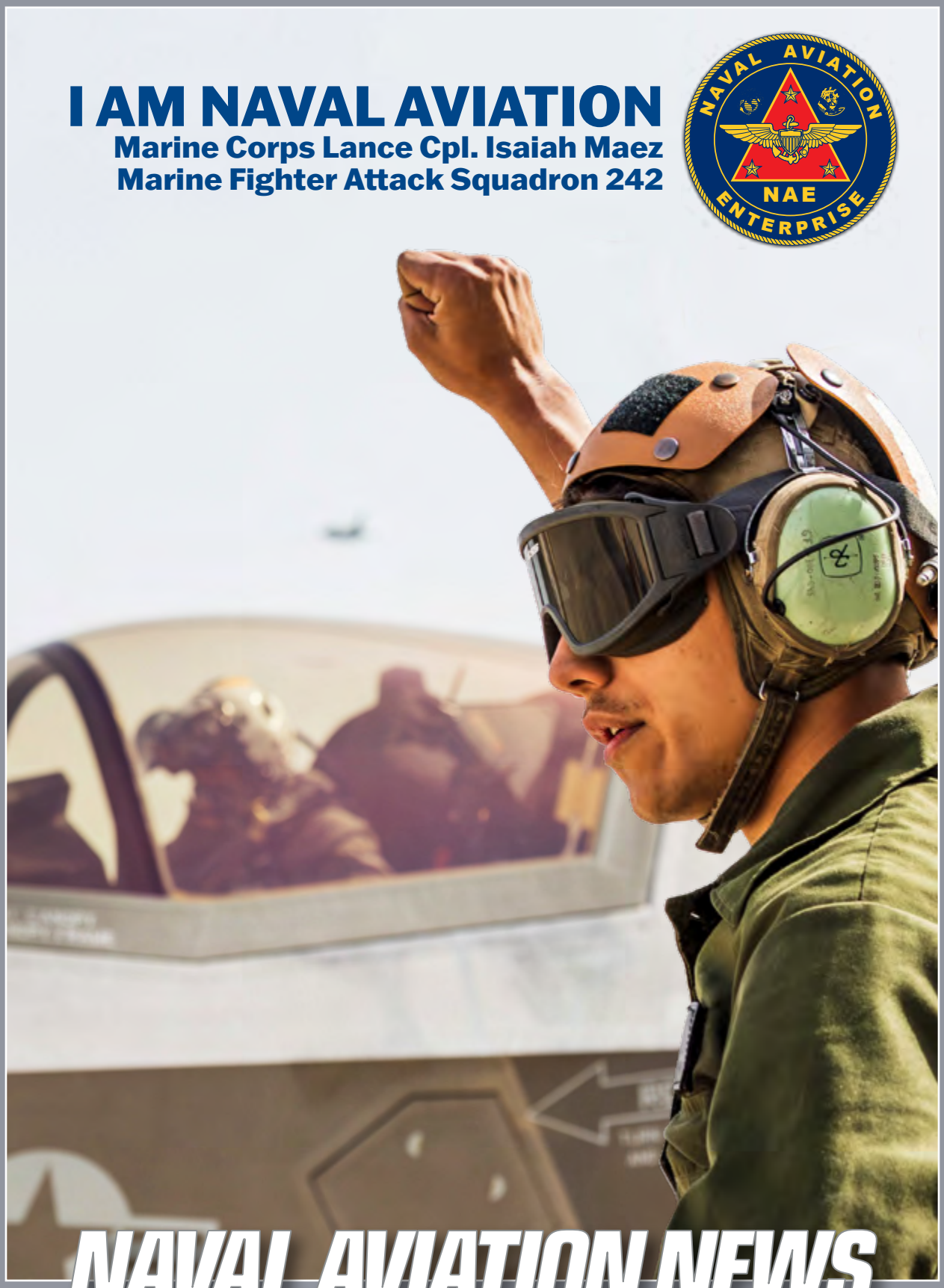
While Fisher's research and desire to describe several very intricate, often complicated aspects of carrier organization and operation is commendable, he often gets lost in the story and again should have had advantage of an equally dedicated and knowledgeable editor. Nevertheless, his research and assimilation of this important historical coverage into his narrative definitely adds to the overall story off how Navy sea-based units were able to keep their many aircraft and related systems functioning in the high-pressure combat deployments.

Photo courtesy of NHHC

As noted in this book, women began taking more and more active roles during WWII. Pictured are members of the first class of WAVES (Women Accepted for Volunteer Emergency Service) to graduate from the Aviation Metalsmith School at NATTC, Norman, Oklahoma, July 1943.

I AM NAVAL AVIATION

Marine Corps Lance Cpl. Isaiah Maez
Marine Fighter Attack Squadron 242



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