

# NAVAL AVIATION NEWS

THE FLAGSHIP PUBLICATION OF NAVAL AVIATION SINCE 1917

WINTER 2025

*Versatile, Agile, Dependable and Enduring:*

# C-130 HERCULES TURNS 70



## WHAT'S INSIDE

- ▶ Deck Crews Conduct Night Flight Ops
- ▶ Next-Gen Jammer Reaches IOC, First Deployment
- ▶ Ship Motion Platform Capabilities Expanding





# NAVAL AVIATION NEWS

WINTER 2025

VOLUME 107, No. 1

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## ON THE COVER



**On the Cover:** A KC-130J Hercules with Special-Purpose Marine Air-Ground Task Force Crisis Response-Africa rests on the flight line near Madrid, Spain, March 16, 2015. (U.S. Marine Corps photo by Sgt. Paul Peterson).

**In this first edition of 2025,** Naval Aviation News celebrates the 70th anniversary of the stalwart C-130 Hercules aircraft, a transport plane that has served the armed forces in a variety of capacities since the 1950s. Read about what makes the Hercules so enduring starting on page 22. After years of development and experimentation, the Navy's Next-Generation Jammer Pod made its first successful deployment and initial operating capacity with Electronic Attack Squadron (VAQ) 133 while deployed aboard USS Abraham Lincoln. Read about the Navy's newest defense capability starting on page 30. And on page 36, read about the extraordinary abilities, coordination and precision in which aircraft carrier crews conduct night flight operations aboard USS Carl Vinson.

**On the back cover:** Lt. Paul Giewicz preflights the mission systems on a P-8A Poseidon at Naval Air Station Sigonella, Italy, Jan. 4, 2025. The Patrol Squadron (VP) 26 "Tridents" are based in Jacksonville, Florida, and are currently forward deployed conducting maritime patrol and reconnaissance, as well as theater outreach operations, as part of a rotational deployment to the U.S. 6th Fleet area of operations. (U.S. Navy photo by Mass Communication Specialist 2nd Class Aubrey Stueven).

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



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# Airscoop

Compiled by Rob Perry

## VMFA-211 Facilitates USS Tripoli Aviation Certification

PACIFIC OCEAN—Marine Fighter Attack Squadron (VMFA) 211 deployed with the 13th Marine Expeditionary Unit aboard the Essex Amphibious Ready Group in 2018, marking the first combat deployment of the F-35B Lightning II. This deployment demonstrated the effectiveness of amphibious forces when the Marine Corps’ fifth-generation fighter capabilities are integrated aboard the Navy’s amphibious assault ships.

Since returning from the first F-35B deployment in 2019, VMFA-211 has continued to play a crucial role in refining tactics and expanding the Navy-Marine Corps team’s ability to project power. In 2024, VMFA-211 completed a series of exercises with the America-class amphibious assault ship USS Tripoli (LHA 7), which enhanced both units’ readiness and interoperability.

From April 9 to 11, 2024, Marines and Sailors of VMFA-211 partnered with Tripoli to conduct three days of training in Yuma, Arizona, as part of the aviation certification syllabus. The AVCERT ensures that flight deck crews can launch and recover aircraft safely and are prepared to handle emergencies on the flight deck.

Flight deck crew received classes about the F-35B, and ground instruction from senior Landing Signal Officers (LSO), pilots who specialize in guiding aircraft to safe and expeditious landings aboard ship. Tripoli flight deck crews launched F-35Bs from the simulated deck of an amphibious assault ship at the Barry M. Goldwater Air Force Range while VMFA-211 pilots rehearsed procedures for carrier landings.

Three months later, VMFA-211, alongside tilt-rotor and rotary-wing squadrons from 3rd MAW, landed F-35B aircraft aboard the Tripoli during day and night operations, July 14 through 18, culminating in the ship’s successful AVCERT.

“This training gives us an opportunity to get to know each other and how we operate together on the flight deck,” said Navy Aviation Boatswain’s Mate 2nd Class Lawrence Pivec, a member of the Tripoli air department’s V-1 division, responsible for moving aircraft on the flight deck. “We get out here and fly together as much as possible, so we are ready when the call comes.”

Training at sea enhanced readiness for both the Tripoli and 3rd MAW squadrons. During the AVCERT process, 3rd MAW pilots gained or refreshed flight deck landing qualifications. Two VMFA-211 pilots achieved the day and night carrier qualification. VMFA-211 progressed a pilot from basic to advanced LSO—a role critical for future deployments—and made progress toward creating an additional basic LSO. LSOs help coordinate the complex flight deck environment and are essential for safety during high-tempo amphibious operations.

“The flight deck is very dynamic and can be a dangerous place, so it is imperative that we ensure the personnel on the deck are trained and qualified to safely operate around the aircraft,” said Maj. Courtenay Franklin, an F-35B pilot and aviation safety officer with VMFA-211.

From Sept. 30 to Oct. 4, VMFA-211 conducted training aboard the





U.S. Navy photo by Sgt. Emeline Swyers

*Marine Fighter Attack Squadron (VMFA) 211 conducts flight deck qualifications aboard USS Tripoli (LHA 7) in the Pacific Ocean, July 15, 2024.*

Tripoli once more, recertifying the flight deck.

The F-35B Lightning II, known for its short takeoff and vertical landing capabilities, is uniquely suited for operations from amphibious assault ships such as the Tripoli.

“It is important to have a joint understanding of the standard procedures that go into landing aboard a ship and ship operations,” said Capt. Leland Raymond, an F-35B pilot with VMFA-211. “Having this experience on the LHA [landing helicopter assault class] will translate to

any other ship we go on and allows us to practice those standard procedures. It translates across the Navy.”

The multi-role, stealth capabilities of the F-35B, when paired with the capabilities of the U.S. Navy’s largest amphibious warfare ships, like the Tripoli, offers unmatched operational flexibility, from close air support and interdiction to intelligence, surveillance and reconnaissance missions.

Third MAW’s F-35B squadrons routinely deploy aboard amphibious assault ships as the aviation combat element of

Marine Expeditionary Units to the Indo-Pacific region in support of combatant commander requirements. The mutually beneficial training between VMFA-211 and the Tripoli is a testament to each unit’s commitment to interoperability and readiness to deploy at any moment.

“This is building confidence in our Navy-Marine Corps team,” Raymond said. “We are all aligned in our goals for successful future deployments.”

*Written by Capt. Stephanie Davis and 1st Lt. Madison Walls with the 3rd Marine Aircraft Wing. 🇺🇸*

## F-35B Begins Sea Trials with Japanese Multi-Functional Destroyer in Eastern Pacific Ocean

U.S. Navy photo by Darin Russell



*An F-35B lightning lands aboard JS Kaga (DDH 184) off the southern coast of California to begin development testing.*

PACIFIC OCEAN—A U.S. F-35 Lightning II aircraft landed aboard Japan's Izumo-class multi-functional destroyer JS Kaga (DDH 84) for the first time Oct. 20, 2024, off the southern coast of California to begin developmental test aboard the allies' largest ship.

A test pilot flew a specially instrumented F-35B short takeoff and vertical landing (STOVL) variant of the fifth-generation air system and touched down about 3:15 p.m.

Sea trials will leverage the ship's recent modifications to con-

## Carderock Team Provides Critical Technical Support for F-35B Sea Trials on JS Kaga

BETHESDA, Md.—Naval Surface Warfare Center (NSWC) Carderock Division's Platform Integrity Department engineers responded to a request from the Naval Air Warfare Center Aircraft Division (NAWCAD) Paxtuxent River F-35 Integrated Test Force (ITF) to support developmental flight trials aboard the Japan Maritime Self-Defense Force Izumo-class JS Kaga (DDH 184) in early October.

The Carderock team applied technical expertise and provided onsite assistance to ensure the ship was prepared for testing with the F-35B Lightning II aircraft, playing a critical role in ensuring the safety and success of the sea trials.

The engineers' work focused on a critical challenge: managing the intense heat generated by the aircraft by determining appropriate hover durations and intervals between vertical landings to allow the flight deck to cool sufficiently. By addressing this issue, the team played a key role in protecting the structural integrity of the ship's flight deck, enabling the successful completion of the trials.

"Effective testing relies on precise

data," said Jessica McDonald, one of the engineers involved. "Our role was to make sure everything was in place to collect the information needed to evaluate performance safely."

Originally designed as a helicopter carrier, JS Kaga recently underwent modifications that make it a multi-functional destroyer capable of supporting fixed-wing aircraft, like the F-35B short takeoff and vertical landing aircraft. These changes included new nighttime lighting systems, reshaping the bow and preparing the flight deck for intense heat generated during vertical landings. Carderock's role focused on ensuring that the flight deck could handle this heat without compromising the ship's structural integrity.

"During a vertical landing, the F-35B puts out a pretty significant thermal load onto the deck, and in order to maintain structural integrity, we need to time when those F-35B landings can occur," McDonald said. "Otherwise, the heat builds up in the structure, leading to structural integrity issues."

By working with the ITF to account for the test-unique hover timing and carefully scheduling landing intervals, engineers were able to mitigate those concerns.

To support the trials, the Carderock team traveled to Naval Base San Diego, California, and worked aboard the JS Kaga. They used specialized equipment to measure temperatures beneath the deck in real time, allowing the team to track heating and cooling patterns. This data helped the ITF optimize landing schedules to protect the flight deck during operations.

This effort was part of a broader collaboration between the U.S. and Japan, showcasing the strength of their defense partnership. This is not the first time the Carderock team has worked with Izumo-class ships.

"We have been supporting the Japanese for F-35B on the JS Izumo and JS Kaga for several years," McDonald said. "Our team tested for and developed an F-35B thermal design load. We evaluate our own ships for that and provide timing guidance to the fleet. While we typically take a more



duct fixed-wing aircraft operations. Changes to Kaga included painting its flight deck with heat-resistant material that tolerates the F-35B's vectored-thrust engines, installing lights for nighttime operations and reshaping the flight deck's bow from a trapezoid to a rectangular shape.

The trials will also pave the way for allies' increased ability to operate in conjunction with each other.

"This test is essential for strengthening Japan's defense capabilities and is of utmost importance. We will do our best to achieve good test results together with the [Integrated Test Force]," said Japan Maritime Self-Defense Force Capt. Shusaku Takeuchi, commanding officer, JS Kaga. "This test does not merely enhance the capabilities of the Maritime Self-Defense Force. It also improves the interoperability between Japan and the U.S., strengthening the deterrence and response capabilities of the Japan-U.S. alliance, thereby contributing to peace and stability in the Indo-Pacific region."

The F-35 is detached from Air Test and Evaluation Squadron (VX) 23, based at

Naval Air Station Patuxent River, Maryland. It joins a test team from the F-35 Pax River Integrated Test Force (Pax ITF), which embarked the ship in San Diego.

In addition to F-35 test pilots, the Pax ITF team includes aircraft maintainers, flight test engineers, flight test control engineers, flight deck personnel, logisticians and others, with support from the U.S. Navy and Marine Corps.

"We are proud to be part of this joint effort to test the compatibility of F-35B aboard JS Kaga," said Seth Dion, Pax ITF team lead. "Our team has prepared meticulously for this mission, and we are committed to working closely with our allies to achieve our shared goals and strengthen our partnership."

The sea trials were to take approximately three weeks.

JS Kaga set sail from its homeport at Kure Naval Base, Japan, in early September.

*From Michael Land, communications specialist with the Patuxent River Integrated Test Force.* 🇺🇸

conservative approach, there's always an interest to improve operational capability where we can."

By applying their expertise, the Carderock team played a critical role in ensuring the safety and success of the sea trials.

McDonald said the Carderock team intends to use lessons learned through the trials to improve methods for active thermal monitoring. She explained these advancements will enable precise, real-time data collection during operations, further enhancing ship-aircraft compatibility and ensuring the long-term safety and efficiency of naval platforms.

"Partnering with the ITF team gave us the opportunity to gain more insight as to how they execute at-sea developmental testing, as well as how trial operations occur," McDonald said. "It's really rewarding to see the work we do succeed and be reflected in the news."

Carderock, the Navy's innovation and ship design powerhouse, headquartered in West Bethesda, Maryland, is a world-class research and development facility specializing in critical ship design



*A joint team consisting of F-35 Patuxent River Integrated Test Force flight test members, U.S. Sailors and Marines, and the crew of the Japan Maritime Self-Defense Force Izumo-class multi-functional destroyer JS Kaga (DDH 184), executed developmental sea trials in the eastern Pacific Ocean to gather the necessary data to certify F-35B Lightning II short takeoff and vertical landing aircraft operations.*

components. Carderock uses state-of-the-art facilities, such as the David Taylor Model Basin, to create small-scale models and evaluate next-generation surface ships and underwater vessels, ensuring they are future-proof, agile and equipped to dominate the maritime environment. Carderock's focus areas include platform integrity, signatures and

naval architecture and engineering. With teams and facilities across the country, from Florida to Alaska and Idaho to Washington, Carderock is "Where the Fleet Begins," building the future of the Navy.

*Written by Alisha Tyer with the Naval Surface Warfare Center Carderock Division.* 🇺🇸

## VMFA-533 First Operational F-35 Squadron Aboard MCAS Beaufort to Receive Aircraft

BEAUFORT, S.C.—Marine Fighter Attack Squadron (VMFA) 533, Marine Aircraft Group (MAG) 31, 2nd Marine Aircraft Wing (MAW), received its first F-35B Lightning II jet Oct. 11, 2024, aboard Marine Corps Air Station (MCAS) Beaufort, South Carolina.

VMFA-533 is the Marine Corps' second East Coast operational F-35B Lightning II Joint Strike Fighter squadron and the first aboard MCAS Beaufort. Prior to October, the only F-35 aircraft stationed aboard MCAS Beaufort were assigned to Marine Fighter Attack Training Squadron 501, which is tasked with conducting core introduction fighter/attack training for prospective F-35 pilots. The arrival of the aircraft marks the beginning of F-35 deliveries to MCAS Beaufort's operational squadrons, defined as units whose primary purpose is supporting Marine Corps and Department of Defense operations. The arrival continues 2nd MAW's operational transition from legacy fixed-wing tactical aircraft to the F-35.

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 (STOVL) F-35 variant. This capability allows the aircraft to operate from amphibious assault ships and expeditionary airstrips fewer than 2,000 feet long.

"The delivery of VMFA-533's first Block 4 F-35B starts another chapter in the storied history of the squadron that began almost 81 years ago to date, and is a major stepping stone to increasing the lethality of MAG-31 and our ability to contribute to the Marine Air-Ground Task Force and joint force," said Col. Michael Cassidy, commanding officer, MAG-31. "Transition-

ing a squadron is no small feat, and significant preparation by VMFA-533's Marines and Sailors has occurred over the past year to get them to this point. I'm excited about what the future holds for VMFA-533 as they take this significant step in their history, and I very much look forward to their contribution to the sound of freedom at MCAS Beaufort."

VMFA-533—colloquially known as "America's Squadron" among squadrons assigned to MCAS Beaufort due to its red, white and blue insignia—redesignated to VMFA-533 during a ceremony Sept. 28, 2023. The squadron's redesignation concluded its 31 years as an F/A-18 Hornet squadron. The squadron then began preparing for its transition to the F-35 and is currently going through the process of aircraft acceptance and working toward receiving its Safe for Flight certification.

"This arrival marks the new era in the Marine Corps' employment of the F-35. The yearlong process of preparing for our first Block 4 F-35 demonstrates the patience and perseverance of the Marines in this squadron," said Lt. Col. Zachary Hartnett, commanding officer, VMFA-533. "I'm truly proud of the exceptional professionalism and dedication that every Marine in America's Squadron has shown over the last year, and I'm excited to see their hard work rewarded with the long-awaited delivery of an F-35 to call our own."

VMFA-533 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 Lt. Col. Zachary Hartnett, the commanding officer of Marine Fighter Attack Squadron (VMFA) 533, taxis an F-35B Lightning II at Marine Corps Air Station Beaufort, South Carolina, Oct. 11, 2024.



## NAWCWD Team Delivers F-35 MDF in Record Time

U.S. Marine Corps photo by 1stLt. Charles Allen



An F-35C Lightning II, assigned to Marine Fighter Attack Squadron (VMFA) 314, arrives aboard USS Abraham Lincoln (CVN 72).

POINT MUGU, Calif.—The Naval Air Warfare Center Weapons Division (NAWCWD) team delivered a crucial mission data file (MDF) ahead of schedule, accelerating the normal production timeline significantly to support Marine Fighter Attack Squadron (VMFA) 314 aboard USS Abraham Lincoln (CVN 72).

The MDF, essential for F-35 Lightning II operations, provides intelligence updates and design enhancements that enable pilots to identify and counter threats in specific operational environments. Typically, the production process spans three months, incorporating intelligence updates, required fixes and design improvements. However, when Abraham Lincoln and VMFA-314 were tasked to the 5th Fleet earlier than expected, the NAWCWD team, in collaboration with Air Force partners, expedited the process swiftly and completed the task in just six weeks to ensure the squadron's readiness in theater.

"Our team worked with focused intensity to meet the goal of delivering the mission data file as soon as possible," said Cmdr. Alexander Sandroni, Commanding Officer of the 513th Electronic Warfare Squadron at Eglin Air Force Base, Valparaiso, Florida. "We even cut five days off our timeline to release the file before Labor Day weekend. The process highlighted the importance of open communication and adapting dynamically to the needs of our customers."

The accelerated timeline required close coordination between all team members. By working together across multiple disciplines, they overcame technical challenges to ensure a successful MDF release.

"Our engineers, testers and fleet support team compressed a three-month effort into six weeks," Sandroni said. "Their collaboration allowed us to deliver the file just two weeks after the squadron's arrival in theater."

Rear Adm. Keith A. Hash, commander of NAWCWD, praised the team's quick response and mission-critical support.

"The team's commitment and professionalism were evident throughout this process," Hash said. "Their ability to accelerate production ensured that our warfighters had the tools they needed, right when they needed them. This type of responsiveness keeps our fleet ready for operational demands."

The success of this effort was a result of a joint collaboration between Navy and Air Force personnel, as well as civilian contractors. The team responsible for producing the file included intelligence experts, engineers, testers and data analysts from both services.

Several key contributors played a pivotal role in the delivery. Greg Francis ensured the encryption and packaging

of the files, while the test team, including Jazmine Travis, Kayla Rynes, John Siverd and Matt Schmeiser, overcame technical challenges in the lab to complete rigorous testing. Additionally, Mike Davis resolved a throttle grip issue, ensuring the MDF's timely release.

"The dedication, technical expertise and commitment of our team were evident every step of the way," Sandroni said. "They showed how much we can accomplish when we come together with a shared mission."

The MDF, which incorporated over 100 intelligence updates and design features, enhanced the F-35's capabilities in terms of survivability and lethality, ensuring VMFA-314's readiness to support operations in the 5th Fleet.

"This mission data file is more than just a product; it's a lifeline for the warfighters who rely on accurate, real-time information to accomplish their mission," Hash said. "Delivering these critical capabilities is how we ensure our fleet remains ready and effective in any theater."

The timely delivery underscores NAWCWD's essential role in providing innovative solutions and fleet support, enabling the Navy to stay ahead in a rapidly changing and increasingly competitive global environment.

*From Naval Air Warfare Center Weapons Division, Point Mugu, California.* 🦅

## Navy's Third Operational F-35C Lightning II Squadron Achieves Safe-for-Flight Certification

PACIFIC OCEAN—Strike Fighter Squadron (VFA) 86 has earned a Full Safe-for-Flight certification on the F-35C.

The F-35C enhances the carrier strike group's ability to project power, supporting U.S. national security and integrating seamlessly with other carrier air wing assets.

"I couldn't be more proud of the Winder Team for this achievement," said Cmdr. Nathan Staples, VFA-86 Commanding Officer. "Our team has excelled since the transition began in February 2023, and I look forward to our future achievements and the standards we set for the Lightning II community."

The squadron's transition from the F/A-18E Super Hornet, flown for 36 years, began in September 2023. Nearly 200 personnel completed training at Eglin Air Force Base, Florida, and Naval Air Station Lemoore, California, while nine pilots finished their flight syllabus with VFA-125, the Navy's F-35C Fleet Replacement Squadron, while simultaneously executing tactical training events with Naval Aviation Warfighting Development

Center and the U.S. Navy Strike Fighter Tactics Instructor Program (TOPGUN).

After achieving several key milestones, including a perfect score on the Conventional Weapons Technical Proficiency Inspection and the highest Maintenance Program Assist inspection score, VFA-86 earned Interim Safe-for-Flight certification in June 2024. In July, they conducted their first embarked operations aboard USS Nimitz (CVN 68), culminating in Full Safe-for-Flight certification.

"Our success is due to proactive management, engaged leadership and a can-do attitude," said AFCM Rich Brickey, VFA-86 Maintenance Master Chief. "Our Sailors have excelled in every metric and will continue to do so whenever called upon."

Established in 1951, VFA-86 has flown nine different aircraft and supported combat operations in Vietnam, Bosnia, Iraq, Afghanistan and Syria. As the Navy's newest F-35C squadron, the Sidewinders remain committed to their motto: "When diplomacy fails...86 'em!"

*From Lt. John Choi with Strike Fighter Squadron (VFA) 86.* ✈️



U.S. Navy photo by MC2 Carson Croom

## Program Office Celebrates Final Visit by EP-3E ARIES II Aircraft



U.S. Navy photo by MCI Foster

Current and former employees who have supported the EP-3E ARIES II aircraft over the many years stand with the last EP-3 at Naval Air Station (NAS) Patuxent River, Maryland, before the aircraft heads home to NAS Whidbey Island, Washington, Nov. 5, 2024.





*An F-35C Lightning II from the "Rough Raiders" of Strike Fighter Squadron (VFA) 125 prepares to launch from the flight deck of the aircraft carrier USS Nimitz (CVN 68) in the Pacific Ocean, July 26, 2024.*

PATUXENT RIVER, Md.—Two EP-3E Airborne Reconnaissance Integrated Electronic System (ARIES) II aircraft stopped at Naval Air Station (NAS) Patuxent River, Maryland, while making their return journey from final detachments. Upon arrival of the second aircraft, current and former Maritime Patrol and Reconnaissance Aircraft Program Office personnel gathered to commemorate the aircraft flown by a crew from Fleet Air Reconnaissance Squadron (VQ) 1. NAS Patuxent River was the first stateside stop before both aircraft flew home to NAS Whidbey Island, Washington.

Since 1969, when Navy first introduced the EP-3E, the program office personnel have supported the acquisition and sustainment activities surrounding the aircraft, including development and test, training systems and lifecycle support. The last production EP-3E ARIES II aircraft was delivered in 1997, followed

by four P-3 Orion to EP-3E conversion aircraft deliveries in the early 2000s. VQ-1 has flown the aircraft since its introduction into the Navy as an aerial reconnaissance and signals intelligence (SIGINT) aircraft.

"Thousands of people had a role in this platform's prolonged success throughout the last five decades, including many team members from Pax River," said Capt. Erik Thomas, program manager. "As the EP-3E completes its dutiful service to the nation, [the program office] is proud of the community's achievements and dedication. The VQ-1 World Watchers truly earned the respect of friend and foe alike, and we here at [the program office] congratulate them on a successful final deployment of this invaluable asset."

The Lockheed EP-3E ARIES II is a land-based, multi-intelligence reconnaissance aircraft based on the P-3 Orion airframe. During missions, the aircraft provided fleet and theater commanders

worldwide with near real-time tactical SIGINT and full motion video intelligence. With sensitive receivers and high-gain dish antennas, the aircraft exploited a wide range of electronic emissions from deep within targeted territory. The crew fused the collected intelligence along with off-board data and disseminated the information for direct threat warning, information dominance, battlespace situational awareness, suppression and destruction of enemy air defenses, anti-air warfare and anti-submarine warfare applications.

Remaining EP-3E aircraft will be decommissioned and transferred to the 309th Aerospace Maintenance and Regeneration Group at Davis-Monthan Air Force Base, Arizona, for destruction. Other platforms, including the P-8A Poseidon and MQ-4C Triton, assumed portions of the EP-3 ARIES II mission set and responsibilities.

*From the Maritime Patrol and Reconnaissance Aircraft Program Office.* 🦅

## VAW-123 Sends Last E-2C Hawkeye to Boneyard

TUCSON, Ariz.—Airborne Command & Control Squadron (VAW) 123 transferred two of its four E-2C Hawkeye aircraft to Davis-Monthan Air Force Base, Arizona, the largest aircraft “boneyard” in the world, in September.

This event was part of the squadron’s transition to the E-2D Advanced Hawkeye, to be completed in mid-2025.

VAW-123’s other two E-2C were transferred to VAW-120 Fleet Replacement Squadron to be used for training the next generation of Hawkeye pilots. For more than 50 years, the E-2C has provided the Navy’s command and control capabilities.

Lt. Terrance Lawrence, assigned to VAW-123, was one of the pilots chosen to deliver an E-2C to Davis-Monthan. The squadron first received the E-2C in November 1973. The platform has been

used for sea- and land-based military operations, search and rescue missions, drug interdiction, humanitarian efforts and disaster relief.

Lawrence, a naval aviator since 2021, had not experienced delivering an aircraft to its final resting place.

“It was something that I knew not a lot of other aviators get to do; it is pretty rare that you get to participate in this type of flight,” Lawrence said. “This was a special and unique opportunity that does not come up often. I volunteered immediately.”

Lt. Avesta Shwany, also of VAW-123, flew the second E-2C and reflected on the experience for her and her crew upon departing Norfolk for the boneyard.

“Getting to be a part of the last crew was incredibly bittersweet,” Shwany

said. “This aircraft carries a lot of memories to so many aircrew members, especially from this most recent deployment to the Red Sea.”

Shwany added the aircraft had seen combat and played a vital role in many missions.

“Taking this aircraft to the boneyard signified the end of an era and the beginning of our delta transition. I think everyone was surprised with how emotional we were dropping her off and saying our goodbyes,” Shwany said.

Lawrence said he was proud to be the last person to fly the E-2C for his squadron. The aircrew that accompanied both aircraft to Tucson took the opportunity to mark their place in history by ceremoniously signing the inside of the aircraft as a final farewell.

“This aircraft meant a lot,” Lawrence

U.S. Navy photos

*An E-2C Hawkeye aircraft from VAW-123 arrives at Davis-Monthan Air Force Base, the largest aircraft boneyard in the world, in September 2024.*





said. “I was sentimental about it, especially after spending nine months flying it in the Red Sea.”

The 10 aircrew who participated in the nearly six-hour flight to the boneyard took time to tap the side of the aircraft as they said their farewells before transferring it to the staff at Davis-Monthan Air Force Base.

“This plane has all of these stories associated with it, especially just after deployment,” Lawrence said. VAW-123 was deployed aboard the USS Dwight D. Eisenhower Carrier Strike Group and returned from a nine-month deployment in July 2024.

The crew also had an opportunity to step back in time and witness aviation history.

“We toured the boneyard, which has over 4,000 aircraft stored,” Lawrence said. “I am proud to be one of the last pilots to be part of that aircraft’s history.”

With VAW-123 marking its transition to the E-2D, West Coast-based VAW-116 is the only fleet squadron in the Navy flying the E-2C until its scheduled sundown.

Lawrence said he looks forward to flying the E-2D, which features a state-of-the-art radar

with upgraded capabilities and aircraft systems that improve supportability and increase readiness. The E-2D enhances operational capabilities by increasing time on station, allowing for extended range from the carrier, increased persistence and operational flexibility.

Davis-Monthan’s 309th Aerospace Maintenance and Regeneration Group, i.e., the Boneyard, has been home to tens of thousands of decommissioned U.S. military aircraft over its seven-plus decades of operation.

*From Chief Petty Officer Brian Brooks with Airborne Command & Control Squadron (VAW) 123. 🇺🇸*

## Teams Wrap E-2D Software Update Preliminary Review

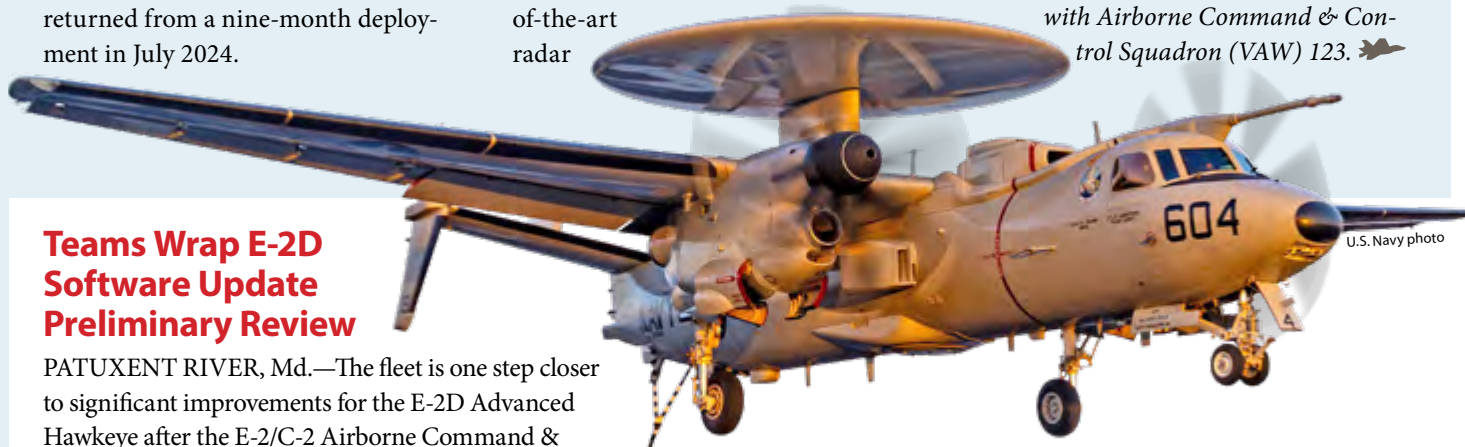
PATUXENT RIVER, Md.—The fleet is one step closer to significant improvements for the E-2D Advanced Hawkeye after the E-2/C-2 Airborne Command & Control Systems Program Office and industry partner Northrop Grumman Corporation wrapped the E-2D Advanced Hawkeye Delta System Software Configuration (DSSC)-6 Preliminary Design Review (PDR) recently.

This configuration will improve the aircraft significantly by reducing pilot workload, improving situational awareness and bringing vital readiness and reliability upgrades, paired with architecture and cybersecurity improvements.

The PDR assesses the allocated baseline and authorizes the transition into a detailed design for the E-2D DSSC-6 program upon closure of the review.

The E-2D DSSC-6 PDR was briefed to a 10-member Technical Review Board, co-chaired by Gary Evans, Naval Air Warfare Center Aircraft Division (NAWCAD) Director of Systems Engineering, and Hin Chan, NAWCAD Director of Software Engineering. According to Evans, the E-2D DSSC-6 team is “leading Naval Aviation” in transforming a franchise platform architecture to take advantage of the advent of digital engineering.

During the review, the combined government and industry partner teams received request-for-action forms to capture actions that are managed collaboratively by the combined DSSC-6 teams to enable a mature and robust system design through the detailed design phase, which will be assessed at the critical design review, scheduled for next fiscal year.



*An E-2D Hawkeye from the “Seahawks” of Airborne Command & Control Squadron (VAW) 126 lands on the flight deck of aircraft carrier USS Harry S. Truman (CVN 75) during flight operations in the Atlantic Ocean.*

“Successful completion of the E-2D DSSC-6 PDR is an affirmation of the groundbreaking work undertaken by the combined [program office] and NGC teams,” said Lt. Cmdr. Neil Whitesell, Level 2 Program Manager for DSSC-6. “It represents a major programmatic milestone in the acquisition of technology key to maintaining carrier-based airborne command and control dominance well into the next decade.”

With these upgrades, this configuration will provide avionics infrastructure improvements to flight and mission systems. These improvements increase crew effectiveness, address parts obsolescence, add improved computing and electronic storage, improve connectivity for command and control, and create a modular open systems environment for future technology insertion.

The first test flight of an E-2D with this configuration is scheduled for fiscal year 2027, with initial operational capability scheduled for fiscal year 2030.

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

## Last of the Sea Dragons Qualifies on MH-53E

U.S. Navy photo by MC3 Class Jesse Schwab



*An MH-53E Sea Dragon helicopter from Helicopter Mine Countermeasures Squadron (HM) 12 flies over the James River in Newport News, Virginia.*

NORFOLK, Va.—The last two naval aviators to qualify to operate the MH-53E Sea Dragon are completing the final phases of their training while assigned to training squadron Helicopter Mine Countermeasures Squadron (HM) 12 in Norfolk, Virginia.

Lt. Jack Griffin and Lt. Keven Humphreys are set to close the chapter on the aircraft's 42-year history of qualifying pilots to operate the storied MH-53E Sea Dragon.

This specialized helicopter, renowned for its Airborne Mine Countermeasures (AMCM) capabilities, is drawing close to the end of its operational life with a sunset ceremony planned for March 2025. The MH-53E, introduced to the Navy in 1982, has long served as a critical asset in mine hunting, sweeping and neutralization, as well as a heavy-lift aircraft transporting troops and equipment.

Since 1986, HM-12 has qualified over 580 naval aviators to operate the MH-53E, spanning nearly five generations.

As the Navy phases out this iconic aircraft, Griffin and Humphreys will be the last pilots to master its unique skill set while the last two remaining squadrons—HM-12 and HM-15—prepare for the sundown of this aircraft type-model -eries. Both



U.S. Navy photo

*Lt. Keven Humphreys, one of the last two naval aviators to qualify to operate the MH-53E Sea Dragon, stands next to an aircraft.*

men originally set their sights on serving as naval officers but did not initially envision becoming naval aviators.

Humphreys credits his inspiration to join the aviation community from listening to experiences a close friend of his brothers shared after joining the Marine Corps to serve as a fighter pilot.

"Growing up, I looked up to my best friend's brother," Humphreys said. "I knew I wanted to serve and become a leader in the military, but becoming a pilot wasn't initially part of my plan. Seeing him as a leader and a pilot was pretty cool, though."

Griffin emphasized what he likes best about serving in the MH-53E community.



“The MH-53E community is extremely tight-knit,” Griffin said. “There is a close relationship between pilots and aircrewmembers. Everyone is down-to-earth and focused on the mission. I really appreciate how well the crews work together to get the job done.”

As the MH-53E nears its retirement, Griffin and Humphreys are still preparing for their final missions and upcoming overseas deployment and will continue to enhance their proficiency with the aircraft.

“We are excited to be here,” Griffin said. “We love what we do and where we are right now.”

A special ceremony will be held to honor Griffin and Humphreys as they mark the end of an era and their place in history as preparations are being made to sundown the MH-53E Sea Dragon. This event will celebrate their contributions and the legacy of an aircraft that has played a pivotal role in Naval Aviation history.

*From Commander, Naval Air Forces Atlantic Public Affairs.* 🦅

## CH-53K Advanced Aviation Training Device Declared Ready for Training

PATUXENT RIVER, Md.—A Test Readiness Review and Joint Final Testing were completed for the CH-53K Advanced Aviation Training Device (AATD) 1, resulting in the trainer being declared ready for training Aug. 16. The new, mixed-reality static training device is the first of its kind to support both pilot and aircrew training on the CH-53K King Stallion.

Veraxx Engineering Corporation developed the AATD prototype for the H-53 Heavy Lift Helicopter Program Office.

According to Maj. Daniel Meckley, H-53 Training Systems Integrated Product Team Lead, “The purpose of the device is to provide cockpit familiar-

ization and crew resource management training to pilots and aircrew.”

The AATD provides mixed-reality goggles for pilots, which simulate the external environment while also allowing them to see their hands.

“With the AATD, the pilots don’t need to use the goggles because there is a big-screen TV in front of the device to conduct basic training,” Meckley said.

The crew chief also wears a set of goggles, but these are virtual reality instead of mixed reality.

“This means the crew chief cannot see his or her hands,” Meckley said. “All they see is the simulated environment.”

According to Meckley, even though the crew chief station is physically

located behind the cockpit, the training can simulate being anywhere inside or outside the aircraft.

“This leads to enhanced communication and crew resource management during specific training areas like aircraft startup/shutdown, confined area landings, formation flights, etc.,” he said.

The H-53 Heavy Lift Helicopter Program Office manages the cradle-to-grave procurement, development, support, fielding and disposal of the entire family of H-53 heavy lift helicopters, including the CH-53K King Stallion, the CH-53E Super Stallion and the MH-53E Sea Dragon.

*From the H-53 Heavy Lift Helicopter Program Office.* 🦅



U.S. Navy photo

*The CH-53K Advanced Aviation Training Device is a new “first-of-its-kind” trainer for both pilots and aircrew of the CH-53K King Stallion. The mixed-reality static trainer recently completed a test readiness review and joint final testing and was declared ready for training.*



Artistic rendering of the U.S. Navy's future E-130J aircraft, which will be modified from a C-130J-30 and will fly the Take Charge and Move Out (TACAMO) mission.

## TACAMO Community Announces Name for New Mission Aircraft: E-130J

PATUXENT RIVER, Md.—The Navy's Airborne Strategic Command, Control and Communications Program Office and Strategic Communications Wing 1 (SCW-1) announced Oct. 21, 2024, the name selected for the Navy's new Take Charge and Move Out (TACAMO) mission aircraft: E-130J.

The E-130J—previously called the E-XX while awaiting naming—will relieve the Navy's E-6B Mercury fleet of the TACAMO mission, which connects the president, secretary of defense and U.S. Strategic Command with naval ballistic missile forces.

E-130J is the aircraft's mission design series. The E stands for special electronic installation; 130 is the design number and reflects the aircraft's origins as the EC-130; and J is the series, demonstrating that it will be modified from a proven C-130J-30 Super Hercules airframe. The common name—e.g., Mercury—has not been selected.

At the request of the program office, the Air Force approved the MDS in October. The Air Force approves all military aircraft names.

The program office is procuring the

E-130J through the TACAMO Recapitalization Program. The solicitation, which closed in April 2024, is for a prime contractor to integrate TACAMO mission systems, including the Collins Aerospace Very Low Frequency subsystem, into government-furnished C-130J-30 aircraft.

"I am proud to announce that the U.S. Navy's new TACAMO aircraft will be the E-130J," said Program Manager Capt. Adam Scott. "This is an important milestone as we work toward delivering the next generation of TACAMO aircraft to the warfighter."

Those warfighters are the SCW-1 squadrons, based out of Tinker Air Force Base, Oklahoma. They include the "Ironmen" of Fleet Air Reconnaissance Squadron (VQ) 3, "Shadows" of VQ-4 and "Roughnecks" of VQ-7.

"I'm excited as SCW-1 continues to work together with [the program office] to deliver new capabilities and strengthen America's nuclear deterrence," said SCW-1 Commander Capt. Britt Windeler. "The E-130J will assure that our nation's leadership maintains

control of its strategic forces as the E-6B gets closer to end of life, and enable it to focus on the performance of other critical missions until sundown."

The E-6B Mercury is a communications relay and strategic airborne command post aircraft. It provides survivable, reliable and endurable airborne Nuclear Command, Control and Communications for the president, secretary of defense and U.S. Strategic Command.

The Airborne Strategic Command, Control and Communications Program Office is part of Naval Air Systems Command (NAVAIR) and headquartered at Naval Air Station Patuxent River, Maryland. Its mission is to deliver and support survivable, reliable and endurable airborne command, control and communications for the president, secretary of defense and U.S. Strategic Command.

The mission of SCW-1 is to receive, verify and retransmit Emergency Action Messages to U.S. strategic forces.

*From the Airborne Strategic Command, Control and Communications Program Office.* 🦅



## Navy Awards \$3.5B Contract to Northrop Grumman to Develop Successor to E-6B Mercury

PATUXENT RIVER, Md.—The Navy announced in December it awarded Northrop Grumman Corp. a \$3.5 billion contract to conduct the mission-systems integration for the E-130J, which will be the successor to the E-6B Mercury for the Take Charge and Move Out (TACAMO) mission.

Under the contract, Northrop Grumman of Melbourne, Florida, will serve as the prime contractor to integrate TACAMO mission systems, including the Collins Aerospace Very Low Frequency system, into government-furnished C-130J air vehicles built by Lockheed Martin Corp. The contract is for three Engineering Development Models and options for up to three System Demonstration Test Articles and up to six aircraft in the first lot of production. Collins Aerospace and Lockheed Martin are directed subcontractors to support the integration and airworthiness.

“Our TACAMO mission is foundational to our nation’s nuclear Triad,” said Secretary of the Navy Carlos Del Toro. “The E-130J will carry on the proud legacy of Navy TACAMO aircraft and keep our nation safe.”

The acquisition effort is being led by the Navy’s Airborne Strategic Command, Control and Communications Program Office within the Program Executive Office for Air Anti-Submarine Warfare, Assault and Special Mission Programs (PEO(A)).

“Today is a tremendous day for the future of Naval Aviation’s contribution to our nation’s nuclear deterrence mission,” said Capt. Adam Scott, program manager. “With the selection

of Northrop Grumman as the prime contractor for the TACAMO Recapitalization Program, we are ready to move out with developing this critical asset. In carrying on the legacy of the E-6B Mercury, the E-130J will ensure our nation’s leadership is always connected to its nuclear forces for decades to come.”

Work developing this asset in conjunction with the prime contractor is underway.

The E-130J is a critical part of the United States’ nuclear modernization program, which includes new Columbia-class ballistic missile submarines, new bomber aircraft such as the B-21 Raider, and Sentinel, a new ground-based system to replace the silo-based Minuteman III intercontinental ballistic missiles. The E-130J will ensure leadership can always communicate with those nuclear forces to order or cancel strikes, even if ground-based communications are unavailable.

The E-6B is a communications relay and strategic airborne command post aircraft. It provides survivable, reliable and enduring airborne nuclear command, control and communications for the President, secretary of defense and U.S. Strategic Command. It is a dual-mission aircraft capable of fulfilling the no-fail TACAMO mission and the Looking Glass mission, which facilitates the launch of U.S. land-based intercontinental ballistic missiles using an airborne launch control system. The E-130J will relieve the E-6B of the TACAMO mission.

*From the Airborne Strategic Command, Control and Communications Program Office. 🦅*



Rendering courtesy of Northrop Grumman Corp.

*Artist's rendering of the U.S. Navy's future E-130J aircraft.*

## Editor's Choice

*Young or old, civilian or military, starting a career or getting ready to end one, perseverance, resilience and reflection remain valuable qualities across the human experience. Retired Air Force veteran Jason France addresses all of these and more in his well-told story of a post-retirement, five-month hike along the Pacific Crest trail. His goal was to fulfill a lifelong dream, but it turned into more. An inveterate planner, he experienced the struggle and ultimately joy of letting go and living in the moment, while at the same time exploring the bigger picture—examin-*

*ing and rediscovering himself, and clarifying what he wanted out of the next chapter of his life. He overcomes the psychological and physical challenges of the 2,650-mile journey, a solitary endeavor somewhat conversely only made possible with the help of others, and immeasurably enriched by the friends he made on the trail and his family back home. Ultimately, "Five Million Steps" is the story of a moment in time of one person's life, but with implications for all of us.* 🦋

—David Byrd, Editor in Chief

### **Five Million Steps: Hiking the Pacific Crest Trail after Three Decades of Service to our Nation**

By Jason France, Amplify Publishing,  
Herndon, Va. 2024. 205 pp.

Review by Sarah Balian

Back in September 2024, I took a solo camping trip a few hours away from my home in Colorado Springs, Colorado. Surrounded by colorful aspen trees and the mountainous landscape behind Pikes Peak, I settled into a camp chair after a day of hiking with the book I had brought along: "Five Million Steps," by Jason France.

France retired from the Air Force in 2021 after 31 years of active duty. Shortly thereafter, just after turning 50, he embarked on a through-hike of the 2,650-mile Pacific Crest Trail (PCT). In "Five Million Steps," France takes us with him on the five-month journey, including not only 489,000 feet of elevation gain and a myriad of physical challenges, but also the relationships he built along the way. Also at the core of the book, he reflects on his life and career.

In his final USAF position, the author was the Command Senior Enlisted Leader of U.S. Transportation Command, responsible for the morale and welfare of over 120,000 service members. To provide context on the selective nature of his final position: U.S. Air Force Chief Master Sergeant positions are congressionally limited to one percent of the force. Of this, only another one percent are selected for Command Chief. Even fewer go on to serve at the Major Command level, and just a handful of those rise into Combatant Command-level positions. But despite the exclusivity and importance of his final military rank and position, France presents his book with humility and vulnerability. Throughout the book, he weaves in not only leadership lessons from his time in service, but also shares his personal challenges as a professional and a human. Along with his PCT journey, the author weaves in the story of his life, including some of his greatest personal and professional challenges. His anecdotes range from the hilarious (receiving and using his trail name) to the personal (his commitment to family as a son, spouse and father).



One of the most impressive (and harrowing) stories of service he shares is his journey through Army Ranger School. It is notoriously difficult to be accepted into the training—only six Air Force members per year are selected to attend. France spent six years pursuing his opportunity, attending four rigorous selection courses, enduring numerous setbacks, and overcoming three major injuries before finally earning his Ranger Tab in 2000—an example of the grit and perseverance he showed throughout his career and on his PCT hike.

The author's PCT journey also includes a courageous reflection on his mental health struggles, a difficult and critical topic to approach for many service members. France's multiple military deployments took a toll, and signs of post-traumatic stress were starting to affect work and family life. Like many people in military leadership positions, he delayed treatment—not wanting to take time for himself when his focus was caring for others. His transparency around these challenges and willingness to share them with the reader exemplify the strength it takes for a person to ask for and receive assistance, in an arena historically stigmatized for military members—especially for those in positions of authority.

The author seamlessly weaves together his journey to and through military service with his Pacific Crest Trail through-hike. His journey of personal growth from life's challenges and setbacks is reflected in his trail journey—through each pass he summits and injury he overcomes to reach the Canadian border. Jason also stresses the importance of disconnecting from work stress and taking time out for ourselves, no matter what positions we hold in our work lives. Overall, "Five Million Steps" is not just another book about hiking—it's the personal story of a servant leader, sharing his odyssey for the benefit of others.

*Sarah Balian is a recently-retired 25-year U.S. Air Force veteran. She lives in Colorado Springs, Colorado, where she continues her two careers as an international affairs specialist and professional musician.* 🦋





"... my newfound quiet  
was very loud in  
the beginning."  
—Jason France, from "Five Million Steps"

France stands near what is left of Packwood Glacier in Goat Rocks Wilderness, Washington, just before traversing the Knife's Edge section of the Pacific Crest Trail, one of his most memorable experiences of the hike.



Photos courtesy Jason France

The author poses next to the Northern Terminus of the Pacific Crest Trail just south of the U.S./Canada border, on Sept. 10, 2021.

France made a deliberate effort to reach his goal before 9/11, an anniversary in American history he considered sacred.



### Pacific Crest Trail Overview Map

Cartography by: Magellan (2018)  
(Andrew Alfred-Duggan)  
[www.andrewmaps.com](http://www.andrewmaps.com)

Map courtesy of the Pacific Crest Trail Association



## Gramps from Yesteryear: November-December 2005

During the last at-sea period prior to deployment, a flight of four AV-8B Harriers launched from an amphib on a long-range night interdiction mission. The flight plan called for a strike on a training range using laser-guided training rounds, plus aerial refueling from a section of tankers before and after the strike. Although all aircraft were equipped with targeting pods, once airborne the division discovered only Dash-3's was working.

The flight encountered intermittent meteorological conditions during the transit, which caused the first tanking evolution to take longer than expected. The weather wasn't getting any better closer to land, and the four Harriers needed air traffic control handling to pick their way over the target area. The flight lead deemed the weather sufficient to conduct the low-altitude option of the strike plan, however, Dash-3's laser pod wouldn't designate the target. After several unsuccessful attempts, the flight lead called for the flight to return to the ship.

The flight proceeded to the tanker track for post-mission tanking, encountering more clouds along the way. As the division closed on the leadtrail formation of tankers, the Harrier flight lead requested the tankers “drag” the flight north toward the ship’s position. The flight lead also directed Dash-3 and -4 to join on the trail tanker, but because of confusion over the location of the trail tanker, the entire division wound up joining on the lead tanker. Eventually Dash-3 and -4 dropped back, hampered by the clouds but able to find the trail tanker.

Dash-3 engaged the trail tanker but was unable to receive fuel. The tanker crew directed him to back away from the basket as they attempted to reset the hose, after which the Harrier was still unable to take on gas. Dash-3 made several more attempts to engage the hose. The flight lead, with his own tanking complete and now flying off the trail tanker's right wing, noted how long Dash-3 was taking and detached Dash-2 and -4 to return to the ship. The flight lead then asked the Dash-3 pilot for his fuel state. Only then did Dash-3 realize his fuel had dwindled below bingo state, and he asked the flight lead how far it was to the divert field. The flight lead determined the

ship was now 35 miles closer than the divert field and therefore was the better option.

Twenty-eight minutes had passed from Dash-3's first attempt to plug by the time he assumed the lead and started a bingo profile to the ship. Using the TACAN for navigation, the section closed the ship, but neither pilot was able to visually acquire it because of intermittent cloud cover. The ship's controllers were unable to assist because the air traffic radar was inoperative.

The flight lead, now acting as Dash-3's wingman, spotted the ship just long enough to direct the other pilot's attention before they both lost sight of it again, which only served to further disorient both pilots. By the time they leveled off, the section was in a lead-trail separated by several miles. The flight lead was running out of ideas, so beseeched the LSO to find them,





Illustration by

Ted Wilbur

adding his best guess was his section was in a left-hand turn approaching final bearing. Meanwhile, Dash-4, one of the two jets the flight lead had detached earlier, gave up on attempting a visual approach and pushed from overhead the ship on a Tactical Air Navigation (TACAN) approach.

After rogering the earnest request from the flight lead, the LSO scanned the skies aft of the ship and did, in fact, spot two aircraft, but the formation he saw was actually the flight lead followed by Dash-4 on TACAN final, not Dash-3. Dash-3, still out of visual contact with the ship, followed the LSO's directions, which caused him to fly further away from the ship. On short final, Dash-4 realized the LSO had mistaken him as Dash-3, and he

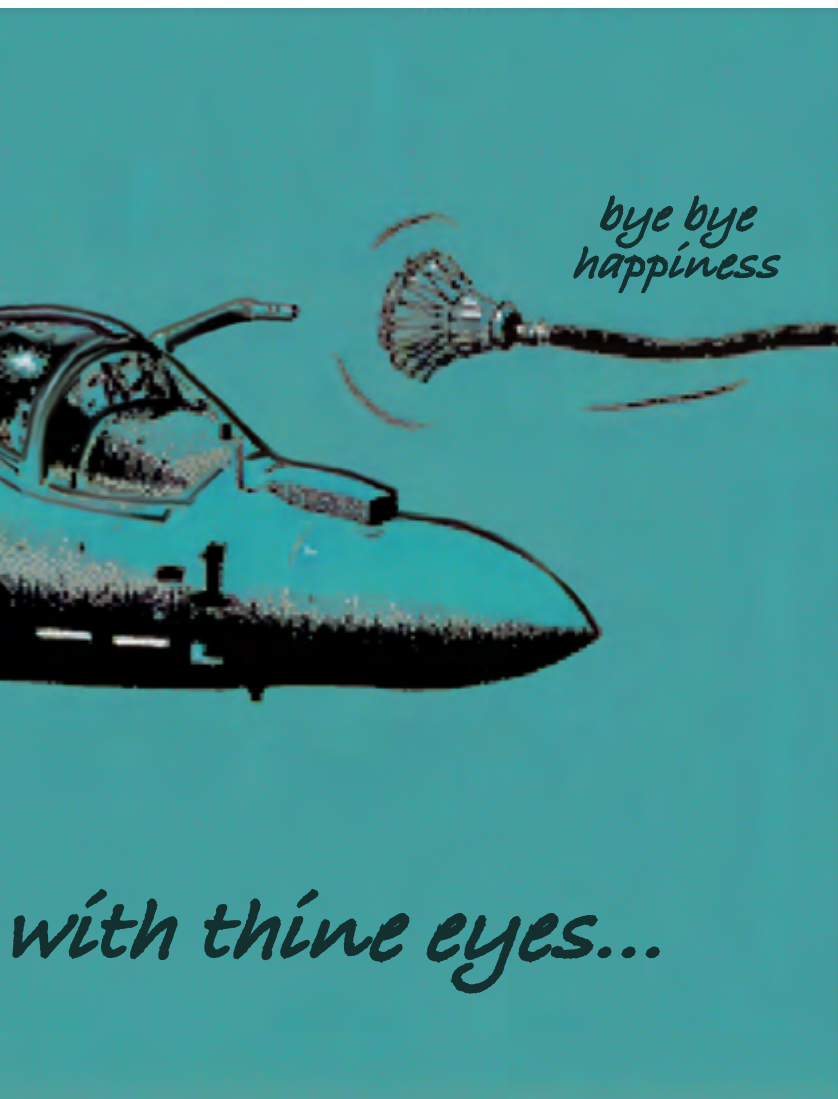
executed a wave-off, which, in turn, caused the LSO to realize the airplane under his control was not Dash-3. The LSO requested Dash-3's fuel status, and Dash-3 replied, "My gauges are reading zero." Seconds later the Harrier flamed out, and the pilot ejected. He was rescued with minor injuries by the ship's search and rescue helo. The other jets recovered without incident. ✈️

### Grampaw Pettibone says...



"Bingo." It's a pretty simple word, ain't it? Even now, when Granmaw Pettibone takes to shouting it out in the parlor on Wednesday nights, I'm prone to jumping out of my folding chair and heading to the briefed divert. So why do so many fliers still figure it in so many different ways? During this here hop the flight lead—already behind the eight-ball for letting one of his charges get below bingo state—added another log to a roaring inferno of rotten headwork by blindly choosing the shorter distance option. That might work between like airfields experiencing the same weather, but it don't always work when one of the options is USS Boat operating in and out of the goo, especially on a night when it's Murphy's shift. And although I've flown some pigs in my day, I'm relatively confident that in 28 minutes—the amount of time flameout boy sat behind the sour tanker waiting for a miracle to occur—even my biplane could have gone further than the 35 miles the flight lead made a big deal out of. Even if you're getting dragged toward your destination, trying to get into the basket takes a lot more throttle jockeying than flying a bingo profile does.

All it took to complete the mishap was confusion in the landing pattern, and on this night there was confusion a-plenty. Paddles might have been set up here, but all the same, there's a not-so-fine line between taking control of a situation and making it worse. ✈️



***Versatile, Agile, Dependable and***

# C-130 HERCULES



*A KC-130J Hercules with Special-Purpose Marine Air-Ground Task Force Crisis Response-Africa rests on the flight line near Madrid, Spain, March 16, 2015.*

U.S. Marine Corps photo by Sgt. Paul Peterson



A C-130 Hercules aircraft is shown from a low angle, parked on a runway. The aircraft is silhouetted against a bright, orange and yellow sunset sky. The sun is visible as a bright orb behind the aircraft's propeller. The number '472' is visible on the side of the fuselage. The overall mood is dramatic and celebratory.

**Enduring:**

# LES TURNS 70

*By Sean Scriber*

The C-130 Hercules has been answering the call to defend America since Aug. 23, 1954, providing tactical airlift, humanitarian aid, air support and various other missions. Initially designed to be a medium cargo plane able to land in short, confined runways, the Hercules is used in over 70 countries with more than a million flight hours. Last year marked the 70th year the C-130 has been in flight, and the aircraft continues to reach new heights.

**T**he nature of war has changed in the past seven decades, and the Hercules has evolved alongside it, while maintaining its strength and iconic four turbo prop engines. The Hercules not only serves as a military vehicle, but also serves in humanitarian aid and has been a part of U.S. international relations. This platform has the honor of having generations of pilots operating it. This legacy has passed from parents to their children, from the aviators of yesterday to the aviators of tomorrow. Produced longer than any other platform, the aircraft dubbed the “Four Fans of Freedom” by Dr. Douglas Kennedy, assistant professor of history at the U.S. Air Force Academy, continues to soar the skies to protect life, liberty and freedom.

Photo courtesy of National Archives & Records Administration (NARA)



*A C-130 flies over Naval Air Station Patuxent River, Maryland, April 16, 1967.*

**“The C-130 has had over 70 variants, 15 of which are produced by Lockheed Martin. From aerial command centers to weather observation and, on occasion, an aerial drone carrier, the Hercules performs its eclectic missions.”**

The C-130 has had over 70 variants, 15 of which are produced by Lockheed Martin. From aerial command centers to weather observation and, on occasion, an aerial drone carrier, the Hercules performs its eclectic missions. The timeless design of the plane has allowed C-130s to be modified with pontoons for aquatic landings or sleds for scientific explorations in the Arctic tundra. It has lent its services to nearly every mission capability needed for military or civilian applications.

The Hercules was introduced to the Navy in 1960 to assist in Antarctica. Since then, the platform has traded its sled landing gear for external fuel tanks. While the Navy uses the T model, the KC-130J Super Hercules has become a standout for the Marine Corps. This “super” plane takes the cargo capabilities of its other C-130 siblings and ups the ante by refueling helicopters, fixed-wing and tilt-rotor aircraft mid flight. Equipped with extensive hoses and massive external fuel tanks, the Super Hercules supports an array of missions across U.S. naval forces and is an integral part of tactical advantage and mission success.

Photo courtesy of NARA



*A C-130 tanker/transport aircraft refuels an RF-86 Crusader fighter aircraft over the Gulf of Tonkin, March 17, 1971.*

Photo courtesy of NARA





## The Dawn of C-130 Development and Operations Began in the Air Force

By David Byrd



Courtesy of U.S. Air Force

*Fat Albert, the C-130 Hercules aircraft used to transport equipment, fuel and the highly specialized maintenance crew for the Blue Angels Flight Demonstration Squadron, lands during an annual open house and air show Nov. 11, 1989.*



Photo courtesy of NARA

*A U. S. Navy C-130 Hercules aircraft flies past Gibraltar.*



*New Zealand dog handlers from Scott Base, Ross Island, exercise their dog teams on the sea ice runway at then-Naval Air Station McMurdo Sound, Antarctica, prior to long summer land expeditions. In the background are Air Development Squadron (VX) 6 C-130 Hercules, which were being used for the first year in Antarctica. Nov. 4, 1960.*



*The YC-130 prototype completed its first flight Aug. 23, 1954.*

The start of the Korean War brought to the forefront the Air Force's long-simmering need for improved tactical transport. On Feb. 2, 1951, the service issued a formal requirement for an aircraft capable of carrying 30,000 pounds of cargo or 90 troops, dropping its payload by parachute or using unimproved airstrips and featuring a four-engine design with a minimum 2,000-mile range at full capacity. Although the resulting aircraft, the C-130, would never see action in the Korean conflict, it went on to become a workhorse of the Air Force, its sister services and international allies.

Lockheed Corp. quickly won the initial contract with its design and three years later, on Aug. 23, 1954, test pilots Stan Beltz and Roy Wimmer flew the company's YC-130 prototype for the first time. A resounding success, with an unprecedented eight-second takeoff roll and 30-degree climb out, by December 1956 Lockheed began delivery of operational aircraft to the Air Force. A new variant, the C-130B, with improved aerodynamics and fuel capacity, among other upgrades, began delivery in late 1958. It was the first of an alphabet soup of new C-130 models built over the ensuing decades.

The platform's versatility was reflected almost immediately in its expanded mission set. Lockheed converted several



Photo courtesy of Greg Goebel

*A replica of 56-0528, a C-130A-II "Sun Valley" reconnaissance aircraft shot down over Armenia on Sept. 2, 1958, on display at the National Cryptologic Museum, Fort Meade, Maryland.*



## **“Being the ‘workhorse’ of the U.S. armed forces is no small task. The C-130 has supplied mission-critical manpower and materials in every American military conflict since the mid-20th century.”**

Though the Hercules was designed to carry tens of thousands of pounds, it is still one of the sky’s most acrobatic fliers. Getting in and out of short, unconventional runways is in the job description for the Hercules, but this plane has also proven the ability to land on aircraft carriers, as was accomplished by Lt. James H. Flatley III when he landed on USS Forrestal (CVA 59). The C-130 can land just about anywhere at any time. While in the air, the Hercules is still a force to be reckoned with.

In 1964, a short-lived demonstration squadron, The Four Horsemen, was comprised of four C-130s. Though brief, this was not the last time the aircraft was seen as a soaring spectacle. The Hercules made its most enduring impression in 1970 when it proudly joined the U.S. Navy’s demonstration squad, the Blue Angels. Affectionately nicknamed “Fat Albert,” what was initially a Marine C-130T and now a C-130J, has awed audiences across the nation with its deft flying prowess alongside F/A-18E Super Hornets.

“The versatility of the KC-130J is what makes it so vital to the [U.S. Marine Corps] and a sought-after aircraft to pilot,” said Capt. Luke Pederson, supporting the Tactical Airlift Program Office as Military Class Desk, “A single flight can include low-level flying, aerial refueling, aerial delivery, tactical arrivals, short field landings, or several others mission sets or tactics. Adding the ability to then be self-deployable, taking the Marines and equipment necessary to sustain deployed operations anywhere in the world at a moment’s notice, truly makes the KC-130J one of the most exciting aircraft to fly. It was and will continue to be a privilege to support the Marine Air Ground Task Force and Marine Expeditionary Forces around the globe by piloting a KC-130J.”

Being the “workhorse” of the U.S. armed forces is no small task. The C-130 has supplied mission-critical manpower and materials in every American military conflict since the mid-20th century. Whether cargo or manpower needs to be parachuted down or delivered while on the ground, the Hercules is up to the task.

Photo courtesy of NARA



U.S. Navy photo

*An NC-130H provides an in-flight test bed for a Radar Modernization Program under development for the next generation E-2C “Hawkeye” Carrier Airborne Early Warning aircraft, Oct. 28, 2002.*



U.S. Marine Corps photo by Lance Cpl. Andrew Skiver

*A Marine with Marine Aerial Refueler Squadron 352 pilots a KC-130J during an aerial delivery mission in support of Operation Inherent Resolve over the Middle East, Sept. 13, 2020.*



*The Navy conducts carrier suitability tests of the KC-130F Hercules aircraft aboard USS Forrestal (CVA 59).*

U.S. Air National Guard photo by Maj. Shay Price



*An LC-130 Hercules "Skibird" assigned to the 109th Airlift Wing, New York Air National Guard.*

The Air Force's 61st Troop Carrier Squadron flew 58 shuttle missions using ski-equipped C-130Ds to support "Operation Deep Freeze," a resupply mission to various naval stations in Antarctica, for two weeks beginning Jan. 23, 1960. Eventually, the Navy would secure its own C-130s, notably, the LC-130F for Antarctic support; the C-130G (performing submarine support); and the EC-130Q, acting as a communications aircraft under the Take Charge and Move Out (TACAMO) program. The Marine Corps (KC-130F and, later, KC-130J "Super Hercules") and Coast Guard (HC-130B/H/J and ED-130E) also employed the C-130 platform.



*Food and equipment is unloaded from a Navy C-130 of Logistic Support Squadron (VR 64) for transport to Pakistan following a devastating earthquake October 2005.*

U.S. Navy photo by Photographer's Mate 2nd Class Carolla Bennett



*An EC-130J Commando Solo from the 193rd Special Operations Squadron.*

Air Force C-130s provided the backbone for U.S. humanitarian missions throughout the United States and the world, beginning in 1960 with an airlift of food and supplies to the war-torn Republic of Congo. Assistance to relieve famine, flood, earthquakes, hurricanes, and other natural and man-made disasters followed. From 1960 through the mid-1990s, the U.S. provided assistance more than 500 times, with C-130s supporting much of the airlift.



*The Blue Angels arrive at Naval Air Station Pensacola, Florida, Aug. 17, 2020, with the team's new C-130J Super Hercules. 2020 marked the team's 50th year utilizing the C-130 as its lead logistics aircraft.*

U.S. Navy photo by MC2 Cody Hendrix



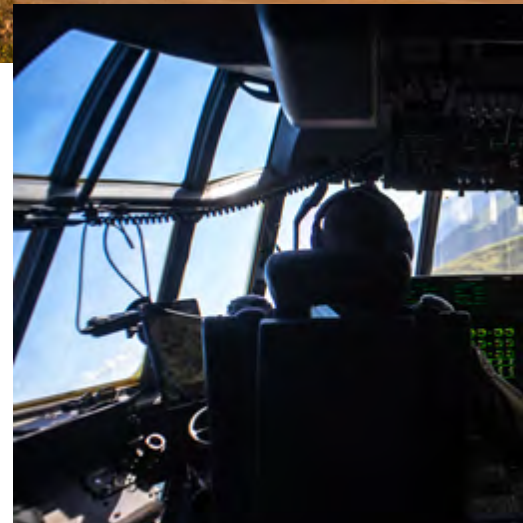
The heart of any mission is to protect and preserve human life. With its massive cargo capacity, the Hercules has brought in firetrucks, medical supplies and evacuation support in times of crisis. Notably, a C-130 rescued 452 refugees in a single flight from the fall of Saigon on April 29, 1975.

“During Operation Northern Watch, we were deployed as standby tanker crews with two KC-130s to a forward-operating base in Turkey [November 2000-March 2001],” said retired Master Sgt. Anthony Villa, current KC-130J Production IPT Systems Engineer for the program office, “In the event that a pilot was shot down operating in the no-fly zone, we would provide fuel to the Air Force rescue helicopters. The aircraft we had on hand were [Bu.No.] 149815 and 160240. Aircraft 815 was accepted in 1962 and aircraft 240 was accepted in 1977. We were supporting some of the newest, most modern and sophisticated aircraft in the USAF inventory with two of the oldest, non-Night Vision Imaging System (NVIS), half-working fuel quantity system, non-counter-measures having KC-130s in the Marine inventory. We never missed a mission. We were ‘alone and unafraid.’”

Retired Staff Sgt. Charles Miller, the program office’s former KC-130J IPTL, said, “During my tour at [Marine Aerial Refueler Transport Squadron] VMGR-352, I had the luxury to deliver a part of Naval Aviation history from Marine Corps Air Station Miramar, San Diego, California, to its final resting place at the Naval Aviation Museum in Pensacola, Florida. The KC-130F Bu.No.149798 S/N 282-3680 aircraft was delivered to the museum in 2006, but back in October/November of 1963, this same aircraft was a part of testing to see if a C-130 was feasible to land on aircraft carriers as a Super Carrier On-board Delivery. It conducted these carrier landings on USS Forrestal for 29 touch-and-go landings and 21 full-stop landings. Two screwdrivers, a crescent wrench and safety wire pliers for cross-country flight from San Diego to Pensacola. No problem.”

*Sean Scriber is the communications specialist for the Tactical Airlift Program Office at Naval Air Station Patuxent River, Maryland.* 🦋

**“The heart of any mission is to protect and preserve human life. With its massive cargo capacity, the Hercules has brought in firetrucks, medical supplies and evacuation support in times of crisis.”**



U.S. Marine Corps photo by Cpl. Trevor Stutz

Two F/A-18D Hornets with Marine All-Weather Fighter Attack Squadron 533 approach a KC-130J with Marine Aerial Refueler Transport Squadron 352 during a Special Purpose Marine Air-Ground Task Force—Crisis Response—Central Command aerial refueling exercise, Oct. 13, 2016.





*A U.S. Marines Corps KC-130J Hercules lands on a refurbished runway during a touch and takeoff exercise.*

U.S. Marine Corps photo by Cpl. Gabriela Garcia-Gregorio



*Marine Corps Maj. John Coutoumas, a KC-130J Super Hercules aircraft pilot assigned to Marine Aerial Refueler Transport Squadron 153 (VMGR-153), left, and Capt. Kale Heckerson, a KC-130J Super Hercules aircraft pilot assigned to VMGR-152, right, conduct threat reaction maneuvering training during exercise Kodiak Mace 23, Alaska, May 25, 2023.*

U.S. Marine Corps photo by Cpl. Gabriela Garcia-Gregorio



*A Coast Guard Air Station Elizabeth City C130J sits on the ramp with fuel truck. The C-130J is the latest incarnation of this enduring, multi-mission platform.*

U.S. Coast Guard photo by Dave Silva

In the spring of 1962, the Air Force accepted its first C-130Es, essentially an extended-range and extended-payload variant of the "B" model. "E" models would become the mainstay for the Air Force C-130 fleet for a number of years, to include its role providing tactical airlift during the Vietnam War. In 1972, pilot Capt. William Caldwell and loadmaster Tech. Sgt. Charlie Schaub each earned an Air Force Cross in a C-130E during the battle for An Loc, landing their heavily-damaged aircraft with only one functional engine.

In late 1964, the Air Force expanded use of the C-130 with the development and initial flight of the HC-130H, designed for use by the Air Rescue Service. Eventually, 63 would be delivered to the Air Force, another three to the Coast Guard, and four were modified as JC-130H for spacecraft recovery.

Air Force Special Operations Command (AFSOC) in particular put the airframe to a dizzying array of uses. Ideally suited for urban operations and delivering low-yield munitions, the fifth-generation gunship AC-130J "Ghostrider" replaced AC-130U/W gunships, ("Spooky" and "Stinger II," respectively) who in turn had replaced the Vietnam-era AC-130A/D/E/H models. Air Force Staff Sgt. John Levitow earned the Medal of



U.S. Air Force photo by Master Sgt. Christopher Boltz

*An AC-130J Ghostrider assigned to the 4th Special Operations Squadron.*

Honor for his actions aboard an AC-130D in February 1969, and AC-130 gunships would play critical roles in operations Just Cause, Desert Storm, Iraqi Freedom and Enduring Freedom, among others. EC-130J "Commando Solo" entered the AFSOC inventory to broadcast radio programs to adversary troops and citizenry alike, as well as conduct electronic attack. It replaced the EC-130E "Volant Solo," a veteran of Operation Urgent Fury in Grenada 1983. HC-130J "Combat King II" aircraft replaced another C-130, the HC-130P/Ns, as the only fixed-wing personnel recovery platform. And the command accepted its final MC-130J Commando II, designed for infiltration and exfiltration and resupply of Special Forces, in December 2024.

Little did, or could, World War II military planners know the need for tactical transport they identified would result in an aircraft that 70 years later would not only still be in business, but by 2025, have resulted in dozens of variants and still be used by over 70 nations—with no end in sight for the versatile airframe.

*David Byrd is the editor-in-chief of Naval Aviation News.* 🦅

# VAQ-133 Completes First Next-



*An EA-18G Growler, assigned to Electronic Attack Squadron (VAQ) 133, launches from the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).*

U.S. Navy photo by MC3 Valerie Morrison

Electronic Attack Squadron 133 (VAQ-133), assigned to Carrier Air Wing (CVW) 9, returned Dec. 14, 2024, from the Abraham Lincoln Carrier Strike Group's (ABECSG) five-month deployment to the Middle East and Eastern Pacific to Naval Air Station Whidbey Island in time for the holidays.

**T**he 153 Sailors, 18 aircrew and seven EA-18G Growlers of the “Wizards” of VAQ-133 departed Naval Air Station North Island, San Diego, July 13, 2024.

The Wizard’s deployment marked a historic milestone, as the squadron became the first in the Navy to deploy with the ALQ-249 Next-Generation Jammer (NGJ). Throughout their rigorous training and deployment, the Wizards demonstrated the future of airborne electronic attack by developing new tactics, achieving the first NGJ arrested landing and tactically employing the system.

“This deployment showcased the cutting-edge capabilities of the NGJ and reinforced the critical role of the Growler community in modern warfare,” said Cmdr. Erik Dente, commanding officer, VAQ-133. “More importantly, it demonstrated the

skill, dedication and perseverance of every VAQ-133 Sailor and the families, friends and loved ones who supported them at home. I could not be more proud of the Sailors, aircrew and support teams who made this deployment an overwhelming success.”

The Wizards began and concluded their deployment in U.S. 7th Fleet, executing key training missions in support of U.S. Indo-Pacific Command and participating in a Multi-Large Deck Exercise (MLDE) with the Italian Navy’s ITS Cavour Carrier Strike Group and conducting operations in the South China Sea to promote a free and open Indo-Pacific.

The strike group was ordered to the U.S. Central Command (CENTCOM) area of responsibility to bolster U.S. military force posture in the Middle East, deter regional escalation, degrade Iranian-



# Generation Jammer Deployment



U.S. Navy photo

backed Houthi capabilities and defend U.S. forces to promote security, stability and prosperity.

While operating in the Middle East, the Wizards played a key role in supporting CENTCOM objectives, participating in dual-carrier operations with USS Theodore Roosevelt (CVN 71), flying critical combat missions to ensure the safety of deployed U.S. forces, and aiding in strikes to degrade Houthi weapons storage capabilities.

"This deployment will go down in history," said VAQ-133 Command Master Chief Frederick Tuiel, summing up the deployment. "While it wasn't filled with port visits, it was defined by impactful combat operations—experiences our Sailors will share for

years to come. Bringing everyone home safely makes the accomplishment even sweeter."

The squadron earned the Commander Electronic Attack Wing Pacific (CVWP) Golden Wrench Award for maintenance excellence demonstrating the Wizard's dedication to excellence. Wizard maintainers sustained 100 percent Growler mission-readiness throughout the deployment, enabling the successful completion of all assigned missions.

"The dedication of the Sailors of VAQ-133 was second to none," Dente said. "Their hard work kept our Growlers fully mission capable and ensured every mission was a success. Whether from administration, operations, safety, maintenance, intelli-

*An EA-18G Growler, attached to Electronic Attack Squadron (VAQ) 133, launches from aircraft carrier USS Abraham Lincoln (CVN 72).*



*An EA-18G Growler, attached to Electronic Attack Squadron (VAQ) 133, launches from the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).*

U.S. Navy photos

## Navy Declares Initial Operational Capability for Next-Generation Jammer Mid-Band System

The Navy declared Initial Operational Capability (IOC) for the Next-Generation Jammer Mid-Band (NGJ-MB) system in December, bringing a quantum leap in capability over legacy systems with drastic increases in power, target flexibility and jamming technique for Naval Aviation operations worldwide.

"Next-Generation Jammer Mid-Band improves our fleet's warfighting advantage in the electromagnetic spectrum," said Rear Adm. John Lemmon, Program Executive Officer for Tactical Aircraft Programs. "This system provides enhanced capabilities to deny, distract and disorient adversaries' radars, protecting our naval aviators and allowing them to carry out their missions in contested airspace."

The fleet got a preview of the jammer's high-end capabilities during Abraham Lincoln Carrier Strike Group's five-month deployment this year. Electronic Attack Squadron (VAQ) 133 deployed with the

system aboard USS Abraham Lincoln (CVN 72), marking the first time NGJ-MB was used both deployed and in combat.

IOC signals the design, testing and production of this capability meet the logistical needs of the carrier air wings and EA-18G Growler squadrons.

"What an incredible day for the U.S. Navy, our Australian partners and the airborne electronic attack (AEA) community," said Capt. David Rueter, Airborne Electronic Attack Systems program manager. "The achievement of NGJ-MB IOC is a positive reflection on the hard work, innovation and resilience from a dedicated team of government and industry professionals who have developed and fielded this critical capability to the warfighters."

The NGJ-MB system, developed by Raytheon, an RTX business, is part of a larger NGJ system that will augment and ultimately replace the legacy ALQ-99 Tactical Jamming System currently used on the EA-18G Growler. NGJ-MB uses

the latest digital, software-based and electronically-scanned array technologies and provides enhanced AEA capabilities to disrupt, deny, and degrade enemy air defense and ground communication systems.

"NGJ-MB will boost our fleet's ability to maintain spectrum dominance. Yielding new capabilities is critical for addressing current and future threats. The era of isolated surface-to-air missile systems, which operate within a non-agile and limited frequency range, is behind us," said Lt. Cmdr. Michael Bedwell, EA-18G Naval Flight Officer and NGJ-MB Deputy Integrated Product Team Lead.

The Airborne Electronic Attack Systems Program Office is responsible for acquiring, delivering and sustaining AEA systems, providing combatant commanders with capabilities that enable mission success.

*From the Airborne Electronic Attack Systems Program Office.* 🇺🇸





“Initial Operational Capability (IOC) signals that the design, testing and production of this capability meet the logistical needs of the carrier air wings and EA-18G Growler squadrons.”

U.S. Navy photo by MC3 Michael Singley

gence or food service and support divisions, it took every Sailor to build and maintain the combat power required during our operations.”

In addition to operational accomplishments, the deployment included port calls to Guam in August and Kuala Lumpur in November, offering Sailors a chance to recharge and experience diverse cultures while supporting U.S. partner nations.

ABECSG completed more than 11,600 flight hours comprised of 5,500 sorties and over 4,400 fixed-wing aircraft launches and arrestments throughout its five-month deployment. The embarked next-generation, multi-platform CVW 9 enables advance mobile projection of naval air power and forward operational presence.

CVW 9 consists of nine squadrons flying the F-35C Lightning II, F/A-18E/F Super Hornet, EA-18G Growler, E-2D Hawkeye, C-2A Greyhound and MH-60R/S Seahawk. The squadrons are the “Tophatters” of Strike Fighter Squadron (VFA) 14; the “Black Aces” of VFA 41; the “Vigilantes” of VFA-151; the

“Black Knights” of Marine Fighter Attack Squadron (VMFA) 314; the “Wallbangers” of Airborne Command and Control Squadron (VAW) 117; the “Wizards” of (VAQ) 133; the “Raptors” of Helicopter Maritime Strike Squadron (HSM) 71; the “Chargers” of Helicopter Sea Combat Squadron (HSC) 14; and the “Rawhides” of Fleet Logistics Support Squadron (VRC) 40.

ABECSG consists of the flagship USS Abraham Lincoln (CVN 72), embarked staffs of Carrier Strike Group (CSG) 3 and Destroyer Squadron (DESRON) 21; Carrier Air Wing (CVW) 9; integrated air and missile defense Arleigh Burke-class guided missile destroyer USS Frank E. Petersen Jr. (DDG 121); and DESRON 21’s USS Spruance (DDG 111) and USS Michael Murphy (DDG 112).

Arleigh Burke-class guided-missile destroyers USS O’Kane (DDG 77) and USS Stockdale (DDG 106) remain deployed in the 5th Fleet area of operations supporting global maritime security operations.

Story courtesy of the Carrier Strike Group 3. 🇺🇸

*An EA-18G Growler, assigned to the “Wizards” of Electronic Attack Squadron (VAQ) 133, launches from the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72).*

# Lakehurst Announces Capability

By Adam Hochron

After two years of establishing the core capabilities of the Ship Motion Platform (SMP) at Naval Air Warfare Center Aircraft Division (NAWCAD) Lakehurst, New Jersey, test engineer Rob Pellegrino said he and his team have expanded and integrated the site capabilities with the surrounding test sites to provide a multifaceted development tool for military and commercial customers.

Since its commissioning in 2020, the SMP has developed and trained Unmanned Aerial Vehicles (UAVs) for launch and recovery to and from ships at sea. The hulking metal structure, complete with hydraulic pumps and CONEX boxes mounted on top, allows the team to simulate the movement of both aircraft carriers and guided-missile destroyers in waves up to sea state 4 with wave heights of 4 to 8 feet.

"When we talk about the Motion Platform, I always say it is quantifiable, repeatable and tailorable," Pellegrino said. "Now, the idea isn't just land to and from the Ship Motion Platform to mimic and teach landings, but to execute multipurpose missions within Lakehurst. It's not just flying to and from the ship. If you want to figure out a ship-to-shore scenario, we can utilize our sites around the platform, and we can fly to different locations and create a mini-mission within Lakehurst and execute that."

The SMP team's latest work, resulting in an expanded Concept of Operation (CONOPS), aims to allow UAVs greater flexibility in and around the Lakehurst test sites for a wider variety of mission replication.

Pellegrino was one of the key people who brought the SMP from Aberdeen Proving Ground, Maryland, to

Lakehurst. The goal was to provide a place to test UAVs repeatedly and reliably to see how they would work on a ship at sea. The platform can replicate the pitch, roll and heave of a ship at sea and hold a static tilt as part of the testing, saving customers valuable time and money.

After their initial UAV tests in 2022, the SMP team conducted internal reviews to analyze the site performance and identify areas to improve its mission and performance.

A year later, the team leveraged its partnership with the Air Test and Evaluation Squadron (UX) 24 and worked with mission safety and Lakehurst air traffic control to develop and ultimately execute a plan to evaluate "Beyond-Visual Line of Sight" operations, flying a UAV to the limits of the Lakehurst airspace while being controlled from the SMP test site.

This progress expanded UAV operation into the larger test department airspace, including successfully landing a UAV



An unmanned aerial vehicle  
lands on the Ship Motion  
Platform at Naval Air Warfare  
Center Aircraft Division  
Lakehurst, New Jersey,  
Aug. 18, 2022.





# Expansion at Ship Motion Platform

launched from the SMP test site to Lakehurst's Runway Arrested Landing Site (RALS) test runway.

Last year, the first UAV wind gust test was also conducted, combining the SMP, its UAV Superstructure and the Environmental Test Lab's Blowing Rain Test Apparatus to introduce a controlled wind gust to a flying UAV. While more work is needed to improve future wind tests, Pellegrino said the initial efforts met the needs of the customer's schedule and available budget and credits his site-engineering technician, Harry Beals, for the unique solution to the customer's request.

"It's leveraging the idea what Lakehurst lacks in physical airspace we make up for in configurability, and we can tailor the infrastructure of our site to replicate more than just shipboard landings and launches," Pellegrino said. "The end goal of the platform is to reach out to all of the UAV stakeholders, Navy and private industry and say 'look what I can do.' I can replicate a ship in a quantifiable and repeatable environment. I can give you your mini-mission. We can use our site with relatively minimal interference because I can carve out my airspace to execute the test to your needs."

Recently, a Marine Corps contingent conducted risk-mitigation

testing at Lakehurst. Pellegrino described the testing as a "rousing success," demonstrating that small UAVs could land on small ships in a real-world scenario. The Marines' next step is to take their testing to a ship to confirm their findings from the Lakehurst exercises. The potential impact of the testing on the Marines' immediate operational posture made it a particularly significant moment for Pellegrino and his team, underlining the platform's relevance to military operations and industry stakeholders.

Pellegrino said six UAV models have used the platform in three years of testing, proving the site's significance in a relatively short period, with each test providing different lessons and capabilities to showcase now and in the future. In addition to their UAV work, the SMP team has also extended its outreach to other emergent arenas, participating in the first NAWCAD-led Shipboard Robotics Technical Exchange Meeting in Philadelphia, Pennsylvania, showcasing the capabilities and benefits of the platform.

"This isn't a one-time capability. We're here for the long haul," Pellegrino said. "We aim to harness the growing UAV interest and establish ourselves as a reliable and long-term testing site."

*Adam Hochron is a communications specialist with Naval Air Warfare Center Aircraft Division, Lakehurst, New Jersey.* 🇺🇸

U.S. Navyphotos



*The Ship Motion Platform at Naval Air Warfare Center Aircraft Division Lakehurst can recreate sea conditions up to sea state 4 with wave heights of 4 to 8 feet. It can also be used to evaluate "Beyond-Visual Line of Sight" operations, flying a UAV to the limits of the Lakehurst airspace while being controlled from the SMP test site.*



# NIGHT FLIGHT

USS Carl Vinson (CVN 70) Conducts Ro

*Aviation Boatswain's Mate (Handling) 3rd Class Austin Howard signals an E-2D Advanced Hawkeye, assigned to the "Black Eagles" of Carrier Airborne Early Warning Squadron (VAW) 113, while it taxis on the flight deck of the Nimitz-class aircraft carrier USS Carl Vinson (CVN 70), Dec. 27, 2024.*



# OPERATIONS:

## utine Flight Operations Around the Clock

*By Petty Officer 3rd Class Isaiah Goessl*

Observing nighttime flight operations aboard the Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) is like watching a meticulously choreographed ballet unfold under the cover of darkness.

**T**he flight deck, illuminated by the glow of red, yellow, blue and green wands wielded by Sailors in color-coded jerseys, bustles with purpose and precision. Each movement is deliberate, every action essential. Yet beneath the captivating sights and sounds lies an ever-present danger that becomes even more palpable at night. The air is charged with an intensity unique to operations conducted in the dark.

Vinson, the flagship of Carrier Strike Group 1, operates as a visible symbol of U.S. naval power in the Indo-Pacific. Alongside Carrier Air Wing 2, it executes relentless flight operations day and night, in clear skies or inclement weather, demonstrating the Navy's commitment to a free and open Indo-Pacific. This tireless capability serves as a deterrent, signaling to the world that U.S. allies and interests are safeguarded.

"Not many other countries can conduct night operations like us," said Aviation Machinist's Mate Airman Joseph Lorenzo, a plane captain assigned to the "Stingers" of Strike Fighter Squadron (VFA) 113. "Along with everything else the U.S. is capable of, for me, night operations are what really drive the nail in."

Lorenzo recalls working construction with his father before joining the Navy. Now, he oversees the maintenance of an F/A-18E Super Hornet on the flight deck, ensuring mission readiness before and after each flight. Like many of his peers on the flight deck, with an average age of just 22, he takes pride in his work, keeping his head on a swivel as he tackles one of the world's most dangerous jobs.

"The way I work is, I imagine my dad is working with me," Lorenzo said. "I imagine it like when we worked construction. I always want to set up the next person I turn over with for success. Before I joined the Navy, I

U.S. Navy photo by MC2 Isaiah B. Goessl



used to say time is money. Out here, time is sleep. The sooner we get the job done right, the more time I have to nap.”

Aircraft carriers, housing about 5,000 personnel, are the centerpiece of America’s naval forces. They are adaptable, fast and survivable airfields, capable of conducting a wide range of missions at any time.

**It is no small feat for a pilot to land on a moving carrier deck in pitch-black conditions, relying only on the glow of a visual system displaying glide slope information. Success demands extraordinary skill and trust between professionals.**

Aboard Vinson, Sailors and aviators are constantly trained and ready to deploy their expertise, day or night.

Vinson’s Operations Department includes Sailors who serve as air traffic controllers (AC). They play a pivotal role as their mission is to ensure the safe, orderly and expeditious flow of air traffic, whether ashore or afloat. At night, they serve as the pilots’ eyes, guiding them back to the ship safely.

“Carrier air traffic control during Case 3 is significantly more complex and demanding compared to Case 1,” said AC

1st Class Keelie Sirhalt. “While Case 1 involves clear weather and visual flight rules, Case 3 operations occur in adverse weather or at night. This requires precision instrument approaches and heightened coordination between pilots and controllers to ensure safety and efficiency.”



U.S. Navy photos by MC2 Isaiah B. Goessl

While ACs facilitate the safe return of aircraft, the final moments of a landing are managed by Landing Signal Officers (LSO). LSOs act as coaches, evaluating a pilot’s approach and issuing precise verbal commands until touchdown. If an approach looks unsafe, they direct a wave-off, requiring the pilot to circle back for another attempt. It is no small feat for a pilot to land on a moving carrier deck in pitch-black con-



An F/A-18F Super Hornet, assigned to the “Bounty Hunters” of Strike Fighter Squadron (VFA) 2, prepares to launch from the flight deck.





*An EA-18G Growler, assigned to the "Gauntlets" of Electronic Attack Squadron (VAQ) 136, prepares to launch from the flight deck of aircraft carrier USS Carl Vinson (CVN 70), Dec. 27, 2024.*



*An F-35C Lightning II, assigned to the "Warhawks" of Strike Fighter Squadron (VFA) 97, recovers on the flight deck of USS Carl Vinson (CVN 70), Dec. 27, 2024.*

ditions, relying only on the glow of a visual system displaying glide slope information. Success demands extraordinary skill and trust between professionals.

"I would equate daytime aircraft carrier operations to driving down the autobahn in a Shelby GT500 going 180 mph with a cougar in the backseat. The only difference between daytime and nighttime carrier operations is that now you are blindfolded and the cougar hasn't eaten in three days," said Lt. Hunter Koltes, an F-35C Lightning II pilot assigned to the "Warhawks" of Strike Fighter Squadron (VFA) 97. "There's that little bit of fear that creeps in, and before you can really do any sort of night flying, you've got to make friends with that fear. Before you know it, it's just you and a cougar cruising around enjoying the sights."

Every Sailor on the flight deck says their job is among the most hazardous in the world, but they take pride in knowing no one does it better than the U.S. Navy—day or night. For those working the graveyard shift, there is an added privilege: the chance to witness the serenity of a clear night sky. The moon and stars cast their light across the vast, infinite expanse of the ocean, a tranquil reminder of the unique and demanding environment in which they serve.

*Petty Officer 3rd Class Isaiah Goessl is a mass communication specialist 2nd class aboard USS Carl Vinson.* 🦋



*Sailors secure an E-2D Advanced Hawkeye, assigned to the "Black Eagles" of Carrier Airborne Early Warning Squadron (VAW) 113, to the flight deck.*

# Marine's Award-Winning NPS Thesis Explores Mixed-Reality for Training Naval Aviators

*From Naval Postgraduate School Public Affairs*

As the Naval Aviation Enterprise moves to integrate emerging virtual, augmented and mixed-reality technologies fully into the spectrum of aviation training, understanding the impact of these technologies on training effectiveness is paramount.

**M**arine Corps Lt. Col. Thomas A. Cecil—a June 2024 graduate from the Naval Postgraduate School's (NPS) Modeling, Virtual Environments and Simulation (MOVES) program and winner of Commander George L. Phillips Award for top MOVES graduate—focused his award-winning thesis research on advancing one of these technologies—mixed-reality (MR) head-mounted displays (HMD)—a key contributor to Naval Aviation's plan for distributed, low-cost, simulation-based training.

The accolades for Cecil's work did not stop on campus. His work was selected as one of six nominees for the Best Paper Award at the upcoming 2024 Interservice/Industry Training Simulation and Education Conference (I/ITSEC). Cecil presented his nominated work with his NPS MOVES advisers Dec. 3.

"My thesis investigated the effects of mixed-reality, head-mounted displays on cognitive workload with an eye towards the implications for Naval Aviation," he said.

Cecil's study employed the U.S. Army Aeromedical Research Laboratory's (USAARL) Multiple Attribute Task Battery (MATB), with participants completing three trials of aviation-related subtasks through touchscreens and a joystick.

"We varied the display method participants used to view the tracking subtask between trials," Cecil said, providing testers with a legacy simulator as well as two HMD MRs, each using one of two primary display technologies, optical see-through (OST) and video see-through (VST). Cecil collected "subjective user assessments, objective performance metrics and heart rate variability to determine if the display methods affect the user's cognitive workload," he said.

Cecil's results demonstrate the inherent challenges in transitioning to new technologies and how humans engage





with them.

“We found significant differences between the display methods,” he said. “Users of MR HMDs demonstrated poorer performance, slower reaction times, subjectively higher cognitive workloads and increased simulator sickness symptoms.”

With the advancement of live, virtual, constructive training environments, emerging technologies will play a major

role in the training of tomorrow’s naval aviators, as will next-generation virtual, augmented and MR displays. Areas for further research, detailed in Cecil’s thesis, offer insights into understanding how to pair the training functions optimally with the right technology.

“Further research needs to investigate these impacts on actual aircraft while conducting training sorties to identify which training events are best suited to legacy or MR technology,” Cecil said.

Collaboration with both the USAARL, as well as the Naval Air Warfare Training Systems Division (NAWCTSD), proved to be key enablers to Cecil’s success. Through updates to its task battery, USAARL officials made critical changes that were essential to Cecil’s study design.

“USAARL also proved instrumental in helping me process the data and conduct the statistical analysis,” he said.

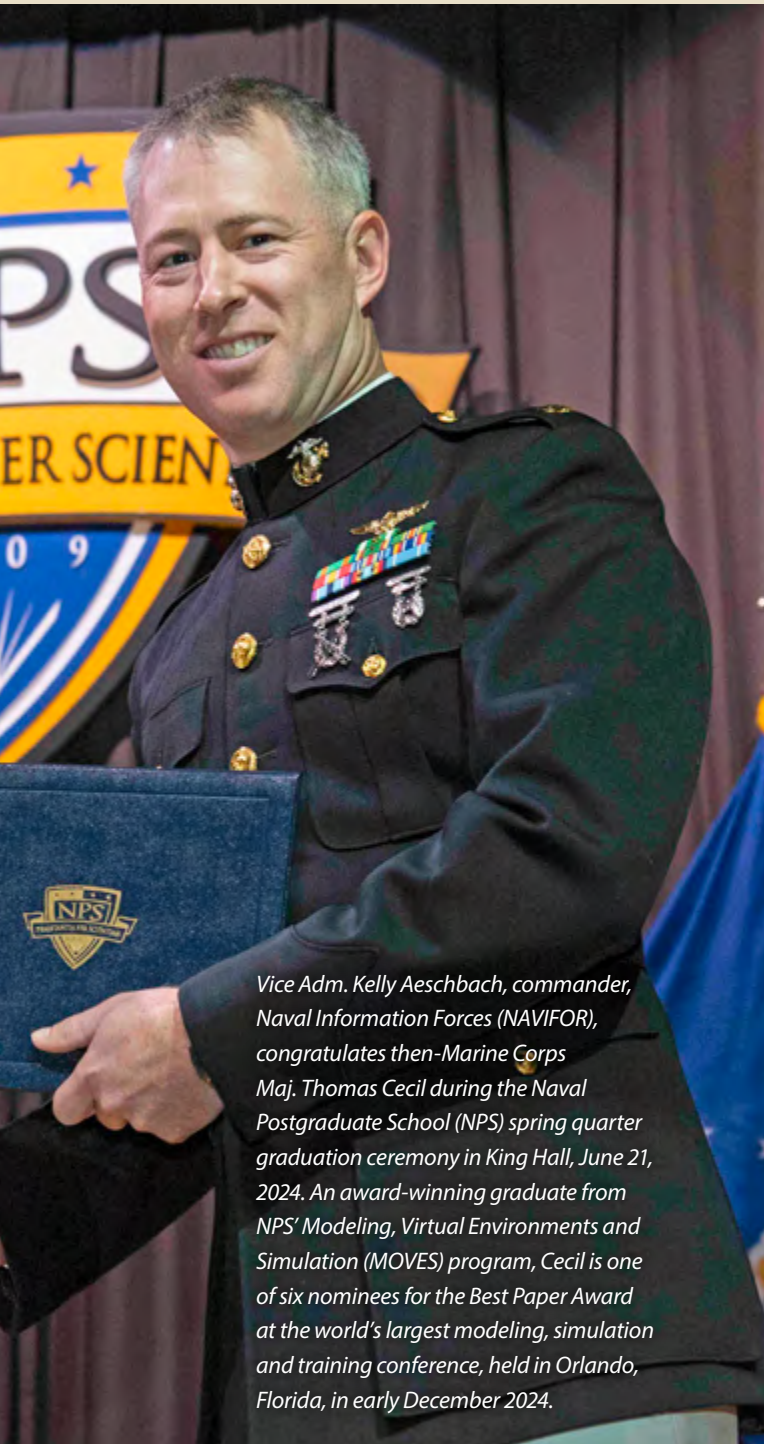
“NAWCTSD proved helpful in the concept development stage by helping me understand the limitations of the work that had been done up to that point and the technology being used in development of MR simulators,” Cecil said. “They also lent us a headset that we used to build and validate our test bench.”

Cecil is stationed in Okinawa, Japan, where he serves as the director of the III Marine Expeditionary Force (MEF) Tactical Exercise Control Group (TECG).

“We provide the MEF with wargame simulation and virtual reality capabilities in support of integrated Marine Air-Ground Task Force training,” Cecil said. “This includes providing planning, coordination and technical support to III MEF and its major subordinate commands in support of participation in joint, unilateral and bilateral training in the U.S. Indo-Pacific Command area of responsibility. We also maintain and operate tactical-level virtual reality and wargame simulations.

“My education at NPS has allowed me to hit the ground running with a solid foundational knowledge of the technology on hand,” he said. “This translates into being able to focus my time and energy on leading our team rather than treading water trying to understand the systems and how they are employed.”

NPS, located in Monterey, California, provides defense-focused graduate education, including classified studies and interdisciplinary research, to advance the operational effectiveness, technological leadership and warfighting advantage of the Naval service. Established in 1909, NPS offers master’s and doctorate programs to Department of Defense military and civilians, along with international partners, to deliver transformative solutions and innovative leaders through advanced education and research. 🐟



*Vice Adm. Kelly Aeschbach, commander, Naval Information Forces (NAVIFOR), congratulates then-Marine Corps Maj. Thomas Cecil during the Naval Postgraduate School (NPS) spring quarter graduation ceremony in King Hall, June 21, 2024. An award-winning graduate from NPS' Modeling, Virtual Environments and Simulation (MOVES) program, Cecil is one of six nominees for the Best Paper Award at the world's largest modeling, simulation and training conference, held in Orlando, Florida, in early December 2024.*

U.S. Navy photo by Javier Chagoya

# MARINES IMPROVE F-35B MAINTENANCE EFFICIENCY WITH 3D PRINTING

*By 1st Lt. Madison Walls, 3rd Marine Aircraft Wing*

Marine Corps innovation isn't just a buzzword—it happens every day at the tactical, end-user level, where Marines like Staff Sgt. Nicholas Bevan, an airframes technician, and Sgt. Landon Boroday, an aviation machinist, turn challenges into cutting-edge solutions that enhance aviation maintenance and readiness.

In July 2024, Marine Aviation Logistics Squadron (MALS) 13 faced a critical shortage in reamers—precision cutting tools essential to aviation maintenance. The traditional reamers were costly and insufficient due to their lengthy procurement times and limited lifespan.

“Staff Sgt. Bevan and Sgt. Boroday's initiative exemplifies the kind of forward-thinking innovation that directly enhances 3rd MAW's readiness,” Wellons said. “Their ability to develop solutions at the tactical level not only saves resources but keeps our aircraft mission-ready. This kind of ingenuity is

*Marine Corps Maj. Gen. James Wellons, left, commanding general, 3rd Marine Aircraft Wing (MAW), awards Staff Sgt. Nicholas Bevan, right, airframes technician, MALS-13, 3rd MAW, at Marine Corps Air Station Yuma, Arizona, Oct. 9, 2024. Bevan received the Navy and Marine Corps Achievement Medal (NAM) for designing a 3D printable maintenance tool that will be used to help maintain aircraft for years to come.*



Bevan and Boroday harnessed their technical expertise and the latest additive manufacturing technology to create an on-demand solution. They developed high-performance reamers with an extended lifespan of 300 percent, cutting maintenance costs by more than 50 percent, and reduced the procurement time from three months to same-day production.

On Oct. 10, Maj. Gen. James Wellons, commanding general of 3rd Marine Air Wing (MAW), visited MALS-13 to recognize the Marines' efforts and award them both the Navy and Marine Corps Achievement Medal.

what keeps 3rd MAW at the forefront of operational excellence.”

Bevan identified the shortfall as Marine Aircraft Group 13, comprised of four F-35B Lightning II squadrons, was preparing for an annual corrosion inspection. The reamers are used to ensure the proper fit and finish of composite materials and fasteners.

“The mission of MALS-13 is to serve as logistics support to the Marine Aircraft Group, such as providing personnel and parts,” Bevan said. “As we were assisting the unit through



providing maintainers ... we noticed a shortage in the tools needed to remove corrosion.”

Learning that conventional reamers cost approximately \$30 each and suffer from rapid wear, Bevan devised a process to produce more durable reamers using chopped carbon fiber strands and high-temperature resin in place of Torlon, a high-performance thermoplastic typically used.

“Torlon is a high-strength, highly abrasive material that doesn’t damage the aircraft structure but is still abrasive enough to remove corrosion from the aircraft,” Bevan said. “We have used carbon fiber as an alternative to Torlon, and as a 3D printing material, to make these reamers for the units in-house.”

Addressing the longevity of the reamers, the Marines were also able to create a different design, described as a three-fluted one that enhances the durability of the reamers.

day said. “I got the information on which type of reamers the supply section was ordering, I did the math and figured out it can cost less if we print them internally.”

Boroday also trained more than 20 Marines in additive manufacturing techniques, increasing technical proficiency within MALS-13 and establishing a new standard for maintenance efficiency. This advancement has saved MALS-13 more than \$10,000 in tool procurement costs and reduced aircraft downtime across MAG-13 by nearly 20 percent over a three-month period.

While the Marines’ creative solution saved the squadron time and money, it also demonstrated the advantages of advanced manufacturing in a forward-deployed environment.

“This initiative directly supports the tenets of Marine Corps Force Design by empowering our units to be more self-suffi-



*Marine Corps Maj. Gen. James Wellons, right, commanding general, 3rd Marine Aircraft Wing (MAW), visits Marine Air Logistics Squadron (MALS) 13 at Marine Corps Air Station Yuma, Arizona, Oct. 9, 2024. Wellons observed a 3D printable maintenance tool that will be used to help maintain aircraft for years to come.*

Boroday’s technical knowledge and expertise in computer-aided design and additive manufacturing made the process possible.

Boroday spearheaded the procurement of two Markforged X7 industrial 3D printers, enabling MALS-13 to produce the aerospace-grade components locally, eliminating reliance on external suppliers. In addition to the reamers, the Marines’ efforts have enabled the production of other vital parts, such as corrosion treatment mandrels and radius blocks.

“The versatility of these 3D printers is phenomenal,” Boro-

day said. “I got the information on which type of reamers the supply section was ordering, I did the math and figured out it can cost less if we print them internally.”

“Their contributions are not only improving readiness today but also paving the way for how we approach maintenance and logistics in the future.”

“A whole new door of opportunities has opened for my [military occupational specialty] field, specifically as a machinist,” Boroday said. “Our field is small, and I am proud of anything I can do to showcase what we are capable of.”

*1st Lt. Madison Walls is a communications specialist with 3rd Marine Aircraft Wing. 🇺🇸*

# FRCE Supports Marine F-35 Recovery Training

Fleet Readiness Center East (FRCE) is using a unique depot training asset to help Marines gain real-world experience in recovering a damaged F-35B Lightning II without risking harm to an operational aircraft.

FRCE recently partnered with Marine Wing Support Squadron (MWSS) 271 to assist with the squadron's F-35 familiarization and aircraft salvage and recovery training. The collaboration with FRCE allowed MWSS-271 access to a stripped-down F-35 airframe used for training and testing at the depot, along with the knowledge and expertise provided by FRCE artisans and engineers who support the F-35 modification program.

According to Chief Warrant Officer 2 Joseph Durand, the MWSS-271 Heavy Equipment Platoon leader who also serves as the squadron's salvage and recovery officer, the three-day training simulated the recovery of an F-35 with collapsed front landing gear. The event consisted of three phases: learning proper F-35 lifting procedures through an introductory crane lift; stowing the front landing gear and using the crane to rest the aircraft's nose on a temporary structure to simulate landing gear failure; and finally, establishing a controlled recovery site and recovering the aircraft.

While the training event simulated one specific set of circumstances, Durand said it included techniques that could be implemented in a wide variety of recovery scenarios, both in garrison environments and at forward locations.

"Recovery has so many different scenarios, and the F-35 is a fairly new aircraft; recovery on this platform hasn't really been conducted in a broad manner across the Marine Corps," Durand said. "We're training to educate on how pertinent it is to be able to recover an F-35, the practices that go into that recovery and the hazards that come along with it. We're really stressing the need for that aircraft to be able to get back into the air and do its job."

"What we're looking forward to is being able to conduct this same recovery scenario, whether it be a front landing gear that went down or something more catastrophic, no matter where it happens," he said. "We need to be able to get that bird back into the fight, and do it in a safe manner that doesn't harm the aircraft or the individuals working to recover it."

FRCE's ability to provide a nonoperational airframe for use in the Marines' training offered the squadron unique advantages, said F-35 branch head Ike Rettenmair.



U.S. Navy photos by Heather Wilburn

Marine Wing Support Squadron (MWSS) 271, based at Marine Corps Air Station (MCAS) Cherry Point, North Carolina, train with Fleet Readiness Center East artisans and engineers to learn proper crane lifting techniques for the F-35B Lightning II aircraft. The crane lift was one phase of a three-day training event that simulated the recovery of a downed F-35 with collapsed front landing gear.









Marines with Marine Wing Support Squadron (MWSS) 271, based at MCAS Cherry Point, train with Fleet Readiness Center East artisans and engineers to learn proper crane lifting techniques for the F-35B Lightning II aircraft. The crane lift was one phase of a three-day training event that simulated the recovery of a downed F-35 with collapsed front landing gear.







U.S. Navy photos by Heather Wilburn

*David White, an F-35 support equipment engineer at Fleet Readiness Center East, builds a temporary structure to support the nose of an F-35B Lightning II during aircraft recovery training conducted by Marine Wing Support Squadron (MWSS) 271.*



*Marines with Marine Wing Support Squadron (MWSS) 271, based at MCAS Cherry Point, use inflatable pads to support recovery of an F-35B Lightning II aircraft with simulated damage.*

“Having an asset like this airframe on hand is really beneficial in terms of allowing for training without the concern of potentially damaging an operational aircraft,” he said. “While you plan for everything to go perfectly during a training event, there’s always the chance that mistakes could be made; that’s why there’s training in the first place, to provide that learning experience.”

“Using an airframe that isn’t an operational aircraft helps provide a real-world, hands-on experience—everything looks, feels and moves the same—without the added pressure that comes from working with an aircraft that needs to be back on flightline the later that day,” Rettenmair said.

Working with MWSS-271 to support the squadron’s activities also benefitted the FRCE team, he said.

“Supporting MWSS-271’s training not only allowed their Marines to advance their F-35 aircraft recovery skills, it also gave our team the opportunity to sharpen their expertise while serving as subject matter experts,” he said. “Developing a way to simulate a landing gear failure, for example, presented a challenge that the team proved ready to tackle. Teaching the Marines the proper way to crane-lift the aircraft provided our artisans and engineers the opportunity to refresh their skills as well. This really was a win-win situation for everyone involved.”

Durand agreed the partnership between the squadron and FRCE yielded positive outcomes.

“It’s extremely effective for us to drive just 15 minutes down the road to FRC East and be able to execute training with all of our partners in the warfighting effort,” he said. “It makes it extremely reliable for us to be able to conduct additional training as scenarios start to develop across the nation and around the world.”

The F-35 airframe used in this exercise, which arrived to FRCE in early 2021, has also seen use as a training aid in the depot. Its status as a readiness enhancer is not limited to supporting recovery training.

“We have also used the airframe for artisan and engineer training at FRC East, although the depot maintenance environment is definitely different than an operational unit,” Rettenmair said. “For us, the airframe serves as a training aid that helps us improve processes and procedures, which can in turn drive down the modification turnaround times and enable us to return completed aircraft to the fleet sooner than planned.”

FRCE is the lead site for depot-level maintenance on the F-35B Lightning II, and has conducted modifications and repairs on the Marine Corps’ short takeoff-vertical landing variant of the aircraft since 2013. The depot also performs work on the Navy’s F-35C carrier variant and the Air Force’s conventional takeoff and landing F-35A variant. ✈️

# FRCE Marks 150th F-35 Induction

Fleet Readiness Center East (FRCE) marked a milestone in its support of the F-35 Lightning II program when the depot recently inducted and completed modifications on its 150th F-35 and returned the aircraft to the fleet.



U.S. Navy photos by Joe Andes

*Workers on the Fleet Readiness Center East (FRCE) F-35 Lightning II aircraft modification line confer with the pilot prior to conducting a functional check flight inspection on an F-35B at Marine Corps Air Station Cherry Point, North Carolina.*

**F**RCE is the lead site for depot-level maintenance on the F-35B Lightning II and has conducted modifications and repairs on the Marine Corps' short takeoff-vertical landing variant of the aircraft since 2013. The depot has also worked with the F-35A (conventional takeoff and landing) and F-35C (carrier) variants.

"The F-35 plays such a crucial role in our national defense," said FRCE Commanding Officer Capt. Randy Berti. "It is the next-generation strike aircraft weapon systems for the Navy, Air Force, Marines and our allies. It gives our warfighters unprecedented capabilities. We're extremely proud of the support we provide for this aircraft."

"The F-35 was completely new when the first aircraft was inducted in 2013,"

Berti said. "There were a lot of unknowns. Inducting our 150th F-35 highlights how far we've come and how dedicated and innovative our people are. They were constantly breaking new ground and they continue to do that today."

Dustin Schultz, an aircraft planner and estimator with FRCE's F-35 team, was one of those trailblazers.

"Everything was brand new in the beginning," Schultz said. "From engineering support to tooling and logistics, we were starting from scratch. We had one aircraft with six of us working on it. Now we have 130 artisans working on the F-35 alone. That's a lot of growth."

"We have other aircraft programs that are sundowning," he said. "The F-35 is filling that gap now as we move forward."

According to Ike Rettenmair, FRCE's

F-35 branch head, the depot's F-35 workload has grown exponentially over the years and is continuing to expand.

"I was in the hangar as a Harrier mechanic when the first F-35 rolled in," Rettenmair said. "We've grown from that one stall to what will soon be multiple hangars of F-35s. The F-35 plays such a significant role in the U.S. military with more and more continuing to enter the fleet. The number of F-35s used by international partners is also growing. Our F-35 workload goes hand in hand with all of this."

As the F-35 program continues to grow at the depot, Rettenmair said FRCE continues to expand and develop key F-35 support elements.

FRCE declared capability on its first F-35 component—meaning FRCE is now



a verified source of repair and testing for that item—in 2020. Since then, the depot has declared capability on approximately 76 different components for the Lightning II and continues to increase capability.

In 2023, FRCE personnel became the first within the DoD to perform the successful assembly of a lift fan clutch for the F-35B Lightning II aircraft outside of the original manufacturer's facility. Additionally, F-35B vertical lift fan testing and processing facilities are scheduled to come online at FRCE in early 2025.

The depot is also capable of bringing F-35 support to the warfighter when and where it is needed. FRCE's F-35 Rapid Response Team, made up of highly-skilled, cross-trained aircraft maintenance professionals, can deploy at a moment's notice to any location, from a Marine Corps Air Station halfway around the globe to a Navy aircraft carrier afloat in the Indo-Pacific region.

FRCE's F-35 support is not limited to aircraft repair and modification or component capabilities. Don Werner, an aircraft planner and estimator with FRCE's F-35 team, said the lessons learned and the innovation that occurred over the years while expanding FRCE's F-35 program have also found their way to the warfighter.

"There are so many entities within FRC East working on things you would never even think of," Werner said. "They create things and come up with ideas that enable us to get aircraft to the warfighter even faster while saving money in the long run. They create things that make the job easier and these go out to the whole fleet."

In addition to mechanics, Werner said the team includes quality assurance personnel, parts and logistics experts, planners, engineers and even fabric workers who design and produce heavy-duty protective covers for the aircraft's tires, intakes and other parts.

"You can see people right here at the depot working on all these things," Werner said. "They're designing it, going down to



*Workers on the Fleet Readiness Center East (FRCE) F-35 Lightning II aircraft modification line confer with the pilot prior to conducting a functional check flight inspection on an F-35B at Marine Corps Air Station Cherry Point.*

manufacturing and coming up with the tools or equipment our people need because there's nobody out there that's going to get it to us in such a timely manner."

Schultz said the warfighter benefits from the innovative processes and procedures the depot's F-35 team has come up with over the years.

"We've had many modifications that come through here that we were performing for the first time ever," Schultz said. "The manufacturer would say this mod is going to take 10,000 hours and our artisans and engineers would go look at it and end up saving thousands of hours because they came up with a new way to do the job that nobody else had thought of."

According to Rettenmair, the success and expansion of the F-35 program at FRCE lies with the depot's personnel. He

credited their dedication and innovation as instrumental in establishing the reputation of FRCE's F-35 program.

"We've made a name for ourselves as the F-35 facility for depot maintenance," Rettenmair said. "It shows the trust and confidence the enterprise has in FRC East to do this work. That trust is a testament to the people working here who've earned us this reputation."

He said everyone at FRCE, no matter what their job, is committed to supporting the fleet by providing the highest quality, combat ready aircraft and components.

"Every day when we come to work, we know why we're here," Rettenmair said. "We deliver product back to the fleet so the warfighter has what he or she needs to fight and win. The people working here take a lot of pride in that." 🦅

# New F-35 Storage Solutions Set to Boost Efficiency at FRCE

*The Fleet Readiness Center East F-35 Aircraft Systems Inspector James Beers operates the depot's first set of vertical stackers that were installed on the F-35 Lightning II aircraft modification line in 2020. Recognizing the success of the initial set of stackers, the depot recently added three more stackers to the F-35 Lightning II modification line. The vertical stackers serve as a centralized storage unit for aircraft parts and components.*



U.S. Navy photos by Joe Andes

**The Fleet Readiness Center East (FRCE) F-35 Lightning II aircraft modification line continues to grow with the recent addition of a new storage system that will improve safety and efficiency.**

As part of the F-35 modification line's transformation efforts, FRCE has installed three new vertical lift modules—also referred to as vertical stackers—that act as a centralized storage unit for aircraft parts and components. The system effectively consolidates items that have traditionally been stored in various areas throughout the facility.

According to F-35 branch head Ike Rettenmair, the vertical stackers offer additional storage, safety improvements and timesaving benefits, all of which allow FRCE to support the fleet more efficiently.

"Our main goal is to support our nation's warfighters by providing quality, combat-ready aircraft," Rettenmair said. "With the F-35 platform continuously growing, we need to do everything we can to deliver on our promise. That means constantly looking for ways to maximize efficiency, which is exactly what the vertical stackers do."

FRCE's F-35 modification line installed its first set of verti-

cal stackers in 2020. Rettenmair said going up instead of out in search of storage solutions allows more efficient use of the limited space in the aircraft hangars, a strategy that proved successful with the initial set of stackers.

"Real estate is prime around here, so the only place we can really store is up," Rettenmair said. "The vertical stackers help us make the most out of the space we have in our hangars. We saw how well they worked in our other hangar, so we put in a request for more. Now, instead of having parts stored throughout the area, we can put them all in one, organized place. They truly are a worthwhile investment."

The vertical stackers feature a welded frame, integrated tray locating system and trays with a maximum load of up to 1,000 pounds each.

Measuring 13.5 feet wide by 27 feet tall, each stacker contains 18 trays set at varying heights, customized to their contents. The flexible configuration allows artisans to store aircraft parts and hardware, big and small, with their locations documented in a database, which is updated whenever items are added or removed. This makes it easy locate items quickly as needed. Artisans can access the tray retrieval system using a touchpad located on the front of the module. Once a specific



*Fleet Readiness Center East has installed three new vertical lift modules—also referred to as vertical stackers—that act as a centralized storage unit for aircraft parts and components. This is the second set of vertical stackers the depot has installed as a part of the F-35 Lightning II aircraft modification line's transformation efforts, the first having been installed in 2020.*



tray is selected, the system directs the lift platform to the appropriate height to retrieve the tray and position it in the retrieval window, similar to the way a vending machine functions. Artisans can then move the tray clear of the column using the column's pick and delivery system, an integrated carriage that facilitates convenient access to the tray and its contents.

F-35 Overhaul and Repair Supervisor Brent Ward said not only will the vertical stackers remedy a good portion of the line's storage constraints, but they will also save time.

"The lack of storage space in the hangar forced us to store most of our aircraft parts and panels in another building, while keeping some larger components and engines in the hangar," Ward said. "The engines and larger components took up a good amount of space in the hangar, making things quite difficult at times. We basically had to shift everything in the hangar just to move one thing, which is a very time-consuming and laborious task for our artisans.

"Now, we can consolidate many of those parts and panels into the stackers, giving us the room we need to move the larger components, engines and landing gear out of the hangar," Ward said. "The stackers make it much easier to access commonly used parts and panels and allow us to avoid using extra time and manpower to move things around just to work a task."

The vertical stackers will also bolster safety, Rettenmair said.

"With the limited space available, the hangar could easily become cluttered with tools and aircraft parts," Rettenmair said. "The stackers mitigate that; they optimize our hangar space, creating a more efficient environment for our aircraft mechanics and artisans. With the additional room, they can maneuver more freely and perform maintenance tasks more effectively."

F-35 Overhaul and Repair Supervisor Rusty McCoy added that the vertical stackers also improve parts management.

"Previously, we didn't have a designated space to store some of our tools and smaller aircraft parts or panels," McCoy said. "With the stackers, everything will have a home; we will be able to assign designated spaces for all of our parts, making them easier to locate every time we need them."

According to Rettenmair, there are plans to incorporate the vertical stackers throughout the depot's F-35 facilities.

"We are planning to add more stackers as we continue to build and renovate," Rettenmair said. "We want other people to see how helpful the stackers are and hope to convince folks that this is the way to go for parts storage. They aren't just for aircraft parts—they can be for side shops, too. They really are so helpful." ✈️

# FRCSE Inducts First F-35B and F135 Power Module for Depot-Level Work



U.S. Navy photos by Toiete Jackson

*An F-35B Lightning II assigned to Marine Fighter Attack Squadron 122 at Yuma, Arizona, prepares to park after landing at Naval Air Station Jacksonville, Florida, as part of the aircraft's temporary transfer to Fleet Readiness Center Southeast (FRCSE).*

**Fleet Readiness Center Southeast (FRCSE) achieved two significant milestones in the same week by inducting its first F-35B Lightning II and F135 power module (PM), one of five major modules of the F-35 propulsion system.**

**T**he F-35B, which came from the “Flying Leathernecks” of Marine Fighter Attack Squadron (VMFA) 122, based out of Yuma, Arizona, arrived at FRCSE on Aug. 7, 2024 and the F135 PM on Aug. 9.

“This is a historic time for FRC Southeast,” said FRCSE’s Commanding Officer, Capt. Al Palmer. “Between welcoming the first F-35 airframe and receiving the first F135 power module, we remain steadfast in our commitment to the Naval Aviation Enterprise. Inducting these products propels FRCSE into a new era of depot-level maintenance and paves the way for current and next-generation products.”

The timing of the airframe and engine inductions was purely coincidental. However, the back-to-back arrivals were indicative of the progress and effort the command put into preparing to work on these fifth-generation assets.

While the first F135 PM will go through the planned maintenance process—disassembly, inspection, repair and reassembly—with an expected completion

date in May, the F-35 line is a corrosion speed line designed to quickly and efficiently locate corrosion and address any discovered problem areas.

“Hitting that 60-day target will allow us to return one aircraft this fiscal year and up to 16 aircraft next fiscal year,” said Savanna Massey, FRCSE’s F-35 production line deputy director. “We’ll eventually get to a cycle where we induct one and return one back to the fleet at the same time. It’s a corrosion speed line, so speed will be the name of the game, but without sacrificing quality.”

The F-35 induction is part of a more significant effort to support corrosion mitigation efforts for the U.S. Marine Corps (USMC) through a process called Production Asset Inspection Requirement (PAIR). FRCSE artisans will conduct these inspections on targeted areas of the aircraft where corrosion may be taking place.

“A PAIR-II inspection consists of artisans removing a number of panels from the aircraft and inspecting the substructure,” said Tim Duncan, FRCSE’s F-35

general foreman. “If we find corrosion present, we will remove it, treat the aircraft’s surface and reinstall the panels.”

Preparation for the highly technical jet began years ago with the establishment of the F-35 product line in 2022 and the command’s activation as an F135 Department of Defense second depot source of repair (DSOR) in 2020. However, both teams had to undergo extensive training to accommodate the new products.

Since the F-35 line was established, the 60 artisans and support staff have not only received extensive education and training on the aircraft’s Autonomic Logistics Information System (ALIS), surface coatings and other areas, but have also had the opportunity to immerse themselves in the F-35 community by traveling to various USMC squadrons and Fleet Readiness Center East (FRCE), which has been the lead Naval Air Systems Command (NAVAIR) site for F-35 organic depot-level maintenance since 2013.

“Being part of the team that established the F-35 line here at FRC Southeast gives



the artisans a sense of ownership,” said Brandon Smith, an FRCSE F-35 work lead. “This being a new aircraft and corrosion line for the command, there weren’t any examples for us to utilize, so the team was empowered to collect data and implement best practices from other sites.”

While the command is excited to receive the fifth-generation aircraft, a shortened timeline meant overcoming hurdles—challenges that the F-35 production line team took in stride.

“The F-35, being a fifth-generation aircraft, comes with a whole new set of security requirements, which we typically haven’t had to engage here at FRC Southeast while working on some of the legacy platforms,” said Bruce Crooke, FRCSE’s F-35 Production Line Director. “So, there was a learning curve. There are requirements for controlled entry points at the aircraft and electronic security systems that monitor and measure the vibrations of the fencing. There will be visual barriers to prevent seeing the aircraft when it’s opened and panels removed since there are security concerns there as well.”

Simultaneously, the F135 team conducted extensive training and overcame obstacles to get their team ready to work on this complex engine.

“Since being named a DSOR, FRCSE F135 artisans successfully executed over 2,600 qualification requirements shared across the Power Module and Mini Modules,” said Aaron Powers, FRCSE’s F135 product line deputy director. “This ensured that FRCSE had a proficient and qualified labor force to execute the newly established workload. The first qualification evolution trained and qualified 23 primary artisans and support group personnel, and this is the team who will execute the initial production workload.”

As a result of the hard work and preparation to perform maintenance on next-generation components, the F135 team expects huge milestones in the future.

“We expect F135 production to ramp up through 2034 to the max production



*Personnel from FRCSE prepare to park an F-35B Lightning II.*

requirement, or roughly 600 Mini Modules and 120 Power Modules per year, correlating to about 600,000 man-hours,” said Richard Eveson, FRCSE’s F135 product line director.

From the moment the Lightning II landed on the flight line at Naval Air Station Jacksonville and taxied toward the ground crew, to the uncrating of the first F135 PM in front of a skilled group of prepared artisans, a surge of tangible excitement has spread through the command.

“This milestone belongs to all of us,” Palmer said. “Thank you for your unwavering dedication and commitment to our mission, which has undoubtedly led us to this historic moment.”

As FRCSE looks to the future amid ever-changing fleet requirements, it is clear that the command will continue to adapt to support military readiness with unwavering dedication and perseverance.

*Written by Ashley Lombardo, Fleet Readiness Center Southeast.* ✈️



*Personnel from the FRCSE F-35 aircraft production line stand in front of a recently inducted F-35B Lightning II that was delivered from Marine Fighter Attack Squadron 122 at Yuma, Arizona.*

# FRCSW Bids Farewell to Last Legacy F/A-18

Fleet Readiness Center Southwest (FRCSW) has been a pillar of Naval Aviation maintenance since its establishment in 1919. Over the decades, the facility has supported the Navy's mission readiness, ensuring iconic aircraft like the F-14 Tomcat, A-6 Intruder and S-3 Viking remained airworthy. Now, FRCSW signifies a major shift with the final maintenance of its last legacy aircraft—an F/A-18 Hornet.

Introduced in the 1980s, the F/A-18 Hornet has been a versatile and essential asset in Naval Aviation, serving in major conflicts such as Operation Desert Storm and the Kosovo War. This particular Hornet, designated AQ-99, carries a rich operational history, symbolizing both the aircraft's role in naval conflicts and the legacy of FRCSW's aircraft maintenance program.

"This is monumental for the depot," said Ehren Terbeek, FRCSW Tactical Air Program Manager. "Many artisans here began their careers working on these aircraft, and it's a milestone for everyone involved."

The facility's role in maintaining these legacy aircraft has been extraordinary. Through innovations like the center barrel replacement, FRCSW extended the operational life of the F/A-18 far beyond its original limit of 6,000 flight hours, with some Hornets surpassing 9,000 hours.

"The aircraft is old so parts were hard to source, and structural repairs were challenging, but our team's skills and knowledge ensured these aircraft kept flying," Terbeek said.

These efforts have been crucial in keeping Naval Aviation mission-ready for decades.

FRCSW's artisans, many of whom are veterans, take immense pride in their work. The departure of the second-to-last Hornet to Fort Worth, Texas, and now the final Hornet returning to Miramar, California, marks a bittersweet moment for those who spent their careers ensuring these aircraft remained battle-ready. For many, working on the F/A-18 has been a career-defining experience, Terbeek said.

As FRCSW transitions to newer aircraft models like the F-35 Lightning II and an Unmanned Aerial Vehicle like the MQ-8 Triton, the experience and expertise gained from decades of maintaining legacy aircraft will continue to inform its evolving role. The final maintenance effort on this F/A-18 Hornet is both the end of a chapter and a tribute to FRCSW's historical contributions and the skilled workforce that has upheld the highest standards of aircraft maintenance.

*Written by Janina Lamoglia, communications specialist with Fleet Readiness Center Southwest.* 🛩️



U.S. Navy photo

*Fleet Readiness Center Southwest completed the final maintenance on its last legacy F/A-18 Hornet, marking the end of an era in Naval Aviation. This milestone celebrates decades of dedication by artisans who kept these aircraft mission-ready.*





*FRCSW expands its mission by welcoming its first F-16 Falcon, showcasing its adaptability and commitment to sustaining joint-service aviation readiness.*

## FRCSW Begins New Chapter with F-16 Workload

Fleet Readiness Center Southwest (FRCSW) is the Navy's premier West Coast aircraft repair, maintenance and overhaul organization, specializing in Navy and Marine Corps aircraft and their related systems. The command officially added the F-16 Falcon to its workload in December 2024, marking a significant milestone in the facility's ongoing mission to sustain Naval Aviation.

**K**nown for its expertise in maintaining Navy and Marine Corps aircraft, FRCSW now provides critical F-16 support to the Navy squadrons of Naval Aviation Warfare Development Command (NAWDC) and Fighter Squadron Composite (VFC) 13.

"The addition of the F-16 workload demonstrates FRCSW's adaptability and commitment to serving all branches of the armed forces," said Jacob Weintraub, FRCSW Maintenance Repair and Overhaul-Engineering (MRO-E) Division Head. "It's an exciting opportunity to expand our support and showcase the high-caliber skills of our artisans and engineers."

Preparing for this new workload required a series of infrastructure upgrades and targeted training to ensure the workforce could meet the specific demands of the F-16 platform.

"Because this is the first-ever Navy depot-level induction of an F-16, we're essentially building the process as we go," Weintraub said. "We've had to draft qualification letters to certify our artisans, engi-

neers and quality assurance staff to ensure compliance. These early efforts are setting the foundation for the program's success."

The team has also faced unique challenges, including adapting to Air Force processes, integrating specialized tools and resolving logistical hurdles.

"One of the biggest challenges we encountered was learning the Air Force's Enhanced Technical Information Management System for technical data, which is very different from the Navy's system," said Brian Trout, FRCSW Deputy Program Manager. "We overcame this by leaning on our former Air Force employees to train the team and creating step-by-step guides to bridge the gap."

While the F-16 shares some structural similarities with legacy Navy aircraft, its smaller size and distinct maintenance needs required a tailored approach. For example, the first F-16 aircraft to arrive required an immediate wing replacement due to known structural issues—a repair completed using FRCSW's in-service repair capabilities.

"This project has been a mix of discovery and innovation," Trout said. "Every day, the team makes progress while finding solutions to unexpected challenges."

The F-16 workload also aligns with the DOD's initiative to enhance joint-service collaboration, enabling FRCSW to contribute to a stronger, more integrated military aviation community.

"We're proud of the groundwork we're laying with this first aircraft," Weintraub said. "Our goal is to create a predictable, efficient process that benefits every F-16 that comes through FRCSW in the future."

As the first F-16 aircraft arrived at the facility, FRCSW remains focused on its commitment to operational excellence, ensuring that every aircraft it services is mission-ready. With the addition of this workload, FRCSW continues to solidify its role as a key player of aviation sustainment across the armed forces.

*Written by Janina Lamoglia, communications specialist with Fleet Readiness Center Southwest.* 🦅



*Fleet Readiness Center East (FRCE) celebrated its final AV-8B Harrier maintenance event with an informal celebration in the facility's AV-8B hangar Sept. 20. FRCE delivered the completed aircraft to Marine Attack Squadron 223 onboard Marine Corps Air Station Cherry Point, North Carolina, Sept. 26, 2024.*

## FRCE Delivers Final AV-8 Harrier to fleet

Fleet Readiness Center East (FRCE) marked the end of an era with the completion of its final AV-8B Harrier maintenance event Sept. 26, 2024, delivering the aircraft to Marine Attack Squadron 223 onboard Marine Corps Air Station Cherry Point, North Carolina.

**F**RCE celebrated the platform's depot maintenance finale with an informal ceremony Sept. 20 in the command's AV-8 hangar. FRCE Commanding Officer Capt. Randy Berti and leaders from the AV-8B Weapon Systems Program Office recognized members of the depot's Harrier team, both past and present, for their efforts in supporting the legendary aircraft throughout the years.

Berti said the command's AV-8B team has been instrumental in ensuring readiness within the Harrier community.

"It's an honor to lead a facility with such a remarkable legacy," Berti said. "For five decades, FRC East has been a cornerstone in supporting the Harrier program for both the Marine Corps and our nation's international allies. Our AV-8 platform's success is directly attributed to the hard work and dedication of multiple

generations of FRC East employees. I am proud of all this team has accomplished throughout the years and I look forward to what's next."

FRCE has supported the Harrier since 1973, beginning with its assignment of the AV-8A Harrier and F402 engine workload. With the platform sundowning as the Marine Corps replaces it with the F-35 Lightning II, the depot's Harrier program will continue its transition to supporting other weapons platforms, including the F-35.

Many of the depot's AV-8 aircraft maintenance professionals have spent a significant portion of their careers working on the Harrier. Aircraft Overhaul and Repair Supervisor Mike Stewart said it is hard to see the platform come to an end.

"I've been working on the AV-8 platform for the past 30 years," Stewart said. "It's the only platform I've ever known,

dating back to the start of my career in the Marine Corps in 1994 to 2011, when I began working here at FRC East.

"With that, I know that every aircraft has its service life," Stewart said. "We must evolve by improving our technology and tactics. F-35 is that new technology; it's how we keep up and move to the future. Although the AV-8 is a great aircraft, it has served its purpose. It's time to move on to the newer weapons platforms with more capabilities."

Jeff Broughton, business operations specialist, said the depot's Harrier team has an impressive track record, often working under budget and ahead of schedule. On average, the team completed AV-8B depot-level maintenance events nearly 10 percent faster than originally estimated, according to Broughton.

"Our goal is to stay within our cus-





*Fleet Readiness Center East (FRCE) celebrated its final AV-8B Harrier maintenance event with an informal celebration in the facility's AV-8B hangar Sept. 20. FRCE delivered the completed aircraft to Marine Corps Attack Squadron 223 onboard Marine Corps Air Station Cherry Point, North Carolina, Sept. 26.*

tomers' budgets and be good stewards of their funding," Broughton said. "We have met and exceeded that goal time and time again. Many of the aircraft we have worked on have been returned to the fleet earlier than originally planned and under our original cost estimates."

Broughton said during his 22 years on the AV-8B platform, he has witnessed many successes, with the most memorable being in 2015.

"One of our more outstanding inductions was an AV-8 that was damaged during the attack on Camp Bastion, Afghanistan," Broughton said. "It was one of our fastest turnarounds for a special rework induction, and I think that was partially because we knew the circumstances and were highly motivated to get it back to the squadron. Not only did we return that aircraft nearly a week ahead of schedule, we also did it under the original estimate."

"We play an important role in warfighter readiness here at FRC East," Broughton said. "When something tragic like that happens, we come together and

do whatever we can to help get the fleet back up and running."

The AV-8 team's reputation has set FRCE up to be the repair facility of choice for future squadrons, according to Broughton.

"For many years, we have established ourselves as being a successful and affordable option for the AV-8 community," Broughton said. "We have established good rapport with our customers and local squadrons because they know we get the work done. They know we provide high-quality product within a good price range that is in line with their funding."

"We continue to be good stewards of their funding and continue to provide this quality of work, so they continue to choose us. As time goes on and platforms evolve, the way the AV-8 is transitioning to the F-35, we hope to remain their preferred depot source of repair."

Broughton said working together has been a key factor in the team's success.

"Our day-to-day plan is teamwork," he said. "We do everything we can to be role

models to each other. Instead of just having one mentor or role model, we strive to all be a role model because a supervisor may be strong in one area, while the planner may be strong in another. We all come together as one team, one fight, all strong."

Ike Rettenmair, head of the AV-8 and F-35 branches at FRCE, said while the change in focus from the AV-8B Harrier to F-35 Lightning II is bittersweet, it represents an important step forward in the depot's support of the warfighter.

"I was filled with mixed emotions the day we rolled the last Harrier out," Rettenmair said. "I've supported the Harrier for 30 years in some capacity, starting with my time in the Marine Corps as an airframe mechanic. Throughout my time on the platform, I've had the privilege of meeting many remarkable individuals who possess a warrior mentality and take great pride in their service to the fleet."

Even though this transition will be a big change for many of us, we remain proud and motivated in our support of the warfighter." 🦅

# FRCE Delivers Final Harrier Engine to Fleet

Following the delivery of the depot's final AV-8B Harrier in September, Fleet Readiness Center East (FRCE) recently completed its last F402 engine maintenance event, delivering the finished product to the fleet Oct. 28, 2024.

FRCE has supported the Harrier and its engine since 1973, beginning with its assignment of the AV-8A Harrier and F402 engine workload. The legacy Rolls Royce Pegasus F402 turbofan engine features a vectored thrust system that enables the AV-8B Harrier's short take-off and vertical landing capability. Since 1991, FRCE has serviced 1,046 F402 engines, returning an average of 32 engines to the fleet every year.

FRCE Commanding Officer Capt. Randy Berti said the command's F402 team's efforts have not gone unnoticed within the Harrier community.

"I am very proud of FRC East's long history of supporting the Harrier and its engine," Berti said. "To consistently produce high-quality engines that have, in turn, helped extend the Harrier's lifespan is a remarkable achievement, one that every member of the team should take pride in. Their expertise, commitment and teamwork have not only ensured the Harrier's continued success, but also played an important role in our support of the warfighter."

The team celebrated the milestone with an informal ceremony Sept. 19 in the command's AV-8 hangar. During the ceremony, Berti and leaders from the AV-8B Weapon Systems Program Office recognized members of the depot's Harrier and F402 teams, both past and present, for their efforts in supporting the legendary aircraft and its engine throughout the years.

Production Support Director Chris Day, who has worked with the F402 for nearly 30 years, emphasized that the team's accomplishments reflect the strong work ethic and high standards that have always been the foundation of the depot's service to the fleet.

"I can't begin to express how proud I am of this team and their many ac-

complishments," Day said. "While we've encountered our fair share of challenges, our success is a direct result of this team's hard work and dedication to supporting the warfighter."

"Like many others here, I have quite the history with this engine," he said. "I started working on F402 engines back in March of 1993 when I joined the Marine Corps. After about seven years, I got out and began my career at FRC East as a mechanic in the F402 shop."

One of the team's recent successes was a marked reduction in turnaround times achieved over the past five years, said Steven Lupton, who served as the supervisor for the F402 Engine Disassembly, Assembly and Test Shop supervisor until his recent transition to the supervisor of the Fuel Controls Shop.

"Back in 2019, our average turnaround time for this engine was 484 days," Lupton

said. "This year's average is 366 days, so we are seeing over a 100 day decrease in turnaround time. Now, part of this is because the major inspection activities, like the thousand-hour inspections, weren't needed as the aircraft won't need to fly for another thousand hours with the platform sundowning."

"But that's not the only reason our turnaround times have gone down," Lupton said. "Our team has been working on these engines for quite some time now. They are well versed in this engine's maintenance needs, especially because a lot of them worked on the F402 during their time in the service. They know exactly what they're doing so it doesn't take as long as it would for someone who, say, just started out."

Maintaining those reduced turnaround times became increasingly challenging as the platform aged, due to



U.S. Navy photo





supply constraints and other logistical demands, Day said. With some parts no longer readily available from the original equipment manufacturer, the engineering teams at FRCE and Naval Air Systems Command (NAVAIR) were often called upon to help develop repair procedures that allowed the depot to continue providing warfighters with the highest-quality products.

"As the engine got older, we had to develop more repairs," Day said. "The engineers with the AV-8 Fleet Support Team have, time and time again, helped develop repairs and refine processes so we can ensure the product we put back into the engine was capable and suitable for continued service."

Chris Gosnell, Fleet Support Team AV-8 Propulsion Sub-Team lead, said the cross-disciplinary F402 team at FRCE has been developing solutions to the fleet's needs for decades. One of the team's most memorable milestones came in 2001, he said, when the Marine Corps' Harrier community experienced multiple groundings within a 15-month period,

leaving 110 aircraft without engines. As a result, the F402 team was tasked with coming up with a functional resolution.

The team not only solved the issue, but also had enough output to produce spare engines and assisted the fleet customer with a cost savings of more than \$32 million that year. These actions earned the team the 2002 NAVAIR Commander's Award for Supporting the Warfighter for their impact on warfighter readiness, effectiveness and satisfaction.

"A lot of people rely on FRC East to be productive and responsive to the fleet's needs," Gosnell said. "For us to have been able to help identify the root cause and implement the fixes is a testament to all who have worked on the program and is an accomplishment that I hold near and dear to my heart."

The delivery of the final F402 engine to the fleet marked the end of the F402 team at FRCE, one that has supported the workload for 51 years; however, the depot will continue to support specific F402 components, Day said.

"We will still perform maintenance

on a few F402 engine components, like the gearbox and fuel metering unit, because those items can be changed out at the squadron level," Day said. "We want to make sure we can keep up the Naval Supply Systems Command demands and keep inventory healthy until 2027. And, of course, we want to make sure we can continue to support our fleet and international allies, like the Spanish and Italian navies."

Day said the majority of the team's members will transition to support the command's other service platforms, including the fifth-generation F-35 Lightning II.

"Their skills translate to other areas within the depot," Day said. "Some will go to other shops within the engine branch while others will transfer over to F-35 components. There are similarities between what we do with the F402 engine and the F-35 lift fan. As a matter of fact, like the F402, the lift fan itself is a Rolls-Royce product. With those similarities, crossing some of those people over into F-35 components just made perfect sense."

While the transition will change day-to-day activities for some of the depot's employees, Gosnell said it is for the best as its replacement will increase the fleet's ability to defend the nation.

"It's been a long time since I first walked through these doors back in January of 1989. I have been on the F402 team since the beginning of my career here, so watching the AV-8 program sundown and transition to F-35 is bitter-sweet for me," Gosnell said.

"Every frontline fighter has a service life," he said. "There comes a point in time where the fleet needs to bring a specific capability to the fight that their current aircraft simply can't support. Even though the AV-8 is an extremely capable aircraft, its successor programs, like the F-35, are not only newer and faster, but most importantly, more capable in today's environment." 🦅



*Fleet Readiness Center East (FRCE) and Defense Logistics Agency employees who have been part of the F402 team, either currently or in the past, stand in front of the depot's final completed F402 engine. Following the conclusion of the command's last AV-8 Harrier maintenance event in September, FRCE also returned its final F402 engine, the Harrier's power source, to the fleet Oct. 28.*

# Professional Reading

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

Photo courtesy of Peter B. Mersky



At the September 1967 National Air Races at Stead Air Force Base, west of Reno, Nevada, a restored and flyable F4B-1 stands by a now-empty grandstand, while the red wind sock above the wing shows there is a light wind probably from the southwest. After graduating from college and before joining the Navy, this reviewer spent five-and-a-half months at this rented Air Force base earning his commercial license and instrument rating. I lived in the enlisted barracks and earned pocket money selling programs during the daytime racing activities.



## F4B and Export Variants

By Richard S. Dann. Steve Ginter, Simi Valley, CA. 2023. 160 pp. III.

No. 116 in this publisher's long-lived Naval Fighters series, and heavily illustrated with photos and manual diagrams—as well as the usual end-of-book discussion of plastic scale models of this iconic Boeing fighter that served an equally long career with the Army as the P-12 series—this book is arguably

one of the best in the series. Combining familiar and unfamiliar images with an equally authoritative text and captions, it is both an excellent introduction and great reference of this biplane fighter that played great service to the aviators of the Navy, Marines and Army. Those pilots would soon find themselves fighting in the Pacific and Europe in the cockpits as well as in senior leadership positions during World War II.

Basically, it might be said that without it, the winning history of war might have been different in outcome. Thus, this

little biplane should be considered one of the most useful early tools the Allies had in their arsenal.

The author served on active duty as a helicopter pilot and also contributed to various programs that saw him progress to captain before he retired in 2015.

The author covers the F4Bs early career, flying throughout the 1930s, even seeing occasional combat in China and South America, as well as establishing itself in the between-wars naval service in fleet squadrons and then as intermediate training squadrons. The F4B was actually not that well-known or shown in movies of the time, but was very much a behind-the-scenes first high-performance (for the time) fighter that combined contemporary speed with very favorable maneuverability. The aircraft couldn't help but instill confidence in a generation of aviators that would stand them in good stead when what eventually developed into WWII truly all over the world and the then-young fighter pilots were ready to fight the likes of the Zero, Bf. 109 and FW-190. It's all here in this new look at Boeing's attractive and highly capable biplane. ✈





Photo courtesy of Naval History and Heritage Command (NHHC)

Then-Lt. Cmdr. Dixwell Ketcham (1899-1993), commanding officer of Fighting Squadron Six (VF-6), poses beside his F4B-3 at Naval Air Station San Diego in April 1936. He graduated from the U.S. Naval Academy in 1919, and was designated a naval aviator in 1922. Note the "Felix the Cat" insignia using a popular animated cartoon character of the period. Also, the aircraft's telescopic gunsight and its underwing bomb rack. An avid photographer, he took pictures of many subjects, including aircraft of the period as well as various cities he visited throughout his career. The photos are now the Collection of Vice Admiral Dixwell Ketcham, USN (Ret). He served throughout WWII in many senior positions lead various carrier groups and other associated Navy units.



Photo courtesy of U.S. Marine Corps

An F4B-3 of Marine Bombing Squadron (VB) 4M in 1933. It has a bomb rack below the fuselage, and, in place of a tailhook, it carries a radio antenna mast behind the cockpit.



Photo courtesy of NHHC

An F4B-1, BuNo A-8153, begins its takeoff run down the flight deck of the USS Lexington (CV 2), which was sunk at the Battle of the Coral Sea in May 1942.

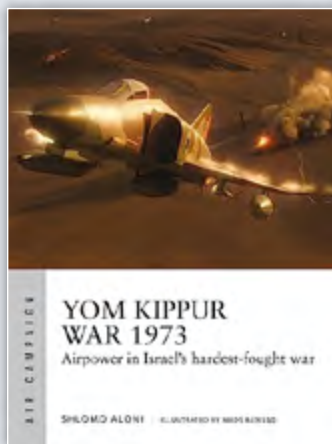
## Yom Kippur War 1973, Airpower in Israel's hardest-fought war.

By Aloni, Shlomo, Osprey Publishing, Oxford, UK. 2024. 96 pp. Ill.

No. 43 in Osprey's open-ended Air Campaign series, this new soft-cover title is the latest dealing with what was something of an expected, yet surprising, addition to the long list of Arab-Israeli wars, beginning with the 1948 War of Independence following Israel's declaring itself a state in May 1948. The fighting has never truly ended, as unfortunately indicated by the ongoing 18-month conflict over Gaza, with so many thousands of casualties and fatalities, military and civilian, on both sides. The most recent conflict began in October 2023, 50 years almost to the date of the Yom Kippur War, which is named for when it started on the holiest day of the Jewish calendar, Oct. 6, that year's Day of Atonement. The Yom Kippur War began when a combined alliance of Arab countries, led by Egypt and Syria, invaded Israel, which did "win." Both sides were absolutely exhausted, but there was hope that a way to a lasting peace could be found.

The war was fought on land as well as in the air, with Israel receiving support from the U.S. in the form of F-4 Phantoms and A-4 Skyhawks to replace those lost in combat or operational attrition during the war. Israel did have several squadrons of these aircraft, which had seen much combat in Vietnam, with the U.S. Air Force's (USAF's) F-4Es, with a nose-mounted cannon and Navy A-4Es being the main variants now flown by the Israel Air Force (IAF).

The Skyhawks were occasionally brought to Israel by a shuttle schedule that involved American naval aviators ferrying them from the U.S. to Israel with stopovers on Navy aircraft carriers. Their pilots would spend the night aboard ship, then launch the next day toward the Mediterranean to be escorted to their new owner's base often by IAF Mirages, their two cannon ports blackened from combat. Occasionally, the A-4s' now-former operators



could watch as their A-4s' star-and-bar insignia was painted over with the IAF's six-pointed Mogan David (Star of David), loaded with bombs and launched on a new mission for its new owner.

The author has written many books and magazine articles about the IAF including "Arab-Israeli Air Wars 1947-82," published by Osprey Combat Aircraft series (No. 23) in 2001, a general compilation of these individual wars. However, his latest book now focuses on this particular war with greater detail, with photos and maps (perhaps the most detailed of this type of graphic of specific operations during the 1973 war). Complimented by dramatic illustrations by Mads Bangso, the overall package shows the war in greater analysis and detail than I have seen, focusing more on individual operational factors than other titles that described the experiences and careers of individual pilots. ✈️



Photos courtesy of Israeli Air Force (IAF)

An A-4N Ahit (the IAF Hebrew name for the Skyhawk, meaning Eagle) of 115 Squadron, 1973, which was commanded by then-Lt. Col. Giora Romm (1945-2023). Romm was the first native Israeli ace who gained five kills flying Mirages with 119 Squadron, during the 1967 war, and was shot down in September 1969 (he was a captain at the time) and captured by Egyptians. He was a PoW for nearly four intense months until released in early December with the warning never to fly against them again, which, of course, he ignored. He rose to major general and assistant IAF CO, then Military Attache in the Israeli embassy in Washington, D.C. He wrote a book about his experiences, "Solitary," published in 2014, which describes his time as a prisoner. A highly intelligent man and excellent combat pilot and leader, his first hop in the A-4 was a combat mission in 1973 from the IAF base at Tel Nof, 15 miles south of Tel Aviv in central Israel.





IAF A-4s warm up at the run-up area with Kfirs at Ovda Air Base, 25 miles north of Eilat at the southern tip of Israel. Ovda specializes in adversary operations. The Israelis found the highly maneuverable A-4 an ideal adversary mount. In turn, the U.S. Navy and Marines took turns flying rented Israeli Kfirs as mach-capable adversaries for a time.

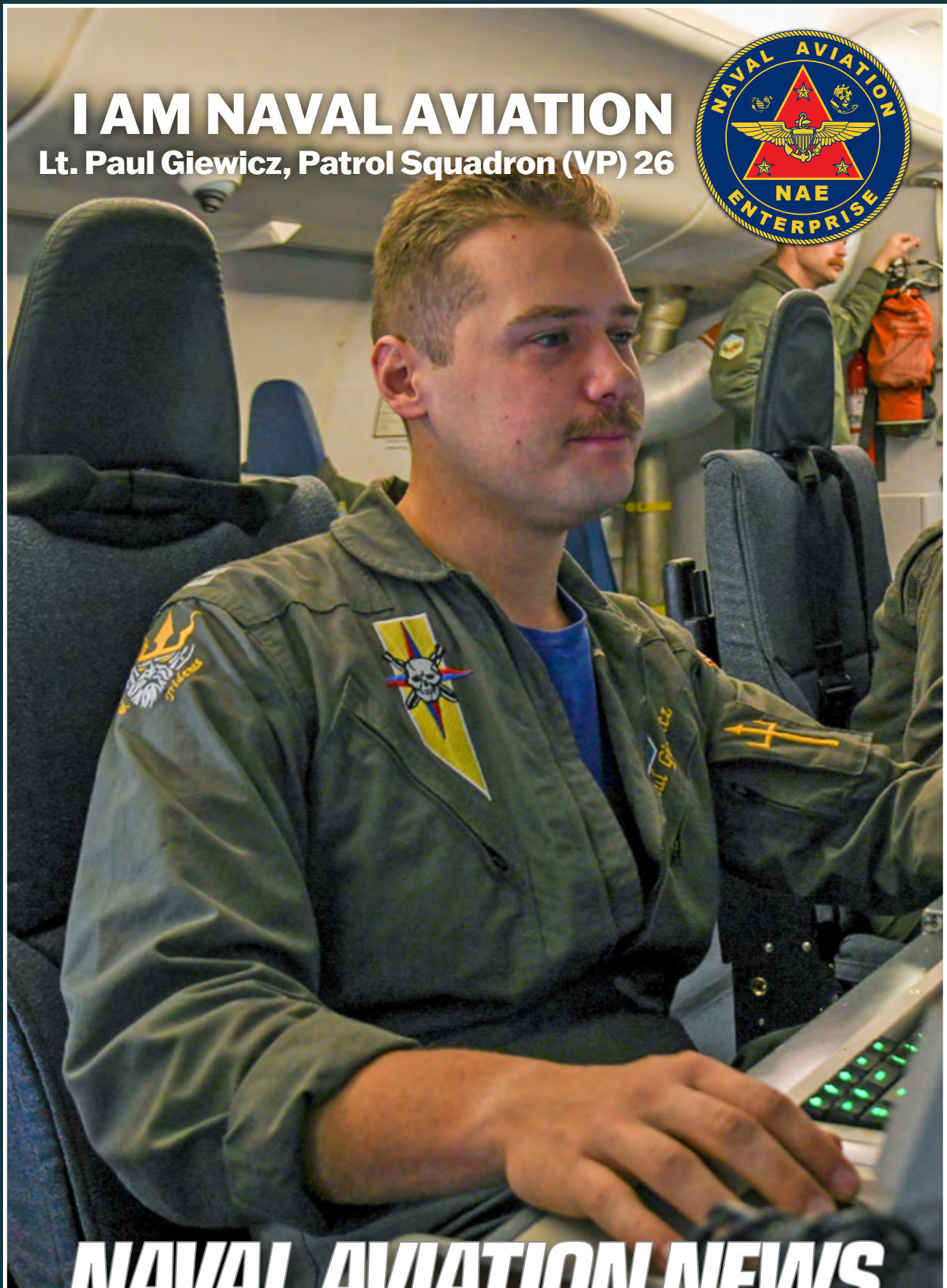
An A-4H of 109 Squadron in 1968, at Ramat David, 89.4 miles north of Jerusalem.



A camouflaged TA-4H and a white-and-orange French Fouga, named Tzukit in the IAF fly a loose formation. The Tzukit was a very basic aircraft without ejection seats but gave student aviators their first taste of a jet-powered aircraft for many years.

# I AM NAVAL AVIATION

Lt. Paul Giewicz, Patrol Squadron (VP) 26



## NAVAL AVIATION NEWS

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