NAVAL AVIATION NEWS

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WHAT'S INSIDE

The Nimitz-class aircraft carrier USS George Washington (CVN 73) transits the Strait of Magellan, June 5. George Washington is deployed as part of Southern Seas 2024.

U.S. Navy photo by MC2 David C. Fines

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DEPARTMENTS

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ALSO IN THIS ISSUE

ON THE COVER

On the Cover: *Sailors refuel T-45C Goshawk training aircraft from Training Squadron (VT) 7 on the flight deck of the Nimitz-class aircraft carrier USS Dwight D. Eisenhower (CVN 69) (IKE). The Eisenhower is underway in the Atlantic Ocean conducting training carrier qualifications for the Chief of Naval Air Training. This is the first opportunity for student naval aviators from Training Air Wings (TW) 1 and 2 to launch and recover on an underway aircraft carrier. (U.S. Navy photo by Mass Communication Specialist Seaman Apprentice Theodore Morrison)*

In this issue of Naval Aviation News, *read about the Naval Air Systems Command's Additive Manufacturing Team's quick solution in helping USS Bataan (LHD-5) repair its optical landing system after a small part broke during deployment—ultimately allowing the Bataan to render aid to Israel during a strike—on page 24. On page 28, learn how ONR TechSolutions developed and delivered a new realistic training simulator for the T-45 Goshawk. And on page 40, read about how the Naval Air Warfare Center Training Systems Division made improvements to its BATTLE Lab's Multi-Station Disorientation Demonstrator.*

On the back cover: *U.S. Marine Corps Lance Cpl. Angel MendozaCruz, center, an expeditionary fuel technician with Marine Medium Tiltrotor Squadron 268 (Reinforced), Marine Rotational Force–Darwin 24.3, fuels a U.S. Navy P-8A Poseidon assigned to Patrol Squadron 4, Patrol and Reconnaissance Wing 10, at a forward arming and refueling point during Super Garuda Shield 2024 at Juanda International Airport, East Java, Indonesia, Aug. 30, 2024. Super Garuda Shield is an annual exercise that has grown significantly in scope and size since 2009. Super Garuda Shield 24 is the third consecutive time this exercise has grown into a combined and joint event, focused on commitment to partnership and a free and open Indo-Pacific. (Marine Corps photo by Cpl. Migel A. Reynosa)*

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

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Acquisition Standards Can Be a Two-Way Street

By Rear Adm. John Lemmon

In January, the F/A-18 and EA-18G Program Office fielded an urgent call from a squadron in the Red Sea supporting Operation Prosperity Guardian. It wanted to carry more AIM-9X missiles on its Super Hornets to bolster its capability against Houthi attacks on merchant vessels. The program office partnered with multiple other program offices, the Naval Air Warfare Center Aircraft Division (NAWCAD), the Naval Air Warfare Center Weapons Division (NAWCWD) and others to provide a flight clearance in just seven days, a process that—depending on complexity—ordinarily could take weeks or months. In this case, collaboration overcame multiple obstacles.

The Program Executive Office for Tactical Aircraft (PEO[T]) has 11 other program offices in addition to the F/A-18 and EA-18G Program Office, which provide comprehensive support to Naval Aviation aircraft, weapons and other Navy and Marine Corps systems. Our work spans systems' full life cycles—from research, design and development to procurement, test and evaluation, engineering and logistics.

Revamping RFIs

PEO(T) conducts market research to better involve industry at the start of the acquisition process. Done right, this creates space for innovation, expands the industrial base and drives competition. Requests for information (RFIs) and sources-sought notices (SSs) convey to industry partners the government's needs and how it intends to fulfill them contractually. These communications are typically industry's first and best insight into Navy and Marine Corps requirements.

Early and frequent RFIs and SSs also give PEOs better insight into what industry can provide, which helps shape contracting strategies. They also test assumptions. For example, a program office might assume only an original equipment manufacturer (OEM) can provide a service or product because of complexity, timing or cost. However, early communication with industry may reveal other vendors that can meet the need.

PEO(T) has also altered how it formulates RFIs and SSs. Instead of describing a system of service explicitly, we now define the desired capability and/or outcome. If vendors cannot meet the delivery deadline, they are given a chance to share capabilities they could provide in the future.

Over the past few years, we have made our language around technical data in RFIs and SSs open to more alternatives. Previously, it was usually assumed a vendor could not supply a product if it did not have access to all the original technical data at the outset. Now, we ask vendors to suggest alternative means to get the data—e.g., by partnering agreements—or if

U.S. Navy photo

The Air Intercept Missile (AIM)-9X Sidewinder is the latest of the Sidewinder family of short-range air-to-air missiles.

they can produce a similar product with the same form, fit and function without OEM data.

Open Architecture

PEO(T) employs innovative development processes. We know the Navy must develop technology faster—but it has to do so affordably. That means the Navy and industry must continue to strengthen their partnership. One way to do so is through a modular open-systems approach (MOSA). Using Department of Defense–approved standards, MOSAs can lead to fast deployment of cost-efficient, adaptable and reusable technology.

Open systems and standard architectures allow PEO and program office teams to decompose a system into smaller subsystems, establishing and maintaining ownership of the interface and integration standards along the way. Subsystems can be competed among a much larger industrial base—so long as they comply with the standards.

PEO(T)'s Air Combat Electronics Program Office leads MOSA efforts for avionics, sensors and mission systems across Naval Air Systems Command–affiliated programs. Its avionics architecture team promotes multiple open standards. One was developed and sponsored in-house called Hardware Open Systems Technologies (HOST), a technical standard for high-performance embedded computing. It lays out requirements that a program manager or integrator can use to create a verifiably open system.

In addition to speeding technology deployment, it also widens the aperture for competition and participation from industry, including small businesses. Historically, the best most small businesses could hope for was to be selected to perform work as a subcontractor to a major prime. But open standards create more opportunities for Tier 2 and 3 vendors to compete directly.

Collaborative Forums

Industry input and feedback is critical. PEO(T) is committed to increasing the transparency of its performance and decision-making, as well as the collec-

U.S. Navy photo by MC3 Maxwell Orlosky

An F/A-18E Super Hornet, attached to the "Ragin' Bulls" of Strike Fighter Squadron (VFA) 37, lands on the flight deck of the world's largest aircraft carrier, USS Gerald R. Ford (CVN 78), Dec. 13.

tive situational awareness of the military, civilian and industry team. One way we do this is through collaborative forums called heads-up display (HUD) sessions.

HUDs are for specific platforms, components and problems to address and resolve barriers to delivery. They are part of the Naval Sustainment System—Aviation and facilitate conversation and problem-solving across Navy and Marine Corps teams. These meetings include the PEO and program office associated with the type/model/series; fleet stakeholders; supporting government entities; and industry teammates. HUDs bridge boundaries across otherwise stove-piped approaches.

"Industry input and feedback is critical. PEO(T) is committed to increasing the transparency of its performance and decision-making, as well as the collective situational awareness of the military, civilian and industry team. One way we do this is through collaborative forums called heads-up display sessions."

PEO(T) uses the same guiding principles in every HUD to set expectations, foster open and honest communication and build trust. These principles emphasize collaboration and accountability. Participants are challenged to understand the root cause and embrace the "red," which means sharing honest, sometimes brutal, facts to get to the core of issues.

These forums have achieved numerous positive outcomes. For example, the Aircraft Launch and Recovery Equipment Program Office relies on HUDs to keep the Electromagnetic Aircraft Launch System (EMALS) and Advanced Arresting Gear (AAG) program running as effectively as possible in support of the newest class of aircraft carriers. Before the first deployment of the USS Gerald R. Ford (CVN 78) in 2023, the AAG team developed and distributed an important software update in just three months. In a normal software update cycle, that task would typically require 18 months. The HUD session brought together Commander, Naval Air Force Atlantic; PEO(T); Aircraft Launch and Recovery Equipment Program Office; NAWCAD and industry partners to identify and remove barriers and expedite a solution.

After an issue affecting the readiness of F-5 Tiger II depot aircraft was discovered in 2023, vendors joined a HUD discussion to team with the Adversary and Specialized Aircraft Program Office and other participants to address the issue. When contract logistics vendors were included, the HUD resulted in immediate benefits and extended the life limit on the part in question. As a result, the adversary fighters gained an additional 2,100 hours of flight time before having to return to the depot.

Industry partners have similarly played a key role in the HUD forum for the General Electric (GE) F414 engine, the power behind the Navy's twin-engine F/A-18E/F Super Hornet and EA-18G Growler. From 2019 to 2023, the F414 ecosystem experienced engine module shortages as it struggled to meet the goal of 341 mission-capable Super Hornets. The F414 HUD facilitated collaboration among all stakeholders and provided GE an inside look into how the engine shortfalls affected the fleet. Together, in November 2023, the Fleet Readiness Center Southeast, F/A-18 and EA-18G Program Office, Naval Supply Systems Command, the Defense Logistics Agency, GE and other organizations surpassed the goal of 1,451 ready-for-issue F414 engines for the first time since 2018—eight months ahead of the planned recovery schedule.

So, what do we need from industry partners in these HUD forums? Highlight roadblocks and issues early and identify where the government can help break down any barriers. Be prepared to speak to current status and any risks or issues and empower leaders to make real-time decisions. Because supply chain shortfalls remain a challenge, we ask our prime contractors to include sub-tier vendors in HUDs to field solutions as a team.

PEO(T) will continue to look for ways for government and industry teammates to stay aligned and innovate across its entire portfolio. Acquisition and sustainment of capability are essential to the nation's ability to deter, fight and win. Strong collaboration built on trust is our bond as we and industry rapidly work side by side to field and sustain capability for the fleet.

Rear Adm. John Lemmon is the Program Executive Officer for Tactical Aircraft.

This article originally appeared in the July 2024 U.S. Naval Institute Proceedings.

U.S. Navy photo by Todd Frantom

Rear Adm. John Lemmon is a native of Champaign, Illinois, and a 1988 graduate of the U.S. Naval Academy. He is also a graduate of the U.S. Naval Test Pilot School, Class 107, and holds a master of science in systems engineering from the Naval Post Graduate School.

After earning his wings as a naval aviator in 1990, he flew the E-2C Hawkeye in support of multiple deployed operations aboard USS Forrestal (CV 59), USS Theodore Roosevelt (CVN 71) and USS John F. Kennedy (CV 67).

Lemmon's tours include service as an aircraft and systems test pilot, where he worked on numerous upgrades to E-2 and C-2 aircraft. He served as the Chief Test Pilot and Commanding Officer of Air Test and Evaluation Squadron (VX) 20, and was the Commander, Task Group 67.8, Horn of Africa, in support of irregular warfare contingency operations.

His multiple acquisition tours include serving as the program manager for both the E-2/C-2 Airborne Tactical Data System Program Office and the Naval Integrated Fires Program Office. He also completed an assignment at the Naval Air Depot, North Island, California; served as the Executive Assistant to the Assistant Secretary of the Navy for Research, Development and Acquisition; and was the Vice Commander, Naval Air Systems Command (NAVAIR).

Most recently, he served as the Commander, Naval Air Warfare Center Aircraft Division and Chief Engineer, NAVAIR.

Lemmon has 324 carrier-arrested landings and has logged over 3,400 flight hours in multiple aircraft models, including turboprop, jet, helicopter, multi-engine, piston, tail-wheel and sailplane.

His personal decorations include the Legion of Merit (three awards), the Meritorious Service Medal (three awards) and various campaign, unit and personal awards.

Airscoop

Compiled by Rob Perry

Dwight D. Eisenhower Carrier Strike Group Returns from Historic Combat Deployment

NORFOLK, Va.—The Dwight D. Eisenhower (IKE) Carrier Strike Group (CSG) returned July 14 to Norfolk, Virginia, after a historic nine-month combat deployment to U.S. 5th Fleet.

The strike group—comprised of the nine squadrons of Carrier Air Wing (CVW) 3, Ticonderoga-class guided-missile cruiser USS Philippine Sea (CG 58), and Arleigh Burke-class guided-missile destroyers USS Gravely (DDG 107) and USS Mason (DDG 87) of Destroyer Squadron (DESRON) 22—engaged in combat operations in the Middle East region from November 2023 to June 2024.

"We provide options to our nation's decision makers. Our job is to preserve the peace, respond in crisis, and if necessary, fight and win decisively, and you delivered on all of those objectives," said Chief of Naval Operations Adm. Lisa Franchetti. "You had a mission and you did it every day with purpose and perseverance."

When Houthi capabilities threatened innocent merchant traffic in critical waterways, CVW-3 collaborated with U.S. Air Force assets and coalition partners to launch seven pre-planned, dedicated strikes into Iranian-backed, Houthi-controlled territories in Yemen. The Arleigh Burke-class guided-missile destroyers USS Laboon (DDG 58) and USS Carney (DDG 64) augmented the strike group in the U.S. 5th Fleet operating area, launching Tomahawk Land Attack Missiles (TLAMs) into Yemen from the Red Sea to support the strikes.

"When called upon, the force brought the fight to the Houthis in their front yard, linking airpower and dynamic and self-defense strikes. These acts reduced the risk to shipping and also reinforced our nation's commitment to maritime security," said Vice Adm. George Wikoff, commander, U.S. 5th Fleet. "The currency used to fund this important mission was incredible focus, resiliency and professionalism of the sailors of the IKE Carrier Strike Group over eight months … this is the Navy's finest moment since World War II."

Beyond self-defensive strikes into Yemen, IKECSG units engaged dozens of one-way attack uncrewed aerial vehicles, uncrewed surface vehicles (USVs) and uncrewed underwater vehicles, earning awards including the Combat Action Ribbon and Navy Unit Commendation award. Several aviators were also awarded personal medals for their exemplary actions against the Dec. 31, Jan. 9 and subsequent Houthi attacks on IKECSG units. The CSG escorted over 28 high-value, vulnerable units conducting innocent passage through the Strait of Hormuz, Gulfs of Oman and Aden, Bab al-Mandeb Strait and through the Red Sea.

In total, IKECSG warships launched 155 standard missiles and 135 TLAMs from their vertical launch system across self-defense and pre-planned strikes. IKECSG aircraft expended nearly 60 air-to-air

Sailors man the rails on the flight deck of aircraft carrier USS Dwight D. Eisenhower (CVN 69), July 14, concluding a nine-month deployment to the Atlantic.

U.S. Navy Photos by MC2 Hunter Day

USS Dwight D. Eisenhower (CVN 69) returns to Naval Station Norfolk, July 14, concluding a nine-month deployment to the Atlantic.

missiles and released 420 air-to-surface weapons.

The Houthi targets in Yemen posed an immediate threat to U.S., coalition and merchant shipping, and these strikes were designed to degrade Houthi offensive capabilities across more than 460 pre-planned, dynamic and self-defense targets.

These threats damaged many civilian vessels, and IKECSG warships answered their distress calls. Laboon rescued stranded civilians in the Red Sea and returned them to the regional coast guard. Philippine Sea and its embarked detachment of MH-60R helicopters from Helicopter Maritime Strike Squadron (HSM) 74 rescued 24 civilian mariners in distress after a USV struck the M/V Tutor in the southern Red Sea.

For nine months, the units within IKECSG sustained operations with minimal port calls thanks to their seamless integration with Military Sealift Command (MSC). The Supply-class fast combat ship USNS Supply (T-AOE-6) deployed as a part of the IKECSG. Also supporting logistics in the Red Sea were the Henry J. Kaiser class USNS Kanawha (T-AO 196), and the Lewis and Clark-class dry cargo ship USNS Alan Shepard (T-AKE-3). Together with the carrier, they enabled all strike group operations, logistics support, command and control structure, and essential medical resources.

The Sailors of IKECSG demonstrated unparalleled resiliency, supported by the embarked Deployment Resiliency Team who worked tirelessly to build connections between Sailors, families and friends. The team included a Deployed Resiliency Counselor, two psychologists, a Licensed Clinical Social Worker, an Embedded Integrated Prevention Coordinator, seven Chaplains and a command facility dog named Demo. As IKECSG returns home, Return and Reunion teams are embarked to offer Sailors workshops and one-on-one counseling designed to help them ease back into reuniting with loved ones at home.

"What a wonderful day," said Rear Adm. Kavon Hakimzadeh, Commander, CSG-2, IKECSG, speaking on the return of IKECSG. "These Sailors are surrounded by their loved ones after a long deployment. Every single one of them demonstrated a level of courage and resiliency that we can all be proud of. I am so proud to be part of this Navy team, and I am grateful to everyone who put in the time and effort to make this a great homecoming."

The units departed their homeports of Norfolk and Oceana, Virginia, Mayport, Florida, and Whidbey Island, Washington, on Oct. 13 and 14, 2023, for the scheduled deployment. Now back home, IKECSG Sailors will get opportunities for downtime to rest and recuperate.

Squadrons of Carrier Air Wing 3 include the "Gunslingers" of Strike Fighter Squadron (VFA) 105; the "Fighting Swordsmen" of Strike Fighter Squadron (VFA) 32; the "Rampagers" of Strike Fighter Squadron (VFA) 83; the "Wildcats" of Strike Fighter Squadron (VFA) 131; the "Screwtops" of Carrier Airborne Early Warning Squadron (VAW) 123; the "Zappers" of Electronic Attack Squadron (VAQ) 130; the "Dusty Dogs" of Helicopter Sea Combat Squadron (HSC) 7; the "Swamp Foxes" of Helicopter Maritime Strike Squadron (HSM) 74; and the "Rawhides" of Fleet Logistics Support Squadron (VRC) 40.

From Carrier Strike Group Two (CSG-2).

VMFA-251 Receives First East Coast-Based Marine Corps F-35C

MARINE CORPS AIR STATION CHERRY POINT, N.C.—Marine Fighter Attack Squadron (VMFA) 251, Marine Aircraft Group (MAG) 14, 2nd Marine Aircraft Wing (MAW), received its first F-35C Lightning II jet Sept. 17 aboard Marine Corps Air Station (MCAS) Cherry Point, North Carolina.

VMFA-251 is the Marine Corps' first East Coast operational F-35C Lightning II Joint Strike Fighter squadron. The arrival of the aircraft marks the beginning of F-35C deliveries to MCAS Cherry Point, continuing 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-35C is designed to operate from conventional aircraft carriers or land bases and provides operational maneuverability and persistence to the Marine Air-Ground Task Force (MAGTF). Superior internal fuel capacity results in a significantly increased combat radius and longer on-station times as compared to the F-35B, the F-35's short takeoff and vertical landing (STOVL) variant.

"Today's arrival of our first carrier-based, fifth-generation fighter-attack aircraft represents an enormous milestone for MAG-14, MCAS Cherry Point, 2nd MAW and the F-35 community," said Col. Benjamin Grant, commanding officer, MAG-14. "The one-two punch provided by the F-35C's increased range and the F-35B's STOVL capability will give MAG-14 and the MAGTF a significant advantage in the future fight. I'm proud of the team of Marines and Sailors at MAG-14 and VMFA-251 for their professionalism and dedication and grateful for our partners in the Marine Corps and the joint force that made today's event possible."

VMFA-251, known as the "Thunderbolts" or "T-Bolts," deactivated during a ceremony on April 23, 2020, aboard MCAS Beaufort, South Carolina, after returning from a deployment in 2020 in support of Operation Inherent Resolve. The Thunderbolts' deactivation concluded its 34 years as a F/A-18 Hornet squadron. The squadron was relocated to MCAS Cherry Point to begin its F-35 transition and is currently going through the process of official reactivation and working toward receiving its Safe for Flight certification.

"The F-35C Lightning II brings tremendous combat power to 2nd MAW, MAG-14, and MCAS Cherry Point. It's incredible range, firepower, sensors and survivability, coupled with the fact that it is truly a Joint aircraft, makes it a lethal asset for Marine aviation," said Lt. Col. Evan Shockley, commanding officer, VMFA-251, and the aircraft's pilot to MCAS Cherry Point. "The T-Bolts of VMFA-251 are excited to accept these aircraft, reactivate the squadron in the coming months and carry their legacy forward."

VMFA-251 is a subordinate unit of 2nd MAW, the aviation combat element of II Marine Expeditionary Force.

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

An F-35C with Marine Fighter Attack Squadron (VMFA) 251 taxis at Marine Corps Air Station Cherry Point, North Carolina, Sept. 17.

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

An F-16 from Fighter Squadron Composite (VFC) 13 sits on the flightline at Naval Air Station Joint Reserve Base Fort Worth, Texas.

U.S. Navy photo by Petty Officer 2nd Class Oscar Diaz

TSW Welcomes Another F-16 to its Fleet

FORT WORTH, TEXAS— Commander, Tactical Support Wing (TSW), whose wing headquarters is at Naval Air Station (NAS) Joint Reserve Base (JRB) Fort Worth, welcomed Aug. 27 a new F-16 Fighting Falcon to its fleet, marking a significant upgrade for the Navy Reserve's first F-16 squadron, Fighter Squadron Composite (VFC) 13, based in Fallon, Nevada. This acquisition aims to modernize the Navy's adversary squadrons, enhancing their ability to train active-duty forces against current and evolving threats.

This endeavor of TSW acquiring F-16s has been in the works since 2009. However, in recent years the decision to retire the F-18A/B/C/D Legacy Hornets earlier than planned hastened the requisition of the F-16s.

"With only 12 Super Hornets available to replace approximately 48 Legacy Hornets, we had to explore alternatives like the F-16," said Executive Officer of VFC-13 Cmdr. Traver Fordham. "New build F-16s were too costly and time consuming, so we looked at second-hand options."

Amidst difficulties in acquiring aircraft from Greece, TSW seized an opportunity with the Air Force's decision to retire their fleet of F-16s, resulting in a transfer agreement for 30 aircraft.

"After encountering issues with buying from Greece, we capitalized on the Air Force's plan to retire over 30 F-16s with 2,000 to 3,000 flight hours remaining," Fordham said. "This led to a successful transfer agreement, and the first of these 26 F-16s, 12 of which went to VFC-13, was delivered to NAS Fallon back in April 2022, with plans to receive a total of 30."

Introducing the F-16 into the fleet has presented its fair share of challenges, ranging from training pilots, to establishing maintenance programs, support depots and training personnel.

"There are always challenges when transitioning a squadron to a new platform," said TSW Safety Officer Cmdr. David Radomile. "In this case, we had to transition two squadrons and retrain 30 pi-lots, which required significant coordination and a year of effort. We also had to procure a new F-16 simulator and move our F-5 simulator to New Orleans. Another major challenge was establishing the Viper Maintenance Group (VMG), a new joint maintenance element for VFC-13 and Naval Aviation Warfighting Development Center (NAWDC). This involved developing a coordinated approach for aircraft sharing, mishap reporting and maintenance inspections."

In 2023, VFC-13 completed its first Strike Fighter Advanced Readiness Program (SFARP) exclusively with F-16s and was declared Safe-for-Flight. With the addition of the newest F-16, TSW's fleet now totals 13 aircraft, which enhances its capacity to train naval aviators and improves warfighting capabilities.

NAS JRB Fort Worth is the first and finest joint reserve base, known for training and equipping air crews and aviation ground support personnel, while supporting missions such as airlift, aerial refueling and global mobility, making it an integral part of national defense infrastructure.

Written by Petty Officer 2nd Class Oscar Diaz.

Final VH-92A Presidential Helicopter Delivered

PATUXENT RIVER, Md.—Presidential Helicopters Program Office and the Marine Corps accepted delivery of the final VH-92A helicopter, built by Sikorsky, a Lockheed Martin company, in August. The achievement signifies the completion of the program of record to deliver 23 new presidential helicopters in support of the executive lift mission.

The total inventory of 23 VH-92A aircraft will consist of 21 operational and two test aircraft. This quantity allows for aircraft to be ready to support the executive lift mission, undergo various levels of maintenance, lifecycle upgrades and provide assets for pilot/aircrew training.

"This exceptional team has successfully completed the program of record for the VH-92A within budget and schedule," said Brig. Gen. David Walsh, program executive officer for air anti-submarine warfare, assault and special mission programs. "This helicopter not only embodies the hard work and dedication of those responsible for building and delivering the aircraft, but it will remain a recognizable patriotic asset known around the globe for safety, security and reliability."

In May 2014, the program office, with approval from the Navy, awarded Sikorsky a contract to build the next presidential helicopter, the VH-92A, a derivative of the commercial S-92.

The new presidential helicopter was built to increase performance and payload over the VH-3D and VH-60N. It will provide enhanced crew coordination systems and communications capabilities in addition to improving availability and maintainability.

The Marine Corps works with the White House Military Office, the program office and Marine Helicopter Squadron One (HMX-1) to ensure the conditions are set for a successful transition from the current in-service VH-3D and VH-60N aircraft to the VH-92A. Currently, there are 10 VH-3Ds, six VH-60Ns and nine VH-92As that support various missions assigned to HMX-1.

"Between the program staff and artisans within Sikorsky and [the program office], we have the best and brightest. These great Americans are experts at their craft and put their all into this platform," said Col. Alex Ramthun, program manager. "Not only have we delivered increased performance and reduced maintenance costs and time over the current fleet of presidential helicopters, but we have also delivered the next phase of Marine One helicopters. Knowing those who step aboard any of the 21 VH-92A will have absolute top-notch execution, maintenance and service for the life of the aircraft makes me proud to be part of this amazing team."

The VH-92A Patriot is in the midst of a phased plan to ensure a smooth, safe and timely transition from the legacy VH-3D and VH-60N aircraft.

From the Presidential Helicopters Program Office.

U.S. Navy photo by Owen Hoffmann

Government and industry members gathered in Owego, New York, for the final delivery cermony of the VH-92A presidential helicopter in August.

$420M Contracts Awarded to Address F/A-18 Readiness Gaps

PHILADELPHIA, Pa.—Logisticians and contracting professionals from NAVSUP Weapon Systems Support's F/A-18 Integrated Weapon System Team and N79 Aviation Contracts Team collaborated to award supply contracts valued at a combined $420 million for the sustainment of spares and repairs of flight control surfaces (FCS) for the F/A-18 aircraft.

"The scope and timing of the flight control surfaces contract awards is vital to aviation readiness. This is going to pave the way for future warfighting to defend our nation and partner countries," said Capt. Abdul Ceville, NAVSUP WSS director of contracts. "The F/A-18 Integrated Weapon System Team and N79 Aviation Contracts Team were unified every step of the way to get the job done right—and right now."

These contracts cover the acquisition of both spares and repairs of essential parts within the Naval Aviation Enterprise, ensuring the delivery of FCS to the fleet through fiscal year 2028 and setting the stage for a long-term contract that provides both financial and readiness stability.

Through complex negotiations, NAVSUP WSS teams worked alongside Program Executive Office (Tactical), the F/A-18 and EA-18G Program Office and Boeing to ensure the contracts included 20 individual National Item Identification Numbers (NIIN) (nine spares and 11 repairs), supporting the F/A-18 Super Hornet and EA-18G Growler for the United States and Foreign Military Sales to Australia. These contracts will collectively address potential readiness gaps for key components of the F/A-18's aerodynamic capabilities.

The F/A-18 Super Hornet is a supersonic, twin-engine, carrier-capable, multirole fighter aircraft able to perform air superiority, day/night strike with precision-guided weapons, fighter escort, close air support, suppression of enemy air defenses, maritime strike, reconnaissance, forward air control and tanker missions. The EA-18G Growler is a variant of the jet that combines the proven F/A-18F Super Hornet platform with a sophisticated electronic warfare suite.

The flight control surfaces are aerodynamic devices that allow pilots to adjust and control the aircraft's flight attitude, a crucial aspect of their multirole capabilities.

The Navy team worked through multiple complexities, including an expedited timeline to increase aviation readiness during heightened operations tempo, while simultaneously facing the closing of Boeing's largest material supplier, GKN Aerospace, which Boeing acquired during negotiations.

"Our nation's Navy, the Joint Force and a vast network of allies rely on our highly skilled workforce of logisticians and contracting professionals to effectively sustain a fight when called upon," said Capt. Andrew Henwood, NAVSUP WSS director of aviation operations. "Their ability to collaborate and execute these awards is a testament to their expertise."

Following the successful acquisition of GKN, the speed to award enables Boeing to secure long lead-time material to minimize any gaps in spares deliveries to the fleet.

Written by Tristan Pavlik, public affairs specialist with Naval Supply Systems Command, Weapon Systems Support.

An F/A-18 F Super Hornet aircraft, assigned to Strike Fighter Squadron (VFA) 103, approaches the flight deck of the aircraft carrier USS George H.W. Bush (CVN 77).

U.S. Navy photo by MC3 Bryan Valek

Marine Corps Adds AGM-158A Joint Air-to-Surface Standoff Missile to F/A-18 Arsenal

MARINE CORPS AIR STATION MIRAMAR, Calif.—Marines with Marine Aviation Logistics Squadron 11 and Marine Fighter Attack Squadron (VMFA) 232 became the first to conduct ordnance operations with the Marine Corps' newest F/A-18 Hornet weapon, the AGM-158A joint air-to-surface standoff missile (JASSM), during validation and verification testing Aug. 27-28 at Marine Corps Air Station Miramar, California.

The AGM-158A JASSM is a conventional, stealthy, air-launched ground-attack cruise missile with a range of 230 miles. In 2018, the United States employed the JASSM in combat for the first time, fired from U.S. Air Force B-1B Lancer bombers, destroying a Syrian chemical weapons manufacturer and proving the JASSM's effectiveness.

"The integration of the AGM-158A joint air-to-surface standoff missile into the F/A-18's arsenal significantly enhances the Hornet's capabilities, enabling it to strike targets from well

Program Office Completes Performance Evaluation for Medium Aerial Resupply

U.S. Navy photo

Marines get an up close look at the two Medium Aerial Resupply Vehicle–Expeditionary Logistics (MARV-EL) systems under evaluation and watched flight demonstrations at Yuma Proving Ground during designated observation days in July 2024.

PATUXENT RIVER, Md.—The Navy and Marine Corps Small Tactical Unmanned Aircraft System program office completed the Medium Aerial Resupply Vehicle-Expeditionary Logistics (MARV-EL) performance evaluation July 8 to 26 at Yuma Proving Ground, Arizona.

During the three-week performance evaluation, Kaman Aerospace Kargo and Leidos Inc./Elroy Air Chaparral demonstrated prototype systems' ability to meet Marine Corps requirements for medium aerial resupply. The program office and Air Test and Evaluation Squadron (UX) 24 evaluators put the systems through their paces for payloads, software requirements, navigation systems, ground test and flight test.

The MARV-EL system should be capable of transporting 300 or more pounds approximately 50 nautical miles with fully autonomous takeoff, landing and waypoint navigation.

"Tomorrow is here," said Col. Aaron Angell, director, Logistics Combat Element Division, who attended the demonstration. "Yesterday we had only innovative ideas about unmanned aerial delivery systems, and today they are real. We are excited to lead this leap forward in tactical distribution."

The acquisition path to initiate MARV-EL began in February 2022 when a capability document for medium autonomous aerial delivery was signed by the Director, Capabilities Development Directorate. The program office requested white paper submissions from vendors and received and evaluated 26 proposals.

Kaman Aerospace and Leidos Inc. each received an Other Transaction Agreement (OTA) in January 2023 to develop and deliver one prototype system per vendor to demonstrate air vehicle capability at the end of the 18-month period of performance.

The program office's next step is to complete the analysis of the data collected during Yuma flight testing, then select a vendor to enter a formal rapid prototyping Middle Tier Acquisition (MTA) program to continue development and conduct formal developmental testing.

"[The program office] is dedicated to deploying this much needed unmanned logistics capability in support of Marine Corps Force Design objectives," said Tom Matthews, deputy program manager. "I applaud the team for executing a plan that enabled competition, rapid prototyping and flight test demonstrations within a two-year time frame. Great work by the entire extended team."

From the Navy and Marine Corps Small Tactical Unmanned Aircraft System Program Office.

U.S. Marine Corps photo by Lance Cpl. Jennifer Sanchez

U.S. Marines with Marine Fighter Attack Squadron (VMFA) 232 load an AGM-158A joint air-to-surface standoff missile on an F/A-18 Hornet.

beyond the reach of enemy air defenses," said Maj. Bradley Kirby, an aviation ordnance officer with 3rd Marine Aircraft Wing.

Marines conducted validation and verification testing by loading an AGM-158A JASSM onto an F/A-18 assigned to VMFA-232 to evaluate the loading procedures, connecting hardware and software—a required protocol before the JASSM is incorporated in the Marine Corps arsenal.

The validation and verification process requires attention to detail and technical qualifications maintained by the MALS-11 and VMFA-232 aviation ordnance technicians. Sgt. Kaleb Bents, quality assurance safety observer (QASO) with MALS-11, supervised transportation, safe weapon handling and inspection. Staff Sgt. Elijah Gilbert, VMFA-232 QASO, then led weapon loading, software compatibility verification, arming and dearming. While this was an opportunity for junior Marines to gain exposure to the JASSM, Bents was familiar with JASSM ordnance operations, having gained experience while attending the U.S. Air Force Aviation Ordnance course.

"We wanted to have as many munitions Marines participate as possible," said Staff Sgt. Holly Espinoza, munitions work center supervisor with MALS-11. "It was an excellent opportunity not only to learn about the JASSM, but also about how ordnance items are loaded onto the aircraft."

MALS-11 Marines unboxed, inspected and prepared the JASSM for transfer to VMFA-232 at the MCAS Miramar combat aircraft loading area. Marines with VMFA-232 inspected the weapon before initiating the aircraft loading sequence and post-loading checks.

The Marines performed checks while the F/A-18 was powered on to ensure communication between the aircraft and the missile. Once complete, they reversed the process, incorporating modifications and annotations into the final instructions. These instructions will be used to develop the Marine Corps loading manual for the AGM-158A JASSM.

"The JASSM validation and verification process allowed Marines to contribute valuable feedback that will inform the development of checklists to be used by both the Marine Corps and the Navy against future adversaries," said Warrant Officer Josiah Hood, ordnance officer with VMFA-232. "Throughout the inspection and loading procedures, the Marines demonstrated a high level of meticulousness and attention to detail."

An additional element that made the validation and verification testing notable was the use of a live AGM-158A. Typically, a training missile is used for validation and verification to avoid potential damage of a critical munition from unvalidated procedures, but there are no JASSM training missiles. The AGM-158A JASSM's advanced sensors, range and precision-strike capabilities make it an invaluable asset reserved for operational use.

As the Marine Corps tailors its advanced fighter attack aircraft and ushers in fifth-generation aircraft, it is also integrating new munitions with increased range, speed and lethality.

Marine Corps strike fighter platforms are postured to acquire long-range, maritime strike capabilities with the inclusion of the AGM-158B joint air-to-surface standoff missile extended range and AGM-158C long range anti-ship missile on the F-35B/C weapons integration roadmap.

"The JASSM not only surpasses the capabilities of any other weapon currently in the Hornet's extensive weapons portfolio, but also the Marine Corps at large," Kirby said. "This added capability will greatly increase 3rd Marine Aircraft Wing's ability to support the joint force and enable greater freedom of maneuver across all operational domains."

Written by 1st Lt. Andrew Baez and Capt. Stephanie Davis, 3rd Marine Aircraft Wing.

Navy's Unmanned Detect-and-Avoidance Tech Goes Operational

CHERRY POINT, N.C.—Guardian, the Navy's new UAS detect-and-avoidance system, will make unmanned training safer and more efficient at its first-ever operational squadron, Marine Unmanned Aerial Vehicle Training Squadron (VMUT) 2, after its August installation at Marine Corps Air Station Cherry Point, North Carolina.

Engineers from the Naval Air Warfare Center Aircraft Division delivered Guardian to the Marine Corps' squadron dedicated to training the service's MQ-9 Reaper operators.

"In a crewed aircraft, a pilot looks outside the cockpit to maintain an all-clear from others—unmanned operators can't do this," said Guardian Program Manager Kris Melton. "Guardian gives squadrons with unmanned systems an expanded reach into areas not previously flyable without the safety tech, and UAS operators the flight visibility they do not have inside control stations."

Guardian tracks manned and unmanned systems across airspace within a 200 nautical mile radius. The system uses ground-based sensors to provide UAS operators in ground control stations visual cues for collision avoidance, suggesting maneuvers like turn, ascend or descend in instances where collisions are imminent—all on a computer screen.

NAWCAD engineers prototyped Guardian in response to safety requirements set by the Federal Aviation Administration (FAA) that limit unmanned systems from operating in airspaces alongside manned aircraft. The restrictions make flight operations increasingly difficult to execute, as unmanned aviation becomes a larger part of the Navy's portfolio. Before Guardian, only a single unmanned vehicle could operate over NAWCAD's airspace, the Atlantic Test Ranges, at any given time, which made flight operations a challenge to manage across the warfare center's squadrons testing aircraft for the Navy and Marine Corps.

The Navy is considering Guardian for other operational squadrons, and NAWCAD is providing the technology to Edwards Air Force Base and the Naval Air Warfare Center Weapons Division for future unmanned test programs. NAWCAD is also developing a prototype

First MQ-25 Unmanned Air Warfare Center Installed Aboard Bush

PATUXENT RIVER, Md.—The Navy recently installed the world's first Unmanned Air Warfare Center (UAWC) aboard USS George H.W. Bush (CVN 77), where Air Vehicle Pilots (AVPs) will control future MQ-25 Stingray airborne operations.

This major installation was a multi-year effort coordinated across multiple ship availability periods and the ship's deployment schedule.

The CVN-based control room, known as the UAWC,

U.S. Navy photo

The first installation of the Unmanned Air Warfare Center (UAWC) aboard USS George H.W. Bush (CVN 77), where air vehicle pilots will control future MQ-25 Stingray airborne operations.

U.S. Navy photo

Unmanned air vehicle operators from Marine Unmanned Aerial Vehicle Training Squadron (VMUT) 2 learn how to use the squadron's new detect-and-avoidance system called Guardian after its August installation at Marine Corps Air Station Cherry Point in North Carolina.

to test on carriers to determine whether Guardian can increase safety for future manned/unmanned teaming in operational environments.

Guardian is the Navy's only detect and avoidance system that meets the FAA's performance standards for unmanned systems, and is currently under evaluation with the agency as an alternate compliance measure for its see-and-avoid mandate. Guardian earned Naval Air Systems Command certification in 2023.

Written by Naval Air Warfare Center Aircraft Division Visual Information.

includes software and hardware systems that make up the first fully operational and integrated Unmanned Carrier Aviation Mission Control System (UMCS) MD-5E Ground Control Station (GCS). UMCS is the system-of-systems required for the MQ-25 air vehicle command and control and is critical to the unmanned aircraft refueler's operations.

"CVN-77's UAWC lays the foundation for how the U.S. Navy will operate and control unmanned aircraft, and perhaps other unmanned vehicles, with UMCS," said Unmanned Carrier Aviation Program Office Manager Capt. Daniel Fucito. "These systems will initially support the MQ-25 but also future unmanned systems, such as Collaborative Combat Aircraft, that comprise the Air Wing of the Future."

The GCS, developed by the Navy, includes Lockheed Martin's Skunk Works Multi Domain Combat System (MDCX), the power behind the GCS, along with additional supporting equipment and hardware. The hardware installed in the racks and cockpits is the baseline for the production systems currently being fabricated for installation on CVNs 70, 71 and 76 beginning in fiscal year 2025.

"The support we received from all the organizations was incredible," said Gordon Carlon, acting UMCS CVN installation lead. "Our program is accomplishing things on a much faster timeline than any other normal startup program."

The program office's UMCS team worked with multiple program offices, systems commands and shipyards to integrate the UAWC into existing networks and the carrier architecture. The Naval Air Warfare Center Aircraft Division Webster Outlying Field Alteration Installation Team, AirWorks and Lockheed Martin assisted with the coordination and physical installation of the UAWC while Naval Sea Systems Command, Norfolk Naval Shipyard and CVN-77 organized schedules, equipment and logistics.

Early next year, CVN-77 will lead the first at-sea testing of the UAWC's operational networks, building on initial network testing with a simulated GCS that took place in January aboard USS Abraham Lincoln (CVN 72).

"This will be the first time the AVPs from Unmanned Carrier-Launched Multi-Role Squadron (VUQ) 10 will operate the MD-5 from an aircraft carrier. They will use the actual GCS hardware and software aboard CVN-77 to communicate with a simulated air vehicle in the lab in Pax River," said Joe Nedeau, program office UMCS lead.

The program office is the lead systems integrator for MQ-25, working closely with its two prime industry partners, Boeing and Lockheed Martin, to integrate seamlessly the MQ-25 into carrier operations, including deck handing, taxiing and launch and recovery. When operational, MQ-25 will provide an aerial refueling capability to extend the range and flexibility of the carrier air wing.

From the Unmanned Carrier Aviation Program Office.

U.S. Navy photo

Desktop trainers display Naval Aviation's new carrier-based joint air training program in a lab at the Naval Air Warfare Center Aircraft Division near its Patuxent River, Maryland, headquarters on July 31.

Navy Uses First-of-Their-Kind Simulators to Train Carrier Air Wings at Sea

PATUXENT RIVER, Md.—Aviators across USS Abraham Lincoln's (CVN 72) carrier air wing now train as a joint fighting force while deployed at sea in advanced simulators thanks to aviation pros across the Naval Air Systems Command (NAVAIR) enterprise.

The new training capability was made possible through extensive partnership between Naval Air Warfare Center Aircraft Division's (NAWCAD) Joint Simulation Environment (JSE); NAWCAD's Webster Outlying Field (WOLF); the Naval Air Warfare Center Training Systems Division (NAWCTSD); and the Naval Aviation Training Systems and Ranges Program Office, with support from industry partners Boeing, Collins Aerospace and General Dynamics Information Technology.

The system—called Simulators at Sea—increases readiness for aviators flying the F-35C Lightning II, F/A-18 E/F Super Hornets, EA-18G Growlers and E-2D Hawkeyes attached to Abraham Lincoln's Carrier Air Wing (CVW) 9. It is the first integrated training capability for an air wing to deploy on a Navy carrier.

The training system features a suite of connected virtual desktop trainers that enables CVW-9 aviators to rehearse missions—including wartime scenarios—together while at sea, an exercise not possible before this program. Historically, joint mission training on this scale is limited significantly, because practicing wartime scenarios can be risky, flight operations can be expensive, and real-life rehearsal puts Navy tactics on display for adversaries.

After the team learned squadrons were deploying on Navy carriers with a limited ability to train together consistently, they started with the outcome: ensure Navy fighting forces maintain proficiency while deployed at sea.

"Naval aviators train extensively working up to deployment, but those skills begin to atrophy when they pull out of port," said NAWCAD JSE Director Blaine Summers, whose team delivered the Simulators at Sea capability. "This was a capability gap we had to plug with a fully integrated carrier air wing solution—one we're ready to scale across the Navy's fleet of carriers."

With no formal requirement or funding, the team made it happen. Their success was thanks to an abundance mindset by the joint team, who recognized our NAVAIR enterprise has the talent and technology to make Simulators, at Sea possible, all it took was bringing it together. After mapping out a plan, the joint team brought the new trainers to CVN 72 in less than 12 months.

"Coordinating the engineering, logistics and ship modifications for these classified programs was daunting—these were things we never really tried," said Mark Mckinnis, IPT lead for Virtual Integrated Training. "Getting this moving quickly sometimes required elevating things to senior leaders, including U.S. Pacific Fleet, the Naval Aviation Enterprise, and ship and air wing commanders."

The Simulators at Sea effort was complex, requiring multiple technical disciplines from across the enterprise to put their ex-

pertise onto the same project. When the team hit challenges—cyber and security, for example—they elevated issues quickly to leaders who could remove barriers to stay on timeline.

"The challenges we were up against included tight timelines, the scope of the ship modification, and the unknowns along the way—our relationships were key to navigating all three of these areas," said A.J. Lawrence, NAWCAD's Ship Alteration Installation manager at WOLF.

CVW-9 has trained in its new simulators daily since its July 2024 deployment. The team plans to expand Simulators at Sea to other aircraft carriers through partnerships with OPNAV and the Naval Aviation Training Systems and Ranges Program Office.

"The best part of this project was hearing an E-2 aviator describe the new training to Pacific Fleet Commander Adm. Stephen Koehler," Mckinnis said. "He called it 'better than the training they get ashore' because in Sims at Sea, they can train for things they can't anywhere else—that was an exciting breakthrough."

From the Naval Air Warfare Center Aircraft Division.

New Contract Awarded to Help Train Fleet to Counter Electronic Warfare

PATUXENT RIVER, Md.—The U.S. Navy awarded the Phoenix Air Group Inc. a $165 million contract June 28 for Contracted Air Services (CAS) flight hours to simulate a variety of airborne electronic warfare (EW) threats to train, test and evaluate shipboard personnel and aircraft squadron weapon systems operators and aircrew.

"Fleet training against airborne electronic attack forces is a priority and a critical path to achieving electromagnetic spectrum superiority," said Capt. Greg Sutton, Adversary and Specialized Aircraft Program Office Program Manager. "The CAS EW jet services contract provides an ability to simulate both the threat and overall spectrum density of the current and future high-end fight, which is essential to effective aircrew training."

The contract includes use of 10 contractor-owned and operated aircraft that can support up to 5,000 flight hours of EW jet capabilities per year for fleet scheduling on the East and West Coasts. They can be used in a variety of venues, from basic "schoolhouse" air intercept control training, large multinational exercises, and small, single unit training exercises, including target/banner tow missions supporting the Navy, Department of Defense (DOD) and non-DOD agencies.

"CAS affordably fills critical and mandatory training requirements, mitigating readiness gaps and capability divestments," said the program office CAS EW Integrated Product Team Lead Matt Rhodes. "It provides fleet air defense training to include evaluation of evolving threats via uniquely modified aircraft configured as required to simulate Fleet Forces Command identified hostile EW near peer threats for air-to-air and air-to-surface training events."

The EW jets contract is a firm-fixed-price, indefinite-delivery/indefinite-quantity contract with work beginning in August and slated for completion in August 2029.

From the Adversary and Specialized Aircraft Program Office.

Photo courtesy of Phoenix Air Group Inc

The U.S. Navy awarded the Phoenix Air Group Inc. a contract for Contracted Air Services to simulate airborne electronic warfare threats to help train shipboard personnel and squadrons. The contract includes use of 10 contractor-owned and operated aircraft, such as the Learjet 36 (pictured), which are employed to support up to 5,000 flight hours annually.

U.S. Navy photo by Tristan Pavlik

The National Museum of Transportation dedicated its newest display Saturday, Aug. 3: a first-production Boeing F/A-18 Super Hornet in St. Louis, Mo.

The 'Stricken Aircraft' Managers of the Navy and a New Home for an F/A-18

PHILADELPHIA, Pa.—On Aug. 3, a first-production F/A-18 Super Hornet found a new home at the National Museum of Transportation, where a formal dedication ceremony took place.

Its path to St. Louis, Missouri, began with Boeing and the F/A-18 and EA-18G Program Office formally requesting a first-production aircraft for display. At that point, the Naval Supply Systems Command Weapon Systems Support (NAVSUP WSS) team in Philadelphia, Pennsylvania, became involved.

The NAVSUP WSS Industrial Support team serves as the U.S. Navy's stricken aircraft managers. A "stricken aircraft" is a retired aircraft that has been removed from the active-duty inventory.

"Not many people know that we are responsible for the management of all stricken aircraft in the Navy," said John Tantoco, NAVSUP WSS Stricken Aircraft Manager. "Industry and many organizations within the Navy coordinated their efforts to put the aircraft on display. Boeing, the National Museum of Naval Aviation and [the program office] did a lot of the heavy lifting."

After an aircraft is officially retired from service, several options exist. Parts can be retained from stricken aircraft and returned to the Naval Supply system to support current or future needs of existing fleet aircraft; the aircraft can be sent for storage at Davis Monthan Air Force Base, Tucson, Arizona; it can be transferred to training commands; or—as in this case—it can be lent to museums.

The Super Hornet, a U.S. Navy carrier-based supersonic fighter jet, was built by Boeing in St. Louis, and flew operationally in the fleet before being acquired and rebuilt by Boeing employees.

"At any given time, our office is managing several hundred stricken aircraft," Tantoco said. "We take our responsibility to manage the inventory seriously, and we're glad so many people came together to find a good home where this aircraft can be seen and celebrated."

From Naval Supply Systems Command Weapon Systems Support.

Preserving Harrier History: Retired AV-8B II+ Finds New Home at North Carolina Air Museum

PATUXENT RIVER, Md.—A retired and demilitarized AV-8B Harrier II+ was inducted into the Hickory Aviation Museum in the "First in Flight" state of North Carolina on July 15.

This aircraft, BUNO 164560, entered service in 1994 and flew with Marine Attack Squadron (VMA) 231, 542 and 223, logging 6,888 flight hours in support of multiple Marine Expeditionary Unit deployments, Operation Iraqi Freedom deployments, humanitarian efforts and Request for Forces.

"This is a unique opportunity to preserve and share a vital chapter in aviation history while playing a valuable role in inspiring future generations," said Col. Mark Amspacher, AV-8B Weapon Systems Program Office program manager. "I hope this piece of Marine Corps history and embodiment of innovation, courage and dedication motivates children to consider a career in aviation and service within the Marine Corps."

The program office, Headquarters, U.S. Marine Corps, Marine Aircraft Group (MAG) 14, and VMA-223 oversaw the comprehensive process of demilitarizing the aircraft and ensured it was safe to display. VMA-223 Commanding Officer Lt. Col. John Cumbie, based in Marine Corps Air Station Cherry Point, flew the aircraft to the museum where visitors can learn about the aircraft's unique engineering design and capabilities.

The AV-8B Harrier II+ is a vertical/short takeoff and landing, light attack jet utilized by the U.S. Marine Corps, and the Italian and Spanish Navies. In service for nearly four decades, its mission is to destroy surface targets and escort friendly aircraft in austere conditions during expeditionary, joint and combined operations.

The platform provides close and deep air support, including armed reconnaissance and air interdiction, and conducts offensive and defensive anti-air warfare. The AV-8B Harrier II+ can operate from carriers and other suitable seagoing platforms, advanced bases, expeditionary airfields and remote tactical landing sites offering versatility, firepower and mobility to effectively counter enemies engaged by U.S. and allied ground forces.

From the AV-8B Weapon Systems Program Office.

U.S. Navy photo by Jamie Vance

A retired AV-8B Harrier II+ and Marine Attack Squadron (VMA) 231 members get ready for the aircraft's induction into the Hickory Air Museum July 15. The squadron, together with AV-8B Weapon Systems Program Office, Headquarters, U.S. Marine Corps, Marine Aircraft Group (MAG) and VMA-223, oversaw the comprehensive process of demilitarizing the aircraft and ensured it was safe to display.

First Military Fixed-Wing Aircraft Lands on Recertified Peleliu Airstrip

A U.S. Marine Corps KC-130J Super Hercules aircraft with 1st Marine Air Wing, lands on a newly designated airstrip on the island of Peleliu, Republic of Palau, June 22.

U.S. Marine Corps photo by Lance Cpl. Hannah Hollerud

PELELIU, PALAU—For the first time since its recertification earlier in the month, a military fixed-wing aircraft touched down June 22 on the historic Peleliu airstrip, marking a significant and triumphant return to this iconic World War II site. This landmark event was made possible by the tireless efforts of the Marine Corps Engineer Detachment Palau (MCED-P) 24.1, comprised of engineers from the 7th Engineer Support Battalion, 1st Marine Logistics Group.

The MCED-P has been diligently rehabilitating the WWII-era Japanese airfield on Peleliu, a mission critical to enhancing U.S. military strategic capabilities in the Indo-Pacific region. The successful landing marks the culmination of months of dedicated work by the Marine engineers.

The runway was named in honor of Eugene Sledge, a private first class with the 1st Marine Division during the Battle of Peleliu and author of the well-known book "With the Old Breed: At Peleliu and Okinawa," which provides a vivid account of the historic battle and is used by many to explain what happened during the historic event.

"Today is a historic moment as we land a Marine Corps aircraft on the 'Sledge' runway," said Maj. Christopher Romero, MCED-P 24.1 commanding officer. "This remarkable achievement demonstrates the strategic importance of our mission and our dedication to regional stability and security."

Local leaders and community members, including Peleliu Gov. Emais Roberts, attended the event, underscoring its significance for the island.

"The landing of the C-130 on the resurfaced runway after many years hopefully begins a new chapter for a prosperous future of Peleliu island," Roberts said. "On behalf of the Peleliu citizens, I thank the U.S. Department of Defense with U.S. Marines for making this long-awaited joint use airfield become a reality. Our small island community has benefitted immensely with the U.S. Marine presence. We value the great partnership, and we feel safe and protected with the support of the greatest country in this world."

"I feel privileged because I was in Peleliu in 2021 and saw the airfield transform into what it is now. It truly is an honor to have been a part of this mission and see it come to fruition with a KC-130 landing," said Sgt. Brandon Gonzalez, a MCED-P 24.1 combat engineer squad leader.

The restored Peleliu airstrip stands as a testament to the resilience and innovation of Marine Corps engineers. It bridges the past and the future, honoring WWII sacrifices while enhancing regional security and cooperation.

The successful landing is particularly poignant as the 80th anniversary of the Battle of Peleliu was celebrated in September. To commemorate this historic occasion, Combat Logistics Battalion 13, another battalion within 1st MLG, will enhance the Peleliu Civic Center Museum. This project aims to provide a new home for historic artifacts, ensuring the legacy of those who fought in the Battle of Peleliu is honored and remembered.

As MCED-P 24.1's rotation draws to a close, Romero extended his gratitude to Roberts and the Peleliu community.

"Thank you for taking care of the Marines and Sailors of the MCED mission. Your contributions have been key to our success. The 'Stray Dogs' feel right at home here in Peleliu."

The nickname "Stray Dogs" comes from the numerous stray dogs found in Peleliu, cherished and nourished by the community. This name reflects the locals' hospitality and the bond formed with the Marines and Sailors of MCED-P.

As the rehabilitation project continues, this successful landing represents a significant step forward in strengthening regional infrastructure. The engineers of MCED-P remain committed to their mission, ready to tackle challenges and contribute to ensuring peace and stability in the Indo-Pacific.

Written by 1st Lt. John Carter with the 1st Marine Logistics Group.

Grampaw Pettibone

Gramps from Yesteryear: March-April 2005

Illustration by Ted Wilbur

Head Jam

An AH-1W Super Cobra launched as Dash-4 in a division of Cobras for a daytime electronic warfare and "battle drills" mission in the local warning area. After several simulated engagements, the Dash-4 helicopter commander in the front seat transferred controls to the copilot in the rear seat. The helicopter commander then passed a "heads down" over the intercom and proceeded to focus on the forward-looking infrared display in an attempt to find the Dash-3 aircraft.

A minute later, 300 feet over the trees, the copilot yanked the Cobra into a hard right-hand turn in response to a simulated air threat called over the radio by the division leader. In the middle of the turn, the copilot looked up and left to reacquire his section lead, and as he did, his head became pinned against the canopy. Unable to reference either his instruments or the ground, the copilot said, "My head's stuck," over the intercom and nothing else. The helicopter commander heard the call but thought nothing of it. He remained focused on the FLIR presentation until he saw trees in his peripheral vision, then joined the copilot in an attempt to maintain control of the helicopter. The Cobra hit the trees and lost the tail boom before coming to rest on its right side. During the crash, the helicopter commander broke his arm and ankle, and the copilot sustained severe back injuries.

The copilot was able to egress only after pulling his head out of the stuck helmet, and he then helped the helicopter commander out of the cockpit. The base search and rescue helo picked them up some time later.

Grampaw Pettibone says...

Now I know it's a tight fit in this particular type of chopper, but what kind of sideshow contortions did this guy have to go through to make his melon stick like that? Keeping sight of your wingman is one thing, but if you've got to torque around like a hoot owl to do it, chances are you're out of position.

But never mind the glued noggin; the real issue here is bad crew coordination. Once the copilot realized he was in trouble there was only one call to make over the intercom: "Take the controls." And if somebody tells me, "My head's stuck," as I'm cruising 300 feet above the forest, I might be inclined to stop watching television and start thinking about aviating. In any case, these fellahs were lucky they were able to walk—or, rather, limp—away from this one.

Rapid Collaborative Additive Manufacturing Effort Helps U.S. Protect International Ally

By Rob Perry

The ability for Naval Aviation to deploy and intervene anywhere in the world is one of the many tenets that makes it a superior force. At any point in time, Sailors and Marines can receive orders to support an ally and need to be ready for whatever threat it engages. That requires shipboard and aircraft components to be fully operational. Last year, the failure of a single quarter-sized component aboard the landing system of a Wasp-class amphibious assault ship, the USS Bataan (LHD 5), nearly resulted in the vessel being unable to assist Israel in the escalating Red Sea crisis. However, quick thinking and action enabled the ship to make necessary repairs and intervene in a major battle, saving countless lives.

Small Part, Big Problem

In October 2023, Bataan was operating in the Indian Ocean. On Oct. 24, the ship's crew issued a casualty report (CASREP) back to the States, asking for help with the ship's broken Optical Landing System (OLS), which aids pilots in landing. The crew determined the culprit of the OLS system's failure was a broken polymer coupler inside the system's ball/screw jack assembly—a part roughly the size of a bottle cap. Without the OLS, aircraft would be unable land aboard the ship, especially at night.

Without a spare coupler or assembly aboard, they needed a solution fast.

The OLS aboard Bataan is a Naval Air Systems Command (NAVAIR) system that is supported and maintained by Naval Air Warfare Center Aircraft Division (NAWCAD) in Lakehurst, New Jersey. The failed OLS coupler within the OLS's ball/screw assembly is considered a Critical Application Item (CAI) as it has a unique breakaway torque requirement where if it were to be over-torqued, it would break, thus saving the OLS's electric motor from binding and failing. In the unfortunate event the OLS's electric motor were to fail, it would require a fly-away team from NAWCAD Lakehurst to be dispatched to the ship to replace it, as well as perform an OLS final alignment to return it to normal operations. Since Bataan was in the Indian Ocean, the logistics of such an at-sea repair would take longer than operationally acceptable.

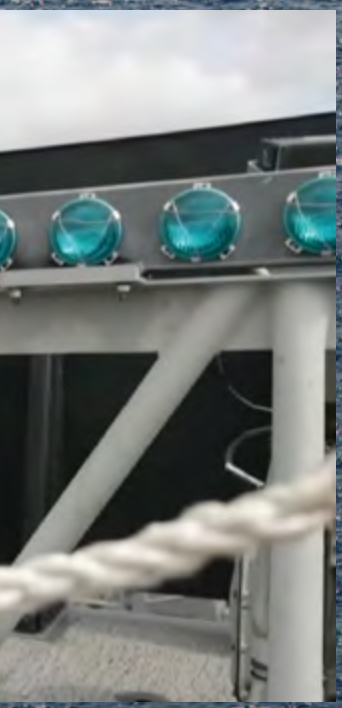
Early on Oct. 25, the Naval Sea Systems Command (NAVSEA) Additive Manufacturing team received the Bataan's CASREP. Additive manufacturing is the ability to use 3D printers to "print" replacement parts on site using polymers, metal or other materials. The Bataan was equipped with a NAVSEA 3D printer, vice a NAVAIR 3D printer used to support aviation and related support equipment, so NAVSEA reached out to the NAVAIR Additive Manufacturing (AM) Team.

"Our alert came because the ship was equipped with a NAVSEA polymer printer and the sailors aboard the ship did not know that the OLS was a NAVAIR-owned system, so they requested support from NAVSEA's additive team first," said Ling Xu, an engineer with NAVAIR's AM Team. "Once that support was requested, NAVSEA's additive team realized this was a NAVAIR part and required NAVAIR's AM team, so they forwarded it on to us."

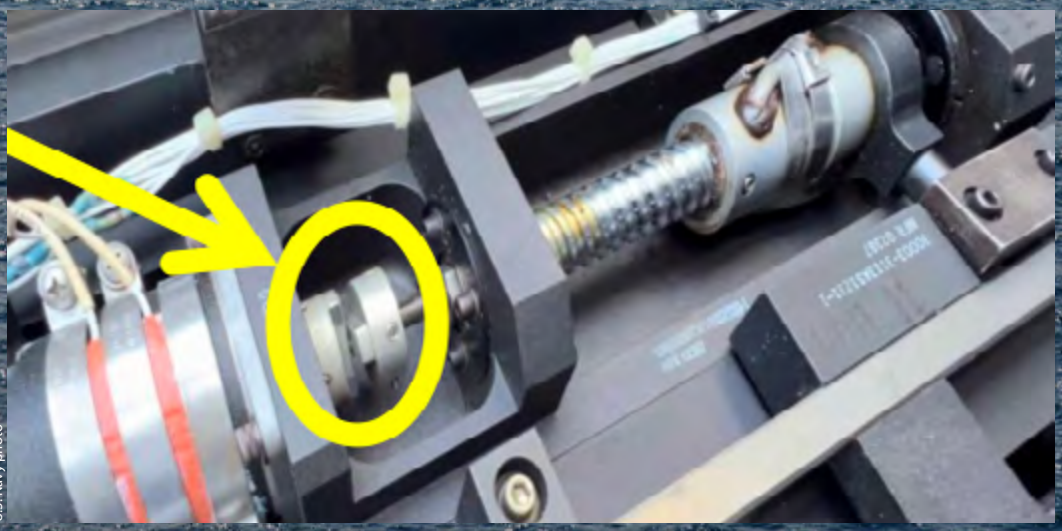
U.S. Navy photo

The U.S. Navy Wasp-class amphibious assault ship USS Bataan (LHD 5) conducts a strait transit and Defense of the Amphibious Task Force (DATF) drill during Amphibious Ready Group/MEU Exercise (ARGMEUEX) while underway in the Atlantic Ocean, April 26, 2023.

U.S. Marine Corps photo by Cpl. Kyle Jia



An example of the Optical Landing System like the one aboard USS Bataan (LHD 5).



U.S. Navy photo

The coupler located inside the Optical Landing System motor assembly.

The NAVAIR AM team learned the polymer printer aboard the Bataan used onyx to AM print parts, a material the NAVAIR AM team was not used to working with.

"Onyx is a chopped carbon fiber reinforced nylon, which is significantly stronger than some of the materials that we work with," Xu said. "Knowing that there was a unique torque breakaway requirement—meaning that it needed to break at a certain torque level—we knew that we would have to come up with a design solution that would fail while still meeting other requirements. This component acts like a 'fuse.' It is an excellent design to prevent damage to obsolete or difficult to install components elsewhere into the Optical Landing System."

The NAVAIR AM Team quickly rallied to the challenge and, knowing the gravity of the operational impact Bataan was experiencing, went to work. Fortunately, the NAVAIR AM Team had prior experience with the NAVSEA AM printer that was aboard the USS Bataan and had retained an older version of it in storage. As luck would have it, the NAVAIR AM Team even had the same raw, thermoplastic onyx feedstock used on Bataan.

Overnight and within 12 hours of notification of the CASREP, the NAVAIR AM Team's engineers redesigned and tested 22 prototypes of the AM coupler, being sure to design into it the unique breakaway requirement, before successfully finding a working solution. In the meantime, the OLS's Cognizant Engineer and Technical Warrant Holder at NAWCAD Lakehurst already initiated the effort to pull the OEM coupler and ball/screw assembly jack from the Navy Supply System and send them to the ship. Lakehurst was kept apprised of the NAVAIR AM Team's effort to print out a replacement coupler as a stopgap measure while the ship awaited delivery of the parts. After seeing the test results from the AM-created coupler, the NAWCAD Lakehurst team gave temporary approval to the ship to use the AM-created coupler in the OLS.

U.S. Navy photos

The NAVAIR Additive Manufacturing Team tested more than 20 printed parts for torque strength before arriving at a part that passed the part's unique breakaway requirement.

The approved design for the AM coupler and associated Technical Data Package (TDP) was electronically transmitted to the ship the next morning. A TDP is essentially a "blueprint" that is fed into the 3D printer to produce the part to exact technical specifications needed. The ship's company verified they received the TDP and successfully printed the AM coupler using their resident AM printer. However, when the technician went to install the AM coupler in the OLS, the ship was issued immediate orders to redeploy to the Red Sea. The technician had to suspend the installation of the AM coupler.

Two days later, on Oct. 28, Bataan arrived on station in the Red Sea. The AM coupler was installed in the ship's OLS. After a few hours of testing, the ship sent back word that the coupler was holding fast and restored the OLS to its normal working condition. The ship immediately resumed normal flight operations—and just in time. Within hours, aircraft aboard Bataan launched and began intercepting and shooting down a salvo of drones and missiles being launched at Israel by the Yemen Houthis.

"Those aircraft were directly responsible for intercepting missiles fired by the Houthis towards Israel," Xu said. "That's something that would not have happened had there not been an AM printer aboard."

"Your efforts exemplify the mindset and behaviors that deliver winning outcomes for the fleet," said Vice Adm. Carl Chebi, Commander, NAVAIR, in a message delivered to the NAVAIR AM team, commending them for their can-do attitude and innovative approach.

"You immediately recognized the significance of the request, assessed the problem and reached outside your lanes to ensure all the right players were brought into the effort. You embraced an 'abundance vs. scarcity' mindset, engineering a solution using equipment and materials already available to the ship's maintainers. You demonstrated remarkable dedication, working through the night to design a coupler that met specifications. Incredibly, you designed and tested 22 iterations of the part, a testament to your high standards of excellence, attention to detail and tenacity.

"You were bold—obtaining verbal approval from the Tech Warrant Holder, OLS Division Head and cognizant engineer to expedite delivery of the tech data package to the ship. In a matter of days, normal flight operations resumed and the ship is back in the fight today because of you. Your actions demonstrate what we can accomplish by thinking differently,

A test coupler printed by the NAVAIR AM team from a similar OLS system the team had addressed a few months earlier than the USS Bataan OLS issue.

collaborating, and focusing on outcomes that matter to the fleet."

Bataan continued using the AM coupler in the OLS until the replacement ball/screw jack assembly arrived on March 29, 2024.

Xu said the part operating continuously without breaking for six months was a sure sign of success for the AM team.

"We could have very easily designed an extremely strong component, but then that would have just transferred the load into a different portion of the optical landing system, which could have broken and caused them a much longer delay," he said.

An engineer with the NAVAIR AM team uses a torque wrench to test the part's breakaway requirement.

Additive Manufacturing: Addressing Problems as They Arise

Bataan OLS provided just one example of how the NAVAIR AM team addresses problems just as quickly as they arise. Two other incidents that the team addressed were key parts for F/A-18 Hornets.

Xu said the armament plug back shell for the F/A-18—a part of the avionics kit that tells the aircraft how many hard points it has—failed. The lead time for a replacement component was "upwards of a year," he said, but, through AM, "we were able to bring that aircraft back up in about three days."

Another component was a heads-up display (HUD) mounting bracket, which had broken on another F/A-18 that was deployed on a carrier.

"In that case, we already had a technical data package ready to go, so they were able to just manufacture on the carrier and keep going," Xu said.

Xu said his team currently has more than 400 TDPs ready for printing AM parts at the point of need.

"We solicit parts from the fleet as they see problems. However, we are also pursuing components that we see as a potential issue in a contested logistics environment," Xu said. "One of the projects [I am working on is] the battery housing for the H-60 Seahawk night vision goggles. [The goggles are] required for nighttime operations on the H-60, and we are currently going through these at a rate of several hundred per month. [With the part] being a simple injection molded component, [the normal supply chain] is able to keep up with current demand. However, in a contested logistics scenario, we want to ensure the fleet has ability to manufacture at the point of need.

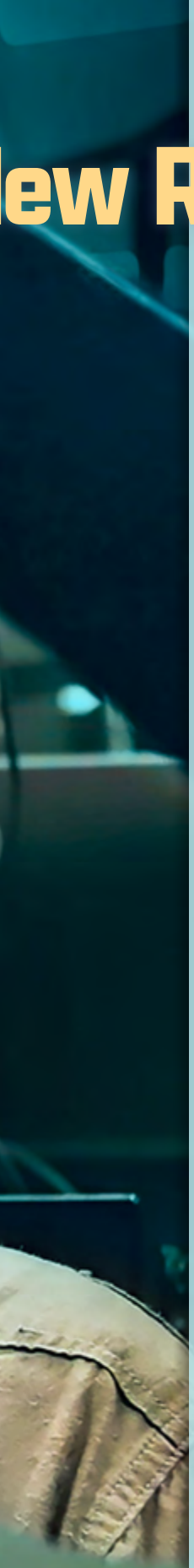
"Ultimately, this is speed to the fleet. Instead of using traditional methods and traditional processes, we are coming or using a new way to get parts out there or to get parts to where they are needed. And with this case, they are just being manufactured where they are needed."

Rob Perry is an editor/writer for Naval Aviation News.

ONR TechSolutions Delivers N

Capt. Juston Kuch, Training Air Wing One Commodore, operates a simulated T-45 Goshawk in the Operational Flight Trainer onboard Naval Air Station Meridian, Mississippi. The simulators incorporate augmented-reality technology to enhance student pilot training.

U.S. Navy photo illustration by Fred Flerlage; imagery by Petty Officer 2nd Class Molly Tice



ew Realistic Flight Simulator

By Cherish Gilmore

A new innovation in aviation training, featuring a simulator sponsored by the Office of Naval Research TechSolutions program, delivers a better way to prepare future Navy pilots.

The T-45C Goshawk mixed-reality simulator, also known as Project Link, was recently showcased at Naval Air Station Meridian, Mississippi. Created in response to a request from Lt. Cmdr. Geoffrey Dick, T-45C chief standardization pilot with Chief of Naval Air Training (CNATRA), this simulator combines virtual reality with a physical cockpit.

TechSolutions rapidly sponsors the development of prototype solutions based on direct requests from Sailors and Marines worldwide.

Jason Payne, director of TechSolutions, said the new mixed-reality simulator illustrates just how quickly a request from a Sailor or Marine can be developed into a prototype and deliverable solution.

"We received a request about a year ago and began working on the solution for a mixed-reality training program almost immediately," Payne said. "The development team at Naval Air Warfare Center Training Systems Division [NAWCTSD] quickly prototyped the solution and we're now delivering a new capability to the fleet."

The new capability will allow future pilots to practice and refine skills before setting foot in an actual aircraft, ultimately saving both time and money for the Department of the Navy and taxpayers.

Training new strike pilots can take up to two and a half years—much of it spent in the classroom. While the new simulator will not necessarily shorten the length of training time, Dick said it will better prepare students for an important aspect of their training—physically engaging with a cockpit with low risk. The new system is also low cost, has a small footprint and is easily deployable.

"We want them to be able to flip switches, turn dials—physically interact with the cockpit," Dick said. "Virtual reality didn't quite get us there because of the fact that there's no cockpit built into it. You've got to kind of move your head around, then stare at something and pull the hand trigger to select it, which introduces the possibility of a negative transfer of training. Mixed reality should help solve that problem."

Mixed reality combines elements of both virtual and augmented reality to create immersive experiences that blend the real world with digital elements. By overlaying digital content onto our physical surroundings, mixed reality has the potential to revolutionize training.

Lt. Jonathan "Bichón" Jackson, an instructor pilot, tested the simulator and noted its potential.

"For the first time, we now have the ability to repeatedly expose students to these sight pictures numerous times before they encounter them in the aircraft and to allow students to practice these skill-sets on their own time when devices are available," Jackson said.

"In an increasingly challenging training environment, where the student and instructor must squeeze every ounce of learning out of every minute airborne, this technology greatly accelerates progress up the learning curve and expands the student's ability to absorb information and retain lessons-learned while flying."

Dr. Jessica Jones, deputy director of TechSolutions, who was onsite for the demonstration, praised the development team's work.

"Seeing pilots independently interact with the controls with no assistance was a testament to the work the development team put into making the simulator as realistic as possible," Jones said.

Payne added that TechSolutions is constantly on the lookout for suggestions and requests from Sailors and Marines who have firsthand knowledge of what is needed to fulfill their mission. He encourages warfighters to email his team directly at ONR_TechSolutions@navy.mil or look on the website for more information: https://www.onr.navy.mil/Techsolutions.

Cherish T. Gilmore is a contractor for Office of Naval Research Corporate Strategic Communications.

Program Office Brings E-6B Mercury Operator, Maintainer Training into the 21st Century

By Kathy Hieatt

The training for operators and maintainers of the Navy's E-6B Mercury fleet has launched into the 21st century thanks to new virtual 3D training systems provided by the Airborne Strategic Command, Control and Communications Program Office.

The program office earlier this year delivered the new Multi-Purpose Reconfigurable Training System® (MRTS) to Tinker Air Force Base, Oklahoma, home base for the E-6B. Next is the Mission Avionics System Trainer (MAST) for operators of the E-6B's mission systems, scheduled for delivery in August. They create a trio of systems—along with the 2023 Virtual Checklist Trainer (VCT)—that elevates training for the fleet.

The MRTS and MAST projects were a collaboration between the program office and the Naval Aviation Training Systems and Ranges Program Office, the Center for Naval Aviation Technical

U.S. Air Force photo by Staff Sgt. Jacob Skovo

A U.S. Navy E-6B Mercury aircraft, assigned to Strategic Communications Wing 1 at Tinker Air Force Base, Oklahoma, receives post-flight maintenance after landing at Offutt AFB, Nebraska.

Training (CNATT) and the Naval Air Warfare Center Training Systems Division (NAWCTSD). The systems are a product of Florida-based Proactive Technologies Inc. and JHT Inc.

The E-6B Mercury is a communications relay and strategic airborne command post aircraft. It executes the no-fail Take Charge and Move Out (TACAMO) and Looking Glass missions. TACAMO connects the president, secretary of defense and U.S. Strategic Command with naval ballistic missile forces. Looking Glass facilitates the launch of U.S. land-based intercontinental ballistic missiles using an airborne launch control system. Together they provide strategic nuclear deterrence against America's adversaries.

The fleet is operated and maintained by the Navy's Fleet Air Reconnaissance Squadrons (VQ) 3, 4 and 7 based out of Tinker.

The MRTS Maintenance Trainers and Virtual Checklist Trainers improve training, reduce risk and save money by providing hands-on instruction in a classroom rather than on the aircraft. They allow maintainers and operators to train for the mission, even when fleet aircraft are unavailable due to mission requirements. The classrooms are a controlled environment and allow for a higher instructor-student ratio, said Barry Polk, NAWCTSD program manager and the program office training lead.

"We are bringing the E-6B from the '80s into the 21st century," Polk said. "The generation that we have entering the fleet now are more adept at these 3D environments. They're already comfortable in the virtual world, and I think it will speed up training and give them better training than we've had in the life of the E-6B TACAMO aircraft."

The newest system, the MRTS 3D Panel Trainers, are interactive simulators that model and provide troubleshooting scenarios for various aircraft systems. They replace the original panel trainers from the 1980s, which were designed for the E-6A fleet before it transitioned to the E-6B configuration.

U.S. Navy photos by Chief Petty Officer Jeremy Jones

Students practice conducting maintenance on the E-6B Mercury using the new Multi-Purpose Reconfigurable Training System (MRTS) 3D Panel Trainers at Tinker Air Force Base, Oklahoma.

Aviation Machinist's Mate Airman Maribel Lopez works inside a virtual E-6B Mercury using the new Multi-Purpose Reconfigurable Training System 3D Panel Trainers.

"The students get to experience the next best thing to working on the actual aircraft in a safe and controlled training environment, where mistakes can be made and learned from without damage to equipment or injury to personnel."

The massive panels were stagnant, outdated and no longer replicated the actual fleet.

The MRTS simulates the fuel flow, electrical flow, auxiliary power unit, hydraulics, environmental control system and pre- and post-flight checklists. Students use either a touch-screen panel or video-game controller to interact with the system. They can practice getting into the body of the aircraft, opening panels and conducting maintenance, with all the proper maintenance processes embedded.

"They're in a nice classroom that's not dependent on aircraft availability or weather," Polk said. "And, of course, if they do something wrong, it doesn't down the jet."

Instructors and students began using the new system in January, including as part of the month-long Organizational Level Maintenance course.

"The students get to experience the next best thing to working on the actual aircraft in a safe and controlled training environment, where mistakes can be made and learned from without damage to equipment or injury to personnel," said CNATT instructor Coy Weese. "With MRTS, we can repeat the training over and over as many times as necessary to ensure the information is retained, and we can drive home the severity of completing all maintenance with the 'by the book' mentality, which ensures the job was done right the first time every time."

Students said the MRTS prepared them for working on the aircraft by providing hands-on, interactive training.

"When I got on the aircraft, it was exactly the same as MRTS," said Aviation Machinist's Mate Airman Maribel Lopez. "For example, I knew where the auxiliary power unit was located before I even saw the aircraft in-person."

Aviation Machinist Mate First Class Lexus Himes, a Center for Naval Aviation Technical Training instructor, oversees students practicing conducting maintenance on the E-6B Mercury using the new virtual MRTS 3D Pane.

"The E-6B Mercury fleet, which started as the E-6A in 1986, has been in service for 37 years. It underwent a Service Life Extension Program in 2013, which extended its structural life to 45,000 flight hours. Maintenance is essential for keeping the aircraft flying and ensuring the connection between the president and his nuclear forces."

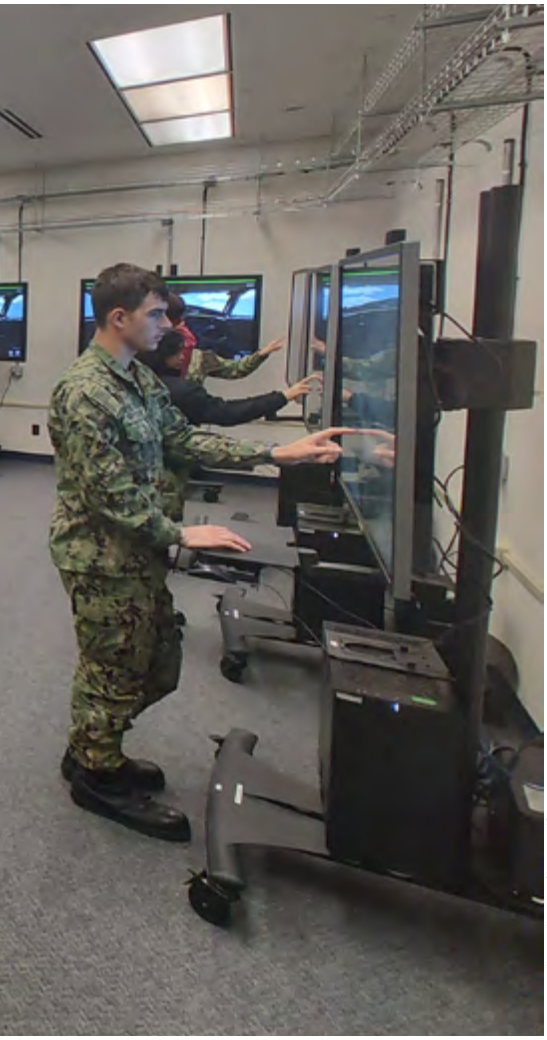
"It was very helpful in seeing how the hydraulics, electrical, fuel, etc., systems worked," said Aviation Machinist's Mate Airman Logan Gottschalk. "It was more in-depth and more visual."

The MRTS cost $3.7 million, split between the Airborne Strategic Command, Control and Communications Program Office and Naval Aviation Training Systems and Ranges Program Office, which are both part of Naval Air Systems Command. CNATT assisted with testing and development.

The VCT preceded the MRTS, coming online at Tinker in June 2023. The Naval Aviation Training Systems and Ranges Program Office paid the $2.2 million cost. It provides virtual training for the VQ-7 crew that operates the two Very Low Frequency trailing wire antennas. Those antennas extend 2.5 miles and 5 miles behind the aircraft, respectively, and enable TACAMO message transmissions to submarines.

The next iteration of the VCT—for flight engineers—went online in July.

The E-6B Mercury fleet, which started as the E-6A in 1986, has been in service for 37 years. It un-



U.S. Navy photoS by Chief Petty Officer Jeremy Jones

derwent a Service Life Extension Program in 2013, which extended its structural life to 45,000 flight hours. Maintenance is essential for keeping the aircraft flying and ensuring the connection between the president and his nuclear forces.

"We need to look realistically at the E-6B mission and be ready to fly that mission until we're relieved, and this helps us do that," Polk said.

The Navy uses the MRTS for training on other systems, including the Tomahawk missile launch console and submarine community support system. The system is totally secure because the government owns the 3D models and software.

The MAST works similarly to the MRTS, but provides training on how to check out, troubleshoot, isolate faults, and remove and replace components of the communications, battle staff and receiver-transmitter equipment. The system cost $6.6 million, paid by the Airborne Strategic Command, Control and Communications Program Office.

The mission of the Airborne Strategic Command, Control and Communications Program Office 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 program's vision is to provide national security and deterrence through assured airborne strategic communications.

Providing quality training aligns with the program office's mission of delivering capabilities to the fleet, said Capt. Adam Scott, program manager.

"[Airborne Strategic Command, Control and Communications Program Office] exists to provide capabilities to the fleet and to ensure they have the training they need to maximize those capabilities and execute the mission," Scott said. "These new virtual systems improve training for today's sailors, and I'm proud of the team's vision and dedication to bringing it to fruition."

Kathy Hieatt is a public affairs officer with Airborne Strategic Command, Control and Communications Program Office.

Under the supervision of Center for Naval Aviation Technical Training instructor Coy Weese (right), Aviation Machinist's Mate Airman Jhianna Baker (left) practices conducting maintenance on the E-6B Mercury using the new MRTS 3D Panel Trainer.

Get Real, Get Better:
NAWCTSD's Theoretical Research, Engineering

U.S. Navy photos by LCDR Jeremy Miller

Left, Shaun Andrew with Naval Air Warfare Center Training Systems Division (NAWCTSD) taps into the building power supply and hardwires the motor control unit to the fuse box. Right, Chris Pyles with NAWCTSD secures a spare motor to frame in order to anchor it to the floor for safety.

By Angelika B. Robertson

The Basic & Applied Training & Technologies for Learning & Evaluation (BATTLE) Lab is an in-house capability dedicated to improving training and human performance. Since its establishment in 2014, the lab has produced capabilities by applying cognitive science, behavioral research and emerging technology solutions in a variety of learning environments.

The BATTLE Lab's immense effort has received several awards, to include the Dr. Dolores M. Etter Top Scientist and Engineers Award of the Year and the Naval Air Warfare Center Aircraft Division (NAWCAD) Acquisition Support Award for collaborative work with the Naval Aviation Survival Training Program (NASTP). In August 2023, the lab's research into "Galvanic Vestibular Stimulation (GVS) as a Training Device for Spatial Disorientation in Naval Aviation" received the U.S. Naval Aeromedical Conference (USNAC) 2023 Theoretical Research Award. The lab's focus on spatial disorientation solutions led to the Rapid Design, Development and Fabrication (RD2F) Lab, another Naval Air Warfare Center Training Systems Division (NAWCTSD) team, to update the current training device, the Multi-Station Disorientation Demonstrator (MSDD) with the NASTP. Senior Research Psychologists Beth Atkinson and Dr. Mitch Tindall explained how the NAWCTSD labs aim to improve aviation survival training.

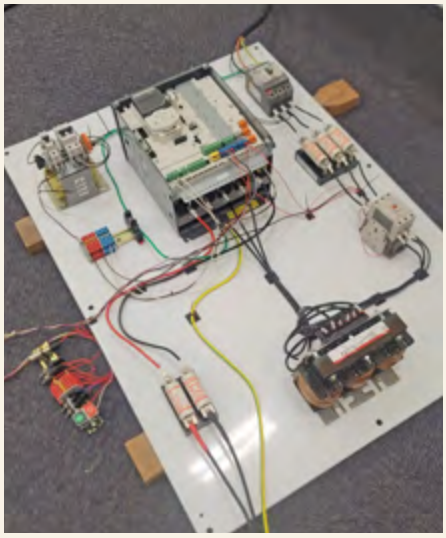
Imagine rolling out of bed and feeling the room spinning despite barely moving. That sensation of orientation mismatching what is happening in the environment is similar to spatial disorientation. Tindall defined spatial disorientation, in regard to Naval Aviation, as a mismatch between visual and/or vestibular systems and other senses that result in disorientation during flight.

"If your perception of reality is different than reality, then you'll modify your behavior based on what you think is happening," which most commonly occurs during low visibility situations. "Sometimes that might be descending when you should be ascending, or staying steady when you should be turning, or turning when you should be staying steady," Tindall said.

These reactions that are not grounded in the reality of the situation can be fatal and are the most cited factors associated with Class A mishaps within the Navy.

Because of the physiological nature of spatial disorientation, it effects pilots of all kinds. For example, famed basketball player Kobe Bryant died in 2020 from a helicopter crash. According to Business Insider, the helicopter was cleared to fly Bryant, Bryant's 13-year-old daughter and seven other passengers through dense fog because of the pilot's experience. The pilot missed clearing a hill by less than 30 feet and the helicopter crashed, killing all of the passengers. The findings released by the National Transportation Safety Board (NTSB) cited that the probable cause of the crash was spatial disorientation due to

Improves Spatial Disorientation Training


Anil Thomas, a mechanical engineer with NAWCTSD who designed the motor control unit, works on the prototype motor control unit for the Multi-Station Disorientation Demonstrator, or the "spin and puke" trainer. Pictured at right is a spare motor from the unit.

poor visual conditions that resulted in the loss of control of the aircraft.

Although spatial disorientation has been a known issue for decades, the training devices available to support awareness training have limitations. According to Atkinson, the MSDD located in Pensacola, Florida, affectionately called the "Spin and Puke," has been around for over 40 years. Students climb inside the MSDD, which looks like a big canister, and experience the sensations associated with a mismatch between vestibular systems and visual systems. The motion of the device and visual displays provided by a projector stimulate the sensation.

While the MSDD can provide basic familiarity training, "it can't replicate changes in altitude" or more dynamic motion associated with flying. This lack of a realistic experience and the lack of an aviation-specific environment "could be a training gap," Atkinson said. The MSDD provides invaluable training, so the RD2F Lab is updating the MSDD with the NASTP.

The legacy computer system was outdated, and the motor controller failed. The RD2F team is modernizing the system's computer and control functionality to regain control of the carousel, capsules and projector. The team pressurized the training device and attached the motor control unit at a recent site visit at Naval Air Station Pensacola. This success "got the motors on the device operational," NASTP IPT Lead Lt. Cmdr. Jeremy Miller said.

Thanks to the efforts of BATTLE lab, RD2F, NASTP, connections within the aeromedical community and research from the National Aeronautics and Space Administration (NASA), additional potential solutions are being posed to update the GVS device.

"The idea is to leverage some existing capabilities and try to integrate them and see if we can technically align the systems in a way that allows us to replicate exactly the sensations we want and not some random assortment of experiences," Tindall said.

The GVS device would stimulate the vestibular system and make the trainee feel like they are in motion. The GVS system works by placing small probes on the neck or forehead of an individual to deliver electric signals to stimulate the vestibular system, resulting in a feeling of sway or movement. If successful, this method would reduce training costs and increase accessibility of training.

BATTLE Lab, RD2F and NASTP collaboratively leveraged their research and engineering skills to address a serious capability gap in aviation survival training. Instead of rendering the MSDD legacy training device as obsolete, the labs strategically saved time and cost by getting real about necessary changes to device. Two prototype control units will be developed to run each motor, which are stacked on top of each other under the carousel. Then control units will replace the legacy computer system to minimize footprint. The labs' research and technological updates are examples of how improving training devices with technological advances will improve human performance and help warfighters get better.

Angelika B. Robertson is a communications specialist with Naval Air Warfare Center Training Systems Division.

WWII Veteran Receives Distinguished

Eighty-one years after serving as an Aviation Radioman-gunner in World War II, a 99-year-old Navy veteran received July 25 a Distinguished Flying Cross and an Air Medal at the California State Capitol Building in Sacramento.

Richard E. "Dick" Miralles, assigned to Bombing Squadron (VB) 21 of Carrier Air Group (CVG) 11, received the Air Medal (first through 14th Strike/Flight) and Distinguished Flying Cross (with three gold stars in lieu of fourth) awards for meritorious achievement in aerial flight during 85 combat missions as an Aviation Radioman 2nd Class from Aug. 16, 1942, to July 25, 1943.

During the ceremony, Lt. Cmdr. Brantley Harvey, naval aviator and executive officer of Navy Reserve Center Sacramento, had the privilege of presenting the awards to Miralles in the presence of his friends and four generations of family.

"I accept these for all of those that didn't make it back," Miralles said.

Miralles is believed to be the last surviving veteran of CVG-11 and received this award days before his 100th birthday July 28.

He joined the Navy at 17 years old and began his career in the back seat of the Scout Bomber Douglas (SBD) Dauntless Dive-Bomber. He describes experiences in war where he survived multiple crash landings, being shot down, torpedoed on USS Honolulu (CL 48) and even an occasion where he threw his radio and equipment as a last resort during aerial combat. He concluded his service as ship's company aboard the escort carrier USS Hoggatt Bay (CVE 75).

Miralles completed his service in 1945 without receiving the awards he earned in aerial flight.

During a search for fellow members of CVG-11,

SBD-3 Dauntless of Bombing Squadron (VB) 6 preparing for takeoff from USS Enterprise (CV 6) Feb. 24, 1942.

U.S. Navy photo illustration by Fred Flerlage; photo courtesy of Naval History and Heritage Command

Flying Cross, Air Medal

Miralles connected with the grandson of one of his old shipmates, George Retelas. George Retelas, named after his grandfather who served with Miralles, wrote to the Secretary of the Navy Carlos Del Toro Oct. 10, 2023, and helped Miralles finally receive his awards.

"It was a great honor to help him get his awards," Retelas said. "Mostly, it was an honor to spend time with him. Hearing his stories and the oral history of the service members was such an honor. Dick is the last living member of Air Group 11, so being there for the award pinning was so special because at any age, but especially at his age, every day is a gift."

After the war, Miralles spent more than 30 years with the California Department of Forestry (now CalFire) and authored his memoir, "War and Fire," where he recounts his time in service and in forestry.

Miralles resides in Sacramento, California, with his wife, Joy, and celebrated his 100th birthday with friends and family at the church he attends.

Written by Petty Officer 1st Class Samantha P. Montenegro.

Courtesy Photo by Jolie Orban

Richard E. "Dick" Miralles poses for a photo wearing his Distinguished Flying Cross and Air Medal, holding a replica of the Scout Bomber Douglas (SBD) Dauntless Dive-Bomber, where he earned the awards, at the California State Capitol Building, July 25.

Courtesy Photo by Jolie Orban

(Right to Left) Lt. Cmdr. Brantley Harvey, naval aviator and executive officer of Navy Reserve Center Sacramento, George Retelas, Richard E. Miralles and a U.S. Navy lieutenant pose for a photo after an award ceremony honoring Miralles at the California State Capitol Building, July 25.

VT AVIATORS COMPLETE CARRIER

By Seaman Evan Antonisse

The Nimitz-class aircraft carrier USS Dwight D. Eisenhower (CVN 69) (IKE) hosted student naval aviators Sept. 24 from Training Air Wing (TW) 1, composed of Training Squadron (VT) 7 and VT-9 from Naval Air Station Meridian, Mississippi, and TW-2, composed of VT-21 and VT-22 from Naval Air Station Kingsville, Texas, as a part of carrier qualification (CQ) training off the coast of Florida.

For the VT students, CQs represent an important milestone in their training as it is the first time the students will land on an operational aircraft carrier.

During the evolution, students completed 256 recoveries aboard IKE in T-45C Goshawk training aircraft. This evolution is the culmination of the advanced phase of strike pilot training. The success of the students will earn them their wings of gold and designation as naval aviators, setting them up to fill operational commands across the fleet.

Throughout CQs, safety and emergency preparedness were paramount to both the student naval aviators and IKE personnel, especially those operating on the flight deck.

"In preparing for this CQ process, we have done numerous briefs and [simulations] of the T-45 models," said Lt. j.g. Terrance Wever, IKE's flight deck officer. "We planned for 20 aircraft but ended up with 14, so we knew how to manage the flight deck and the real estate available to us. Ultimately, it's on all of us to make sure we stop anything that is unsafe. We are preventative and not reactive."

In the air, the students' safety is carefully managed. From the tower to the ground, a network of IKE personnel and VT instructors kept a close eye on the performance of the students.

U.S. Navy photo by MCSA Theodore Morrison

Sailors refuel T-45C Goshawk training aircraft from Training Squadron (VT) 7 on the flight deck of the Nimitz-class aircraft carrier USS Dwight D. Eisenhower (CVN 69) (IKE).

QUALIFICATIONS ABOARD IKE

Despite oversight at every level, the instructors have a high level of trust in their students and expect a high level of performance.

"If they're having difficulty, we'll talk to them in plain English," said Lt. Cory "Venus" Morgan, a VT-7 landing signal officer. "Otherwise, it's usually pretty silent; there's not much noise. We're letting them cook, so-to-speak; letting them get reps and sets, because they don't know what to expect until after the first couple [of recoveries]. Then, they start to loosen up a bit and think, 'I can do this.'"

Although the students are nearing the end of their advanced training pipeline, nerves are inevitable ahead of their first CQ. This is something even the most experienced pilots in the fleet can attest to.

"The first few passes from behind the ship, I barely remember," said Cmdr. Tyler "McGruber" McQuiggan, IKE's air department head, also known as "Air Boss." "My nerves were there and I realized after my first arrested landing, when my feet and hands were shaking from the gravity of what I had just accomplished. Your nerves start to cool over time, but I don't think you ever really get comfortable as a student out there."

In addition to technical support, instructors play a key role in helping the students manage their nerves during the evolution.

"I think everyone is nervous going to the boat, especially if they haven't done it in a while," Morgan said. "It's a healthy nervousness but we meter their nerves by emphasizing their training will set them up properly for landing on the boat."

While the students set their sights on earning their wings of gold, IKE's air department continues to practice their warrior tradecraft at a high level behind the scenes.

"Carrier aviation is always going to have risk and our job is to minimize the risk out here," McQuiggan said. "We have to keep our head on a swivel, be safe and look out for one another."

With CQs in the rearview mirror, IKE will return to Naval Station Norfolk, Virginia, and begin preparation for a scheduled maintenance period.

A T-45C Goshawk training aircraft assigned to Training Squadron (VT) 9 launches from the flight deck of aircraft carrier USS Dwight D. Eisenhower (CVN 69).

A T-45C Goshawk training aircraft from Training Squadron (VT) 9 on approach to perform a touch-and-go on the flight deck of aircraft carrier USS Dwight D. Eisenhower (CVN 69).

U.S. Navy photos by MCSA Theodore Morrison

A T-45C Goshawk training aircraft from Training Squadron (VT) 9 performs a touch-and-go on the flight deck of aircraft carrier USS Dwight D. Eisenhower (CVN 69).

FRCE Ensures Continued Readiness for Fleet Super Hornets

Fleet Readiness Center East (FRCE) recently achieved a significant production milestone by eliminating high-priority backorders for auxiliary power units (APU) used in the F/A-18E/F Super Hornet, bolstering the platform's mission readiness.

Challenges related to the availability of parts and materials used in the APU threatened to keep a number of the Navy's Super Hornets on the ground and led to a number of high-priority backorders known as Issue Priority Group 1 (IPG-1).

Scott Barry, the co-lead for the F/A-18 and EA-18G Program Office's Propulsion and Power Integrated Project Team, credited FRCE with working quickly to increase production throughput of the APUs, cutting down on backorders.

"By looking at innovative ways on expediting part deliveries, reviewing current inspection methods by engineers and increasing efficiencies in processes, FRCE eliminated IPG-1s within a staggering 12-month time frame," Barry said. "This ensured that the Super Hornet is ready to fight tonight and enabled the fleet to perform their mission."

The program office is responsible for acquiring, delivering and sustaining the F/A-18 and EA-18G aircraft, ensuring mission success for U.S. Navy and Marine Corps aviators, as well as international partners. The Super Hornet is designed to meet current Navy fighter mission requirements, maintain fleet air defense and close air support and increase mission range.

Working closely with the Defense Logistics Agency (DLA) and Naval Supply Systems Command (NAVSUP), FRCE exceeded the program office's production expectations, building more APUs than requested and providing assets to fill critical requirements.

"The Super Hornets are the backbone of the U.S. Navy's carrier air wing," said FRCE Commanding Officer Capt. James Belmont. "Ensuring they are mission ready is a top priority. Everyone involved was committed to providing the warfighters with the APUs they needed. Working together with our partners like this, there's no challenge we can't overcome."

An APU is a gas turbine engine that serves as an independent power source for the aircraft. Although separate from the main engines, it is a key component that provides supplementary power while the aircraft is on the ground and during some phases of flight.

To ensure the availability of APUs for the Super Hornet, an integrated product team of experts from FRCE, the program office, DLA and NAVSUP was formed.

"This was a very tight team," said FRCE Components Division Director Lenny Domitrovits. "Everything was being expedited. We were facing the challenge of increasing depot repair throughput despite supply constraints, and we needed to do this as quickly as possible. It was a massive effort."

One major part of this effort involved ensuring an adequate supply of the parts needed to repair and overhaul an APU. According to Sean Doss, a component planner in FRCE's Centralized Coordination Department, there are more than 540 parts listed on the Super Hornet APU's bill of materials.

"A bill of material is basically a listing of all the parts necessary to make

Grady Mayo, a pneudralics systems mechanic at Fleet Readiness Center East, works on an auxiliary power unit used in the F/A-18E/F Super Hornet.

U.S. Navy photos by Joe Andes

a component whole after rework," Doss said. "We have every part listed so we know exactly how many parts it's going to take to rework a component. You might not need every part, but every part needs to be listed on the bill. This way we know exactly what is needed if we had to replace every single part."

Domitrovits credited DLA with providing FRCE's artisans with the parts necessary to rework the APUs despite limited time constraints.

"DLA really came through," Domitrovits said. "It was a herculean effort on their part."

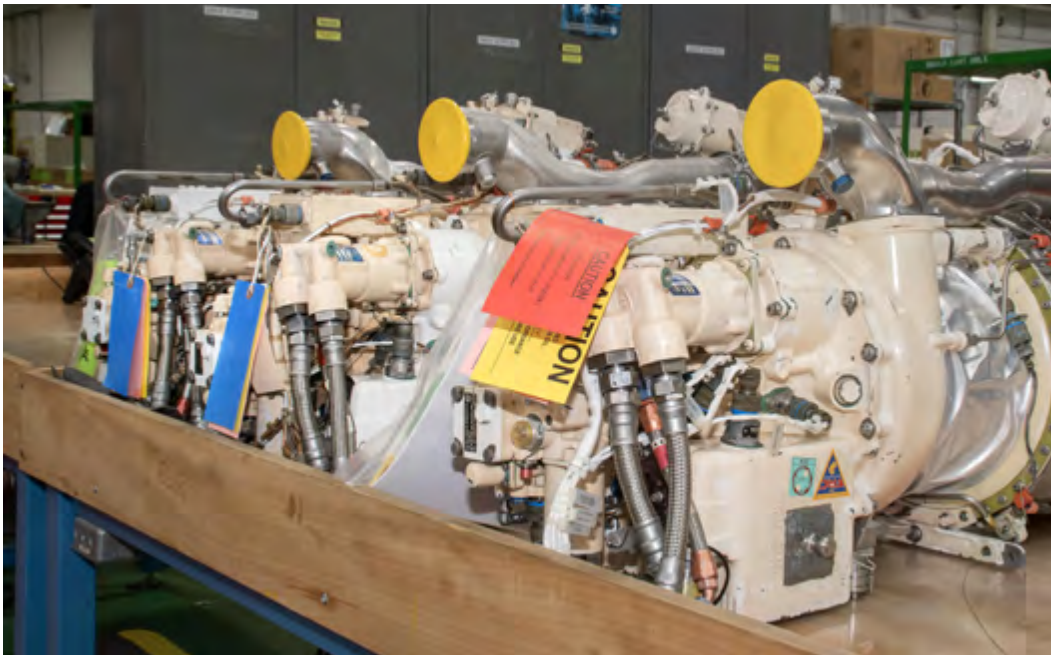
Barry also cited the close collaboration between FRCE and DLA as playing a crucial role in putting overhauled APUs in stock and keeping the Super Hornet flying.

"FRCE and DLA teamed together to identify and aggressively attack supply constraints," Barry said. "They got ahead of this in a high-pressure environment, and ultimately, tripled the depot repair throughput."

In addition to obtaining the necessary parts and materials, the integrated product team also worked to develop and enhance procedures and processes for inducting, reworking and sending out APUs. Engineers, logisticians, and artisans tackled problems ranging from the creation of new tooling and fixtures needed to work on the units to enhancing the efficiency of testing completed components.

"There were a lot of lessons learned and one good one we pulled away from this is empowering each person to come forth with ideas of how to increase efficiency and production in a time of constrained resources," Domitrovits said. "Pretty much every area came up with something innovative."

Ryan McNeil, a pneudralics systems mechanic at Fleet Readiness Center East, works on an auxiliary power unit used in the F/A-18E/F Super Hornet.



Freshly overhauled auxiliary power units for the F/A-18E/F Super Hornet await shipping at Fleet Readiness Center East (FRCE). FRCE recently achieved a significant production milestone by eliminating high-priority backorders for auxiliary power units used in the Super Hornet, bolstering the platform's mission readiness. Challenges related to the availability of parts and materials used in the auxiliary power unit threatened to keep a number of Super Hornets on the ground. The depot eliminated all high-priority backorders within a 12-month time frame.

According to Doss, team members from a variety of disciplines worked together closely and looked beyond their assigned roles to examine the APU repair and overhaul process as a whole.

"There's that old saying about staying in your swim lane," Doss said. "We didn't stay in our swim lanes. We're all helping one another to get things done faster, to get these APUs out to the fleet. If the warfighter needs one now, we would like to be able to push one out now while maintaining the highest quality.

"One thing we continue to concentrate on for this particular product is turnaround time reduction," Doss said. "It's a never ending-process—always continually improving."

Artisans working in FRCE's Engine Driven Compressor and Gas Turbine Shop were tasked with building units for the Super Hornet. To support the needs of the fleet, the artisans had to increase drastically the number of APUs they built each month.

According to Justin Rimmer, shop supervisor, this involved more than simply building more units. Increasing output meant enhancing work processes as well as utilizing new tools and training new personnel.

"We have some really good artisans who've been doing this for a long time and they just hit this out of the park," Rimmer said. "With so many people building at one time, we had new fixtures and new tooling made to handle the number of units we were producing. We also requested some new employees to build up our staff. Each month we met our numbers and, in many cases, exceeded them."

Rimmer said his team was able to accomplish this despite the Super Hornet APU workload being just one facet of the shop's responsibilities.

"We have a schedule we have to meet across the board, not just for that one APU," Rimmer said. "We also build units for the H-60 Black Hawk helicopter and the legacy Hornet. We just got workload back for the P-3, which has been in sun down for six years. We're also working to stand up capability on the new F-35 turbomachine.

"The artisans in this shop didn't skip a beat even while standing up these capabilities at the same time as getting this workload out," Rimmer said. "We know where these APUs are going and we want the warfighter to have not only the units they need, but the best units we can send them."

Domitrovits said this desire to support the warfighter was a driving factor for the entire integrated product team.

"When all the IPG-1s were resolved so far ahead of schedule, it demonstrated how the product team came together and everything came to fruition," Domitrovits said. "We were able to do things that nobody thought were possible. We had to—this has a direct result on mission readiness. These APUs are going to the fleet and enabling the warfighter to do their job. That's what we are here to do."

U.S. Navy photo by Joe Andes

Artisans at Fleet Readiness Center East's Engine Driven Compressor and Gas Turbine shop stand for a group photo with a freshly overhauled auxiliary power unit for the F/A-18E/F Super Hornet.

U.S. Navy photo by Janina Lamoglia

At Naval Air Station Naval Air Station North Island, California, a CMV-22 Osprey undergoes ground turns at the test line. Highly trained artisans at FRCSW perform these critical system tests to ensure the aircraft's operational integrity and readiness.

CMV-22: Operational Excellence at Fleet Readiness Center Southwest

At Fleet Readiness Center Southwest (FRCSW), the maintenance of the CMV-22 Osprey is executed with military precision, reflecting the center's critical role in ensuring the operational readiness and safety of the fleet. Deputy Program Manager Michael Dixon provides an overview of the Planned Maintenance Interval (PMI) Depot event process, demonstrating the meticulous attention to detail required to maintain these advanced tiltrotor aircraft.

The PMI process at FRCSW is a demonstration of operational excellence, structured as an elaborate multi-phase operation that is essential for enhancing the aircraft's lifecycle and ensuring peak performance. It begins with the induction phase, where each Osprey undergoes a thorough assessment to certify its readiness for service and to preserve the aircraft in preparation for the PMI event. This phase is followed by a detailed cleaning, painting and disassembly, preparing the aircraft for the intensive evaluation phase, where examiners perform inspections that check for stress and fatigue within the airframe. The subsequent repair phase is a critical task that involves resolving a range of mechanical, electrical and structural issues, necessitating extensive collaboration across various specialized trades. The aircraft is then assembled, and operational checks of disturbed systems are tested to ensure system integrity and reliability. The conclusion of the PMI event is performed at the Test Line where the aircraft is "depreserved," fuel is reintroduced and aircraft examiners ground turn the aircraft preparing for Functional Check Flight.

Recent advancements have significantly refined the PMI process. The integration of ground-turn capabilities by highly trained artisans allows for more efficient system testing without requiring direct involvement of pilots.

The training regimen for FRCSW Aircraft Examiners is rigorous and thorough, involving advanced simulations and extensive practical experience. This preparation is crucial for meeting the unique demands of maintaining the V-22s sophisticated systems. Quality assurance is integrated into every stage of the PMI, with strict checks designed to ensure all repairs meet the highest standards of safety and performance. These measures are critical for maintaining the integrity of the aircraft and ensuring each mission is successful.

Maintaining a tiltrotor aircraft like the V-22 presents unique challenges due to its complex configuration, which impacts maintenance accessibility and procedures. Dixon emphasizes the importance of adaptability in the maintenance plan to accommodate the aircraft's various composite repair requirements and mechanical complexity.

The effectiveness of the PMI process directly impacts the readiness of the V-22 fleet. By adhering to a stringent and efficient maintenance schedule, FRCSW ensures aircraft are returned to operational status faster than traditional timelines, thus enhancing fleet availability. Looking forward, Dixon anticipates FRCSW will continue to evolve, with Naval Air Station North Island, California, expected to focus exclusively on CMV PMIs in response to shifting fleet requirements and operational strategies.

The dedicated team at FRCSW plays a key role in the broader operational strategy of the CMV-22 Osprey. Their expert maintenance work meets rigorous safety standards and supports the extensive mission capabilities of the Navy, highlighting the critical nature of their expertise in maintaining one of the most sophisticated aircraft in the military fleet.

Written by Janina Lamoglia, public affairs specialist.

Fleet Readiness Center Southeast Inducts First F-35B Aircraft, F135 Power Module for Depot-Level Work

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.

The 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 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 of May 2025, 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

U.S. Navy photos by Toiete Jackson

An F-35B Lightning II assigned to Marine Fighter Attack Squadron 122 at Yuma, Arizona, taxis after landing at Naval Air Station Jacksonville, Florida, as part of the aircraft's temporary transfer to Fleet Readiness Center Southeast (FRCSE). The jet is the first F-35 ever inducted into the depot and is part of a readiness improvement initiative to support corrosion mitigation efforts for the Marine Corps.

Personnel from Fleet Readiness Center Southeast (FRCSE) tow an F-35B Lightning II that was recently delivered from Marine Fighter Attack Squadron 122 at Yuma, Arizona.

effort to support corrosion mitigation efforts for the Marine Corps 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 has had to conduct extensive training and overcome 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 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, Florida, 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 the command will continue to adapt to support military readiness with unwavering dedication and perseverance.

Personnel from Fleet Readiness Center Southeast tow an F-35B Lightning II that was recently delivered from Marine Fighter Attack Squadron 122 at Yuma, Arizona.

U.S. Navy photos by Toiete Jackson

Personnel from Fleet Readiness Center Southeast prepare to park an F-35B Lightning II that was recently delivered from Marine Fighter Attack Squadron 122 at Yuma, Arizona

U.S. Navy photo by Maria Rachel Melchor

Fleet Readiness Center Southwest and the U.S. Army Software Factory collaborate on a web-based application to enhance supply chain transparency and shipment tracking.

FRCSW Revamps Supply Chain Efficiency

Fleet Readiness Center Southwest (FRCSW) has entered into a strategic collaboration with the U.S. Army Software Factory (ASWF) to develop a web-based application designed to improve how Transportation Account Codes (TACs) are managed and tracked. The function of TACs is to help the command pay for and track shipments. The initiative aims to solve major issues with keeping up with and verifying shipments because of the large number and fast pace of movements.

TACs are vital for funding both outbound and inbound shipments to FRCSW. Each Department of Defense (DoD) command utilizes a unique TAC for official purposes. The current system requires a streamlined process to avoid financial discrepancies and limited oversight, prompting FRCSW to seek an innovative solution.

According to Cmdr. Jeffrey Legg, FRCSW MRO Industrial Supply Officer, "The lack of transparency in our current TAC management system has caused budgeting and accounting issues for FRCSW, as well as limited effective internal controls for TAC use."

This realization was one of the key drivers behind seeking a more effective solution.

The FRCSW Industrial Supply team, after extensive market research, identified the ASWF as a cost-effective partner capable of designing the needed system. The ASWF, based in Austin, Texas, trains soldiers in software development to tackle military challenges, providing solutions at no cost to the customer besides maintenance funding.

The collaboration aims to create the TAC Web App, a centralized management system that will standardize TAC use across all FRCSW programs, improve traceability and ensure audit compliance. In July, the first phase of this effort involved process mapping sessions at FRCSW, where ASWF personnel analyzed the existing TAC management process and identified key challenges.

"This is the first non-Army submission received by the ASWF, which required careful navigation of legal and strategic considerations," Legg said. "The successful implementation of the TAC Web App is expected to enhance FRCSW's operational efficiency, with potential applications across other Fleet Readiness Centers and DoD organizations facing similar challenges."

The new system will empower program managers to directly control and track TAC-related expenses, leading to better financial accountability and more accurate budgeting. This collaboration exemplifies FRCSW's commitment to leveraging innovative, low-cost solutions to improve mission readiness and operational effectiveness.

FRCE Named Top Organization in Safety by Department of Defense

For the second time in three years, Fleet Readiness Center East (FRCE) earned recognition as the safest organization within the Department of Defense (DoD) with the 2024 Safety and Occupational Health Management System (SOHMS) Achievement Award in the organizational category.

Occupational Health and Safety Director Phillip Santee of the Office of the Under Secretary of Defense for Personnel and Readiness presented FRCE with the SOHMS Achievement Award during a ceremony held at the Voluntary Protection Programs Participants' Association National Safety+ Conference in Aurora, Colorado, Aug. 26.

FRCE Executive Officer Capt. Randy Berti said receiving this award represents a significant milestone for the depot and its safety journey.

"Safety is one of the core tenets of this command, and having our hard work recognized by the Department of Defense is an honor," Berti said. "By fostering a culture where safety is a top priority, we ensure that each person—from our safety professionals to our artisans on the floor—makes it home every night. It has been a long journey, but our collective commitment to safety excellence is what sets FRC East apart from other commands, and I am proud of this achievement."

The SOHMS Achievement Awards are presented annually by the Office of the Under Secretary of Defense for Personnel Readiness to recognize commands and individuals who have demonstrated exceptional performance in the implementation and sustainment of a safety and occupational health management system that aligns with DoD goals and objectives.

According to Compliance and Quality Department Head Amy Morgan, the command has introduced several safety and occupational health initiatives over the past two decades, all of which have played a pivotal role in earning the depot this prestigious award.

"Improving safety in a complex, industrial facility, especially one with over 4,000 civilians and contractors, is no small task," Morgan said. "We have implemented a vast number of safety projects over the last 20 years that have improved our workplace, all of which took time and effort from everyone involved."

Morgan said some of the safety initiatives the depot has implemented include mandatory head and hand protection policies, aircraft-specific work stands and upgraded fall protection equipment. Additionally, FRCE established two safety doctrines based on international standards and Occupational Safety and Health Administration (OSHA) guidelines, while also requiring many of its employees to complete a 10-hour OSHA safety training course.

In 2004, the depot adopted the Occupational Health and Safety Assessment Series 18001, which provided a framework for systematically assessing hazards, implementing risk control measures, and reducing workplace injuries, illnesses, and incidents. FRCE has since transitioned to an updated version, the International Organization for Standardization 45001 certification.

The command subsequently adopted OSHA's Voluntary Protection Program (VPP), a federal program that recognizes employers and workers in private industry and government agencies who have implemented effective safety and health management systems. VPP focuses on preventing fatalities, injuries and illnesses through a

U.S. Navy photo

Fleet Readiness Center East sheet metal mechanic Marshawn Becton conducts maintenance on a V-22 Osprey at the depot.

U.S. Navy photo

Fleet Readiness Center East Liam Peralta Sobrado, sheet metal helper, performs maintenance on a CH-53E Super Stallion at the depot.

system of hazard prevention and control, worksite analysis, training and leadership commitment and employee involvement. In 2019, the United States Department of Labor recognized FRCE as a VPP Star Site, making FRCE the first naval aviation command to reach that level. FRCE attained VPP Star recertification in 2023.

Assistant Safety Director Brian Snow said since the adoption of these safety management systems, workplace safety at FRCE has improved.

"We can see the direct results of our safety management systems in the numbers," Snow said. "In 2002, before we implemented the safety management systems, we had 835 OSHA-recordable mishaps; last year, we only had 27. As of right now, we only have 18 and we are nearly three-quarters of the way through the calendar year, so we are tracking to be just about where we were last year, if not fewer."

According to Morgan, protecting employees from workplace injuries and illnesses plays an essential role in providing capable and quality aircraft to the warfighter. Since 2016, FRCE has seen a 53 percent decrease in Federal Employees' Compensation Program costs and a significant decrease in lost workdays due to injuries.

"By increasing our safety training and education, providing better safety equipment, engaging in more peer-to-peer safety talks and, most importantly, fostering a culture of safety, we significantly decrease both the number of on-the-job injuries and the costs associated with those injuries," Morgan said. "Avoiding these costs, which can run into the millions of dollars, helps support our command's financial stability and, in turn, ability to continue supporting our warfighters.

"Fewer injuries mean more employees are here to support our workload," Morgan said. "The more people we have out on the floor, the faster we can return aircraft to the fleet, which is why lowering the number of lost workdays is so important. In 2020, we had 146 lost workdays and in 2023, we only had 62. The work we do here is very important, and so are our people, so this is a win-win situation."

The SOHMS Achievement Award is one of many accolades FRCE has garnered for its safety and occupational health efforts. The depot has been recognized with many other prestigious awards. In 2024, FRCE earned the Chief of Naval Operations (CNO) Shore Safety Award in the Large Industrial Activity category, the command's third receipt of this award; a seventh CNO Aviation Safety Award; and its seventh consecutive Gold Award, along with four Million Hour Awards from the North Carolina Department of Labor.

Though FRCE has received many awards for safety excellence this year, Snow said the SOHMS Achievement Award is the highest honor the depot has received in 2024.

"The SOHMS Achievement Award is awarded to one command and one individual throughout the entire Department of Defense," Snow said. "We're not talking about just within the Department of the Navy—no, we are talking about the Army, Air Force, Coast Guard, Marine Corps and all of the DoD agencies who have submitted nomination packets to compete for this award.

"For us to be selected for this award is impressive to say the least," Snow said. "We are now the example for other commands to emulate."

Morgan highlighted that, in addition to the significance of this award, it recognizes the effectiveness of the foundational and cultural changes made by the command to improve safety.

"This isn't the depot's first time receiving this award; we also won it in 2022," Morgan said. "To be able to say we are the best of the best in all of the DoD in terms of safety is a tremendous honor, but to say we have won this award twice within the past three years, is even better. It tells us we are doing something right by continuously improving and, more importantly, sustaining our safety management systems."

Morgan attributed the success of FRCE's safety and occupational health initiatives to the collective effort of the entire workforce.

"This award was earned by the entire command," Morgan said. "It's not just one person. It's not just the safety division. It's everyone working together as a team to really lean forward into safety by following the processes and procedures that keep us all safe. It says a lot about the workforce here because without their commitment to our safety programs, we wouldn't be where we are today."

FRCSW Takes Extra Steps to Assure Quality

Quality assurance simply refers to inspections to catch errors or product defects before they reach the user, but a healthy Quality Management System (QMS) involves much more than that. A truly robust QMS optimizes an organization's performance not only by monitoring process results, but also managing and continually improving the processes themselves.

Adam Kimmerly, quality manager at Fleet Readiness Center Southwest (FRCSW), leads the charge in revolutionizing quality management within the command. At the forefront of this transformation is the Integrated Quality Team (IQT), a dynamic group spearheaded by an industrial engineer serving as the IQT lead, along with a Quality Assurance Specialist (IQT QAS). The IQT stands out due to its commitment to elevating safety, quality, on-time delivery and cost-effectiveness.

What distinguishes the IQT in the realm of quality management and production support?

At its essence, the IQT is committed to elevating the safety, quality, on-time delivery and cost effectiveness of FRCSW's production team. By pinpointing and mitigating process issues and risks, the team plays a pivotal role in optimizing process effectiveness, perfectly aligning with FRCSW's overarching mission and contributing significantly to its goals.

Traditionally, quality management at FRCSW, like many other commands, is primarily focused on product inspections and procedural compliance. However, this approach often led to surface level solutions like retraining without delving into the root causes of problems. The IQT challenges this conventional wisdom by investigating deeper into the "why" behind errors and deviations, offering a more comprehensive and effective problem-solving approach for the entire Navy enterprise.

To maintain and enhance quality, the IQT employs a plethora of sophisticated methodologies. Among these, the 8D approach to problem-solving, the five-why technique and fishbone diagrams stand out, enabling the team to identify, document and address accurately the causes of quality issues. Moreover, the IQT utilizes proactive tools like the Process Failure Modes and Effects Analysis (PFMEA) to identify and manage potential risks proactively.

The 8D approach to problem-solving involves eight steps: 1) Forming a team; 2) Describing the problem; 3) Implementing immediate containment actions; 4) Identifying root causes; 5) Developing permanent corrective actions; 6) Implementing corrective actions; 7) Preventing recurrence; and 8) Recognizing team efforts. This structured method ensures thorough analysis and effective resolution of issues.

The five-why technique is a simple yet powerful tool for identifying the underlying causes of a problem by repeatedly asking "why" until the root cause is uncovered. It helps in digging deeper beyond the symptoms to address the fundamental issues.

Fishbone diagrams, also known as Ishikawa or cause-and-effect diagrams, visually represent the potential causes of a problem. They categorize causes into major branches representing different aspects of the issue, facilitating comprehensive analysis and solution identification.

The Process Failure Modes and Effects Analysis (PFMEA) is a proactive tool used to anticipate potential failure modes within a process, evaluate their effects and prioritize actions to mitigate risks. It helps in identifying weak points

in processes and implementing preventive measures to enhance quality and reliability.

One of the IQT's most notable strengths lies in its collaborative approach. By closely working with artisans on the floor, the team taps into a wealth of practical knowledge and experience, identifying process failures and improvement opportunities. This synergy between the IQT and artisans working on the aircraft fosters a culture of continuous improvement and ensures the implementation of effective, ground-level solutions.

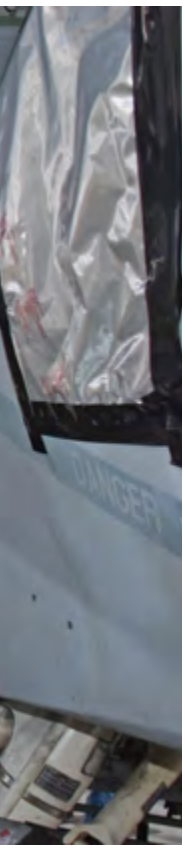
ing regulations, the IQT remains at the forefront of upholding quality standards. By actively contributing to technical publications, policies and standards, the team ensures FRCSW's practices remain cutting-edge and compliant.

The IQT has successfully built trust throughout all levels of the command and has demonstrated its value in supporting FRCSW's mission and goals. This shift from viewing quality management as a disciplinary measure to a supportive, solution-driven approach marks a significant cultural change within the command.

artisans and other stakeholders, facilitating the identification of improvement opportunities and fostering trust and openness.

What truly sets the IQT apart is its process-focused and customer-oriented mindset. By aligning its efforts with the needs of the fleet and production, the team has established itself as an indispensable asset to FRCSW's operations and success.

The Integrated Quality Team at FRCSW exemplifies innovation in quality management. Through its approach with



Aircraft mechanics Jaaziel Juego and Dang Nguyen install a drag load onto an F/A-18 Super Hornet at Naval Air Station North Island, Coronado, California. FRCSW is the leading maintenance, repair and overhaul depot on the West Coast providing premiere quality workmanship in support of our warfighters.

U.S. Navy photos by Janina Lamoglia

Aircraft electrician Orlando Irwin rewires the leading edge extension wing harness on an F/A-18 Super Hornet at NAS North Island, Coronado, California.

The IQT's impact on FRCSW's quality standards is profound. Notable successes include the improvement of the H-53 flight control rigging process, which enhanced quality within FRCSWs H-53 line and had far-reaching positive effects across the fleet, showcasing the team's ability to drive significant change.

In an environment marked by rapid technological advancements and evolv-

The IQT is instrumental in promoting a culture of quality awareness and continuous improvement. By prioritizing open communication and focusing on process over blame, the team has cultivated an environment where all staff are motivated to contribute to the command's success. Direct interaction and involvement with processes allow the IQT to gather valuable feedback from

collaborative efforts and a continuous improvement mindset, the IQT is solving today's problems and paving the way for a future where quality is ingrained in every aspect of production and operations. Due to the innovative advancements facilitated by the IQT, FRCSW is able to meet its mission in the most efficient, safe and cost effective manner possible.

Professional Reading

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

Editor's Note: In this issue's column, we are reviewing two new books on a very important but often overlooked craft, the flying boat, each from one of the opposing warring powers, Great Britain and Japan. After the successful launch of the first powered manned aircraft, the Wright Flyer in December 1903, much of subsequent aviation development in the next five to 10 years was based on water-borne types. In particular were flying boats, where the fuselage was also a boat-shaped hull that was the base to hold two large-span wings that could offer the required lift obtained from the relatively low-horse-power engines of the time while bearing the weight of one or two crew members, pilot and observer/mechanic and fuel.

World War I also saw the development and use of flying boats as anti-submarine weapons. By World War II, every major power involved in the conflict had several indigenous flying-boat designs and, before the war, a few countries used the design as a long-range commercial aircraft, especially the U.S., to cover the vast distances of the Pacific Ocean to reach Hawaii and the Orient. Here, we have two recent books both from England's currently most prodigious publisher, Osprey.

A third review examines the U.S. Pacific fleet prior to World War II.

— Cmdr. Peter B. Mersky, USNR (Ret.)

Kawanishi H6K "Mavis" and H8K "Emily" Units

By Edward M. Young
Osprey Publishing, Oxford, UK. 2024. 96 pp. Ill.

No. 153 in the extensive Combat Aircraft series, this new Osprey book combines two of the Imperial Japanese Navy's (IJN) primary long-range flying boats versus the U.S. PB4Y-1/2 Liberator/Privateer (Duel 126, 2023). We reviewed the latter in the Summer 2023 issue.

The Mavis—the Allied code name for the type (we have often noted the Allied system of code names for Japanese aircraft during WWII instituted by late 1942)—was the most active long-range IJN "boat" at the beginning of the Pacific War. According to the author, the day after the attack on Pearl Harbor, 15 Mavises bombed and strafed little Howland Island, which raises the question of whether famed and now-missing aviatrix Amelia Earhart and her navigator Fred Noonan had crashed anywhere near the small outcropping (which was their intended destination of their 1937 flight), and if so, were they alive and had seen and survived the Japanese attack?

The Emily has long been considered among the best, if not the best, flying boat of the war. A few of them were engaged and shot down by Navy B-24/PB4Ys.

Photo courtesy of Osprey Publishing

This H8K2 Type 2 Emily was captured and flown to the Naval Base at Yokosuka Nov. 13, 1945, and loaded onto the seaplane tender USS Cumberland Sound (AV 17). The flying boat had evidently developed engine problems and was thus relegated to taxiing trial, where an engine failed, terminating the tests. Further examination credited the Japanese with installing self-sealing fuel tanks in the Emily. Resuming limited flight tests, the aircraft revealed it had an impressive top speed of 290 mph. Assigned to the Smithsonian Institution, the H8K2 was placed in long-term storage at Naval Air Station Norfolk, Virginia, until June 1979, when it was shipped back to Japan, where it had been given to the Museum of Maritime Science in Tokyo. In March 2004, the Emily was moved to the Japanese Maritime Self-Defense Force Naval Aviation Museum NAB Kanoya in Kagoshima Prefecture, where it remains today.

Photo courtesy of the Peter M. Bowers collection

This H6K Type 97 Mavis is carrying perhaps 12 small 132-pound bombs on underwing struts. Besides its maritime patrol duties, the Mavis was occasionally used as a bomber. Using four 1300 hp radial engines, it originally had a power-operated dorsally-mounted turret, which was replaced by two staggered (one on each side) blisters—similar to the U.S. PBY Catalina—each containing a 7.7mm machine gun. A third 7.7mm machine gun was placed in the bow station, while a fourth machine gun could be mounted in an open station just aft of the two blisters. In addition, the Mavis also used a 20mm cannon in a hand-operated tail turret.

The book is edited by Osprey's premier aviation editor Tony Holmes and written by an experienced author with 15 titles to his credit, including a previous book in the Osprey Duel series. It includes a predictably stunning front-cover illustration by Scottish artist Gareth Hector and aircraft profiles by long-time American profile and illustration artist Jim Laurier. And, oh, yes, the customary collection of aircraft photos rounds out this excellent description of two Japanese naval aircraft that might not be that well-known to enthusiasts of World War II aviation history. One can't ask for a better combination than that.

Photo courtesy of National Achives and Records Administration (NARA)

This H8K from the 851st Kokutai was attacked by a U.S. Navy PB4Y-1 of VB-115 on July 2, 1944, in the Central Pacific. Flown by Lt. Stoughton Atwood, the PB4Y's crew shot down the Japanese flying boat, although the Emily was well-armed with 7.9mm machine guns and 20mm cannon. The photo was taken by Stoughton's co-pilot, Ens. E. Regan.

A VB-109 crew, with Lt. John Keeling in control, caught this Mavis on May 7, 1944, and shot it down near the Caroline Islands. The U.S. Navy gunners quickly set the enemy flying boat on fire. As the photo shows the Mavis without any defensive positions, it is probably an unarmed H6K4-1 transport. In all, five Mavis Type 97s and 10 Type 2 Emilys were shot down by PB4Y crews during 1943-1945.

Photo courtesy of NARA

Sunderland vs U-Boat Bay of Biscay 1943-44

By Mark Lardas, Osprey Publishing, Oxford, UK. 2023. 80 pp. Ill.

The primary British flying boat of World War II, the Short Sunderland was a large, long-range maritime reconnaissance bomber with many roles. It first flew in 1937. Capable of carrying different weapon loads, including 2,000-pound bombs, as well as three Boulton Paul turrets, each usually, but not always (especially in the bow turret) equipped with four 0.303-inch Browning machine guns. Attacking the "Fliegendes Stachelschwein" (Flying Porcupine), the nickname the Luftwaffe gave it, was not something to be taken lightly, especially when the big "boat" was down low to the water and its dorsal-mounted

The Sunderland was a large aircraft, even for a flying boat, and accommodations on such aircraft are not always that great. But as viewed here, the Sunderland's cockpit flight station was quite roomy. The Royal Air Force captain on the left has his hand on the four throttles while the co-pilot signals a convoy below with an Aldis lamp. Large "boats" usually included extra pilots in their crews because of the duration of their over-water missions.

Photo courtesy of the Mark Lardas collection

turret, tail and bow turrets were a major defense.

Of course, the Royal Air Force (RAF) also flew the iconic Consolidated Catalina, the early war U.S. Navy flying boat, which was also part of other countries' maritime lineup and figured in such important early war campaigns as Midway and Guadalcanal.

Not many full-length books about the Sunderland have been published over the years. One that comes to mind was published by Airlife in 1994 in England,

Photo courtesy of the Philip Jarrett collection

On July 11,1942, a Sunderland II (W3989) of No. 228 Squadron is on patrol from Royal Air Force Oban, Scotland. This veteran Sunderland served until February 1945, when it was "struck off charge."

U.S. Navy Pacific Fleet, 1941, America's Mighty Last Battleship Fleet

By Mark Lardas, Osprey Publishing, Oxford, UK. 2024. 80 pp. Ill.

A new addition to Osprey's Fleet series (No. 7), this new title by a recently established author, who works at the Johnson Space Center in Houston, Texas, describes the American Navy and its ships just before the Japanese attack on Pearl Harbor Dec. 7, 1941, thrust the U.S. into World War II.

Desperately trying to remain neutral, or at least out of the growing conflict overseas, America, under President Franklin D. Roosevelt and his cabinet of experienced long-time military advisers and other diplomatic specialists, were having a very hard time of it. It was only the surprise attack from the very ambitious and also worried Japanese in the first daylight hours of another supposed quiet Sunday in what many considered paradise so far from the U.S. mainland, that proved the now-obvious falsehood of the value of remaining neutral.

As lines of men formed, anxious to join what they supposed would be a quick revenge against Japan's bold but ultimately unsustainable war against its eastern

Illustration courtesy of Osprey Publishing

In a very unusual and rare depiction of an important post-Pearl Harbor event, which the artist has labeled "Buffalo Run," a flight deck is shown loaded with 18 Brewster F2A-3 Buffalos of Marine Corps fighter squadron VMF-221 on the flight deck of the carrier USS Saratoga (CV 3), originally on the way to relieve the decimated squadron VMF-211, which had been flying Grumman F4F-3 Wildcats from beleaguered Wake Island. When delays at Pearl and later rough seas delayed the carrier's departure and progress, Adm. William Pye, in temporary command of the Pacific Fleet, ordered the Sara to turn around, perhaps keeping the air-Marines from further defending Wake, which the Japanese succeeded in taking. In the event, Sara launched 14 of the Buffalos toward Midway Island, where they became part of the defending force against the major Japanese attack on June 4. Artist Edouard A. Groult's illustration shows the lead fighter already beginning its takeoff roll while the flight deck crew readies the other Brewsters for their launch. Behind, at the aft end of the flight deck, three SBD Dauntless dive bombers wait their turn while a plane guard destroyer is on station aft of the carrier.

Photo courtesy of Wikimedia

Like most WWII-era flying boats, the Sunderland had a bow turret that could slide back to allow the crew access to a mooring in the water ahead of the aircraft. In this photo, crew members secure their aircraft to its mooring buoy.

then republished by Pen & Sword in 2012. The title was "Short Sunderland, the 'Flying Porcupines' in the Second World War," by Andrew Hendrie, a former RAF Lockheed Hudson and Sunderland test pilot. Osprey contributed a larger book—No. 19 in its Combat Aircraft series in 2000, by veteran author and artist Jon Lake—"Sunderland Squadrons of World War 2."

This new Osprey offering by Lardas describes the efforts of RAF Sunderland crews against the German submarines in the area off France's west coast during the mid-war phase of WWII. The U-boat danger, which had been so much a part of the early naval war, was slightly diminished but nonetheless still dangerous concerning naval traffic endeavoring to bring supplies to Allied forces as their leaders considered how best to invade and conquer the Nazi menace.

The book contains a lot of narrative and photographic detail on what both the Sunderland and U-boat crews went through to train and then fly these mid-war missions.

Photo courtesy of NARA

The aircraft carrier USS Enterprise (CV 6) in the Pacific in June 1941 is turning into the wind to recover aircraft. Her flight deck of stained natural wood stands out. This carrier was one of the most highly-decorated ships of WWII, serving in many of the major battles and campaigns in the Pacific War.

rivals, led by the U.S., the U.S. Navy was making a quick assessment of what it had left in its forces, so terribly decimated in the waters of Pearl Harbor.

Lardas' book focuses on battleships and includes a few photos of other ships, including carriers, which were quickly taking the battleship's place as the capital ship of most navies able to build and/or operate them during the war, thereby providing a look at how the world was progressing to this important change in order of battle. The U.S. did maintain a few battleships after WWII, even recommissioning the USS Iowa (BB-61) and USS New Jersey (BB-62). The New Jersey bombarded rebel positions in Lebanon after the drastic destruction of Marine barracks on Oct. 23, 1983.

The Iowa is presently at the Port of San Pedro, California, and the New Jersey is at Camden, New Jersey, as museum ships open to the public.

There is a lot of rarely discussed information in this book, along with Edouard A. Groult's fine artwork.

Photo courtesy of NARA

A Curtiss SBC-3 scout bomber of VS-6 from the USS Enterprise, flies up the starboard side of USS Mustin (DD 413) on May 26, 1940. The SBC was the last combat biplane for the Navy, but did not see combat in WWII. Some 40 were headed for France on a French carrier, but when France was conquered by Germany in June 1940, the SBCs were diverted to the French island of Martinique and were eventually scrapped. However, five of the French SBCs that were not aboard the carrier reached England where they were named "Cleveland," and they were used as instructional airframes.

Thanks to Robin Wane of Bloomsbury, New York, and Tony Holmes of Osprey, UK, for their help with this column.

Editor's Choice

In June, the Office of the Director of National Intelligence and several partner nations issued a public warning of efforts by a U.S. competitor state to recruit current and former members of the U.S. military to train its military. Further, the outright espionage threat is real: In the past months, two San Diego sailors (August 2023) and a Navy Chief (February 2024) have been charged or convicted of various counts of espionage. Two civilians pleaded guilty to similar charges in 2022.

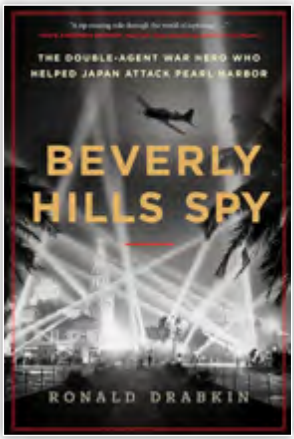
With this backdrop, it is timely to review "Beverly Hills Spy," a 2024 volume researched and written by Ronald Drabkin on the double-agent war hero, British citizen Frederick Rutland, whose information arguably helped the Japanese Navy attack Pearl Harbor. It is a sobering look at the twin motivators of greed and vindictiveness, with tragic results.

—David Byrd, Editor in Chief

Beverly Hills Spy: The Double-Agent War Hero Who Helped Japan Attack Pearl Harbor

By Ronald Drabkin
Harper Collins, 2024, 257 pp. Ill.

Review by Paul Walker



History that reads like a novel is all the rage right now. Authors, many of them not historians, focus on a previously unheralded individual or small group who were involved in feats of daring and thrilling activities such as spying. World War II is a particularly ripe field for these micro-focused histories. In "Beverly Hills Spy: The Double-Agent War Hero Who Helped Japan Attack Pearl Harbor," Ronald Drabkin (not a historian) has taken this format to the extreme, with his unsourced text and complete dialogues often feeling more novelistic in the fictional sense rather than a presentation of history.

Drabkin engagingly tells the story of Frederick Rutland, a World War I hero known as "Rutland of Jutland," because he was not only the pilot of the sea plane that found the German fleet, but he also saved the life of a drowning sailor as his ship took on survivors. Rutland's heroics made him a press darling, attention which he enjoyed and sought the rest of his life. After the war, Rutland assisted in designing concepts for British aircraft carriers, though the Royal Navy implemented a series of half measures on existing ships rather than the purpose-built flattop carrier advocated by Rutland. With the merger of the Royal Navy air forces and the Army's Royal Flying Corps to form the Royal Air Force, Rutland's progress up the ranks stalled, due in no small part to his lower class origins.

Photo courtesy of Naval History and Heritage Command (NHHC)

IJN Kaga at sea following her 1934-36 modernization.

Photo courtesy of U.S. Naval Institute; Imperial War Museum

A Sempill Mission British flying instructor stands with Japanese naval aviators in front of a Gloster Sparrowhawk I. As part of the mission, 50 of the carrier fighters were supplied to the Japanese Navy in 1921.

Photo courtesy of NHHC

Naval Air Station San Pedro, California (Terminal Island) in late 1940.

Although Great Britain provided technical support to Japan's Navy in the early 1920s, that support ended as Japan grew to be the third largest Navy in the world. As a result of the official technical exchanges and sales of British aircraft to the Japanese, a substantial number of British citizens were employed in Japan's aviation industry. It was only natural, then, that Rutland's thoughts of post-RAF employment turned toward Japan. Rather than hire on direct with industry, though, Rutland offered his services directly to the Japanese Navy before his retirement was final. This served to put him on MI5's radar, not only because of his war hero status, but because their codebreaking efforts caught the Japanese glee at having recruited "Rutland of Jutland."

Upon his retirement, Rutland moved to Japan, employed by various companies, while at the same time receiving money from the Japanese Navy. Drabkin credits Rutland with helping the Japanese design their flattop carrier fleet, with

Photo courtesy of NHHC

IJN Akagi at sea during the summer of 1941, with three Mitsubishi A6M Zero fighters parked forward.

two of the carriers he helped build participating in the later attack on Pearl Harbor. As the political climate changed in the 1930s, Rutland eventually moved to Los Angeles, where the U.S. Pacific Fleet was based. He settled in Hollywood and ran a technology-based import-export business focused on Japan; his residency in the United States and military background in Great Britain proved to be an excellent cover for espionage. Rutland obtained information from his U.S. contacts in the aviation and defense industry, trading on his notoriety from World War I, and sent it along to the Japanese.

With the transfer of the Pacific Fleet to Pearl Harbor, Hawaii, the Japanese relied less on Rutland and more on their own personnel in Hawaii and on the West Coast. With war rapidly approaching, Rutland became a double agent, recruited by the Office of Naval Intelligence's (ONI) senior officer on the West Coast. Unfortunately, Rutland's ONI contact neglected to inform his superiors at ONI or the FBI. When the FBI finally did take an interest in Rutland, they were warned off because he was working with ONI, ostensibly to help pinpoint when the Japanese attack would occur. The lack of cooperation between ONI and FBI prevented a true assessment of the risks presented by the recruitment of Rutland by ONI. It did not help that MI5 did not share what it knew about Rutland with the Americans. Drabkin attributes this failure to share information about Rutland and other spies to the British being too embarrassed to admit one of their war heroes was spying for the Japanese against America. It is hard to evaluate the accuracy of this claim due to lack of source notes in the text. At this point the British-U.S. intelligence relationship was in its nascent stages, and it is not clear either side was yet willing to engage in the exchange of sensitive source intelligence. The "special relationship" was

Photo courtesy of NHHC

Aerial view of airstrip and facilities in Long Beach, California, in 1940.

forged during the war and did not exist at this point in time.

The failure to use source notes is particularly disappointing since the author gained access to a collection of documents on pre-World War II Japanese Naval Intelligence, including some that no historian, Japanese or American, has ever seen. Drabkin clearly relies heavily on these sources in certain sections of the story, but it is not possible to know how accurately it has been presented without the ability to replicate the underlying research.

Sourcing shortcomings aside, the story of "Rutland of Jutland" is a timely reminder of the importance of cooperation and collaboration between allies and organizations to defend U.S. national security. As the information sharing pendulum starts to swing away from its post-9/11 apex, we must ensure "need to know" does not become a proxy for "I've got a secret and you don't," allowing personalities to overwhelm process to the detriment of security.

Throughout the book, Rutland comes across as a glory-seeking opportunist. In the epilogue, Drabkin presents some strong conclusions about Rutland's efforts to warn the U.S. about a Japanese attack and the FBI's "cover-up" of those efforts so the FBI could "avoid taking blame for the Pearl Harbor attack." Integrating those conclusions more thoroughly in the text and properly sourcing them would have presented a more nuanced portrait of Rutland and a stronger case against the FBI. But, as one might expect from a story about spies in Hollywood, sources are not allowed to get in the way of a good story, well told.

Paul Walker is a former Naval Aviator and Navy intelligence officer. He is currently attorney-adviser to the Deputy Under Secretary of the Navy for Intelligence and Security.

I AM NAVAL AVIATION

Marine Corps Lance Cpl. Angel MendozaCruz,
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