

NAVAL AVIATION NEWS

THE FLAGSHIP PUBLICATION OF NAVAL AVIATION SINCE 1917

FALL 2019

SUSTAINED



LETHALITY

SECDEF's Super Hornet Goal Achieved



WHAT'S INSIDE

- ▶ MQ-25 Stingray First Flight
- ▶ Physiological Episodes Update
- ▶ MH-60S Gunner Seat Delivered



A P-8A Poseidon assigned to the "Golden Swordsmen" of Patrol Squadron (VP) 47 performs a fly-by next to the Arleigh Burke-class guided-missile destroyer USS Preble (DDG 88).

U.S. Navy photo by MC1 Bryan Niegel

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On the cover: F/A-18E Super Hornets from Strike Fighter Squadron (VFA) 136, the "Knighthawks," fly in formation during a photo exercise over the California coast. (U.S. Navy photo by CMC Shannon Renfro)

This issue contains updates on a range of platforms starting with the F/A-18E/F Super Hornet and EA-18G Growler communities, which have implemented changes that will ensure Naval Aviation continues to sustain its 80-percent mission-capable rate of F/A-18E/F Super Hornets and EA-18G Growlers. Other milestones include the first flight of the first operational carrier-based unmanned refueling aircraft, the MQ-25 Stingray and the first E-2D with aerial refueling capability joins the fleet. Commander, Joint Strike Fighter Wing looks back on its first year and the MH-60S community receives the first two redesigned gunner seats. Naval Test Wing Atlantic continues to promote its mission—testing Naval Aviation's latest technology for the fleet—with a question-and-answer piece from Commodore Col. Rich "Chachi" Marigliano, and a special section on the testing conducted by Air Test and Evaluation Squadron (HX) 21.

On the back cover: Aviation Machinist Mate Airman Monica Lazard, assigned to Patrol Squadron (VP) 5, the "Mad Foxes," removes a P-8A Poseidon rotary blade for an inspection. (U.S. Navy photo by AO2 Trenton Jameson)

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Flightline

Naval Aviation Focuses on Maintaining Readiness

Editor's note: As the Program Executive Officer, Tactical Aircraft Programs, Rear Adm. Shane Gahagan serves as the lead for the engineering reform pillar of the Naval Sustainment System-Aviation. In his column below, he summarizes some of the process improvements that are designed to sustain readiness.

By Rear Adm. Shane Gahagan, PEO(T)

A week ahead of the Secretary of Defense and Air Boss's deadline, we surpassed an incredible milestone in Naval Aviation in September exceeding 80-percent mission-capable (MC) F/A-18E/F Super Hornets and EA-18G Growlers. That's more than 341 Super Hornets and 93 Growlers ready to fight the fight at a moment's notice.

We have proven to ourselves, our nation and our adversaries that we can surge in a time of need. But our work's not done.

This feat was achieved by all hands—from maintainers on the deck plate to senior leaders—working together to achieve the same goal using the six pillars of the Naval Sustainment System-Aviation (NSS-A) initiative to identify and swarm the issues that kept our MC rates lower than 80 percent. With NSS-A, we put the right people in the right places, equipped with the right parts and the right processes and empowered them to achieve the mission.

Naval Aviation has always been focused on readiness, but our Super Hornet MC numbers hovered around 250-260 for nearly a decade. That doesn't mean we weren't combat ready, Naval Aviation always answered our nation's call, but those numbers were not where we wanted them to be. With the current increase in readiness numbers, we have increased our lethality and survivability response.

We have institutionalized many processes that will continue to improve readiness, and we are doing things better. NSS-A efforts have been about challenging ourselves to work more efficiently.

The success of the NSS-A is a product of years of lessons learned and a culmination of the hard work of many individuals throughout the Naval Aviation Enterprise (NAE). We brought in aviation experts with demonstrated proficiency in improving efficiency, effectiveness and performance from the commercial aircraft industry. By collaborating and implementing their best practices, we have decreased turnaround times for maintenance, improved efficiencies at Fleet Readiness Centers (FRCs) and delivered parts to the fleet faster.

We also set up an environment that allowed open communication among the stakeholders, which allowed everybody to bring the brutal facts necessary to find the root cause of why we were not getting aircraft in a MC status.

I want to summarize some of these changes in each of the pillars that will sustain our MC rates for years to come.

Maintenance Operations Center (MOC)/Aircraft-On-Ground (AOG) cell: One of the best industry practices we implemented was establishing an MOC/AOG cell. This cell built strategic partnerships across Naval Aviation communities, focused on getting aircraft up faster instead of focusing on departmentalized internal metrics. This single-decision entity had all the enabling functions and organizations present to make decisions on a daily basis, and all were focused on the same goal.

Fleet Readiness Center (FRC) reform: Within the FRCs, we've created elite-level organic facilities that have adopted proven commercial practices to maximize quality and cost efficiency while minimizing cycle times.

Organization-level reform: The NAE refocused and balanced demand with optimal maintenance performance close to the flight line by empowering petty officers to oversee aircraft throughout the inspection process.

Supply chain reform: We are making sure that the right parts are at the right place at the right time by having various stakeholders form a single accountable entity responsible for the end-to-end material process. Naval Supply Systems Command, Weapon Systems Support continues to improve the sup-

ply chain with more responsive contracting, supplier integration, enhanced customer presence and improved collaboration with the Defense Logistics Agency.

Engineering and maintenance reform: We have developed an engineering-driven reliability process that improves how systems are sustained throughout their life cycle. Reliability engineering is another industry best practice applied through the establishment of a Reliability Control Board (RCB). Through the RCB, we identify the top degraders in a single list and strategically align activities throughout the NAE to prioritize and put the right people, parts and processes in place to address them.

Governance, accountability and organization: We have a single point of accountability for sustainment with the infrastructure to better support fundamental changes. The governance pillar identified issues that each pillar was having, and then swarmed, crushed the barriers and moved forward.

These six pillars impact all aspects of the maintenance process and require the expertise, experience and support of each and every member of the Naval Aviation team. We have aligned how we communicate and focus as one on the end game by identifying and solving the issues that limited our number of MC aircraft.

Keep in mind that while we were making these changes, we were continuing to fly, deploy and respond to national tasking.



U.S. Navy photo by MC2 Janweb B. Lagazo

An E/A-18G Growler and an F/A-18E Super Hornet launch from the flight deck of aircraft carrier USS Ronald Reagan (CVN 76).

Some of the changes were truly a cultural shift, which took time to implement fleet-wide, but once the parts and processes were in place, we saw readiness improve steadily.

These cultural shifts are becoming the new normal for the fleet and the workforce, all of whom have bought into industry best practices. Embracing and continuing to improve our processes remains key to maintaining a MC rate of 80 percent or more.

Achieving the goal for the Super Hornet and Growler fleets was just the beginning. Now, our focus is on keeping those readiness numbers where we need them to be while improving readiness and safety for each type/model/series.

While the initial focus of the NSS-A was on the Super Hor-

nets, we have already applied it to the E-2D fleet and have seen an MC rate increase of more than 10 percent in three months. We will continue to implement the NSS-A best practices across the NAE.

With the best practices implemented under NSS-A, we have the tools and visibility to gauge our sustainment efforts daily—so if they aren't working, we will readjust and swarm the problem areas to maintain our sustainment levels.

Congratulations to the NAE on exceeding the goal and thank you for getting us there. As we move forward, it's important to remember that we still have work to do—we now have the equally challenging task of sustaining these efforts. 🇺🇸

Naval Aviation Garners SECNAV Award for Readiness

By Andrea Watters

Secretary of the Navy Richard V. Spencer acknowledged the efforts and proactive role Sailors, civilians and contractors played in achieving an overall 80-percent mission-capable rate for fiscal 2019 F-18 aircraft that form the backbone of the Navy's tactical air power.

Spencer presented the Certificate of Achievement via video conference from the Pentagon Oct. 17.

Last year, the Naval Aviation Enterprise (NAE) implemented the Naval Sustainment System-Aviation (NSS-A) to address all elements of aviation maintenance—people, parts and processes. As a result, Naval Aviation achieved its Secretary of Defense-

mandated readiness target of an 80-percent mission-capable rate for its operational F/A-18 A-D Hornets, F/A-18 E/F Super Hornet and EA-18G Growler fleets.

"The great reason we are here today is to recognize everyone on this team who had something to do with attaining this meaningful goal," Spencer said. "It's a job well done."

He compared the NSS-A process to peeling back layers of an onion to find aspects that needed corrective actions.

"In reaching 80-percent, we learned some things and we continue to learn where we have certain aspects to correct. That unto itself is the amazing learning," Spencer said.

The effort is a result of a partnership

between naval leaders and civilian aviation experts. By collaborating and implementing commercial best practices, the NAE decreased maintenance turnaround times, improved efficiencies at Fleet Readiness Centers (FRCs) and delivered parts to the fleet faster.

Under NSS, all NAE stakeholders worked as a team, said Dave Heinauer, production director, Commander, Fleet Readiness Centers (COMFRC). "Before NSS was implemented, each stakeholder was working independently to improve readiness."

Increased funding also played a major role.

"From the engineering perspective, the key element to enable success was an increase in resources—funding for additional

Governance Board

Capt. (sel) Michael 'Sniff' Burks, *Integrated Product Team Lead, F/A-18 & EA-18G Program Office*

Maintenance Operations Center/ Aircraft-on-Ground Cell

Dave Ferreira, *director, Maintenance Operations Center, Naval Air Forces Atlantic (AIRLANT)*

Cmdr. Jeff Brown, *MOC/AOG Lead, AIRLANT/COMFRC*

CWO4 Jim Hickman, *In-service Repairs Lead, AIRLANT*

AVCM Adam Bunch, *Organizational Maintenance Master Chief, MOC/AOG, AIRLANT*

Fleet Readiness Reform

Dave Heinauer, *Production Director, Commander, Fleet Readiness Centers*

Chris Rice, *Aircraft Department Head, FRC Mid-Atlantic*

Leanna Radford, *Fleet Support Team Logistics Lead, FRC East*

Magnolia Love Cortez, *Aircraft Production Manager, FRC SW*

Wade Wendell, *Components IPT lead, FRC SW*

Tod Grever, *Assistant Department Head, FRC W*

Operational-Level Reform

Lt. Cmdr. Teresa 'Ike' Turner, *Readiness Officer (RO), Commander, Strike Fighter Wing Pacific*

Lt. Cmdr. (sel) Matt 'Robby' Robertson, *RO, Commander, Strike Fighter Wing Atlantic*

Lt. Cmdr. Phil Torem, *CNAF*

Lt. Cmdr. Brandon Michaelis, *O-Level Reform Champion, CNAF*

Cmdr. William I. Frank, *Commanding Officer, Strike Fighter Squadron (VFA) 22*



An F/A-18E Super Hornet conducts a supersonic pass during a training exercise.

U.S. Navy photo by MC2 Cameron Stoner

people across the enterprise, particularly in the fleet support teams, the FRCs and the supply command,” said Joe Boyle, assistant program manager/chief engineer, F/A-18 & EA-18G Program Office. “It was the efforts of those people who made Naval Aviation successful.”

“NSS also opened the lines of communication, so we could elevate issues to higher levels to get additional resources and issues resolved,” said Woody Payton, product support manager for the F-18 program office.

Now that the NAE has improved the

readiness rates of its Hornets, Super Hornets and Growlers, the NAE is focusing on sustaining those rates and improving lethality and survivability. The NAE will continue to identify opportunities for further improvements, and all naval aircraft type/model/series communities are now applying NSS-A process improvements, lessons learned and best practices.

“Like the Air Boss said, we are transitioning from readiness into lethality. Now that we’ve met the 80-percent goal, we will continue to sustain that and reconstitute our full-mission capable systems,” said Capt.

(sel) Michael Burks, integrated product team lead for the F-18 program office.

The NSS-A initiative focused on reforming six areas: governance board; maintenance operations center (MOC)/aircraft-on-ground (AOG) cells; depot-level maintenance; operational-level maintenance; engineering processes; and supply chain management.

While Spencer acknowledged the efforts of all hands — from maintainers on the deck plate to senior leaders and industry partners—he recognized the following key military and civilian personnel for their achievements.

Lt. Cmdr. Michael Loomis, *Maintenance Material Control Officer, VFA-22*

Master Chief Joseph Coleman, *Maintenance Control Supervisor, VFA-122*

ADC Tyler Sauer, *Electronic Attack Wing Pacific (CVWP)*

AMC Kevin Larsen (CVWP)

AMC Jason Menella (CVWP)

Engineering Reform

Joe Boyle, *Assistant Program Manager/Chief Engineer, F/A-18 & EA-18G Program Office*

Woody Payton, *Product Support Manager, F/A-18 & EA-18G Program Office*

Mariana Magana, *Aerospace Engineer, F/A-18E/F & EA-18G Structures, FRCW*

Scott Goldberg, *F/A-18 and EA-18G Fleet Support Team Lead, FRCSW*

Jonathan Ramba, *Supervisory Aerospace Engineer, FRCSW*

Supply System Reform

Cmdr. Tanya Cormier, *Director, F/A-18 & EA-18G Integrated Weapons System Team (IWST), Naval Supply Systems Command, Weapon Systems Support (NAVSUP WSS)*

Cmdr. Jared Sweetser, *Industrial Support Director, NAVSUP WSS*

Lt. Cmdr. Adam Gunter, *F/A-18 & EA-18G Air Vehicles Branch Head, NAVSUP WSS*

Lt. Cmdr. Curt Butler, *F/A-18 & EA-18G Avionics Branch Head, NAVSUP WSS*

Clinton Mench, *F/A-18 & EA-18G Readiness Manager, NAVSUP WSS*

Lt. Cmdr. PJ Riester, *Customer Facing Division, Defense Logistics Agency*

Andrea Watters is editor of Naval Aviation News. 🦅

Grampaw Pettibone

Gramps from Yesteryear: May-June 1999

Illustration by *Ted Wilbur*

Divert Debacle

A student naval aviator awoke at 0325 for a 0500 course rules brief before a carrier qualification flight in a T-45 Goshawk aboard a carrier off the coast. The primary divert field assigned was the naval air station (NAS) from which the flight would depart. The secondary was a Navy field on the coast.

After a flight briefing at 0600, the aircraft departed for the carrier. Due to marginal weather, however, it had to return to the NAS, arriving at 1015. The student later attended an impromptu all officers meeting to discuss safety issues relating to a T-45 mishap that occurred in another squadron. After the meeting and lunch, the student briefed for a second launch to the boat, and at 1500 took off once again for the carrier.

The student received a "Charlie" signal on arrival at the carrier and let down into the pattern where he made two touch and goes. Subsequently, he made two hook-down passes, waving off both times. At this point he was at bingo fuel and was directed by the tower to divert to shore and proceed with an emergency bingo divert profile. A lead/safe instructor was assigned to join the student and escort him to a land base.

Because of bad weather and radio and tactical aid to navigation problems, the join-up was delayed. When they had

rendezvoused, the instructor assumed the "communications lead" but not the actual flight lead as required by a Chief of Naval Air Training instruction. The instructor told the student to land at the Navy facility on the coast, even though the student had sufficient fuel to safely execute a divert to the NAS launch point with which he was more familiar.

The flight descended and broke out of the weather and into the clear at 2,600 feet, over water, with the runway visible 10 miles

in the distance. The instructor reminded the student to drop his gear and flaps at 7 miles. The student had failed to perform his feet-dry checks prior to the approach, however, and didn't complete his landing checklist on final. Although he verified that his gear and flaps were down and speed brakes extended, he had omitted the aircraft anti-skid from the checklist and the system was not actuated. Also, the student was surprised to note the field did not have a Fresnel lens for landing.

He touched down nearly 2,000 feet from the approach end and hit the brakes while rolling out at 115 knots. Because anti-skid was deselected, the starboard main landing tire blew. The student was unable to counter the T-45's swerve to the right. The Goshawk departed the runway and flipped over. The student struck the instrument panel but suffered only minor lacerations and abrasions from the impact and from the shattered canopy. A physical exam revealed the student was fatigued dehydrated and poorly nourished at the time of the accident.



Grampaw Pettibone says ...

Light a blow torch and singe my whiskers one more time! What can ole Gramps say about checklists but **USE THEM!** Blowin' a tire on a fast rollout is absolutely no fun. And it can be disastrous when you're exhausted, hungry and badly need a drink of water.

The lead/safe pilot wasn't a lot of help here. "Task saturated" is the term used nowadays to describe a situation where a flier has too much to do and not enough time to do it. Add the stress factor, lack of sleep, food and water and the recipe produces trouble with a capital "T." 🐦

Naval Aviation Update Delivered at Tailhook



U.S. Navy photo

From left, Vice Adm. Dean Peters, commander, Naval Air Systems Command (CNAF); Vice Adm. DeWolfe Miller, III commander, Naval Air Forces; Maj. Gen. Kevin Liams, commander, 3rd Marine Air Wing; Rear Adm. Roy Kelley, commander, Naval Air Force Atlantic, and Rear Adm. Scott Hones, CNAF-Reserve, answer questions at the 2019 Tailhook Reunion.

RENO, Nev.—As Naval Aviation zeroed in on its goal to achieve an 80-percent mission-capable rate for F/A-18 E/F Super Hornets, a Naval Aviation Enterprise (NAE) flag panel on readiness updated attendees Sept. 5 at the 2019 Tailhook Association Symposium.

After a decade of too few mission-capable Super Hornets, Naval Aviation is now averaging more than 300 aircraft with the upward trend continuing, said Vice Adm. DeWolfe Miller III, commander, Naval Air Forces, during the panel. The NAE is the partnership of stakeholders focusing on sustaining required readiness and advancing warfighting capabilities at the best possible cost.

Miller, the Navy's Air Boss, along with Vice Adm. Dean Peters, commander, Naval Air Systems Command; Rear Adm. Greg Harris, director, Air Warfare (N98); and Rear Adm. Roy Kelly, commander, Naval Air Force Atlantic, delivered the update to naval and industry attendees.

"It's a matter of focus and priorities," Miller said. "We have changed the way we do business. We're treating the aircraft like a patient, and there is ownership at the petty officer level in our hangar bays."

In October 2018, the NAE implemented the Naval Sustainment System-Aviation (NSS-A)—an initiative that began at Fleet

Readiness Center Southwest and focuses on a performance-to-plan approach to improve aviation readiness and achieve the mission-capable aircraft goals by Oct. 1, 2019.

Peters echoed the success based on NSS-A implementation. "We have established an ability to sustain readiness," Peters said. "The nation is investing in Naval Aviation."

Kelley said that one of the biggest changes as we see improving readiness is in flight hour execution. "We've executed all our flight hours this year, and that is a good thing."

"We're getting healthy and we're on the right track," Kelley added. "A lot of effort has gone into putting the right people in the same room and working together."

The update concluded with the panel fielding questions, including about modernization of the aviation fleet during the return to readiness over the past year.

"We're going to maintain the momentum," Miller said. "I'm confident we're going to be able to do that."

"Naval Aviation is going to get what we need," Harris said, answering a question about future budgets. "It's important to continue the initiative and keep readiness going; and make ourselves more efficient and reliable."

From Naval Aviation Enterprise Public Affairs. 🛩️

Next-Gen Jammer Mid-Band Fit Check



U.S. Navy photo

The first Next Generation Jammer Mid-Band (NGJ-MB) engineering development model pod is fit checked on an EA-18G Growler in September. The fit check verifies the pod securely attaches to the Growler in preparation for flight tests scheduled to begin later this year. Airborne Electronic Attack Program Office is carrying out testing of the NGJ-MB, which is a high-capacity and power airborne electronic attack weapon system for the Growler designed to protect air forces by denying, degrading and disrupting threat radars and communication devices. 🛩️

AAG Ready for Props and Jets

PATUXENT RIVER, Md.—The Navy’s newest aircraft carrier Advanced Arresting Gear (AAG) system received the green light to recover “props and jets” aircraft, according to the Aircraft Recovery Bulletin (ARB) released Aug. 2.

The ARBs enable propeller aircraft—C-2A Greyhound, E-2C Hawkeye and E-2D Advanced Hawkeye, and jet aircraft: F/A-

18E/F Super Hornet and E/A-18G Growler—to perform flight operations aboard USS Gerald R. Ford (CVN 78).

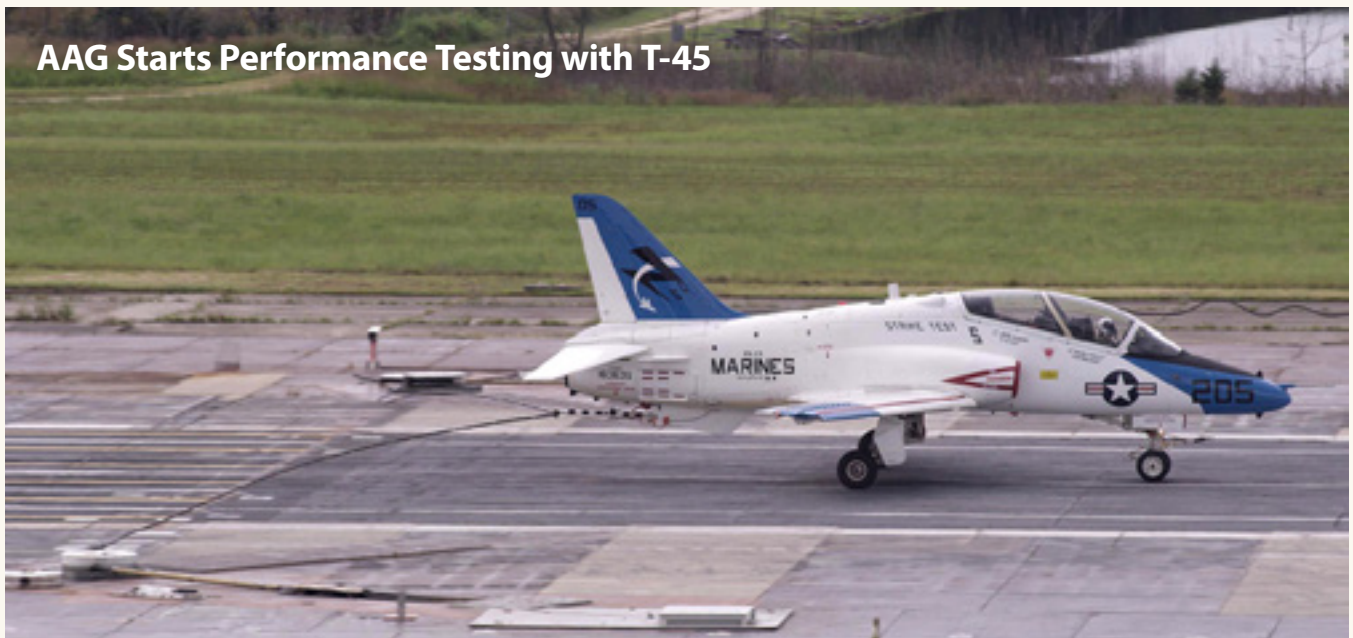
“The entire team did a tremendous job accelerating the schedule and working through challenges,” said Capt. Ken Sterbenz, program manager for the Aircraft Launch and Recovery Equipment Program Office. “This achievement is another significant



U.S. Navy photo

A C-2A Greyhound conducts Advanced Arresting Gear (AAG) performance testing at the Runway Arrested Landing Site (RALS) at Joint Base McGuire-Dix-Lakehurst, N.J.

AAG Starts Performance Testing with T-45



U.S. Navy photo

The T-45C Goshawk began AAG performance testing at the RALS, Aug. 13. This series of testing ensures the new recovery system can support the USS Gerald R. Ford (CVN 78) air wing. In April, the trainer aircraft completed 60 arrestments at RALS during a five-day, risk-reduction test period to evaluate AAG system integrated performance. By the end of this year, the AAG Program is scheduled to release formal approval authorizing T-45 type/model/series aircraft flight operations on CVN 78. 🛩️



step toward ensuring the system can support the ship's full airwing."

ARBs are official Navy instructional documents identifying the weights and engaging speeds authorized for shipboard arrestments of specific aircraft, along with other pertinent information.

"Release of the ARB's signifies Naval Air System Command's stamp of approval for the AAG system to safely recover these type/model/series aircraft aboard the Navy's newest class of aircraft carriers," said Jeff Mclean, deputy program manager for AAG System Design and Development.

The team, in collaboration with prime contractor General Atomics, continues to execute the requisite System Development and Demonstration testing at the land-based test sites located at Joint Base McGuire-Dix-Lakehurst, New Jersey.

Comprehensive testing of new systems like AAG is critical, and not only ensures the technology meets Navy requirements, but also ensures it is operationally safe for use in the fleet, Mclean added.

Prior to the ARB, the team conducted more than 2,500 dead-load arrestments at the Jet Car Track Site and 1,420 manned aircraft

arrestments at the Runway Arrested Landing Site.

"The pace of system testing was consistently demanding and required numerous team members to perform their duties in difficult conditions and in all types of weather in order to meet critical program milestones leading up to these ARB releases," Mclean said.

CVN-78 is the lead ship in the Ford-class of aircraft carrier, the Navy's first new class of aircraft carriers in more than 40 years. The AAG system is designed to arrest a greater range of aircraft, reduce the fatigue impact load to the aircraft, and provide higher safety margins while reducing manpower and maintenance.

From Program Executive Office (Tactical Aircraft Programs) Public Affairs. ✈️

Marine Corps F-35B Lightning II Completes Simulated Defensive Combat Air Patrol with Live AIM-9X Missile

PACIFIC—Marine fighter pilots with Marine Medium Tiltrotor Squadron (VMM) 265 (Reinforced), 31st Marine Expeditionary Unit (MEU), launched from the amphibious assault ship USS Wasp (LHD 1) to rehearse Combat Air Patrol missions with the F-35B Lightning II, carrying and employing a live AIM-9X Sidewinder in the Pacific Ocean Aug. 7.

This execution marked the first operational F-35B live-fire of the AIM-9X missile in the Indo-Pacific region while conducting blue-water flight operations. The rehearsal was in conjunction with the hot reload of ordnance including GBU-12 Paveway II Laser-Guided Bombs and GBU-32 Joint Direct Attack Munitions, and 25-mm ammunition with a GAU-22 cannon.

The air-to-air missile drill validated weapons assembly and loading procedures on the flight deck of the ship and showcased the F-35B's flexibility to offensively engage airborne targets. The missile targeted and successfully engaged LUU-2 flares dispensed out of an MV-22B Osprey during flight operations, according to Maj. Jeffrey Davis, F-35B detachment officer-in-charge with VMM-265 (REIN).

"The 31st MEU regularly conducts F-35B Combat Air Patrol rehearsals and is fully prepared to maintain aerial dominance against any threat," said Col. Robert Brodie, 31st MEU commanding officer. "Our successful live-fire employment of the AIM-9X further exemplifies our preparedness to 'fight and win' against any adversary in any arena."

Written by Capt. George McArthur, 31st Marine Expeditionary Unit. ✈️



Ordnance Marines load an AIM-9X Sidewinder missile onto an F-35B Lightning II fighter aircraft.

U.S. Marine Corps photo by Cpt. Luis Velez

Hands-on Training with New MQ-8C Fire Scout Trainers Available

NORFOLK, Va.—Instructors at the Center for Naval Aviation Technical Training Unit (CNATTU) Norfolk completed their first MQ-8C Fire Scout pilot course Aug. 29 using one of two new custom-built maintenance trainers.

The addition of these brand-new facilities enables the Navy to provide much-needed training on the latest evolution of the Fire Scout.

Over the summer, CNATTU Norfolk added the Composite Maintenance Trainer (CMT) and Avionics Maintenance Trainer (AMT) to assist with teaching aviation

electrician's mates, aviation electronics technicians, aviation machinist's mates (AD) and aviation structural mechanics (AM) on all aspects of the MQ-8C Fire Scout. Previously, "C" School training was only available for the MQ-8B, a far different variation of the aircraft.

The eight-week MQ-8C Airframes and Power Plants Organizational Maintenance Course, a journeyman-level C school, teaches AMs and ADs how to perform maintenance at the squadron level and uses the Fire Scout CMT to enable students to perform the actual tasks that will be

required of them at their squadrons. About 75 percent of the course consists of hands-on training.

"The new Fire Scout trainers will enable us to stay at the forefront of Naval Aviation training and ensure that our Sailors arrive in the fleet with the tools they need to work on this cutting-edge technology," said Cmdr. R. Sudduth, CNATTU Norfolk's Commanding Officer.

The MQ-8C Fire Scout, an unmanned helicopter, is the highly advanced successor to the MQ-8B, which the Navy has used since 2006. The MQ-8C provides upgraded

CNATTU Norfolk Conducts Agile Maintenance Training

NORFOLK, Va.—Carrier Airborne Early Warning Squadron (VAW) 124 hosted the first Broad Unscheduled Rapid Support Training (BURST) course delivered to the E-2 Hawkeye and C-2 Greyhound community July 16.

A BURST course is a condensed version of the standardized curriculum taught at Center for Naval Aviation Technical Training Unit (CNATTU) Norfolk delivered to Naval Aviation maintenance technicians at their squadrons.

"BURST affords trainees the opportunity to experience agile technical training solutions on detailed maintenance actions affecting a specific platform and allows a fast response time to enhance necessary knowledge and skills whenever and wherever required," said Chief Aviation Structural Mechanic Ryan Schaal, instructor at CNATTU Norfolk. "Ultimately, the goal is to tackle critical aviation maintenance degraders affecting the fleet's readiness."

This five-day course developed by Schaal with assistance from CNATTU Norfolk instructor AM1 Mark Coufal and Naval Air Technical Data and Engineering Service Command technical representatives Paul Santos and Ben Urquhart, targeted the Flap and Aileron Droop System.

"This is a tremendous opportunity for us to address an issue that's been plaguing the E-2/C-2 community," Schaal said. "This training will help provide these Sailors with a superior understanding of the system and keep more Hawk-eyes and Greyhounds flying."

Students began the BURST training in a classroom environment, which detailed the various components of the system and their locations, as well as the theory of operation through in-depth component diagrams and literature.

Afterwards, the students gained dynamic hands-on experience by physically removing and reinstalling a port outboard flap and flap actuator while also preparing the aircraft for Flap and Aileron Droop System rigging, a frequent occurrence in any E-2 Hawkeye or C-2 Greyhound squadron.

Written by Aviation Electronics Technician 1st Class Karl A. Kraus, Center for Naval Aviation Technical Training Unit Norfolk Public Affairs. 🦅



Aviation Structural Mechanic 1st Class Mark Coufal, a Center for Naval Aviation Technical Training Unit Norfolk instructor, center, provides hands-on training in E-2 Hawkeye aircraft flap actuator removal to maintenance technicians assigned to the "Bear Aces" of Carrier Airborne Early Warning Squadron (VAW) 124.

U.S. Navy photo

capabilities to the Navy that includes reconnaissance, detailed targeting support, situational awareness and aerial fire support.

“We specifically designed this course to be laboratory intensive,” said AM2 Destinée Riesing, a MQ-8C instructor. “Our new CMT is equipped to support that goal. Out of the 290 hours in the course, we only spend 60 in the classroom. This allows our students to receive critical, hands-on experience and as instructors, allows us to return to our roots—turning wrenches.”

Students of the course are skilled Sailors from the fleet, returning for continuous training to ensure they have the knowledge necessary to perform at their highest level. Sailors will receive a Navy Enlisted Classification code specific to the MQ-8C upon graduation. The designator of this code is still being determined.

AD3 Sean Wylie, with Helicopter Sea Combat Squadron (HSC) 22, is one of the first students to complete the course.

“Training on this new platform is essential to the transformation of Naval Aviation in the future. This training enables me to share what I’ve learned with my fellow Sailors out in the fleet,” Wylie said.

CNATTU Norfolk is the only learning site that will offer maintenance training on the MQ-8C Fire Scout. Instructors and staff will take lessons learned from the CMT pilot course to continue to refine the training.

“Aviation maintenance is the pivotal link to keeping our naval aircraft flying,” said AM1 Brandon Womack, the second half of the MQ-8C instructor duo. “Advancements in technology allow us to be ahead of the game; that is keeping our families safe.”

The eight-week MQ-8C Avionics Organizational Maintenance Course using the AMT is scheduled to begin in September.

Written by Aviation Electrician’s Mate 1st Class Jeffrey P. Helgesen, Center for Naval Aviation Technical Training Unit Norfolk Public Affairs.✈️



U.S. Navy photo by AE2 Cody Fisher

Aviation Structural Mechanic 1st Class Brandon Womack and Aviation Machinist’s Mate 1st Class Marvin Reyes train on a newly acquired MQ-8C Fire Scout trainer as part of the Center for Naval Aviation Technical Training Unit’s (CNATTU) eight-week pilot course in Norfolk, Va.



U.S. Navy photo by AE2 Cody Fisher

AD May Coale trains on a newly acquired MQ-8C Fire Scout trainer as part of the eight-week pilot course in Norfolk, Va.



U.S. Navy photo by MC2 Janweb B. Lagazo

An F/A-18F Super Hornet, piloted by Cmdr. Harry Evans, Commanding Officer of Strike Fighter Squadron (VFA) 102, makes his 1,000th arrested carrier landing on the flight deck of aircraft carrier USS Ronald Reagan (CVN 76).

VFA-102 CO Lands Trap Milestone

SOUTH CHINA SEA—The Commanding Officer of Strike Fighter Squadron (VFA) 102 completed his 1,000th carrier arrested landing Aug. 6 aboard the Navy’s forward-deployed aircraft carrier USS Ronald Reagan (CVN 76).

Cmdr. Harry Evans made the landing, or trap, in an F/A-18F Super Hornet.

“A trap is really the culmination of a flight—the controlled crash if you will,” said the Syracuse, New York, native. “It’s a lot of people working together from the maintainers in my squadron, to the yellow shirts on the roof, to the grapes giving us gas, to the green shirts launching and recovering. It’s a huge team effort to get an airplane ready to go and come down for safe landing.”

Evans served as the weapons system officer during his landing.

“I sit in the back seat of the F/A-18F. I control navigation, weapons systems and communication. I’m basically another set of eyes and ears to back up the pilot and working our crew coordination to accomplish the mission.”

When asked what advice he would offer to other aviators, Evans recalled his first flight and trap.

“It’s about persistence—you have to always work and master the basics in every single thing you do. In this business, you’re only as good as your last pass. Every time you’re flying you have to get better, learn every time and try not

to make the same mistakes. There’s a lot of passion, time, attention-to-detail and concentration that goes into this.”

Evans said his 1,000th trap is a huge milestone not many aviators reach during their naval career and attributed it to his Sailors and family.

“This is a testament to all my hard-working Sailors in 102. The amount of work it takes to maintain aircraft to get it into the air and safely back to support our mission and tasking is immense. We do a lot of things in a controlled and sequenced harmony to get it right. I have to thank my family because it’s a lot of time away from home doing this job. I’m thankful they support me to have this amazing opportunity every day.”

Evans briefly met with Toby Purisima, the Philippines’ assistant secretary of civil defense, and Maj. Gen. Erickson Gloria, deputy chief of staff of the Armed Forces of the Philippines, and was greeted with applause and congratulatory handshakes for his achievement.

Brig. Gen. Elpidio Talja, wing commander of the Philippines’ 520th Air Base Wing, witnessed the arrested landing on the flight deck while taking a tour aboard.

“It was impressive to watch all the movement on the deck and to see expert pilots perform. It was a highlight of our tour here,” he said.

Written by MC2 Janweb B. Lagazo, USS Ronald Reagan (CVN 76) Public Affairs. 🇺🇸

U.S., Australia Partner on Triton Development



Squadron Leader Neale Thompson, from the Royal Australian Air Force (RAAF), trains on Triton Unmanned Air System's mission control system Aug. 14 at NAS Patuxent River, Md. He is the first international partner to operate as a fully integrated Triton crew member as a tactical coordinator to manage mission systems during flight.

PATUXENT RIVER, Md.—The Royal Australian Air Force (RAAF) and the U.S. Navy Triton team have joined forces to define new capabilities that benefit both countries.

Over the past year, the RAAF has provided eight cooperative project personnel (CPP) in support of the Unmanned Aircraft System (UAS) program after signing an agreement in 2018 to procure up to six Triton aircraft and associated Mission Control Stations (MCS) under the MQ-4C Triton Development, Production and Sustainment Cooperative Program. The embedded CPP work with various program teams ranging from engineering, research and development, to flight test.

"This cooperative program aligns with DOD's objective to strengthen alliances that are crucial to our National Defense Strategy," said Capt. Dan Mackin, Triton Program manager. "We are working together with our Australian counterparts

to jointly define new capabilities that benefit both countries."

Recently, a team of system administrators, network engineers and international policy experts from Air Test and Evaluation Squadron (VX) 20 and the Triton Program designed a unique solution to enable Australia's sole member of the flight test team, Squadron Leader Neale Thompson, to operate as a fully integrated Triton crewmember.

"It is an absolute privilege to fulfill this role, working with my U.S. Navy colleagues to develop and test this new, unmanned platform," Thompson said. "The dedication and ingenuity displayed by the system administrator team in this example epitomized the U.S. Navy's genuine commitment to integrate their cooperative partners within the Triton Program."

Thompson, a graduate of the U.S. Naval Test Pilot School and a former tactical

coordinator (TACCO) for the Australian P-3 program, is the first international partner to operate Triton and serves as a TACCO for the aircraft. He is responsible for managing mission systems during flight and performs the mission systems team lead role at the integrated test team (ITT), managing a diverse team of specialized flight test engineers and project officers.

"This is the latest important milestone for our cooperative program, which allows our test team member to be fully involved in all facets of testing," said Wing Cmdr. Troy Denley, Australian National Deputy for the Triton Program. "The cooperative program continues to mature with all CPP embedded in key roles that will help ensure the success of the program for both nations."

Thompson will routinely participate in flight test operations with his Navy counterparts to gain experience on the system while contributing to the cooperative effort using his flight test experience. After his three-year tour, Thompson will return to Australia and continue working on the program in the same capacity.

"This keeps continuity," he said. "We will take the skills and lessons learned here early on and apply them to our program when the aircraft is delivered in-country."

Thompson's integration into the ITT is one of the many cooperative program milestones as both partners progress toward delivery of capability to the warfighter.

Under the agreement, the RAAF will embed personnel within the U.S. Navy program team for the next decade. The Navy and industry partner, Northrop Grumman, plan to deliver the first aircraft to Australia in 2023.

The RAAF plans to operate the MQ-4C Triton in conjunction with the P-8A Poseidon to support its maritime patrol and intelligence, surveillance and reconnaissance roles.

From Program Executive Office (Unmanned Aviation & Strike Weapons) Public Affairs Office. 🇺🇸

Measuring Up: Device Makes Sure Aviators and Aircraft Are Perfect Fit

ARLINGTON, Va.—The aspiring Navy pilot ran through a series of motions—sitting, kneeling, stretching out his arm—to gauge the type of aircraft cockpit his body would fit.

As the pilot completed each exercise, a technician hovered over him and recorded measurements using a tool called an anthropometer—consisting of several metal tubes formed into a large ruler-and-caliper set and spanning the height of a person. Total time: seven minutes.

Another pilot stood at attention while engineers connected a camera the size of a TV remote to a laptop and took a photo. Thirteen yellow-and-black dots—representing limbs and joints—peppered the pilot's image on the computer screen. Specialized software calculated the distance between each joint to produce an accurate body measurement. Time elapsed: one minute. A six-minute difference might not sound like much, but it enables more pilots to be measured in that time frame.

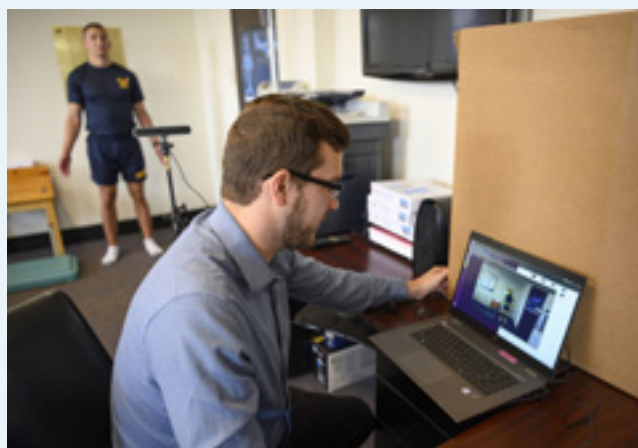
“The Anthropometric Measurement Device features enhanced optical scanning and processing of a person's measurements,” said Jason Payne, director of the Office of Naval Research (ONR) Global TechSolutions program. “This saves time, improves standardization and assists with selecting the right aircraft for differently sized aviators.”

The exercise was part of a demonstration of the computerized Anthropometric Measurement Device at the Naval Aviation Schools Command (NASC) in Pensacola, Florida. The device was developed through support from TechSolutions, which is ONR Global's rapid-response science and technology program that develops prototype technologies to address problems voiced by Sailors and Marines, within approximately 12 months.

The idea for the Anthropometric Measurement Device came from a naval officer at NASC, which also trains Marine Corps and Coast Guard pilots. The officer wanted to improve how pilots and naval flight officers are measured for cockpit compatibility.

Currently, technicians use metal anthropometers to determine if someone can fit in a cockpit, reach the controls inside and properly operate the ejection seat. The data gathered helps decide if someone will fly fighter jets or other aircraft—like helicopters, for example.

While anthropometers are reliable, their design hasn't changed since the 1960s. Their accuracy also can vary due



Nick Sievert, machine learning developer with Naval Surface Warfare Center Dahlgren, uses the computerized Anthropometric Measurement Device to accurately measure a student naval aviator to gauge the type of aircraft cockpit that will best accommodate his body.

to human factors like the height of technicians conducting measurements, differences in chairs used for sitting-height tests and even technician fatigue related to screening large groups of people all day.

This can be problematic at the more than 12 sites nationwide that screen individuals applying to become naval aviators. Before attending the U.S. Naval Academy or officer candidate school, aspiring aviators are measured with anthropometers. After commissioning, these individu-

als report to flight school at NASC and are measured again. If they don't meet NASC measurement standards, regardless of their original results, the hopeful pilots might find their flight dreams grounded.

To address this and standardize the measurement process, TechSolutions partnered with researchers at Naval Surface Warfare Center (NSWC) Dahlgren Division to develop the computerized Anthropometric Measurement Device for greater accuracy and speed.

“The resulting measurement process will be faster, less susceptible to human error and provide data that can be transferred easily between locations and stored in a central repository,” said Megan Kozub, software lead at NSWC Dahlgren.

Patricia Goolsby, an NASC anthropometrics technician, views the TechSolutions device as a valuable complement to current methods: “I like that you can essentially take a picture and the work is done. I think it will help streamline the evaluation process.”

The device also earned praise from pilots measured at the Pensacola demonstration.

“Being on the cutting edge of technology is always good,” said Ens. Nathan Largent. “Simple things like this will lead to bigger innovations later on.”

Kozub said the Anthropometric Measurement Device will undergo more testing and hopefully be transitioned to the fleet within a year.

Watch a video about the device at <https://youtu.be/z2qwj6F4tQ0>

Written by Warren Duffie Jr., a contractor for ONR Corporate Strategic Communications. 🇺🇸

U.S. Navy photo by John F. Williams

Navy Establishes Osprey Wing

SAN DIEGO—Fleet Logistics Multi-Mission Wing (COMVRMWING) 1 was officially established in a ceremony aboard Naval Air Station North Island, Oct. 10.

Capt. Dewon Chaney assumed command of the new wing and will be the first commodore to take on the integration and implementation of the CMV-22B Osprey into fleet operations. The mission for the wing will be to conduct high priority cargo and passenger transport services in support of carrier strike groups and task forces.

“Sailors and Marines have worked hard to ensure the mission capability of these aircraft, and the opportunity to lead this group is a privilege,” said Chaney, a career helicopter pilot with extensive experience piloting four different Navy aircraft: SH-60B Seahawk, CH-46D Sea Knight, MH-60S Knighthawk, and MV-22 Osprey. “This community’s stand up is a joint endeavor, and will bring unmatched capability to a carrier strike group near you.”

The CMV-22B Osprey is a variant of the MV-22B and is the replacement for the C-2A Greyhound for the carrier onboard delivery (COD) mission. The Osprey is a tiltrotor aircraft that can take off and land as a helicopter but transit as a turboprop aircraft, and the airframe recently surpassed the threshold of 500,000 flight hours.

The Osprey, with its increased range, speed and payload capabilities, will provide the Navy with significant increases in capability and operational flexibility over the C-2A, which has served the fleet since 1965. CMV-22B operations can be either shore-based, expeditionary or sea-based.

Vice Adm. DeWolfe Miller, commander, Naval Air Forces, was the principal speaker at the event and said Naval Aviation is peaking, and the carrier air wing of the future is coming soon.

“The aircraft carrier remains the centerpiece of naval power, and carrier strike groups bring unparalleled power to the fight” said Miller, the Navy’s ‘Air

Boss.’ “No other weapons system has the responsiveness, endurance, battlespace awareness and command and control capabilities of a nuclear-powered aircraft carrier, its embarked air wing and accompanying ships.”

Miller continued to say that as our adversaries evolve, so must our ships, aircraft and training and tactics.

“The CMV-22 Osprey is not only part of our future,” Miller said. “It’s part of our ‘now’ that’s going to be provided in every subsequent squadron that transitions.”

A year ago, the Navy established the first CMV-22 squadron—Fleet Logistics Multi-Mission Squadron (VRM) 30—and plans are in the works to establish a sister squadron on the East Coast. The first deployment for VRM-30 is planned for 2021 aboard USS Carl Vinson (CVN 70), and officials say the complete transition from the venerable Greyhound to the newer and more modern CMV-22B Osprey is expected by 2028.

From Naval Air Forces Public Affairs. 🦅



Capt. Dewon Chaney, commodore, Fleet Logistics Multi-Mission Wing (COMVRMWING) 1, delivers remarks during the wing establishment ceremony at Naval Air Station North Island, Calif. on Oct. 10.

U.S. Navy photo by MC2 Chelsea D. Meiller

Navy Announces Tactical Resupply Unmanned Aircraft Challenge

PATUXENT RIVER, Md.—The Navy announced a prize challenge Sept. 27 for its future tactical resupply unmanned aircraft system (UAS) that will aid in the distribution of critical supplies for the Marine Corps.

“Our goal is to provide an autonomous aerial delivery capability to the Marine Corps for field user evaluation,” said Col. John Neville, Navy and Marine Corps Small Tactical UAS Program manager. “The use of the prize challenge will aid us in getting this capability to the Marines faster and hopefully set another course for the way we do rapid acquisition in the tactical arena.”

The program office’s Small Unmanned Logistics Support-Air (ULS-A) effort is seeking prototypes that can transport at least 60 pounds of cargo in various configurations commonly found in company/platoon/squad resupply operations through a 10 km radius and return unburdened to the launch site via automated launch, waypoint navigation and automated landing.

“We’re looking for companies that already have a robust prototype that can meet the challenge requirements and are excited to see what innovative technologies are demonstrated,” said Christina Petrow, ULS-A team lead.

The prize challenge consists of two phases: first phase will be a

formal invitation to participate in the fly-off competition planned for January in Yuma, Arizona, based on applications received.

The second phase will be actual participation in the fly-off competition, demonstrating the vendor’s prototype capabilities and ability to meet requirements.

The challenge submissions will be scored and evaluated by a panel of judges. Vendors will receive \$100,000 for first place; \$75,000 for second place; and \$50,000 for third place.

Successful participation in this prize challenge may result in the award of another transaction agreement or award of a procurement contract for experimental purposes or a combination of these.

Innovation and Modernization Patuxent River (IMPAX) is assisting with the challenge. IMPAX, Naval Air Warfare Center Aircraft Division’s partnership intermediary with Georgia Tech

Research Institute, has been designated to accelerate the “spin-in” of technology from industry to the warfighter.

For more information, visit <https://impax.tech/>.

From Program Executive Office, Unmanned Aviation & Strike Weapons, Public Affairs. 🦅



U.S. Navy photo by MC3 Nikita Custer

First E-2D with Aerial Refueling Capability Joins Fleet

NORFOLK, Va.—An E-2D Advanced Hawkeye capable of aerial refueling landed at Naval Station Norfolk Sept. 9, officially marking the arrival of this upgraded aircraft to the fleet.

“This is an important day for Naval Aviation as we continue to increase our capabilities and maintain our competitive edge in the skies,” said Rear Adm. Roy Kelley, commander, Naval Air Force Atlantic. “This capability will extend the endurance of Hawkeyes, increasing the Navy’s battlespace awareness and integrated fire control—both from the air and the sea.”

The aerial-refueling-capable E-2D joined the “Greyhawks” of Carrier Airborne Early Warning Squadron (VAW) 120.

“Aerial refueling capability is a game-changer for the E-2D community and future operations in the high-end fight,” said Cmdr. Scott Wastak, VAW-120 Commanding Officer. “We will now begin to train instructor pilots and refuel with several different Navy and Air Force tanker aircraft, including F/A-18s.”

VAW-120 is only the first step in rolling out this new capability. The Navy will transition two operational fleet squadrons to aerial refueling capable E-2Ds by 2020.

From Naval Air Force Atlantic Public Affairs. 🦅

An E-2D Hawkeye prepares to land and be accepted by the “Greyhawks” of Carrier Airborne Early Warning Squadron (VAW) 120 on Sept. 9 at Naval Station Norfolk. This is the first E-2D Hawkeye with aerial refueling capability to join the fleet, increasing the Navy’s battlespace awareness and integrated fire control from the air and the sea.

First Naval Aviators Graduate Air Force Pilot Training Next

SAN ANTONIO—The first two student naval aviators graduated from the Air Force's Pilot Training Next (PTN) program at Randolph Air Force Base on Aug. 29.

The PTN program is designed to train military pilots at a lower cost, in a shorter amount of time and with a higher level of proficiency by leveraging emerging technologies to create a dynamic training environment.

The PTN program individualizes training, adjusting to each student pilot's strengths and weaknesses. It integrates virtual reality (VR), advanced biometrics, artificial intelligence (AI) and immersive training devices (ITD) with traditional methods of learning.

"With PTN we have been able to focus more on competencies and the focus of the individual student. We tailor the training to you, and that is a very different mindset shift," said Air Force Lt. Col. Ryan Riley, Det. 24 Commander.

Navy instructors selected Ensigns Charles Hills and Seth Murphy-Sweet for the PTN program in lieu of the standard Navy Primary Flight Training phase. This joint training effort is a step toward integrating emerging technologies into the Navy's flight training curriculum. Now Hill and Murphy-Sweet are moving forward to the advanced stage of flight training with the Navy's Training Air Wing (TAW) 2 at Naval Air Station Kingsville, Texas.

"I think a big thing with this program was the ability to utilize the VR, get the experience and pacing down for each flight real time," Hill said. "This benefited all the students—being able to chair fly while being able to see the whole flight rather than to have to use your imagination. This helped in getting the motor skills while we were able test it out in VR and see how the exact input corresponds to a correct output."

The relatively new program is being improved with each iteration, and instructors use a collaborative learning environment to evaluate and analyze students and subsequently make corrections and improvements.

"I think the unique and most exciting aspect with PTN is the partnership with the Navy and Air Force," Riley said. "With this partnership the Navy has loaned us eight T-6B Texan II aircraft. The manufacturer modified the avionics to what we call the T-6B plus, which has software specifically built for the PTN program mission."

Adding Navy instructors and students to the PTN program brings a unique perspective since training in the T-6B Texan II is new to the Air Force. VR simulators add a new and

exciting element to the PTN program and draws parallels to the gaming industry, which could help attract new accessions.

Today, the Navy's primary flight training phase uses simulators and VR trainer devices to augment the traditional curriculum, which allow students to gain better familiarity with aircraft controls and their areas of operations.

Technology within fleet aircraft and the aviation community at large is constantly advancing. As simulator technology and ITDs improve, they will play an increasingly significant role in the way the Navy trains military aviators.

Written by 1st Lt. Pawel Puczko who is with Chief of Naval Air Training Public Affairs. 🇺🇸



U.S. Navy photo courtesy of Chief of Naval Air Training

Student pilots with the Pilot Training Next (PTN) class train on virtual reality simulators aboard Randolph Air Force Base, Texas.



U.S. Marine Corps photo by 1st Lt. Pawel Puczko

A T-6A Texan II aircraft prepares to conduct a touch-and-go landing on Randolph AFB, Texas. The T-6A Texan II is used by the Air Force's Pilot Training Next program to train new military aviators.

NEW TOOLS DEVELOPED TO MITIGATE PHYSIOLOGICAL EPISODES

By Andrea Watters



Since the Physiological Episode Action Team (PEAT) has ruled out several causes of physiological episodes (PEs), they are developing tools to improve aircrew awareness and address maintenance-related issues.

“Over the past six months, we have had significant success in driving the rate of PEs down. We have accomplished this by making extensive use of data analytics to identify sub-performing system components before they fail thereby preventing PEs in the first place. And when a PE does happen, we have equipped aircrew with tools to help them recognize onset and then mitigate the situation, ultimately ensuring safe recovery,” said Rear Adm. Fredrick Luchtman, Navy lead for the PEAT.

Several types of hypoxia trainers are in development. For example, the Aviation Survival Training Center (ASTC) Jacksonville (JAX) began training with a new, mask-off hypoxia trainer in July that will be used for all Navy and Marine Corps designated aviation personnel flying in multi-place non-ejection aircraft (story on page 22).

The Aircrew Survival Training Center at Naval Air Station Pensacola is demonstrating the newest hypoxia-awareness device for Naval Aviation—the On-Demand Hypoxia Trainer (ODHT) (story on page 23).

Engineers, scientists and medical professionals have ruled out contamination and other potential factors, such as electromagnetic exposure, and found no singular gross contributing factor. However, other factors may play a role in PEs such as maintenance-related issues.

To address this, the Hornet Health and Readiness Tool (HhART), uses data analytics to examine data points from multiple aircraft systems to predict when a system could fail. The computer program is already showing great success in preventing Environmental Control System malfunctions, predicting potential PE-causing aircraft, and has the potential to improve maintenance in other systems as well.

Since PEs happen when two very compli-

cated machines—a naval aircraft and a human body interact asynchronously—teams of engineers are working on how to improve the aircraft and teams of medical professionals are studying the human system.

Physiological monitors are being developed and tested to record and measure what precisely is happening to the human body in different flight conditions.

Researchers across the country are working with aircraft cabin simulators to study how bodies react at different pressure changes. Flight surgeons are trained to handle PEs, so when aircrew do experience significant events, they are treated quickly and effectively.

Background

Since 2017, the phenomenon of PEs has been Naval Aviation’s No. 1 safety priority.

PEs occur when aircrews experience physiological symptoms, which may impair their ability to perform cockpit duties, and can result from many factors, including normal operations in the highly dynamic operating environment, systems malfunctions and various human factors. Symptoms can range from dizziness to degradation of cognitive function, and they pose serious risks to aviators and maintainers.

The PEAT was created in 2017 with personnel and resources from the Naval Air Systems Command, Commander, Naval Air Forces, the Bureau of Naval Medicine and Surgery and the fleet. With the support of experts from industry and NASA, the team coordinates the work of engineers, physiologists and data analysts to employ a methodical, data-driven approach to devise and field best practices and procedures that mitigate the problem while developing long-term solutions.

Using a rigorous root cause corrective

PHYSIOLOGICAL EPISODES UPDATE

action (RCCA) analysis process, the core teams for F/A-18 Hornet, Super Hornet, EA-18G Growler and the T-45 Goshawk training jet determined in 2018 that the onboard oxygen systems showed no contamination. The air was unaffected by asphyxiates, carbon monoxide or other contaminants.

The teams reached that conclusion

after a 16-month effort analyzed 21,000 samples taken across 11 sites from aviators' breathing gas, ground sampling and blood analysis. An independent panel of aeromedical professionals evaluated roughly 1,800 compounds and determined that none of the compounds played a role in any PEs.

While great progress has been made,

there are thousands of people from more than 50 organizations including DoD, government, industry, academia, medical and research facilities, along with international partners who continue to focus on keeping aviators safe, so they can focus on the mission.

Andrea Watters is editor of Naval Aviation News magazine. 🦅

New Mask-Off Hypoxia Training Delivered

Aviation Survival Training Center (ASTC) Jacksonville (JAX) began training with a new, mask-off hypoxia trainer in July that will be used for all Navy and Marine Corps designated aviation personnel flying in multi-place non-ejection aircraft.

Capt. Theron Toole, then Commanding Officer, Navy Medicine Operational Training Center, and Capt. Leslie Kindling, officer in charge, Naval Survival Training Institute in Pensacola, visited ASTC JAX to observe an initial training session with the newly mission-capable Normobaric Hypoxia Trainer (NHT).

"The NHT provides the most realistic hypoxia training for these aircrew members," said Kindling, who oversees the Navy's eight ASTCs.

The NHT simulates the reduced oxygen levels experienced in a depressurized aircraft at altitude, allowing the aircrew to practice their emergency procedures while experiencing the signs and symptoms of hypoxia.

Hypoxia is caused by a lack of sufficient oxygen at the tissue level in the body leading to performance degradation. Symptoms of hypoxia include light-headedness, dizziness, tingling, euphoria and decreased visual accuracy. Training aircrew to recognize the symptoms helps ensure they can take action before progressing to potentially life-threatening situations while in an aircraft at altitude.

"I really felt the effects more this time around, especially feelings of disorientation and difficulty breathing," said Aircrewman (Mechanical) 2nd Class John Booker, who was taking the hypoxia training qualification for the third time. Aircrew are required to take a refresher course every four years.

The NHT at ASTC JAX is the first operational trainer of its type in the fleet and has replaced the low-pressure chamber that was decommissioned in February 2017. Sailors assigned to ASTC JAX have been at the forefront of implementation and operational testing for the new trainer since its inception in summer 2018.

"As a staff, ASTC JAX became 100-percent qualified in only 18 working days, on top of the already established training schedule," said Chief Aircrewman (Avionics) Scott Counselman, ASTC JAX lead-



U.S. Navy photos by MC2 Nick A. Grim

The Normobaric Hypoxia Trainer (NHT) supervisor, communicates with Sailors during training in the newly operational NHT at Aviation Survival Training Center Jacksonville, July 22.

ing chief petty officer. "Nothing has been dropped or moved. We began operational testing late last July, and the ASTC staff has been learning new operating procedures, assisting in writing standard operations and safety procedures, and conducting risk management analysis."

Counselman said once the testing was complete and the procedures validated, the staff qualification process commenced and proceeded at a rapid pace, leading to the introduction of the device to refresher Naval Aviation Survival Training Program classes in July.

With the ASTC JAX NHT now fully functional, the staff will work with the remaining seven ASTCs. Located in Norfolk, Virginia; Cherry Point, North Carolina; Whidbey Island, Washington; Miramar, California; Pensacola, Florida; Lemoore, California; and Patuxent River, Maryland, the ASTCs are scheduled to become fully operation by summer 2020.

Written by MC2 Nick A. Grim with Naval Air Station Jacksonville Public Affairs. 🦅

Hypoxia Trainer: Breath of Fresh Air at Tailhook

Physiology experts were on hand at the annual Tailhook Association Convention Sept. 5-7 providing a demonstration of the newest hypoxia-awareness device for Naval Aviation—the On-Demand Hypoxia Trainer (ODHT).

Hypoxia is a condition in which the body is deprived of adequate oxygen supply and can adversely affect aircrew if they are not properly trained to recognize the symptoms of air hunger.

All naval aviators and aircrew must complete refresher physiology training at least every two years and must familiarize themselves with potential hazards in flight including decreased levels of oxygen.

"The ODHT is great because it reduces oxygen levels and gives the user the feeling of difficulty breathing," said James Netherland, an electrical engineer for the new system that helps train aircrew.

Lt. Chris Gilg, a naval aerospace physiologist at the Aircrew Survival Training Center at Naval Air Station Pensacola, said the ODHT changes the game when it comes to recognizing hypoxia hazards while in flight.

"We expect aircraft to perform in a certain way," said Gilg.

"When it doesn't, however, there is a chance that hypoxia can set in; we can train aircrew to be able to recognize the symptoms in themselves and others."

At Tailhook, attendees volunteered to breathe through a mask that delivers reduced oxygen concentrations like those they would expect to experience at altitude, and then provided feedback that designers will consider in the continued development of the ODHT.

"Bringing the system to Tailhook, we get to network with the aviators and to allow them to test this new device," said Gilg. "It's important for them to see there is work being done to make the training more realistic, with the on-demand system here."

"We've also been training students with it and based on the reli-



U.S. Navy photo

Navy Lt. Chris Gilg explains the operation of the On-Demand Hypoxia Trainer (ODHT) to Air Force Capt. Mike Grimmer at the Tailhook Association Convention in Reno, Nev. The ODHT is designed to provide a mask-on breathing experience that is similar to what military aircrew use in flight.

ability it's shown thus far, and the feedback that we've gotten, this system is what it actually feels like to breathe in the aircraft," he said.

During Tailhook, the team ran hypoxic profiles with 17 aviators to gain feedback on the system. In general, the aviators reported that the ODHT provided a breathing experience that was similar or slightly smoother than the inhalation and exhalation feel in their aircraft.

In some instances, the aviators specifically noted that they could not detect a noticeable difference between the breathing experience on the device and on the jet.

Several aviators reported that the ODHT provided a better experience than the current training device, the Reduced Oxygen Breathing Device.

The ODHT is in the testing phase and the Navy is hoping to see it fully implemented in 2021.

Written by Naval Aviation Enterprise Public Affairs. ✈



The NHT attempts to simulate pilot and aircrew activities at altitudes greater than 24,000 feet so aircrew become aware of signs and symptoms of hypoxia.



MQ-25 PASSES

*By Program Executive Office
(Unmanned Aviation &
Strike Weapons) Public Affairs*

The Navy and Boeing successfully completed Sept. 19 the first test flight of the MQ-25 Stingray, the first operational carrier-based unmanned refueling aircraft from MidAmerica Airport in Mascoutah, Illinois.

The Boeing-owned MQ-25 test asset, known as T1, completed an FAA-certified autonomous taxi, take-off and flew a pre-determined flight route for a two-hour flight to validate the aircraft's basic flight functions and operations.

"Today's flight is an exciting and significant milestone for our program and the Navy," said Capt. Chad Reed, the Navy's Unmanned Carrier Aviation program manager. "The flight of this test asset two years before our first MQ-25 arrives represents the first big step in a series of early learning opportunities that

are helping us progress toward delivery of a game-changing capability for the carrier air wing (CVW) and strike group commanders."

Testing will continue with T1 over the next several years to further early learning and discovery that will advance major systems and software development in support of the program's 2024 Initial Operational Capability target. The company will deliver the engineering development model aircraft beginning in fiscal 2021.

The MQ-25 will be the world's first operational carrier-based unmanned aircraft, designed to provide an aerial



The MQ-25 Stingray unmanned carrier-based test aircraft flew two hours to validate the aircraft's basic flight functions and operations Sept. 19.

Photos courtesy of Boeing

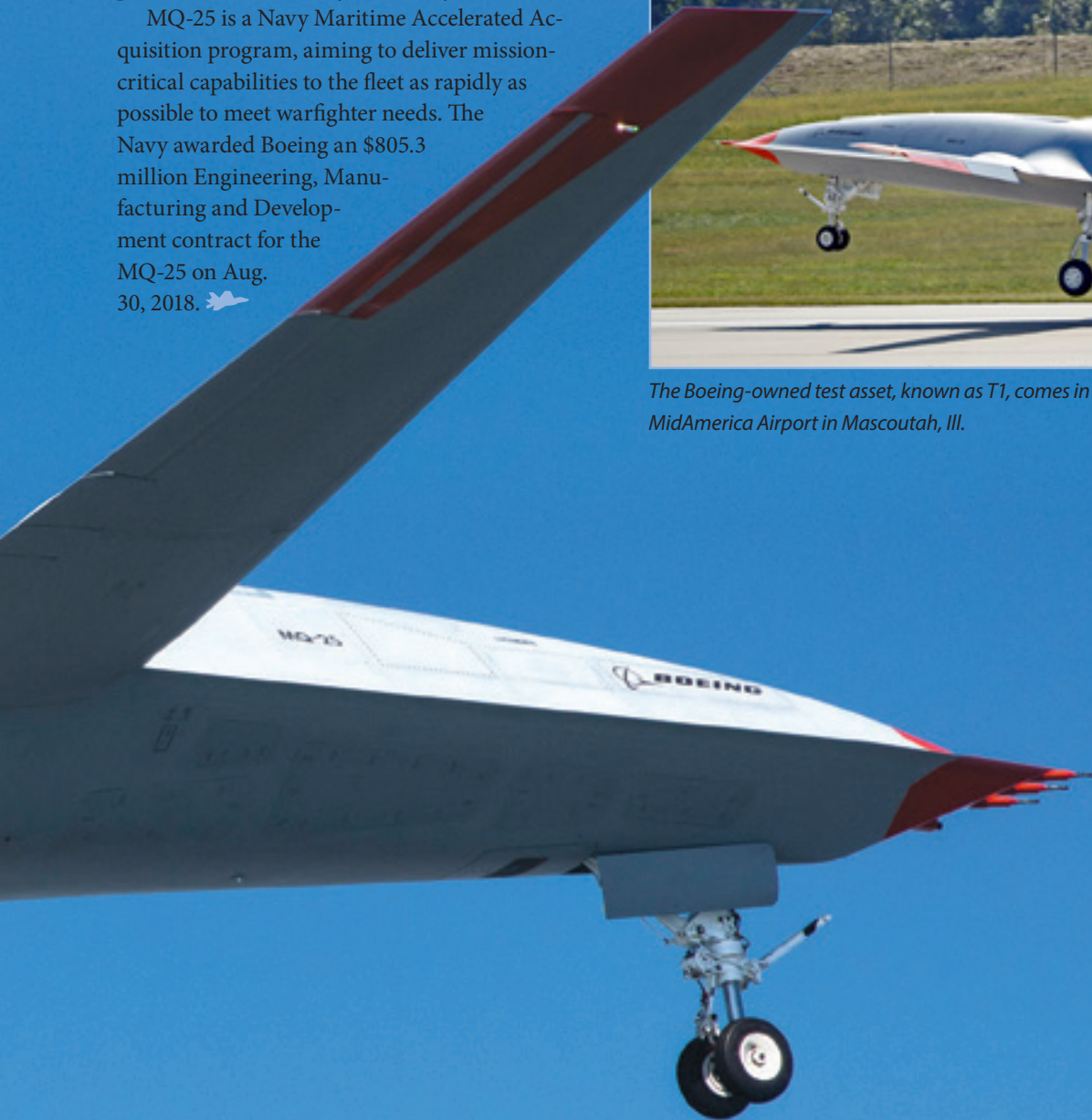
FIRST TEST FLIGHT

refueling capability. Integration of the Stingray into the CVW will increase the number of F/A-18E/F Super Hornets available for strike fighter missions and extend the range of the CVW, improving its performance, efficiency and safety.

MQ-25 is a Navy Maritime Accelerated Acquisition program, aiming to deliver mission-critical capabilities to the fleet as rapidly as possible to meet warfighter needs. The Navy awarded Boeing an \$805.3 million Engineering, Manufacturing and Development contract for the MQ-25 on Aug. 30, 2018. 🇺🇸



The Boeing-owned test asset, known as T1, comes in for a landing after its first flight at MidAmerica Airport in Mascoutah, Ill.



MARINE MAINTAINERS TRAIN ON CH-53K

By Victoria Falcon

Teams of Marine maintainers from Operational Test and Evaluation Squadron (VMX) 1, based in New River, North Carolina, are working on the CH-53K King Stallion heavy-lift helicopter at Naval Air Station Patuxent River during their second training rotation here.

With all flying test aircraft located at Patuxent River, it makes sense for the Marines to gain proficiency where developmental testing has been ongoing since 2017.

Seven teams of VMX-1 maintainers have completed a two-week training cycle and are now well into their second round of training. They continue to advance their skills through hands-on maintenance of CH-53Ks used for flight test.

This effort facilitates preparations for a seamless

and rapid transition from the CH-53E to the CH-53K by leveraging the training and experiences they amass at NAS Patuxent River.

According to Master Sgt. Paul Gallion, CH-53K Aviation Program Team/Maintenance Chief, the 53E maintenance community is excited to see this new aircraft.

“VMX has been working hard to get their Marines up-to-speed with qualifications to make their first round of collateral duty inspectors and collateral duty quality assurance

representatives,” he said. “This is a monumental step toward setting up the CH-53 community to be properly postured to transition to the 53K.”

The program office expects VMX-1 to make its first CH-53K flight by 2020. This flight will be the first of many as the squadron trains to support Initial Operational Test and Evaluation in summer 2021. The aircraft is scheduled for first operational deployment in 2023-2024.

Victoria Falcon supports Strategic Communications, Heavy Lift Helicopter Program. ✈️



U.S. Marine Corps Photo by Sgt. Matthew Callahan

The first CH-53K King Stallion taxis across the flight line at Marine Corps Air Station New River, N.C.



Left, Marine Cpl. Cassandra Esteve, a maintainer with Operational Test and Evaluation Squadron (VMX) 1, at New River, N.C., watches Jason DiLorenzo, electrical flight technician, service the dampers on the CH-53K King Stallion during her first training rotation through Naval Air Station Patuxent River in August.



U.S. Navy photos by Adam Skoczy/las



Pfc. Tanner Hawkins (left) and Cpl. Elijah Cervantes, Marine maintainers with VMX-1 inspect the rotor head of a CH-53K King Stallion from different angles during their first training rotation.



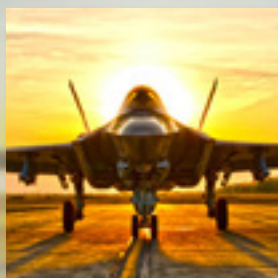
Joint Strike Fighter Wing NAS Lemoore

By Lt. Cmdr. Lydia E. Bock, Commander, Joint Strike Fighter Wing, Public Affairs Officer

Commander, Joint Strike Fighter Wing (CJSFW) officially opens its doors. Its mission is to provide combat-ready F-35C Lightning II assets that are fully trained, properly manned and well maintained to support and win global maritime engagements.

The Argonauts successfully complete their carrier qualifications aboard USS Vinson (CVN 70), where they achieved their full Safe-For-Flight Operations Certification (SFFOC), making them the Navy's first F-35C operational fleet squadron. SFFOC is the final step in a squadron's establishment or transition from one type/model/series aircraft to another.

OCTOBER 2018



AUGUST 2018



DECEMBER 2018

Strike Fighter Squadron (VFA) 147, the "Argonauts," receive their first F-35C aircraft. During the same month, the Argonauts received their interim clearance safe-for-flight operations certification. This was the final step in transitioning the Argonauts from the F/A-18E Super Hornet to the F-35C.

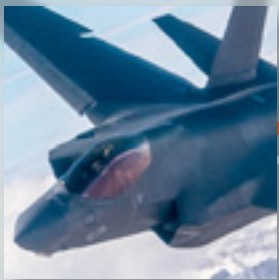
Commander DeWolfe M...
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Year in Review 2018-2019

The last F-35C belonging to VFA-101, the “Grim Reapers,” left its home base at Eglin Air Force Base, Florida, for NAS Lemoore as the squadron deactivated after more than seven years of training F-35C Sailors and Marines. NAS Lemoore is the home base for CJSFW, Navy F-35C fleet squadrons and the F-35C fleet replacement squadron (FRS), VFA-125, the “Rough Raiders.”

VFA-125 begins the transition process for Marine Fighter Attack Squadron (VMFA) 314, the “Black Knights,” to the F-35C. VMFA-314 is the first Marine Corps squadron to transition to the F-35C.

FEBRUARY 2019



er, Naval Air Forces Vice Adm. Miller III and Marine Corps Deputy Ant for Aviation Lt. Gen. Steven R. ntly announce that the F-35C met ents and achieved Initial Operational hich means the F-35C is available to be oyed environments as requested by commanders.

MAY 2019



AUGUST 2019



Commander, Joint Strike Fighter Wing celebrates one year of bringing the F-35C online.

SEPTEMBER 2019



New Technology Extends Search and Rescue Capability for P-8A

By Denver Beaulieu-Hains

Flying at a maximum speed of about 565 mph, at about 41,000 feet, the U.S. Navy's P-8A Poseidon already covers an operational area of about 1,200 nautical miles during a four-hour on-station period. Now, add air-to-air refueling for extended range and endurance and an advanced search and rescue kit and officials say the P-8A is postured to respond to humanitarian missions around the globe.

“The UNIPAC III Search and Rescue (SAR) kit is designed to substantially increase survivor assistance,” said Squadron Leader Nathan Mula, a P-8A flight test office at Naval Air Station Patuxent River, Maryland, as part of the cooperative program at the Maritime Patrol and Reconnaissance

Office. “The kit increases the survivor assistance capability of the P-8A from 16 to 100 people in a single sortie.”

The testing, funded by the Royal Australian Air Force (RAAF), and performed at NAS Patuxent River, ensures those rescued are not only found but kept sustained with food, water and communications for an extended time.

“The test program is a perfect example of the benefits reaped when two international partners join as part of a cooperative partnership,” Mula said. “Not only does the RAAF take a large step toward a major capability milestone, but the U.S. Navy receives the developmental and operational test experience and results.”

“By leveraging the developmental experience, both countries are able to increase their capability to provide assistance to survivors in the oceans around the world,” he said.

The P-8 is currently operated by the U.S. Navy, Australia and India and is performing maritime patrol and reconnaissance operations around the globe. Additionally, the United Kingdom, Norway, New Zealand and South Korea have ordered the aircraft with deliveries expected through to the middle of the next decade.

The aircraft has proven valuable at search and rescue in addition to its core capabilities in maritime patrol, reconnaissance, intelligence and surveillance.

Some missions supported by the P-8A include operations to find the downed Malaysian airliner in 2014; and the rescue of castaways in 2016 when their large “Help” sign constructed from palm leaves stood out against the sands on Fanadik Island. In 2018, three fishermen were rescued in the South Pacific by a U.S. Navy Squadron with the help of UNIPAC-II SAR kit, the predecessor to the UNIPAC-III, and it was the first time the U.S. Navy employed the system.

“Over the past year, we’ve performed numerous ground and flight tests,



U.S. Navy photos courtesy Simon Slattery

A P-8A Poseidon overflies the raft recovery boat at 200 feet during testing of the UNIPAC-III Search and Rescue Kit on behalf of the Royal Australian Air Force.



During a test, a P-8A Poseidon drops the advanced search and rescue kit, the UNIPAC III, approximately 5 miles off the coast of the Naval Air Station Patuxent River.

including static ejection, safe separation and integration programs to certify the UNIPAC-III,” said Katie Giewont, a P-8A Air Vehicle Stores Compatibility flight test engineer.

“It’s rewarding knowing we are providing the RAAF with the capability to rescue 100 survivors from a single P-8A. It’s incredible,” she said.

“The RAAF will perform additional operational testing in Australia later in the year, said the RAAF’s Squadron Leader Lee McDowall. “It means a lot to us for the U.S. Navy to trust our specialists to perform the testing to their same standard.”

The RAAF monitors a region spanning from the Indian Ocean across to the Pacific and down to Antarctica, which equals approximately 10 percent of the earth’s entire surface, McDowall said.

“We have an excellent working relationship as integrated members of the program office, and as cooperative partners in the P-8A acquisition process,” he said.

The U.S. Navy will evaluate the UNIPAC-III for its own fleet, and will use outcomes from the RAAF’s operational tests to inform the introduction of the capability.

“There’s no other rescue capability like it in the world,” McDowall said.

Denver Beaulieu-Hains is the public affairs officer for the Maritime Patrol and Reconnaissance Office. 🐦



P-8A Poseidon aircraft from Patrol Squadron (VP) 5.

U.S. Navy photo by MCS Joshua Hammond

Navy, Coast Guard Help Rescue Seven

The U.S. Coast Guard, Air Force, Navy, Federated States of Micronesia Police and good Samaritans teamed recently to successfully rescue seven people who were adrift on their 18-foot vessel for six days near the Mortlock Islands, Chuuk State.

The boaters, missing since Sept. 8, were located by a U.S. Navy P-8A Poseidon aircraft from Patrol Squadron (VP) 5, the “Mad Foxes,” with Navy Commander Task Force (CTF)-72.

The boaters—four adults and three children—were located 224 miles east northeast of Satawan Atoll. The 7th Fleet Maritime Patrol and Reconnaissance Aircraft (MPRA) began supporting the search and rescue (SAR) effort Sept. 11. The squadron moved on short notice from Kadena Air Force Base, Japan, to Andersen Air Force Base, Guam. The VP-5 aircraft located the vessel mid-afternoon on Sept. 14, and notified the U.S. Coast Guard after finding it dead in the water.

The aircraft remained on station while a patrol craft from Micronesia was notified of the vessel’s location and the crew of the patrol vessel FSS Micronesia was able to take all seven passengers aboard. The rescued boaters were brought to Pohnpei to meet emergency medical personnel for evaluation, reportedly arriving in good health despite drifting for 145 hours.

From U.S. Coast Guard District 14 Hawaii Pacific. 🐦

NAVAIR DELIVERS MH-60S GUNNER SEAT REPLACEMENT TO THE FLEET

By Rob Perry and Andrea Watters

The Aircrew Systems Program Office delivered, installed and demonstrated the first two redesigned production MH-60S Seahawk gunner seats to Helicopter Sea Combat Squadron (HSC) 3 at Naval Air Station North Island on Sept. 24 and 25.

The gunner seat redesign focused on safety and ergonomics to improve operator endurance.

In response to reports of chronic injuries to aircrew flying missions in the MH-60S while sitting in the gunner's seat, Vice Adm. DeWolfe Miller III, then Director, Air Warfare, directed the program office to update the seat to allow crewmembers to perform their missions with increased comfort and flexibility.

Testing on the prototypes was completed earlier this summer and the seat was manufactured and delivered Sept. 24 to HSC-3. Fleet installations are underway.

Naval Aircrewman Helicopter (AWS) 1 Amber Barlow, with HSC-23, reacted positively to the new seat.

"What I liked about what I saw today is you have the ability to lean forward, and forward and down actually, which gives someone like me, who has a very short reach, the ability to get closer to the weapon and still be able to shoot it from a seated position," Barlow said.

She also noticed there was adjustability with the new gunner seat, including having a better range of motion when using the weaponry while remaining securely and comfortably strapped into the aircraft thanks to the redesigned restraint system.

The ability to adjust the seat's height was a welcomed feature for AWS1 Patrick Boedeker, who is a tall gunner.

"Just being able to move my legs and be more mobile in the



U.S. Navy photos by Mikel Lauren Proulx

cabin helps. Usually, I can't sit in a normal sitting position, because then my knees are so close to the window," Boedeker said. "It's more than I expected. It's surprising and I like it."

Hospital corpsman with the wing were pleased with the speed of delivery.

"I think that the engineers have done a fantastic job creating and implementing this new seat. This project has moved at break-neck speed. This is one of the fastest projects I have seen in the 16 years I have been in the Navy," said HM1 Mark Skaggs, aeromedical safety corpsman with Helicopter Sea Combat Wing Pacific (HSCWP).

The program office used an innovative approach and formed a Gunner Seat Task Force (GSTF) to allow the fleet to provide real-time input during each step of the prototype's development, said Phillip Behrman, integrated product team lead.

Throughout the design phase, the team used the GSTF as a



The Aircrew Systems Program Office delivered the redesigned MH-60S Seahawk gunner seats to Helicopter Sea Combat Squadron (HSC) 3 on Sept. 24-25.

resource to vet ideas, support fit checks and provide a conduit into the aircrew community.

“The gunner seat redesign is a great example of how taking measured risks for an urgent fleet need and incorporating direct fleet input allowed us to deliver capability with far greater speed. The result will be increased aircrew endurance and mission performance,” said Vice Adm. Dean Peters, commander, Naval Air Systems Command.

Redesign Focuses on Safety, Endurance

Improvements to the gunner seat focused on three areas, said Capt. Tom Heck, Air Crew Systems program manager.

“First of all, we want our aircrew to be safe. We deliver safe things that work the first time, every time. And second, we need them to be able to do their mission as effectively as they can because that’s why they’re out there—to accomplish



Naval Aircrewman Helicopter (AWS) Master Chief Darren Hauptman, aircrew community lead, Helicopter Sea Combat Wing Pacific (HSCWP), buckles himself into the redesigned gunner seat.



U.S. Navy photos by Mikel Lauren Proulx

Capt. Ryan T. Carron, commodore, HSCWP, and AWSCM Darren Hauptman, aircrew community lead, inspect the gunner seat.

"The success of the gunner seat redesign comes down to the power of relationships, using the direct input and collaboration with the fleet, coupled with a tailored approach using AIRWorks and organic prototyping allowed the team to go fast and deliver this capability with speed."

the mission. Third, when they're done with their mission and with their career, we want them to go on with the rest of life without having to suffer any kind of chronic injury."

Since funding was received in May 2017, it has been a team effort to redesign a new gunner seat in-house to improve ergonomics and endurance to ensure mission success, said Phillip Behrman, Gunner Seat Integrated Production Team Lead with the Aircrew Systems Program Office.

For example, the Naval Air Warfare Center Aircraft Division's (NAWCAD) AIRWorks office provided rapid prototyping to bring the redesign to life in six months.

"The success of the gunner seat redesign comes down to

AWS1 Aaron Hill, with HSC-3, notices the increased protection and ergonomic support of the redesigned gunner seat.



AWS1 Amber Barlow, with HSC-23, adjusts the seat position of the redesigned gunner seat to accommodate her size.



the power of relationships, using the direct input and collaboration with the fleet, coupled with a tailored approach using AIRWorks and organic prototyping allowed the team to go fast and deliver this capability with speed," said Gary Kurtz, Program Executive Officer, Aviation Common Systems and Commercial Services.

In May 2018, the program office debuted its second prototype at the Naval Helicopter Association Symposium in Norfolk, Virginia. That same week, flight and ground testing began at HSC-2.

The design team relied on fleet feedback throughout the redesign process, culminating in production representative test article seats.

Air Test and Evaluation Squadrons (HX) 21, VX-1 and the NAWCAD Crashworthy and Escape Systems Branch conducted flight, ground and lab testing at NAS Patuxent River, Maryland, all of which were completed this summer.



AWSAN Ryan Horn, HSC-3 aircrew student, tests the improved restraint system designed to increase gunner mobility.



Aircrew from HSCWP watch a demonstration of the newly installed gunner seat in a MH-60S Seahawk.

Based on fleet feedback, the current redesigned gunner seat includes the following features:

- Height adjustment, allowing for improved ergonomics and visibility
- Fabric seat back with embedded lumbar cushion for comfort on longer missions
- Seat pan designed to reduce pressure points on buttocks/legs while seated; seat pan folds up for greater mobility
- Seat position adjustable toward center of helicopter (center seat eliminated) to increase seated position leg room

- Increased webbing length to harness/restraint to improve gunner mobility
- Rear-facing seating option for port gunner seat
- Weight adjustable energy absorbers for greater crashworthiness

Endurance was not the only concern during the redesign—safety remains a top priority. The redesign had to meet rigorous standards necessary to protect aircrew should a crash occur.

Lindley Bark, branch head of the Crashworthy and Escape Systems explained that the crash testing is extensive to ensure as many scenarios as possible are addressed.

“We don’t know which direction we’re going to crash. But we have years of mishap data, and it’s taught us where our highest probable crash scenarios are, what severities are, what the angle and orientations are,” Bark said.

Production is fully underway, with a total of 12 Gunner Seat Mission Equipment Sets (GSMES), which include two seats plus a floor and ceiling mount, delivered to HSC-3, Behrman said.

Approximately 50 GSMES’s will be delivered per month until the entire H-60S fleet has been outfitted with the new seats.

Rob Perry is a staff writer with Naval Aviation News and Andrea Watters is the editor. Also contributing to the article were Mikel Lauren Proulx, lead for NAVAIR’s Visual Information team, and Amie Blade, Common Systems and Commercial Services public affairs officer. 🦅



The upgraded gunner seat was designed to improve ergonomics and operator endurance.

U.S. Navy photo by Mikel Lauren Proulx

HSC-22 DET 3 Sails with Fire Scout, USS Milwaukee

By Lt. Rebecca Atkinson

In June, Helicopter Sea Combat Squadron (HSC) 22 became the first East Coast squadron to sail with both type/model/series on the Freedom-class littoral combat ship (LCS) platform during USS Milwaukee's (LCS 5) first underway with MH-60S Seahawk and MQ-8B Fire Scout aircraft.



An MQ-8B Fire Scout unmanned aerial vehicle, assigned to the "Sea Knights" of Helicopter Sea Combat Squadron (HSC) 22, conducts flight operations during an underway with the Freedom-class littoral combat ship USS Milwaukee (LCS 5).

U.S. Navy photo by MC2 Anderson W. Branch

Before getting underway, Detachment (DET) 3 traveled to Point Mugu Naval Air Station in California to test the Fire Scout's capabilities over water and land. This was the first time the DET operated the on-board ZPY-4 radar successfully in conjunction with the BriteStar II Modular Mission Payload to find and identify surface contacts. The DET also conducted its first night operation of the Fire Scout and employed the air vehicle's voice relay ability to communicate over the horizon with both ground forces and the MH-60S.

"The experience gained by maintenance personnel and aircrew was essential in determining how both aircraft would be best utilized in the shipboard maritime environment," said Lt. Cmdr. A.J. Castro, DET 3 officer in charge.

"Once we were on board ship, we had the opportunity to practice procedures

and communications in a unique maritime environment that proved to be more challenging than at a shore-based facility," said Lt. Cassandra Gettinger, DET 3 H-60S/MQ-8B pilot.

Fire Scout crews used its surface radar systems to track and classify contacts while coordinating actions with the ship's combat center. The DET could see and identify surface ships from hundreds of miles along the coast without detection, demonstrating the Fire Scout's integral future as the Navy's newest and most lethal resource for operational reconnaissance and intelligence collection missions.

"It means a lot to be able to provide the ship with an improved maritime picture using our radar systems. The capabilities we can bring to the table make us an invaluable resource," said Aviation Warfare Systems Operator 2nd class

Justin McCrary, DET 3 H-60S aircrew member and mission payload operator (MPO).

While underway, members of the Coast Guard's Airborne Use of Force (AUF) Tactical Law Enforcement and their ship boarding teams executed a full mission profile, using both the MH-60S and Fire Scout to find and identify their target, ultimately disabling and taking command of the suspect vessel. Their forces combined, the ship qualified in the multi-service AUF mission they will be primarily focused on during their upcoming deployment in 4th Fleet.

Embedded in the mission and operational training period, ship's personnel and DET 3 learned how to collaborate.

"It was always easy to find the people and resources I needed because of the smaller crew and the quality of Sailors on board," said Aviation Electrician's Mate



U.S. Navy photo by MC2 Anderson W. Branch

An MQ-8B Fire Scout lands on USS Milwaukee while an MH-60S Seahawk with HSC-22 observes.



U.S. Navy photo by MC2 Anderson W. Branch

A Sea Knights pilot watches as a Fire Scout conducts flight operations.



U.S. Navy photo by MC3 Nathan T. Beard

An MH-60S Seahawk with HSC-22 observes as a Fire Scout lands on USS Milwaukee.

1st class Nicholas Liddle, DET 3 H-60S/MQ-8B maintenance technician.

Because of limited manning on the LCS, teamwork proved to be of utmost importance, with DET 3 enlisted maintainers helping with flight deck readiness, and LCS sailors switching from galley duty to manning flight quarters in an instant.

“At times, being the first has been an uphill battle. We had to learn how to effectively operate and maintain two different platforms at the same time. It hasn’t been easy, but we are a stronger DET because of our experience. I am excited to see what

the MQ-8B and MH-60S team will be able to accomplish when paired in the maritime environment,” Castro said.

In the two years since HSC-22’s safe-to-operate date for the Fire Scout, the squadron went from unqualified to deployment ready, explained Cmdr. Matt Persiani, HSC-22 Commanding Officer. “All of our maintainers, pilots and aircrew have worked incredibly hard to get us to this point, and it is due to their dedication that the DET 3 is ready to deploy with manned and unmanned aircraft,” he said.

Next, to prepare for deployment this

fall, HSC-22 DET 3 conducted a successful initial ship-aviation team training period and advanced phase with crew members from USS Milwaukee and USS Detroit (LCS-7) off the coast of Mayport, Florida. The squadron, with a crew of only 25 personnel, flew 40 hours in the MH-60S and 27 hours in the Fire Scout over a three-week period, practicing ship’s procedures and integrating for operational missions.

“For such a small crew to handle simultaneous manned and unmanned operations, teamwork was crucial, and we learned what works best. We relied on Detroit’s personnel to help facilitate flight quarters and ensure we were able to carry out all of our operational missions,” said Lt. Cmdr. A.J. Castro, DET 3 officer in charge.

DET 3 also conducted the first dual ship flight from a sea-based platform, where the air vehicle operators and MPOs communicated directly with the pilots and aircrew members for tactical employment of both aircraft.

“This accomplishment is redefining the HSC maritime presence worldwide and leading the way for developing tactics, techniques and procedures for manned/unmanned teaming,” Castro said.

Lt. Rebecca Atkinson is the DET public affairs officer for HSC-22. ✈️



HSC-3 REVAMPS TRAINING WITH NEW VIDEOS

By Helicopter Sea Combat Squadron (HSC) 3

The Training Department at Helicopter Sea Combat Squadron (HSC) 3, the West Coast's fleet replacement squadron (FRS), recently redesigned its ground-training syllabus using videos to modernize the materials and increase speed.

“We applaud this innovation, and we strive to grow further as technology advances,” said Chief of Naval Air Training Rear Adm. Dan Dwyer. “Modernizing the flight training curriculum from initial entry through undergraduate training, FRS and into the fleet, will allow students greater opportunity to excel faster.” Starting with a fleet replacement

pilot's first day at the FRS and continuing throughout the “Seawolf” training program, videos now introduce each system and guide students through basic operation and key study points, explained Lt. Cmdr. Robin Dirickson, HSC-3's training lead. Engaging, instructional videos can direct a student through challenging material the same way, for example, a video can guide a do-it-yourselfer through a home repair, she said.



A replacement pilot with Helicopter Sea Combat Squadron (HSC) 3 reviews NATOPs while watching a "prototype" video that further reinforces the lesson and material.

The videos feature active-duty instructors introducing a system and demonstrating the standard for briefing. They use linear diagrams and animated graphics side-by-side with aircraft photos to break down complex topics and include handwritten notes to highlight important information. Students then reference a study guide with required reading from source documents with a personnel qualification standard style outline of learning objectives. Open and closed book tests for each lesson further direct students to study and evaluate the

information that is most critical to commit to memory.

This "flipped classroom" strategy helps better accommodate individual study time, because in-person instructional time is now spent answering questions, having discussions, testing comprehension and practicing problem solving.

Lt. j.g. Richard Wheeler, an FRS student pilot, praised the new courseware. "The videos help break the system down to general concepts of why and how it works, then build it back up for how it

"The videos help break the system down to general concepts of why and how it works, then build it back up for how it works in the helicopter. It helps cue students toward what matters for the system in plain English."

works in the helicopter. It helps cue students toward what matters for the system in plain English," he said.

"The redesigned training also aligns with the Navy's Ready, Relevant Learning initiative," said Capt. Ed Weiler, HSC-3 Commanding Officer, "because it makes learning accessible at the right time, at the right level and in the right format, and it aligns with the recommendations released in a report this year from a Naval Air Warfare Center Training Systems Division review of current FRS instructional methods."

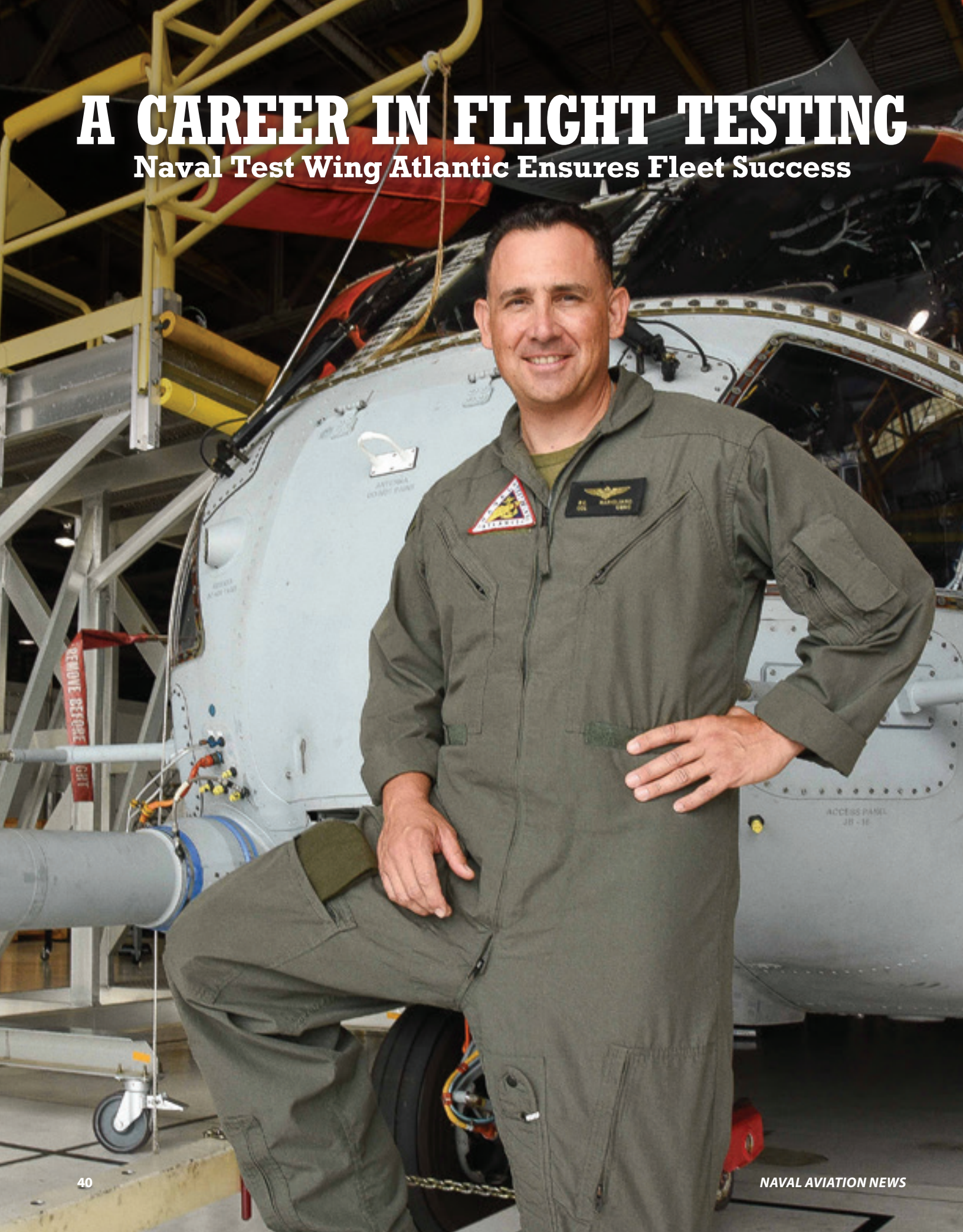
Beyond systems basics, explanatory and walk-through videos will also be available for topics that either require repetition for comprehension or combined audio-visual instruction, Dirickson said.

At the Production Alignment Conference in August, HSC-3 proposed extending the training videos to cover mine countermeasures, unmanned aerial systems and aircraft maintenance operations. To do that, a cloud-based server and site dedicated to aircrew training will need to be established so students can access the content on their phones, tablets or home computers in addition to computers in the learning center. HSC-3 has completed multiple "prototype" videos and plans to bring this initiative to the HSC community starting in January 2020.

For more information, email amanda.dirickson@navy.mil. 🦅

A CAREER IN FLIGHT TESTING

Naval Test Wing Atlantic Ensures Fleet Success





U.S. Navy photo by Peter Fitzpatrick

The following is an expanded version of a recent Naval Air Systems Command (NAVAIR) podcast with Col. Rich “Chachi” Marigliano, Commodore, Naval Test Wing Atlantic (NTWL). In this question-and-answer feature, Marigliano explains the importance of the Wing and advantages the U.S. Naval Test Pilot School (USNTPS) gives the fleet.

What is the mission and squadron make-up of NTWL? Why is it so diverse?

In Navy/Marine Corps developmental test and evaluation, there are two test wings. One on the West Coast, which focuses on weapons testing and one on the East Coast that focuses on aircraft testing and supporting the training of new test pilots at USNTPS. Our primary mission is to conduct research, development, test and evaluation of manned and unmanned fixed and rotary wing aircraft to strengthen the fleet’s lethal warfighting capability. The five commands (Air Test and Evaluation Squadron (VX) 23, VX-20, HX-21, UX-24 and USNTPS) accomplish this with a diverse assignment of approximately 260 manned and unmanned aircraft that represent Naval Aviation.

Why is NTWL such a valuable asset?

All of the squadron commands here are testing the most modern technologies which will provide additional lethality to the fleet. Today, as we look at the environment we are living in, there is a lot of importance in increasing the lethality of our fleet. The threats are real, and our squadrons are responsible and accountable to test those new capabilities to ensure we provide reliable, proven effective technologies as quickly as possible to the warfighters.

What aspects of your career led to your current command?

During my first tour as a Marine First Lieutenant, then Captain, I didn’t know anything about acquisition, testing or test pilots. In my first fleet aircraft, I saw a system that was antiquated. I couldn’t figure out why my car had this great GPS that could get me places, but my aircraft that cost millions of dollars didn’t have it. When I learned about USNTPS, I realized there was an entire world out there that buys and develops this technology for our warfighters. Once I became aware of the role of acquisition in Naval Aviation, it became a passion of mine.

How does the career path of a Marine Corps test pilot compare to that of a Navy test pilot?

It’s very similar. The career path hinges on a successful first tour. My advice to anyone who wants

to attend test pilot school is to do the best you can during your first tour. Show that you can be a good pilot. You don’t have to be the ace-of-the-base pilot to be a test pilot. You have to be competent and prove you are able to fly your aircraft and do it well. Also, seek leadership qualifications, become an expert in the tactical deployment of your aircraft and its weapons. You must establish that you are a high performer with credibility in your community.

What does the career path for a test pilot/naval flight officer (NFO) look like?

Those selected as pilots, NFOs or flight test engineers that complete USNTPS training will be responsible for shaping the future of Naval Aviation. Once they finish with USNTPS, they will go to one of the developmental test squadrons. They go to USNTPS with the most recent fleet experience and learn the disciplines of engineering and testing so they can communicate the needs of the fleet with the engineers. When they arrive at the test squadrons, they get into the aircraft to test capabilities that were paper designs and are now actual hardware. They are looking at it from an operator’s perspective by applying their fleet knowledge and asking, “Does this system work the way it’s intended to? How else can I use this system to be more lethal? What is the mission relation?” all while they are executing developmental engineering flight test.

Can attending USNTPS have a detrimental effect on the traditional career path of an aviator?

No, attending USNTPS is a unique path that provides tremendous insight into Naval Aviation that has served many senior leaders well in both the Navy and Marine Corps. We have many testers that return to the fleet and lead commands in deployed operations progressing to senior levels of leadership.

What separates a test pilot from other aviators?

We’re all aviators first. Test pilots receive special training and gain unique experiences during a test tour that provides skills beneficial to any organization, fleet or acquisition. At USNTPS, one critical skill they learn is how to translate fleet

experience to engineering speak and vice versa. Many testers head back to the fleet where they can explain to the young lieutenants or captains who might see an antiquated system the reason why it's there and what new technology is coming.

What would you say is the greatest thing about being a test pilot?

The greatest thing about being a test pilot is the reward you get after you have successfully completed a test and then see that capability fielded. You know you contributed to getting that capability to the fleet.

I've done a lot of great stuff including work on the first presidential replacement helicopter, the VH-71. I was one of the first fliers of that aircraft. But the test effort that I value the most was when a Marine Expeditionary Unit (MEU) needed to expand a limited launch/recovery envelop for the CH-53D on a landing helicopter dock amphibious assault ship. The MEU could not execute 53D flight operations due to high wind conditions outside the approved limits. A small team of us developed a test plan, executed it within a planned 10-day test window, successfully expanded the envelope and released the new envelop message. Within 24 hours of the message being released, the MEU was using it. That was the most rewarding test effort of my career.

Why is it valuable to have the test pilot school located at the center of test and evaluation?

USNTPS is the gateway for testers in so many facets. The schoolhouse is more than just formulas, science and engineering. It is establishing the culture, the mindset, the critical thinking required to look at and analyze a problem. We have to think critically to identify the risks and ways to mitigate those risks.

That's an important point because we're always talking about the need to take more risk to speed the delivery of these products to the fleet. How do test pilots play into that equation? What do they bring to it? The test pilots and flight test engineers work hand-in-hand to get the most out of the limited program resources. Testers help the program manager figure out what capabilities they can deliver to the fleet.

Another huge advantage for our test squadrons is the collaboration with

the operational testers and weapons schools. There is nothing more powerful than when these stakeholders gain alignment and jointly provide the decision makers with the information needed to make the right decision on taking calculated risks to get critical capability to the fleet.

What platforms or communities have the greatest need for pilots?

The community that needs the most attention is our NFOs. We are just not seeing as many applicants as we would like. For the pilot side, it's fairly populated and it ebbs and flows. That said we value all applications to USNTPS from aviators that had a successful first tour and demonstrated they are able to fly the aircraft, have leadership capabilities and understand their mission and platform.

What is the importance of the relationship between the test pilot and the flight test engineer? What do they offer each other?

The exchange of information is so valuable between the test pilot and the flight test engineer. Our pilots have the recent fleet experience and our engineers have the flight test experience; together they learn from each other about the capability we are testing and methods in which we can safely plan and execute flight test.

I have never observed such a strong relationship between military and civilians then in flight test. I personally have worked with numerous engineers who taught me so much about flight test. Throughout my career, I've witnessed a synergy develop between the engineering smarts and the fleet knowledge, which I continue to encourage throughout the wing.

In your opinion, do test pilots make great astronauts?

Absolutely. Teaching fleet pilots to speak the language of engineering is a skillset that translates to many opportunities, whether it's as an astronaut or in civilian industry. It's the combination of the technical knowledge you learn at USNTPS—the critical thinking, the risk management plus the experience of working with civilians in a complex and challenging environment—that's what NASA recognizes as the value in the testers that have come through here. ✈️



U.S. Navy photo by Liz Wolter

A CH-53K King Stallion lifts a Joint Light Tactical Vehicle (JLTV) at Naval Air Station Patuxent River, Md., Jan. 18, 2018, during a test to show the capabilities of the CH-53K.



HX-21

NEWS

SPECIAL SECTION: AIR TEST & EVALUATION SQUADRON (HX) 21

The mission of Air Test and Evaluation Squadron (HX) 21 is to execute developmental flight test and evaluation of rotary-wing and tilt-rotor aircraft, and their associated airborne systems in support of all Navy and Marine Corps training, combat and combat support missions.

The “Black Jacks” goal is to provide the highest quality evaluation and reporting in support of aircraft program managers and fleet warfighters.

—Lt. Col. John Ennis, Commanding Officer



Air Test and Evaluation Squadron (HX) 21 takes MV-22B Aircraft No. 8 for her final flight Aug. 3, 2018.

U.S. Navy photo by Erik Hildebrandt



U.S. Navy photo

An MH-60R Seahawk assigned to Helicopter Maritime Strike Squadron (HSM) 73 conducts radar testing aboard USS Theodore Roosevelt (CVN 71) in February in the Arabian Gulf.

Radar Testing Conducted in Arabian Gulf

By Lt. Tim Boyce

An HX-21 test team embarked on USS Theodore Roosevelt (CVN 71) in the Arabian Gulf to test a radar upgrade in February 2018, marking the first time the H-60 Seahawk program conducted testing on fleet aircraft in an operational setting.

The seven-member team from HX-21, the original equipment manufacturer (OEM) and the Air-Vehicle Modification and Instrumentation branch of Naval Air Warfare Center Aircraft Division (NAWCAD) embedded with the “Battlecats” of Helicopter Maritime Strike Squadron (HSM) 73 to evaluate an engineering release of software as part of an upgrade cycle currently ongoing for the MH-60R’s surface search radar, the AN/APS-153. The upgrades specifically targeted performance improvements.

The logistics and coordination required to install instrumentation into a deployed aircraft and to transport personnel along with test equipment to and from the Arabian Gulf was an endeavor unto itself—HX-21 created new processes and succeeded with the assistance of HSM-73.

Once embarked, the test team worked closely with the squadron’s operations and maintenance departments to gracefully weave test requirements into an already busy flight schedule

onboard an aircraft carrier conducting continuous operations in support of Operation Inherent Resolve.

The HX-21 team flew 39.3 flight hours in a span of 30 days with a joint crew consisting of HX-21 test pilot Lt. Tim Boyce, Naval Aircrewman Tactical Helicopter 2nd class Justin Hazlegrove, along with a rotating crew of Battlecat pilots and aircrew, who expertly played the part of testers themselves while managing the mission sorties.

Matthew Ardire, NAWCAD flight test engineer, became one of few project specialists to fly in an operational setting while conducting developmental testing during operational events. This exposure for a flight test engineer was extremely valuable as mission-scenario testing comes in vogue.

The team brought back more than 25 terabytes of radar usage data in various conditions and against various targets, which will allow developers to ensure that planned upgrades to the radar improve its performance where the fleet needs it.



Perhaps even more valuable, the observation of test work by HSM-73's crews, and in turn the close proximity of NAWCAD and OEM engineers to actual fleet use of the MH-60R's mission systems, created an invaluable exchange of ideas that enriched both groups' understanding of the MH-60R's mission execution.

For HX-21, the detachment also provided a chance to observe the MH-60R operating tactically within the strike group's system of systems, which yielded valuable insights that will enhance the H-60 team's future use of Capabilities-based Test and Evaluation

(CBT&E) strategies. The objective of CBT&E is to develop a seamless, mission-focused test requirements development process to establish a higher level of integration between developmental and operational test activities, and HX-21's fleet integration during test effort was a step in the right direction.

This test detachment set an exciting precedent for future testing during a time when speed to fleet is of chief concern for every level of the acquisition and test communities. 🍀

HMX-1: Maintaining the Old While Developing the New

U.S. Navy photo by Adam Skoczylas



On the tarmac is one of the VH-92A Presidential Helicopters undergoing testing at Naval Air Station Patuxent River, Md.

By James L. Robbins

It's no easy task to prepare to fly the President and Vice President of the United States and other heads of state. Years of planning, setting requirements and testing the aircraft are just the beginning.

The Presidential Helicopter Flight Test team consists of developmental testers from HX-21 and operational testers with Marine Helicopter Squadron (HMX) 1. The team supports ground and flight test of VH-3D, VH-60N and VH-92A helicopters. The VH-92A, based on the existing Sikorsky Aircraft Corporation S-92A aircraft, was customized to include a VIP cabin

interior and a government-developed Mission Communications System (MCS). The VH-92A platform is the replacement for the current VH-3D and VH-60N fleet of presidential helicopters.

Being part of this test team—which consists of five test pilots and approximately 36 test engineers, aircraft technicians and support personnel along with a 105-member imbedded maintenance team—is a great responsibility.

Testing and evaluating the suitability of the VH-92A air vehicle and its associated mission systems for the executive transport mission are just two aspects of the test program.

Over the past year, the team conducted multiple events to the White House South Lawn, National Observatory and Camp David, putting the air vehicle and

its mission systems through their paces. The team also conducted air transportability demonstrations, ensuring the VH-92A and associated support equipment and personnel can be safely transported by a C-17 and can be loaded and off-loaded within a predetermined timeline.

Presidential helicopters are critical national-level platforms that provide safe, survivable, timely, flexible, dependable and worldwide access to execute the Office of the President. In line with this mission, the test team must evaluate the VH-92A helicopter while simultaneously keeping the current in-service fleet of VH-3D and VH-60N helicopters viable.

The test team has executed 475 flight hours and 313 sorties in support of the VH-92A and in-service programs during fiscal 2019. 🍀

ASW Exercise Improves Proficiency, Combines Software Flight Test

By Lt. Bobby Ball and Lt. Matt Petersen

The Diesel-Electric Submarine Initiative Exercise (DESIEX) took place in August 2018 off Naval Air Station Jacksonville, Florida, where aircraft from Jacksonville-based Helicopter Maritime Strike Squadrons (HSM) flew against a diesel-electric submarine to hone tactical proficiency.

DESIEX 2018 had an additional purpose—mission-focused testing, which gave the fleet its first look at new software tools to make the MH-60R a more effective anti-submarine warfare (ASW) platform.

Hosted by the “Swamp Foxes” of HSM-74, HX-21 and Air Test and Evaluation Squadron (VX) 1 test pilots flew alongside Swamp Fox pilots and aircrew, with support from HSM Weapons School-Atlantic (HSMWSL), the H-60 Program Office and the original equipment manufacturer (OEM).

The Acoustic Mission Planner (AMP) upgrades that were tested included new functionality that leverages existing datalinks to provide distributed employment among multiple aircraft. The positive outcome demonstrates the reciprocal benefits of developmental and operational test communities testing simultaneously.

Test participation in a fleet exercise is vital in today’s near-peer threat environment and helps increase the acquisition community’s execution.

For the AMP, and most upgrades, testing starts in benign conditions and is built up to perform more complex operations.

The early ground tests of AMP identified a number of areas that didn’t function as desired, and feedback to the OEM allowed them to correct some of the deficiencies. The team then brought AMP to a maturity level that could be evaluated in a fleet exercise with an acceptable level of risk.

After the program office released an Interim Flight Clearance to permit developmental software on fleet aircraft, HX-21 planned and coordinated the engineering and test requirements. VX-1 and HSMWSL undertook the tactics integration and mission planning. HSM-74 provided groomed,

mission-capable aircraft and the maintenance effort required to support them.

The combined test team completed dozens of mission-representative test points over 29 flight test hours during DESIEX. As a bonus, fleet pilots and aircrew got a sneak preview of upcoming MH-60 flight software.

The team collected a lot of data on distributed ASW capabilities; fleet aircrew and SEAWOLF weapons and tactics instructors provided great feedback on software improvements. The Swamp Foxes were not only fantastic hosts, but crucial to accomplishing this project.

The DESIEX results serve as a testament to the value of mission-focused test. The coordination required to incorporate flight test into a fleet exercise ultimately helps shape new capabilities. Some of the return on this investment of “on-top time” to developmental test efforts was immediate. The full value, however, will be realized when the new AMP hits the fleet. 🚁



U.S. Navy photo

An MH-60R with Helicopter Maritime Strike Squadron (HSM) 74 participates in the Diesel-Electric Submarine Initiative Exercise and flight testing of the Acoustic Mission Planner upgrades off the East Coast.



Plane in Rain: Maintainers with DynCorp perform a full round of torque checks on an HX-21 MH-60S Seahawk during inclement weather at Ingalls Field in Hot Springs, Va., this summer.

U.S. Navy photo

Detachment Maintenance Team Goes Above and Beyond

By Lt. Matt Merrow

In April, an AH-1Z and an MH-60S from HX-21 executed a detachment to Ingalls Field in Hot Springs, Virginia, to test the Distributed Aperture Infrared Countermeasure (DAIRCM) system.

The DAIRCM system is an improved missile countermeasure system designed to replace the AAR-47 Missile Warning System. As a Joint Urgent Operational Needs (JUONs) program, the capability was required by the fleet yesterday, so many people are watching its progress.

The objective of the detachment was to evaluate the system's performance and determine if it was ready to enter "for score" testing prior to the ever-looming fielding decision. The detachment consisted of about 30 people from HX-21, VX-1, VMX-1, NAVAIR, Atlantic Test Range (ATR), Center for Countermeasures and DynCorp Maintenance.

Ingalls field is an excellent place to test with its non-towered airfield on the very top of a mountain with terrain sharply dropping off into the valleys to the east and west. With very little traffic, save for a few private jets carrying golfers to the areas world-renown courses,

this airspace is as good as it gets.

However, there are challenges that come with testing on the flat top of a mountain where field elevation is 3,790 feet. The biggest challenge is the weather—when it is bad in the area, it's much worse on the mountain. During the April detachment the weather varied from 75 degrees and sunny to driving rain and dense fog with temperatures barely climbing out of the 40's. For the flight crew this resulted in multiple weather cancellations and potential for a perfect chance to catch up on maintenance.

However, one day when the team was battling heavy rain and visibility close to 100 feet, the MH-60S was also due for a full round of torque checks. Although major maintenance was completed on the aircraft prior to detachment, subsequent torque checks on every fastener and every drive shaft coupling from the main transmission to the intermediate gearbox were required. This covers a lot

of bolts, most of which are very difficult to access, requiring two maintainers to contort on top and sometimes inside the aircraft. Maintenance like this is no small task in the dry hangar back home at Patuxent River, yet our maintenance team executed on the flight line, on the top of a mountain, in the elements.

While the rest of the team planned the next flight events or analyzed data from the comforts of the hotel, the DynCorp maintenance team worked for a full day in the driving rain. Through dedication, skill and resolve, the maintenance team found a way to get the job done and return the aircraft to an up status for test execution the next day.

While detachments offer an environment with fewer distractions and a consistency of purpose to accomplish the mission, the magnitude of the work performed by our maintenance personnel in the elements and the attitude with which they met their task stands out as a highlight of our time on the mountain.

In the end, the weather did clear and the MH-60 flew. The team was able to successfully collect and deliver the needed data, resulting in the delivery of a more capable system for the aircrew in the fleet. 🍀

MV-22B Conducts Aerial Refueling Certification with KC-46

By Marine Corps Maj. Nathaniel Ross

The KC-46A Pegasus, the new Air Force tanker, is a Boeing-developed aircraft based on its commercial 767 jetliner that will serve as the Air Force's primary tanker and replace the aging KC-135 tanker fleet.



A Marine Corps MV-22B Osprey receives fuel during air-to-air refueling rehearsals off the coast of Spain.

U.S. Marine Corps photo by Capt. Clay Groover

As part of the fielding process, the KC-46 must demonstrate satisfactory performance in refueling every potential receiver aircraft. This summer, an MV-22B Osprey from HX-21 conducted testing with the Pegasus at Edwards Air Force Base and the Vandenberg Offshore Ranges to certify the tanker/receiver pair for operational use.

A joint effort between the Air Force, Navy and Boeing test teams, the stakeholders developed a comprehensive multi-phase plan to test all aspects of aerial refueling between the two aircraft.

Ground testing began July 17 to ensure the fuel pressures and offload rates from the tanker were compatible with V-22 fuel systems.

Flight test began July 22 with wake surveys, in which MV-

22 crews ensured handling qualities while in close formation with the KC-46 were acceptable to proceed onto contacts with the tanker's Centerline Drogue System.

Subsequent test points included multiple contacts at varying closure rates, altitudes, airspeeds and tanker/receiver weights with the purpose of developing an envelope for fleet use. Additional testing included a night evaluation to determine the optimal lighting configuration for aerial refueling.

The ability to refuel with the KC-46 will enable the V-22 to continue to act as a global reach platform moving combat troops and equipment into any climb or place, and maintain the capability of conducting trans-oceanic ferry flights. With testing complete, the results will be used to determine the final refueling envelope between the two aircraft. 🌐



Carrier On Board Delivery Transition

By Lt. Cmdr. Steve “Sanchez” Tschanz

For those who have experienced life on an aircraft carrier, the Carrier Onboard Delivery (COD) aircraft represents a logistical lifeline between ship and shore. The COD delivers mail, priority cargo, personnel—whatever is needed logistically to keep the carrier strike group operating.

Very soon, the CMV-22B Osprey tiltrotor aircraft will replace the C-2A Greyhound for the COD mission.

The Navy’s first CMV-22B aircraft is scheduled to arrive at HX-21 for developmental test later this year. The first operational squadron, Fleet Logistics Multi-Mission Squadron (VRM) 30, is scheduled to receive aircraft in summer 2020, and operational test is slated to begin in late 2020. Meeting this aggressive timeline has required outside-the-box thinking and careful prioritization of requirements.

Although a new aircraft, the CMV-22B is essentially a Marine MV-22B with increased fuel capacity in the form of enlarged sponson fuel tanks and an extra wing tank on each side, an improved fuel dump system, a high-frequency radio for

beyond line of sight communications, a public address system for communicating with passengers, and an upgraded cargo lighting system.

As with any new aircraft, numerous ground and flight tests are required to confirm proper operation of the aircraft and systems prior to fleet introduction. Of particular impact on the schedules is the installation of special instrumentation necessary to provide insight into the flight characteristics of new aircraft. To meet the expedited delivery schedule, the first CMV-22B will come off the line with minimal instrumentation systems installed, saving six months of test effort.

The V-22 team carefully identified a target flight envelope that could be safely tested utilizing the reduced instrumentation package, and developed

the plan for test execution. This included incorporation of data collected on the first test flights in Amarillo, Texas, at the Bell production facility.

Pending flight test results, this plan allows for completion of the initial operational test and first fleet deployment within the limited initial flight envelope cleared by the first, minimally instrumented CMV-22B aircraft.

A second aircraft, this time fully instrumented, is scheduled to arrive in fall 2020, which will enable CMV-22 flight envelope expansion to provide the same envelope as the MV-22 for future fleet operations.

With more than 10 test plans and many years of work leading up to the present, the CMV-22B is on track to lead the fleet into the newest chapter in the carrier logistics story. 🍷



U.S. Marine Corps photo by Lance Cpl. Cody J. Chira

The Navy’s first CMV-22B aircraft is scheduled to arrive at HX-21 for developmental test later this year. Left, an MV-22 Osprey with HX-21 takes off of the flight deck of the Aviation Logistics Support Ship (T-AVB3) S.S. Wright, Nov. 9, 2017. HX-21 assisted the Wright in acquiring their Aviation Facilities Certification to prove shipboard compatibility with MV-22 Ospreys.

Parts, People and Planes: NSS-A

By Gulianna Dunn

The recurring theme in Naval Aviation has been “We need more people, planes and parts.” In an effort to break that pattern, Naval Aviation implemented the Naval Sustainment System-Aviation (NSS-A) in fall 2018 to change how it conducts business.

A collaboration between military and industry leaders to remove barriers, accelerate actions and improve processes, NSS-A encourages the adoption of commercial best practices and empowers commands to make changes. NSS-A is also a complementary strategy to the Performance to Plan (P2P) initiative, which focuses on training, warfighting demands and aligning priorities of materiel and operational readiness stakeholders.

To evaluate the results of these efforts, Naval Aviation Enterprise (NAE) leaders visit installations and organizations throughout the year

These Boots on the Ground (BoG) events provide leader-

ship with an on-the ground analysis of P2P and NSS-A efforts. They also afford the opportunity to see firsthand how maintenance and supply activities have incorporated better business practices. The goal is to elevate P2P barriers and readiness challenges while showcasing best practices.

At Fleet Readiness Center Mid-Atlantic (FRCMA), NAE leaders were given a look at how NSS-A and P2P have impacted the organization during a BoG event at Naval Station Norfolk in August.

“We conduct these events because we want to check on the Naval Sustainment System reforms,” said Vice Adm. Dean Peters, commander, Naval Air Systems Command. “Are we actually making progress? Is there something that is needed here? We are advocating for you all for MILCON [military construction], manpower and PRL [program-related logistics], but there isn’t much we can do about those right now. We’re here to identify and knock down any barriers that we can help with.”

Following command overview briefs, Capt. Matthew Duffy, commodore, Airborne Command Control and Logistics Wing (ACCLW), shared results of the E-2D Advanced Hawkeye and C-2 Greyhound type/model/series NSS-A



Rear Adm. Shane Gahagan, program executive officer for tactical aircraft programs, listens to a brief provided by members from Carrier Airborne Early Warning Squadron (VAW) 120.

U.S. Navy photos by PRT Brandon Cole, Fleet Readiness Center Mid-Atlantic



Petty Officer 2nd Class (AD2) Nichole Kent briefs members of the NAE about the progress being made at Fleet Readiness Center Mid-Atlantic (FRCMA) with help from the Naval Sustainment System.



An MH-53E Sea Dragon is on display during the visit to Helicopter Mine Countermeasures Squadron (HM) 12.

and NAE Head to FRCMA

approach to readiness by capitalizing on lessons learned from FRC Southeast in Jacksonville, Florida.

“We’ve had eight months of month-to-month increases in the number of E-2D MC [mission capable] aircraft—that’s eight straight months of improvement. We’ve had a lot of positive trendlines with NSS-A, but we are still short by a margin below our MC need number for E-2Ds. Our No. 1 readiness constraint is a lack of key, critical spare parts specific to this aircraft and its weapons system,” Duffy said.

The wing brought this issue to the Reliability Control Board—part of the NSS-A engineering and maintenance reform pillar—noting that some of the E-2D components are not living up to their predicted life expectancy, he said.

Next, NAE leaders and stakeholders visited members of Carrier Airborne Early Warning Squadron (VAW) 120 and the Center for Naval Aviation Technical Training Unit (CNATTU) in Norfolk.

CNATTU has implemented Broad Unscheduled Rapid Support Training (BURST), which delivers a condensed version of the standardized instruction to Naval Aviation maintenance technicians at their squadrons.

“We just conducted this training last month for the first

time. The training is made up of eight hours of classroom instruction followed by 30 hours of practical training, which allows us to teach technical training solutions,” said Chief Aviation Structural Mechanic Ryan Schaal, an instructor at CNATTU Norfolk. “They get to perform detailed maintenance actions on a specific platform such as system components, troubleshooting and operational checks. BURST allows a faster response time because it increases a maintainer’s level of knowledge required to complete their tasks.”

At FRCMA’s E-2D, T-56 and MH-53E T-64 engine lines, leaders observed how FRC reform initiatives were incorporated including the adoption of proven commercial practices to maximize quality and cost efficiency while minimizing cycle times.

“So far, we really like this [FRC reform] system. It has allowed our detachment to meet this fiscal year’s production goal of 17 engines, but we are still falling short of the global pool engine requirements,” said Aviation Machinist’s Mate 1st Class Robin Pruitt. “We have the ability to produce more, but we are suffering from key critical component shortages.”

The recurring theme of “lack of parts” shifted to a manpower shortage at FRCMA.



Petty Officer 2nd Class (AM2) Nicholas Burkhardt, from FRCMA's 500 division, explains the components and purpose of the MH-53E Engine Air Particle Separator with NAE members.

Vice Adm. Dean Peters, commander, Naval Air Systems Command, talks with various NAE leaders and stakeholders to address concerns and questions raised during the BoG.



Lt. Cmdr. John Sumner, regional supply officer for Naval Supply Systems Command, Fleet Logistics Center (FLC) Norfolk, discusses readiness concerns with NAE members.

NAE Recognizes Civilian for Outstanding Performance

Naval Aviation Enterprise (NAE) leadership recognized aircraft engine mechanic supervisor Carlos Rivera with its Outstanding Performance Award during an NAE Boots on the Ground event in August.

Rivera, who retired as a senior chief petty officer after 26 years in the Navy as an aviation machinist's mate, has been working at Fleet Readiness Center Mid-Atlantic (FRCMA) since 2007. He joined the team as a contract maintainer before transitioning to civil service in 2008.

For the past 12 years, Rivera has served as the aircraft engine mechanic supervisor and consistently produced exceptional results. He led the implementation of the Naval Sustainment System (NSS) and reduced turnaround time of inducted aircraft engines for level two, stage one and two repair intervals for the T56-A-427A and T64-GE-419 engines to 30 and 40 days respectively.

"I have a great working relationship with my chain of command and keep them informed of all engine status on a daily basis," Rivera said after receiving the award. "Our goal is to provide ready-

for-issue engines to the fleet for the MH-53, SH-60, C2, E2 and E2D aircraft. I am blessed to work with highly skilled subject matter experts to maintain our production goals."

Rivera's team includes 11 government contractors who have made concrete production improvements, and helped bring about a cultural change that encourages every employee to break down barriers and create efficiencies.

"With 24 engines sold during the past year at FRCMA Det Norfolk, your efforts have directly contributed to a higher readiness level of United States Navy MH-53E and E-2D aircraft," said Vice Adm. Dean Peters, commander, Naval Air Systems Command. "It's always great to

be able to deliver one of these awards in person and it shows our appreciation for all of the great work you and your team have done here."

Rivera's efforts have been responsible for elevating FRCMA to the next level of NSS implementation resulting in an increased throughput of MH-53E and E-2D aircraft engines.

"I am very proud of the work I do and self-satisfied to see quality work go out to the fleet. The award I received was a total surprise because I was not expecting it," Rivera said. "I would like to thank my outstanding team, my lead and right hand man, William Mangual. I cannot say enough about the quality of work my team has done over the years." 🦅



"Currently, there are no impacts to operational readiness or the flight line, but the problem is that we are running crisis mode because our civilian manning is at 50 percent," explained Lt. Cmdr. John Sumner, regional supply officer at Naval Supply Systems Command (NAVSUP) Fleet Logistics Center (FLC) Norfolk. "It has an effect on the people who are here, but the pressure that we run around here 24/7 is going to start having impacts especially in the near future and on the flight line."

To address manpower, FRCMA has created an apprenticeship program in response to the loss of talent due to retirement and other opportunities, such as competition from the naval and private shipyards in the area.

"One of our mitigation strategies is to get that talent, home grow it and build it up from the bottom," explained R.D. Jones, production manager at FRCMA's Voyage Repair Team.

"We're building it from the ground up so it's going to take us some time to get that talent skilled up to the level we need them to be, but we know this is going to work."

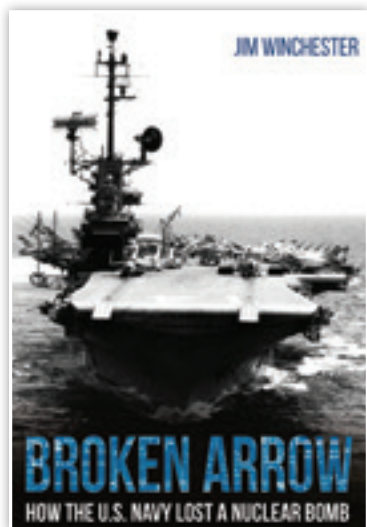
Leadership acknowledged the accomplishments and challenges addressed at the BoG.

"This is a continual process, but having the stakeholders and organizations represented here that are critical to the support of the fleet is really important," Peters said. "We picked up on a few new best practices here and we were able to visualize the work they are doing here. The tone of this BoG was very optimistic despite the action items that we need to address and that illustrates Naval Sustainment System-Aviation at work."

Guliana Dunn is a communication specialist with Naval Aviation Enterprise Public Affairs. 🦅

Professional Reading

By Cmdr. Peter Mersky, USNR (Ret.)



Broken Arrow, How the U.S. Navy Lost a Nuclear Bomb

By Jim Winchester. Casemate, Philadelphia & Oxford. 2019. 272 pp. Ill.

Handling nuclear weapons demands attention to lengthy procedures for everyone involved. Over the years, despite devoting professional concerns to such activities, nuclear bombs, as well as other devices, have been lost. On Dec. 5, 1965, the flight-deck crew of USS Ticonderoga (CVA 14) was moving an A-4C Skyhawk and its pilot to a position on the deck during a specific exercise. A combination of several things led to the A-4 going over the side, trapping its young aviator and sending the aircraft and its small, live B43 one-megaton thermonuclear bomb to the depths at some 16,000 feet below the surface of the South China Sea.

In his new book, Jim Winchester focuses on one A-4, its pilot and their carrier during the Vietnam War period and details the story of the unfortunate loss of plane, pilot and nuclear weapon the Navy referred to as “Broken Arrow.”

This is not just another Vietnam War book. The mishap could have happened anywhere American aircraft carriers operate. But it was in the middle of the

Tico’s second combat deployment to the war zone. The unfortunate pilot, Lt. j.g. Douglas Webster had already flown 17 missions and had recently married before deploying.

Besides detailing the mishap, the author gives an entertaining look at what it was like to serve aboard an aircraft carrier during the Vietnam

War. Veterans will have their memories recalled of those days, good and bad. The Ticonderoga was one of the so-called 27 Charlie Essex-class carriers that saw service in the latter part of World War II in the Pacific, and which received several post-war modifications to keep it in service to accommodate new developments, including angle decks and



U.S. Navy photo

USS Ticonderoga (CVA 14) underway with its air wing on the flight deck. The view shows the WWII-era carrier’s smaller flight deck of that period compared to the much larger decks of the flattops that followed.

hurricane decks, as well as the ability to operate jet aircraft.

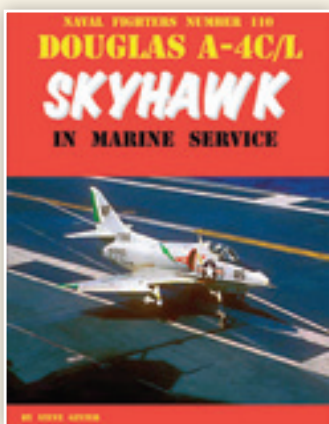
The Vietnam generation of Naval Aviation flight crews came to know the 27-Charlies well, fighting that impossible war to the best of their emotional and physical abilities. The Tico made five combat deployments (starting from May 1964 to September 1969) at the beginning of the conflict during the “Tonkin Gulf Incidents” of August 1964, sending her aircraft out to search for

North Vietnamese PT boats with only limited success and confirmation of the attacks on U.S. ships by these ghost-like enemy vessels. But it was enough to start America’s involvement in its most costly and divisive conflict (to that date) that still affects this country today.

Broken Arrow concerns the second cruise. The author also notes that while Webster was going through flight training, about to choose his pipeline, the particular A-4E he would fly in

December 1965 was just going through the Douglas production line at Long Beach, California, the first of the second-to-last batch of the A-4Es built.

Unfortunately, I found several errors in terminology or understanding throughout the book. These mistakes aside, Broken Arrow is a very good account of the loss of the aircraft and pilot, the nuclear weapon during a combat deployment, and life aboard a the carrier. 🛩️



Douglas A-4C/L Skyhawk in Marine Service

Steve Ginter. Simi Valley, CA. 2019. 49 pages. Ill.

Having published my review of book No. 109 concerning the A-4C/L in Navy service only last issue, I was a little surprised to see No. 110 arrive right behind in the successful, open-ended Naval Fighter series, and the seventh volume covering the various models of the Douglas/McDonnell Douglas Skyhawk.

The second book, which deals expressly with Marine Charlie and Lima squadrons, is much smaller than the previous volume, and thus costs less. Its coverage also keeps preliminary discussion of the basic A-4 to a minimum, and starts almost immediately with the traditional capsule squadron histories, but with the usual gallery of photos.

However, there is no discussion of scale models as that subject has been covered in the previous volume. No. 110 is almost a mini-Ginter publication, but certainly goes a long way in completing the ambitious project of depicting Ed Heinemann’s masterpiece and its contribution to Navy and Marine Corps Aviation. While we may have become familiar with the Ginter style and format, spending time browsing through both books will bring back many memories. 🛩️

Photos courtesy of Bob Paul via Peter B. Mersky



Crewmen bring a VMA-225 A-4C from its spot at Chu Lai for another mission. Without nosewheel steering, the A-4 had to be pulled or towed until the pilot could have enough room to maneuver under the A-4’s power. In the close confines of cramped squadron spaces or that of a carrier flight deck, this operation called for good coordination between the pilot and his ground handlers.



Another A-4C of VMA-225 blasts off from the partially completed runway at Chu Lai, South Vietnam in June 1965. Using JATO rocket assistance was an important part of early operations in the first years of the war.

Squadron Spotlight

Air Test and Evaluation Squadron (HX) 21 "Black Jacks"

Established: April 4, 1975

Based: Naval Air Station Patuxent River,
Maryland

Commanding Officer:
Lt. Col. John M. Ennis

Mission(s): *Execute developmental flight test and evaluation of rotary-wing and tilt-rotor aircraft, and their associated airborne systems in support of all U.S. Navy and Marine Corps training, combat and combat support missions.*

Brief History: The pride and professionalism inherent in everything HX-21 does reflects in its motto "World's Greatest Test Squadron." As a squadron attached to Naval Test Wing Atlantic, HX-21 traces its beginning to the establishment of the rotary-wing



section of the flight test division at Naval Air Test Center, Patuxent River, in 1949. In 1975, the rotary-wing test section was renamed the Rotary Wing Test Directorate and was formally established as an air test and evaluation squadron in 2002. Today, HX-21 conducts rotary-wing and tilt-rotor developmental flight test in support of Navy, Marine Corps, and Coast Guard acquisition and fleet support programs.

Aircraft Flown: MV-22B Osprey, UH-1Y Venom, AH-1Z Viper, CH-53K King Stallion, CH-53E Super Stallion, MH-53E Sea Dragon, NVH-3A and VH-3D Sea King, NSH-60F and VH-60N Whitehawk, VH-92A, MH-60R Seahawk, MH-60S Knighthawk and the TH-57C Sea Ranger

Number of People in Unit: 87 military, 38 civilians and more than 350 contractors



U.S. Navy photo by Liz Wolter

I AM NAVAL AVIATION

Aviation Machinist Mate Airman Monica Lazard, Patrol Squadron (VP) 5



NAVAL AVIATION NEWS