Light Carrier Concept 'Not Compelling,' Navy's Air Warfare Director Says

Then- Pre-Commissioning Unit Gerald R. Ford (CVN 78) at Naval Station Norfolk in 2017. Some pundits and observers are calling for light carriers to augment or replace large nuclear-powered aircraft carriers. *U.S. NAVY / Mass Communication Specialist 2nd Class Kristopher Ruiz*

ARLINGTON, Va. — The U.S. Navy's director of Air Warfare does not see a compelling case for the service to build and deploy light aircraft carriers to augment or replace the service's large, nuclear-powered aircraft carriers (CVNs).

"I believe the L-class ships [amphibious assault ships] operating with the F-35B would fit that bill," said Rear Adm. Gregory Harris, the Navy's director for Air Warfare, speaking

this week at a Navy League Special Topic Breakfast webinar, sponsored by General Dynamics. “Others would disagree.”

Harris noted that some pundits and other observers advocate light carriers because of the high cost of building, maintaining and operating the fleet of 11 CVNs, which some see as vulnerable to high-end threats such as submarines and hypersonic weapons. The capabilities of the F-35B Lightning II strike fighter have given the light carrier proponents support for their case that such a carrier armed with an air wing of F-35Bs would be highly valuable in most likely combat scenarios.

The Navy has in the past filled amphibious assault ship flight decks with Marine Corps AV-8B Harrier II jets for combat operations from the Persian Gulf, and recently conducted an experiment on the new USS America with a load of F-35Bs.

Defenders of CVNs note that the ship’s size enables it to carry a larger air wing, including E-2 battle management aircraft that are vital to the carrier’s over-the-horizon search and air defense capabilities. Often, they point to the 1982 Falklands War, where the U.K. Royal Navy suffered for lack of an ability to detect low-flying Argentinian attack aircraft soon enough to intercept them.

Harris said that the Navy is “committed to executing an analysis of alternatives to look at a light carrier or a follow-on carrier to the Ford class might look like.”

He referred to an earlier study that looked at 70 potential hull forms for aircraft carriers before settling on the Ford class.

“I would say that the majority of that study is still very valid,” he said. “Some of the mission sets may have changed slightly so we will look at those in light of the current threat out there in the world is valid and not unnecessary. It will be good for us to do that. I’m confident that over the

long run we'll find that there's not a compelling return on investment to make a smaller carrier just [because of] speed, station-keeping, the air wing that you would put on top of that carrier, and the ability to have the fuel for the air wing and for the carrier to have for the surface combatants.

"So, we will execute that," the admiral said. "We're going to start a little bit of pre-AOA [analysis of alternatives] activities this summer and then we will look to kick that AOA off probably in the [2022] time frame to go ahead and formally revisit that."

Navy Grapples with Slow Strike Fighter Training Output, Admiral Says

A T-45C Goshawk attached to Training Air Wing (TW) 1 lands on the flight deck of the aircraft carrier USS Gerald R. Ford (CVN 78) during commander, Naval Air Training Command carrier qualifications, March 14, 2021. *U.S. NAVY / Mass Communication Specialist Seaman Jackson Adkins*

ARLINGTON, Va. – The U.S. Navy is struggling with supplying the fleet with enough strike fighter pilots to fill its squadrons, but is seeing some progress after resolving some training aircraft issues.

The strike fighter training pipeline is "too darn long," said Rear Adm. Gregory Harris, the Navy's director for Air Warfare, speaking this week in a Navy League Special Topic Breakfast webinar, sponsored by General Dynamics. "We have had significant delays over a number of years inside that program. Flat out early, we underloaded the program because we were having difficulties, so we did not pull in enough aviators, which led to some of our strike fighter pilot shortfall that we have right now."

Harris also said the Navy has had "a number of different

issues associated with different aircraft inside the series," referring to the daunting problems with the T-45 strike training jet's oxygen system, which resulted in a pause in training pending corrective actions.

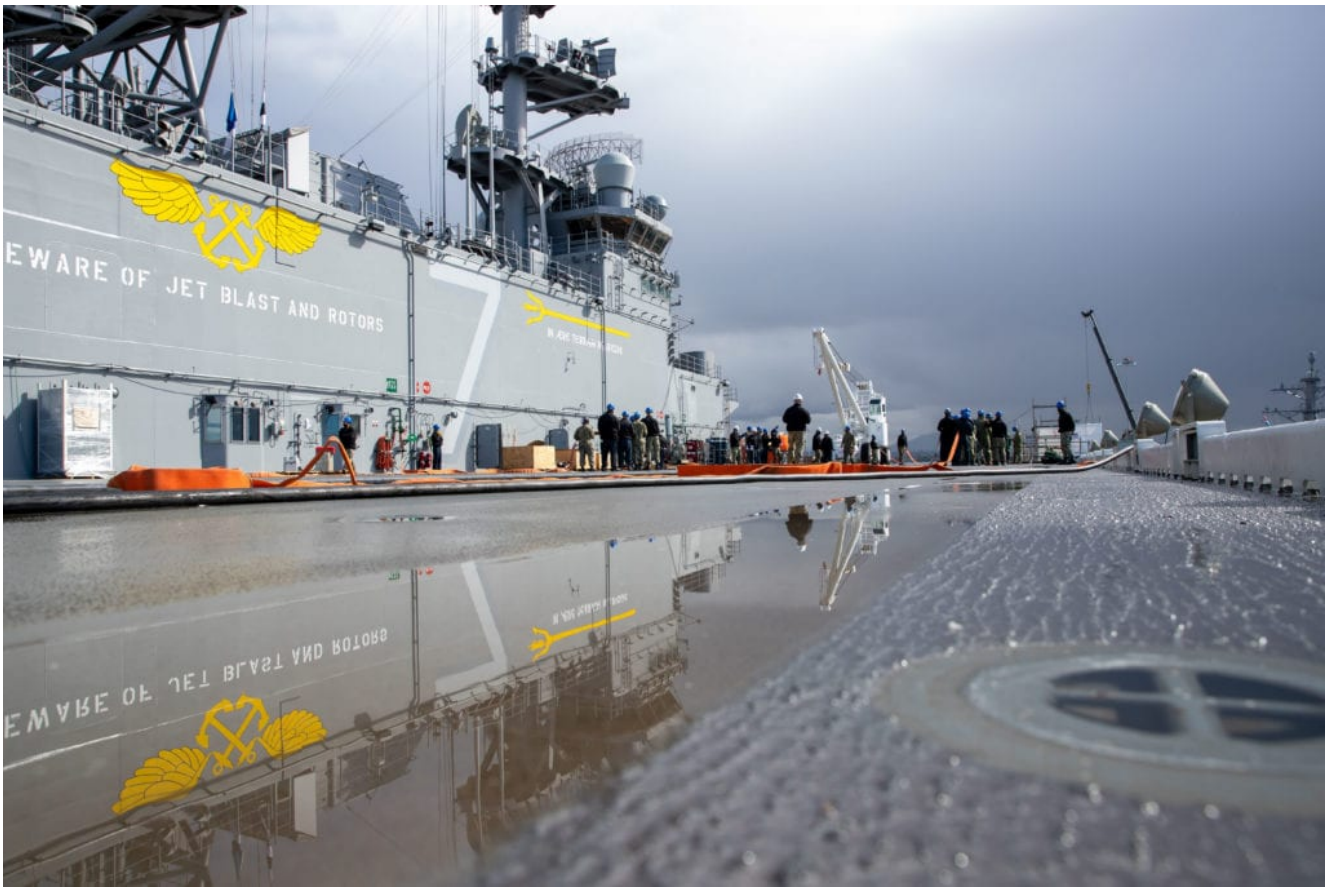
"We made our way through that and started pushing up production in the T-45 line," he said, "But we [also] went through some hiccups with our T-6. We switched vendors for the supply side of the T-6 and that caused perturbations down in the primary training. We have managed to make our way widely through the T-6 piece very successfully, pushing students through aggressively into the helicopter syllabus and now we're getting all cylinders cooking in the strike fighter syllabus."

The admiral noted that training delays also occurred in the strike fighter fleet replacement squadron (FRS) on the West Coast (Strike Fighter Squadron 122) with the low aircraft mission capable rates a few years ago that now have risen to 80% or greater.

"That helped to alleviate the pressure on the FRS there in [Naval Air Station] Lemoore, California," he said. "We have that FRS now moving at full speed. So, for beginning to end for a strike fighter pilot, it should be roughly 2 ½ years. It's taking three years and sometimes a little bit more to get those students through."

Harris said his own son was awarded his aviator wings last week after a time "much longer than I would have liked" in the pipeline, but he noted that another aviator winged during the same ceremony completed the syllabus in 9.5 months, the design duration, evidence that progress is being made in shortening the time in training.

USS Tripoli Marks Significant Steps Toward Fleet Tasking with Fitting Out Availability, Sea Trials



Sailors participate in a flight deck firefighting drill aboard the amphibious assault ship USS Tripoli (LHA 7), March 11, 2021. Tripoli is an America-class amphibious assault ship homeported in San Diego. *U.S. NAVY / Mass Communication Specialist 2nd Class Joshua Hinson*

SAN DIEGO – USS Tripoli (LHA 7), the second amphibious assault ship in the America class, is highlighting its capabilities with the completion of its Fitting Out Availability (FOA) on March 26 and upcoming sea trials, Team Ships and USS Tripoli Public Affairs said in a March 31 release.

The FOA entails changes that resulted from lessons learned and feedback from USS America's (LHA 6) availability and work

postponed due to COVID-19 protocols. Work completed during this time directly supports the vessel's F-35B Joint Strike Fighter (JSF) capability, including onboard space reconfiguration and preparing for advanced logistical systems installment.

When the ship is underway for sea trials, the crew will begin validating performance, operating many of the ship's onboard systems, including navigation, damage control, mechanical and electrical systems, combat systems, communications and propulsion applications to ensure mission readiness.

"This amphibious assault ship is ready to provide critical capabilities in supporting overall mission readiness to the Sailors and Marines of the Pacific Fleet," said Capt. Cedric McNeal, program manager, Amphibious Warfare Programs. "With its enhanced JSF capability, this ship meets the operational needs of today, while providing capacity for the future fight."

Tripoli incorporates key components to provide the fleet with a more aviation-centric platform. The ship's design features an enlarged hangar deck, aviation maintenance facilities realignment and expansion, a significant increase in available stowage for parts and support equipment, and increased aviation fuel capacity.

The ship will enter its Post Delivery Test and Trials phase, followed by Final Contract Trials with the Board of Inspection and Survey and the Post Shakedown Availability before eventual national tasking.

"The combined post-delivery and Tripoli team completed six months of depot-level work on time, a significant accomplishment in this COVID environment," said Capt. Joel Lang, Tripoli's commanding officer. "The crew is ready to take the ship to sea to complete bow-to-stern testing to prove the combat effectiveness of assault carrier 7."

The future USS Bougainville (LHA 8) is currently in production at Huntington Ingalls Industries and LHA 9 contract award is on track for 2021.

Ike Supports Operation Inherent Resolve from Eastern Mediterranean

An F/A-18E Super Hornet, attached to the "Rampagers" of Strike Fighter Squadron (VFA) 83, launches from the flight deck in preparation for operation inherent resolve aboard the Nimitz-class aircraft carrier USS Dwight D. Eisenhower (CVN 69), in the Mediterranean Sea, March 31, 2021. *U.S. NAVY / Mass Communication Specialist 2nd Class Sophie A. Pinkham*

NAPLES – Dwight D. Eisenhower Carrier Strike Group began

flight operations in support of Operation Inherent Resolve (OIR) from the Eastern Mediterranean Sea, March 31, 2021.

Aircraft from Carrier Air Wing (CVW) 3 supported Combined Joint Task Force OIR, demonstrating U.S. commitment to security in the region, U.S. 6th Fleet Public Affairs said in a March 31 release.

“Our Strike Group is ready and capable of providing direct, long-range combat operational air support from the Eastern Mediterranean Sea,” said Rear Adm. Scott F. Robertson, commander, Carrier Strike Group Two. “CSG-2’s presence in U.S. 6th Fleet shows the flexibility of our naval forces to conduct operations whenever and wherever necessary. We can provide a wide range of options to our nation and allies in deterring adversarial aggression and disruption of maritime security and regional stability.”

IKE’s operation in the Mediterranean Sea demonstrates the capability of the U.S. Navy to support OIR from multiple theaters, highlighting the mobility, flexibility, and power projection capability of the U.S. Navy’s carrier strike groups.

Operating from the Eastern Mediterranean enables IKE to seamlessly support three combatant commanders, ensuring immediate responses in a rapidly evolving security environment. IKE CSG brings multi-mission capable platforms to the U.S. 6th Fleet area of operations with strike, ballistic missile defense, and intelligence, surveillance, and reconnaissance capabilities.

Deploying ships and aircraft of the strike group, commanded by Robertson, include flagship USS Dwight D. Eisenhower (CVN 69); the Ticonderoga-class guided-missile cruiser USS Monterey (CG 61); Destroyer Squadron 22 ships include Arleigh Burke-class guided-missile destroyers USS Mitscher (DDG 57), USS Laboon (DDG 58), USS Mahan (DDG 72), and USS Thomas Hudner (DDG

116).

Squadrons of Carrier Air Wing (CVW) 3, embarked on Eisenhower include the “Fighting Swordsmen” of Strike Fighter Squadron (VFA) 32, “Gunslingers” of Strike Fighter Squadron (VFA) 105, “Wildcats” of Strike Fighter Squadron (VFA) 131, “Rampagers” of Strike Fighter Squadron (VFA) 83; “Dusty Dogs” of Helicopter Sea Combat Squadron (HSC) 7, “Swamp Foxes” of Helicopter Maritime Strike Squadron (HSM) 74, “Screwtops” of Airborne Command and Control Squadron (VAW) 123, “Zappers” of Electronic Attack Squadron (VAQ) 130 and a detachment from Fleet Logistics Support Squadron (VRC) 40 “Rawhides.”

Navy’s Next-Generation Air Dominance Increment to Replace EA-18G, Admiral Says

An EA-18G Growler prepares to launch from the flight deck of the aircraft carrier USS Harry S. Truman (CVN 75) in this 2013 photo. The Growler is due to be replaced by the Navy's Next-Generation Air Dominance (NGAD) family of systems. *U.S. NAVY / Mass Communication Specialist 2nd Class Lyle H. Wilkie III*

ARLINGTON, Va. – The U.S. Navy's Next-Generation Air Dominance (NGAD) family of systems is planned to include a replacement for the EA-18G Growler electronic attack aircraft in addition to the F/A-18E/F Super Hornet strike fighter, a senior official said.

Rear Adm. Gregory Harris, the Navy's director for Air Warfare, speaking in a March 30 Navy League Special Topic Breakfast webinar, sponsored by General Dynamics, said Increment 2 of the NGAD program is the planned phase to replace the EA-18G.

Harris said NGAD's Increment 1, the F/A-XX – the planned replacement for the F/A-18E/F – will be the centerpiece of the NGAD family of systems.

"We're going through the study portions of what [Increment] 2

will be to replace the EA-18G Growler, and we expect that family of systems will accommodate manned and unmanned."

The F/A-XX "may or not be manned," Harris said. "The platform meets the fixed-wing portion of the Next-Generation Air Dominance family of systems. We truly see NGAD as more than just a single aircraft. We believe that as manned/unmanned teaming comes online, we will integrate those aspects of manned and unmanned teaming into that. We euphemistically refer to it as our 'little buddy,' an adjunct air-to-air platform, EW [electronic warfare] platform, discussion of whether it could be an advanced early warning platform. We will have to replace the E-2D sometime in the future."

The admiral noted that the notional carrier air wing of the future may have a 60-40 percent manned-unmanned split, but over time will shift to a 40-60 percent manned/unmanned split.

"A lot of that is going to be dependent on the success we see with the MQ-25 Stingray and our ability to truly operate around the aircraft carrier and safely execute that both on the flight deck and in the airplane," he said.

Harris said the NGAD is in the concept refinement phase and is the Navy is working closely with the Air Force NGAD program, "recognizing that the two will likely be different as far as mold lines just based on different services' needs, but a lot of the internal mission systems will be similar and open mission system architecture and government-referenced design that will enable us to use best of breed."

He said the NGAD program is looking to avoid "vendor lock," whereby the program is locked into using a particular mission system when a superior, less costly or more sustainable system becomes available.

"Industry should look at different ways to team," Harris said. "Our industry primes get very comfortable with the folks

they've worked with in the past. Some of that has worked out very well for us; other times it may not have worked a well as well would have liked. I recommended that they broaden their view and look at as many of those folks as they can to team. This will enable a lot of the smaller companies to work into the niche market they may be very successful at."

Unmanned Missile Carrier a Potential for Aerial Manned/Unmanned Teaming, Admiral Says

The Boeing-owned MQ-25 T1 test asset, a predecessor to the engineering development model aircraft being produced under a 2018 contract award. *THE BOEING CO.*

ARLINGTON, Va. – As the Navy looks forward to fielding its MQ-25A Stingray unmanned carrier-based aerial refueling tanker, it is looking to the future potential of unmanned carrier-based aircraft in other missions, including those involving manned/unmanned teaming and incorporating artificial intelligence. A missile-carrying unmanned aerial vehicle (UAV) is within the imaginable possibilities.

Acknowledging the complexity of developing UAVs for aerial warfare, Rear Adm. Gregory Harris, the Navy's director for Air Warfare, speaking in a March 30 Navy League Special Topic Breakfast webinar, sponsored by General Dynamics, discussed his current thinking regarding said manned/unmanned teaming for tactical combat aircraft.

"Having an unmanned platform out there as an adjunct missile carrier I see as not a step too far too soon," Harris said. "I could have an unmanned friend – typically I say a flying Dorito chip – but I'm thinking it doesn't have to be that way. An unmanned system with missiles I can clearly in my mind envision a way to say: 'Defensive combat spread; shoot on this target, and I will squeeze the trigger,' or 'I will just enable that unmanned platform to shoot a designated target.' That doesn't stretch beyond the realm of my imagination."

"When I have that unmanned platform making decisions which target anything it wants to shoot on, that's where I start to have that scratched both from a policy standpoint," he said. "What's the rule of order going to be when Hal is out there executing a strike on itself?" he said, referencing the renegade computer than took over a spaceship in the motion picture 2001: A Space Odyssey. "I jokingly look at all of the movies out there and they typically don't end well when we do that.

"In the next two or three years we'll probably have a better idea of whether a replacement for the F/A-18E/F will be manned or unmanned," Harris said. "I believe it most likely will be

manned. I’m open to the other aspects of it. A family of systems definitely will include manned and unmanned systems.”

Harris said the development of the MQ-25 “has been very successful,” noting the Boeing prototype has been flying with its aerial refueling store.

He said the MQ-25 will be able to carry fuel for up to three carrier launch and recovery cycles or be able to pass 14,000 to 16,000 pounds of fuel up to 500 nautical miles on a strike mission. It will have some unspecified intelligence, surveillance and reconnaissance capability.

Flight Control Technology Set to Dive Underwater for Submarine Mobility

An artist’s rendering of future Successor-class submarine, the first of which will be named Dreadnought. Successor-class is the United Kingdom’s future ballistic missile submarine, to replace the Vanguard class. *U.K. ROYAL NAVY*

ROCHESTER, U.K. – BAE Systems is taking decades of flight controls expertise underwater on-board the United Kingdom’s next-generation submarine, Dreadnought. This innovative approach involves adapting controls that are usually used in fly-by-wire aircraft and applying them in a marine environment, the company said in a March 29 release.

The complete Active Vehicle Control Management (AVCM) system will oversee all major aspects of the submarines’ maneuvering capability to the highest levels of safety and reliability, similar to existing systems on modern air transport platforms.

“With over 50 years of avionics experience, we already have a great understanding of how to develop complex, control systems for hi-tech platforms,” said Jon Tucker, director for Maritime Controls at BAE Systems Controls and Avionics. “However,

taking our technology underwater brings exciting new challenges and we are proud to support the Dreadnought program and play an important part in our national security effort.”

Similar to how fly-by-wire works for aircraft – whereby electronic systems are used to control the movement of aircraft – the company’s engineers are developing electronics that control the heading, pitch, depth and buoyancy of the Dreadnought class among other critical elements with added safety benefits.

Work has already begun, supporting more than 130 highly skilled jobs in Rochester, U.K, with the number expected to grow. The program is one of the largest developmental projects taking place at the Rochester site and the company says it has made significant investments at the site to create new labs and workspaces to support the program.

The innovation has been developed by engineers in the BAE Systems’ Electronic Systems business working closely with colleagues across the company’s Maritime and Air sectors to develop a world-class system as part of BAE System’s Active Vehicle Control One-Team. Its engineers will continue to develop the technologies with a view to expanding its applications to both other underwater and surface vessels.

Anti-Submarine Warfare Virtualization Initiative Expands DDG’s Combat

Capability

The guided-missile destroyer USS William P. Lawrence (DDG 110) practices ship maneuvers as it transits the Pacific Ocean. *U.S. NAVY / Mass Communication Specialist 2nd Class Jessica O. Blackwell*

WASHINGTON NAVY YARD, D.C. – A Navy team responsible for developing and testing Surface Ship Undersea Warfare Combat System Suites (AN/SQQ-89A(V)15) rapidly improved the anti-submarine warfare (ASW) capability of a guided missile destroyer for a February exercise, the Naval Sea Systems Command said in a March 29 release.

According to the PEO IWS 5.0 program office, Naval Sea Systems Command, this will expedite modernization of ASW.

The Navy was upgrading 10 to 12 ships per year with the latest AN/SQQ-89A(V)15 system, and that would take approximately seven to eight years to modernize the entire cruiser and destroyer population of ships.

However, with the successful virtualization of the SQQ-89A(V)15, approximately half of the population of ships per year could be upgraded so that every other year all cruisers and destroyers would be operating the latest greatest capability.

The integrated team led by Program Executive Office Integrated Warfare Systems (PEO IWS) and supported by NAVSEA's Naval Undersea Warfare Center in Newport, Rhode Island, Navy research labs and industry, demonstrated the ability to reduce the time it takes to complete the virtual ASW combat system upgrade to USS William P. Lawrence (DDG 110), an Arleigh Burke-class guided-missile destroyer built by Northrop Grumman Shipbuilding, in just two days following equipment validation and verification.

The team successfully installed the 14v19 virtualization appliance equipped with a virtual version of the most recent ASW capability software, Advanced Capability Build (ACB)-19, onboard USS William P. Lawrence. The team then connected the suite's virtualization appliance directly into the ship's existing SQQ-89A(V)15 legacy Technical Insertion (TI-14) hardware infrastructure to complete the integration and upgrade.

SQQ-89A(V)15 Program Manager Capt. Jill Cesari said this proof-of-concept demonstration also reduces upgrade costs significantly, removing the requirement for hull cuts, minimizing hardware change-outs, and reducing the time to modernize these combat systems from 6 to 9 months of shipyard times to a matter of weeks.

"This will allow the Navy to upgrade ships with the latest, greatest software more frequently," Cesari said.

BAE Systems Wins $42.5M Navy Contract for Landing Systems Integration Support

MCLEAN, Virginia – BAE Systems was awarded a four-year $42.5 million task order from the U.S. Navy to provide shore-based landing systems integration (LSI) support services for instrument carrier and instrument landing systems (ICLS/ILS), the company said in a March 30 release. The new ILS provides U.S. Navy pilots with increased guidance capabilities by using radio beam signals that aircraft computers translate, enabling pilots to correct their flight path and operate aircraft without instruction from an air traffic controller.

“For several decades, we have been responsible for integrating the Navy’s landing systems, which are critical to the safety of warfighters in the air and on the ground,” said Lisa Hand, vice president and general manager of BAE Systems Integrated Defense Solutions business. “As a lead systems integrator, we have efficient, established, and proven methods and experience installing and sustaining these complex landing systems, which are critical for the safe landing of aircraft.”

In partnership with Naval Air Warfare Center Aircraft Division Webster Outlying Field, BAE Systems serves as part of the lead systems integrator team on the LSI contract. The company provides a variety of support including systems integration, installation, and overall system sustainment. The company’s technicians and experts deploy around the world to support warfighters and will provide support at military installations including Naval Air Station Whidbey Island, Washington for ICLS support and Marine Corps Air Station Miramar, California for ILS support.

EXU-1 Leads EOD Cross-Functional Team Effort

Electronics engineers assigned to Exploitation Unit One conduct electronic analysis of evidence collected during a site exploitation training scenario at Naval Surface Warfare Center Indian Head Division, October 2020. *U.S. NAVY / Matthew Poynor*

INDIAN HEAD, Md. – When sending care packages overseas to deployed troops, the contents usually contain items such as toiletries, snacks, video games and other types of sundries. For the personnel attached to Expeditionary Exploitation Unit 1 (EXU-1), however, the packages they are sending aren't meant to entertain, but to provide critical knowledge and training to joint force explosive ordnance disposal (EOD) operators in the form of a comprehensive Level 1 Collection and

Exploitation Guide.

EXU-1 is leading the Navy EOD exploitation cross-functional team (CFT) to identify exploitation-specific shortfalls in training and equipment across the Navy EOD force, establish communication channels with the intelligence community, and create solutions in line with the Navy's 2020-2030 EOD Strategic Plan, the unit said in a March 30 release.

"Out of this role, EXU-1 assembled and produced a 'Level 1 Collection and Exploitation Guide' for deployed joint force EOD units to use," said EODCS Devon Bryan, EXU-1's Operations Department leading chief petty officer. "The guide identifies tools and processes as instructed by EXU-1's exploitation experts to teach operators how to collect various types of evidence, conduct post-blast investigations, handle and package materials, and help identify what material is important to document or collect if possible."

While in theater, EXU-1's Technical Exploitation Platoons collect and process evidence of value through various methods such as X-ray images, chemical and electronic analysis, fingerprints, and DNA. This enables laboratories to reverse engineer electronic systems for countermeasures development, and compile biometric, forensic, and technical data to drive intelligence. These efforts often lead to the identification and exploitation of hostile networks responsible for the production and use of those materials, as well as attribute state sponsors to acts of aggression.

As the Navy's only forward-deployed weapons technical exploitation unit, EXU-1 can leverage the knowledge base and skill set of its subject matter experts to increase the chance of success and strategic impact for deployed EOD operators.

"If EOD teams out in the field come across an exploitation opportunity, they can use our guide and conduct a basic Level 1 collection and exploitation. We are adapting the operator's

recon skill set and applying it to these opportunities, increasing EOD community impact with regards to collecting and reporting technical intelligence," Bryan said.

To date, EXU-1 has delivered more than 4,000 copies to Navy EOD mobile and training units, the FBI's Terrorist Explosive Device Analytical Center Counter-Improvised Explosive Device Collaboration Center, and the Naval EOD School at Eglin Air Force Base. The publication is already used by deployed forces and as a baseline document for curriculum development in Canada and Germany.

In addition to a reference sheet, EXU-1 is spearheading the creation of an expeditionary technical exploitation publication through the Expeditionary Warfare Development Command. According to EXU-1's Operations Officer Lt. Chris Price, this Navy tactics, techniques and procedures publication will inform operators, staffs and the interagency on relevant tactical and operational considerations for conducting exploitation, and how these operations can affect decision-making at the strategic level. It is the first Navy publication that outlines the full spectrum of the expeditionary exploitation mission to include organizations and tactics, techniques and procedures. The release of this publication will further EXU-1 CFT's objectives to improve force integration and increase exploitation capability and capacity across the Navy EOD community.

"I'm extremely proud of the work our team is accomplishing," said EXU-1's Commanding Officer Cmdr. Edgar Britt. "Through our field guides and providing exploitation expertise to critical naval doctrine, EXU-1 is committed to not only deploying forces forward to deliver exploitation capability but also working with our partners to ensure the most lethal and capable force is ready to meet our nation's needs."

EXU-1 is an operationally deployable Type II, Echelon V command aligned under Naval Surface Warfare Center Indian Head

Division (NSWC IHD). The unit hosts a variety of platoons designed to collect, process, exploit and analyze improvised threats, advanced weapons systems, munitions, ordnance, unmanned systems, and strategic infrastructure on land and sea to provide real-time targeting information and intelligence to EOD forces. EXU-1 was commissioned in June 2018 as an Echelon V command and reports to NSWC IHD Commanding Officer Capt. Eric Correll, who serves as the immediate superior in command to EXU-1.