New ‘Rebreather’ Helps Navy Divers Beneath the Waves

ARLINGTON, Va. – The U.S. Navy diver hoisted a 60-pound life-support regulator onto his back, then donned a 30-pound metal helmet. Fellow divers connected his diving suit to an “umbilical” hose pumping in breathing gas and establishing communications with the surface. After receiving approval to hit the water, the diver descended into a large test pool at Naval Surface Warfare Center Panama City (NSWC), Florida – home to the Navy Experimental Diving Unit.

The diver’s mission: demonstrate the effectiveness of the MK29 Mixed Gas Rebreather – a new prototype system that’s the first of its kind within the Navy diving community, developed by NSWC Panama City.

The technology is sponsored by the Office of Naval Research Global (ONR Global) TechSolutions program. TechSolutions is ONR Global’s rapid-response science and technology program that develops prototype technologies to address problems voiced by Sailors and Marines, usually within 12 months.

“This rebreather system is an awesome opportunity to enhance the capabilities of Navy divers and accelerate their deployments,” said ONR Command Master Chief Matt Matteson, who heads up TechSolutions.

Navy diving missions include underwater rescues, explosive ordnance disposal, ship hull maintenance, recovery of sunken equipment, and salvage of vessels and aircraft.

Beneath the waves, Navy divers breathe a careful mixture of oxygen and nitrogen. Below 150 feet, however, nitrogen becomes toxic – leading to nitrogen narcosis, a drowsy state that can dull mental sharpness severely and jeopardize safe return to the surface.

The solution is to replace nitrogen with helium. However, helium is expensive and hard to obtain because of recent worldwide shortages. And the Navy needs a lot of it for missions and training exercises, requiring canisters of the gas to be transported on accompanying ships or planes.

The MK29 rebreather solves these problems. Used oxygen-helium is filtered through a carbon dioxide scrubber – which removes carbon dioxide and recycles the breathable gasses back to the diver.

The result? Very little venting (giveaway bubbles) – or wasted helium.

“The MK29 decreases helium requirements by approximately 80 percent,” said Dr. John Camperman, a senior scientist overseeing the development of the MK29 at NSWC Panama City. “Divers can perform more dives with the same amount of gas or bring less helium.”

Test results suggest this system will be a major asset to Navy divers-who cannot only perform more dives, but also stay underwater longer if surface supply gas is interrupted.

The MK29 even reduces breathing noise and fogging of helmet viewports. It’s also the first piece of Navy diving equipment to feature 3D-printed titanium tubing that connects hoses from the helmet’s breathing manifold to the regulator backpack. That titanium reduces the risk of breathing hoses being sliced by sharp or jagged underwater objects.

The idea for the MK29 came from a NSWC Panama City master diver, who contacted TechSolutions seeking a way to reduce helium consumption while using newly available rebreather technology. Recognizing the expertise of Camperman and his team, TechSolutions asked them to develop the MK29.

Camperman’s research team will conduct further MK29 tests this year-and hope to see the rebreather issued throughout the

fleet by next year.

Geurts Closes Navy Unmanned Systems Secretariat, Citing Progress, Integration

ARLINGTON, Va. – The Navy has eliminated the position of its "drone czar" in its secretariat after only two and a half years, citing goals achieved and integration progress.

In an April 30 directive, James F. Geurts, assistant secretary of the Navy for Research, Development and Acquisition, directed the disestablishment of the Office of the Deputy Assistant Secretary of the Navy (Unmanned Systems) (DASN(UxS)) effective May 7.

Under then-Navy Secretary Ray Mabus, the Navy established DASN(UxS) to put appropriate bureaucratic horsepower and centralized leadership behind the development of unmanned systems. Mabus made the announcement on Oct. 27, 2015, that retired Marine Brig. Gen. Frank Kelley would be the first head of the office.

Geurts cited the completion of the Navy Department's comprehensive Unmanned Systems Roadmap and its submission to Congress as "a logical point to move forward as expressed in our Goals and Roadmap. Both documents state that the integration of manned and unmanned systems into a seamless fighting force is an objective of our unmanned systems strategy and critical to our future naval force."

Geurts said the DASN(UxS) had satisfied Mabus' Nov. 13, 2015,

directive to “Treat unmanned as unmanned.

“That work continues, but that work, to integrate unmanned systems into all that we do, now belongs to all of us,” Geurts said.

Earlier this year, the Unmanned Warfare Systems Division (N99) in the Office of the Chief of Naval Operations was eliminated and its mission merged into the directorate of Warfare Integration. N99 had been established on Sept. 15, 2015, with now-retired Rear Adm. Robert Girrier as director.

Navy to Establish Type Wing for F-35C Squadrons

ARLINGTON, Va. – The Navy will establish a new type wing as commander over the service’s growing F-35C Lightning II strike fighter community.

According to an internal directive, commander, Joint Strike Fighter Wing, will be established on Aug. 1 at Naval Air Station (NAS) Lemoore, California. The new wing will man, train and equip the three current F-35C strike fighter squadrons (VFAs): the two fleet replacement squadrons, VFA-101 at Eglin Air Force Base, Florida, and VFA-125 at Lemoore, plus VFA-147, an operational squadron currently in transition from the F/A-18E to the F-35C.

As more fleet squadrons make the transition to the F-35C, they will be reassigned from their current wing, Strike Fighter Wing, U.S. Pacific Fleet – also at Lemoore – or Strike Fighter Wing Atlantic at NAS Oceana, Virginia. Those wings will continue to man, train and equip the Navy’s F/A-18 strike

fighter squadrons.

AEI: Navy Needs Rebuilding to Reach 355-Ship Fleet

ARLINGTON, Va. – The U.S. Navy faces serious challenges in reaching its goal of 355 ships and the capabilities they need, a Washington think tank said, recommending a series of steps that will help the service to increase its warfighting strength.

In a new study from the American Enterprise Institute (AEI) – Rough Seas: An AEI Study in Crisis Response for Tomorrow's Navy and an Improved Navy for the Future – scholars John W. Miller, Thomas Donnelly and Gary J. Schmitt considered four table-top scenarios to model the future fleet to come up with recommendations.

The authors identified four key challenges. The Navy:

■ "Lacks sufficient funding to meet the stated requirement of a 355-ship fleet;

■ Is not large enough to carry out its primary missions of peacetime engagement, crisis response, and combat operations;

■ Has a maintenance system that cannot respond effectively to unexpected contingencies;

■ Lacks the global presence and capabilities to deal decisively with the new great-power competitors, Russia and China."

The authors made several specific recommendations for the Navy

to:

■ Expand forward presence in the North Atlantic, the Mediterranean, and the Pacific.

■ Fully fund Navy operations and maintenance accounts.

■ Adopt “best maintenance” plans and practices from the private sector.

■ Install vertical launch systems (VLSs). The Navy should install 16-cell VLS systems on at least six amphibious ships and six cargo ships by 2022.

■ Install integrated fire control and counter-air systems.

■ Install Harpoon anti-ship missiles. The Navy should equip all expeditionary fast transport ships with Harpoon anti-ship missiles.

■ Install heavyweight torpedoes. The Navy should equip all Ticonderoga-class cruisers with heavyweight torpedoes.

■ Keep all 22 Ticonderoga-class cruisers.

■ Accelerate production and fielding of the amphibious assault ship Bougainville.

■ Buy more F-35 joint strike fighters.

The study said “the proposed short-term investments can ameliorate future strategic vulnerabilities and increase future strategic opportunities. But these proposed investments are not a substitute for the larger, overdue and essential rebuilding that the Navy needs.

“In short, the 355-ship Navy will take decades and billions of dollars not only to build but also to maintain,” the study said. “Neither the Obama administration nor the Trump administration has proposed defense budgets commensurate with reaching or sustaining this significantly expanded fleet.”

The authors recommended that the Navy buy in bulk – as is done through block buys and multiyear procurements – because it has shown that it "improved shipyard performance and saved money. To expand significantly in size, it is imperative the Navy do so as smoothly as possible."

The authors concluded that "while these improvements can help close a window of maritime vulnerability and assist in stabilizing critical regions, deterring increasingly aggressive adversaries and reassuring increasingly skittish allies, they are not a substitute for the larger, overdue and essential rebuilding that the Navy needs. Today's Navy is too small, insufficiently lethal, not well enough maintained and, at its bases on the East and West Coasts of the United States, positioned too far away from crises and conflicts that might threaten American interests."

Navy Completes Lightweight Torpedo Defense Mission Module Testing

WASHINGTON – The Littoral Combat Ship (LCS) Mission Modules (MM) program announced the successful completion of two days of at-sea testing of the AN/SLQ-61 Lightweight Tow (LWT) Torpedo Defense Mission Module (TDMM), May 2.

Similar to the AN/SLQ-25 "Nixie" system currently installed in the fleet, the LWT is a modular, digitally controlled, soft-kill countermeasure decoy system. It employs an underwater acoustic projector deployed from the ship's stern on a tow cable to defend ships against wake-homing, acoustic homing and wire-guided enemy torpedoes. The LWT system is significantly

lighter in weight than the current “Nixie” system and has a different tow profile, making it ideally suited for small combatant warships operating in littoral environments.

“This test was highly successful and demonstrated that this technology, which provides critical torpedo defense capability for the LCS class of ships, is ready for integration aboard an LCS,” said Capt. Theodore Zobel, LCS Mission Modules program manager.

The test event was the final at-sea test on a commercial vessel. The program is incorporating lessons learned from this event as it prepares for TDMM integration and formal developmental and operational tests aboard an LCS. The torpedo defense capability the TDMM provides is envisioned for eventual deployment on all LCS ships, and potentially other small combatants.

Program Executive Office Unmanned and Small Combatants (PEO USC) provides a single program executive responsible for acquiring and sustaining the littoral combat ship class and mission capabilities; the future frigate; the multi-mission surface combatant – an LCS variant for international customers; mine, anti-submarine and surface warfare systems; and unmanned maritime systems.

LPD to be Named for Navy Medal of Honor Recipient

ARLINGTON, Va. – The Navy’s 13th San Antonio-class amphibious dock ship (LPD) will be named for a naval officer who was awarded the Medal of Honor for gallantry during a kamikaze attack during the 1945 Okinawa campaign.

Speaking May 2 to reporters at the Pentagon, Navy Secretary Richard V. Spencer said the next LPD would be named for Capt. Richard M. McCool Jr., the former commanding officer of a landing craft support ship, large, Mark 3, that went to the aid of the crew of a sinking destroyer, USS William D. Porter, and then came under attack itself, but saved his ship despite being wounded and knocked temporarily unconscious.

Below is the text of the official citation for the Medal of Honor presented to then-Lt. McCool by President Harry S. Truman on Dec. 18, 1945:

“For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty as Commanding Officer of the U.S.S. LCS 122, during operations against enemy Japanese forces in the Ryukyu Chain, 10 and 11 June 1945. Sharply vigilant during hostile air raids against Allied ships on radar picket duty off Okinawa on 10 June, Lieutenant McCool aided materially in evacuating all survivors from a sinking destroyer which had sustained mortal damage under the devastating attacks. When his own craft was attacked simultaneously by two of the enemy’s suicide squadron early in the evening of 11 June, he instantly hurled the full power of his gun batteries against the plunging aircraft, shooting down the first and damaging the second before it crashed his station in the conning tower and engulfed the immediate area in a mass of flames. Although suffering from shrapnel wounds and painful burns, he rallied his concussion-shocked crew and initiated vigorous fire-fighting measures and then proceeded to the rescue of several trapped in a blazing compartment, subsequently carrying one man to safety despite the excruciating pain of additional severe burns. Unmindful of all personal danger, he continued his efforts without respite until aid arrived from other ships and he was evacuated. By his staunch leadership, capable direction and indomitable determination throughout the crisis, Lieutenant McCool saved the lives of many who otherwise might have perished and

contributed materially to the saving of his ship for further combat service. His valiant spirit of self-sacrifice in the face of extreme peril sustains and enhances the highest traditions of the United States Naval Service."

McCool, an Oklahoma native, served in the Korean and Vietnam wars as well, retiring with the rank of captain. He died in 2008.

Spencer broke the tradition of naming LPDs for cities and counties in the United States by naming the ship after a naval hero.

LPD 29 will be built by Huntington Ingalls' shipyard in Pascagoula, Mississippi, under a $1.4 billion contract awarded in February.

Aircraft Carrier John F. Kennedy Reaches 75 Percent Structural Completion

NEWPORT NEWS, Va. – The nuclear-powered aircraft carrier John F. Kennedy (CVN 79) is 75 percent structurally complete following the recent installation of the forward area of the ship's main deck, Huntington Ingalls Industries announced in an April 30 release.

Kennedy, the second ship in the Gerald R. Ford class of carriers, has been taking shape at the company's Newport News Shipbuilding division since the ship's keel was laid in August 2015. The ship is being built using modular construction, a process where smaller sections of the ship are welded together

to form a structural unit, known as a superlift. The superlift is then outfitted with piping, electrical equipment, cable, ventilation and joiner work, and is lifted from the assembly area into the dry dock.

The 750-metric-ton forward section of the main deck includes the machinery spaces located over the ship’s forward diesel generators. Also installed was the first piece of the aircraft carrier flight deck, which includes command and control, pilot ready rooms and additional support spaces, a jet blast deflector and components of the advanced arresting gear system.

With the recent superlifts, 341 of the total 447 sections are currently in place. Kennedy stands about 100 feet in height in the dry dock with only the island and main mast remaining to bring the ship to its full height of 252 feet.

A third key milestone also was achieved recently when the first two generators supporting the electromagnetic aircraft launch system were installed.

“We are very proud of the progress we are making on the Kennedy,” said Lucas Hicks, Newport News’ vice president, CVN 79 program. “The ship now is 75 percent structurally erected and more than 40 percent complete. Many of the improvements we have made over the construction of CVN 78, including increased pre-outfitting and performing more complex assemblies in our shops, will allow us to launch the ship three months earlier than planned.”

Kennedy is scheduled to be christened in the fourth quarter of 2019 and delivered to the U.S. Navy in 2022.

Arleigh Burke Program Pushes Ahead, With First Two Flight III Ships Under Contract

NATIONAL HARBOR, Md. – The DDG 51 program is moving ahead rapidly, with 12 ships under contract, including the first two of the substantially improved Flight III ships, the program manager said April 10.

The detail design on Flight III is "just about done and we're on track to start construction," with work on DDG 125 expected to start at Huntington Ingalls Industries (HII) in May, and DDG 126 at Bath Iron Works later this year, said Capt. Casey Moton. "We have a good, stable design" that was approved by both yards last year with fixed-price contracts.

The major change for Flight III is the AN/SPY-6 Air and Missile Defense Radar (AMDR) "which will bring a significant improvement in missile defense," Moton told a Naval Sea Systems Command briefing at the Sea-Air-Space Exposition.

The Flight III design also required some "enabling changes" needed to accommodate the combat changes and to restore life expectancy margins to match the current Arleigh Burke destroyers, he said.

Those included expansion of the deck house, widening the hull above the water line to improve stability and thicker "inner-bottom scantling" to increase hull strength and to lower the center of gravity to offset the heavier SPY-6 radar antenna, he said. The design also included a major increase in air conditioning capacity and electrical energy, to support the more powerful radar.

Integrating the AMDR with the Aegis combat system "is going smoothly" with tests in Hawaii and elsewhere, he said.

The cost of the new class of ships is expected to be $1.7 billion to $1.75 billion for the first ships, which is expected to drop with later ships, as has happened throughout the DDG 51 program, Moton said.

The program office now is focusing on executing the latest multi-year production contract, which will buy 22 ships through fiscal 2023, he said. That contract calls for three ships a year for each year, except 2020.

A total of 65 Burkes have been delivered, with another about to transfer to the Navy, Moton said.

Navy Renames LCS Program Executive Office to Reflect Broadened Portfolio

ARLINGTON, Va. – The Navy has renamed Program Executive Office Littoral Combat Ship (PEO LCS) as Program Executive Office, Unmanned and Small Combatants (PEO USC), in a move to encompass the PEO's broadening portfolio of responsibilities.

The name change was ordered in a March 13 memorandum by James F. Geurts, the assistant secretary of the Navy for Research, Development and Acquisition.

"Since the creation of PEO LCS in July of 2011, the organization's portfolio has grown beyond its original focus on the development, procurement and sustainment of LCS; its associated mission modules; and related systems," Geurts said in the memo. "Today, PEO LCS oversees the acquisition of the littoral combat ship (LCS) and its associated mission modules,

as well as mine warfare systems, unmanned maritime systems, the future Frigate (FFG(X)) and the Multimission Surface Combatant (MMSC), an LCS variant for international customers. This represents four distinct shipbuilding product lines in development or under construction, 10 unmanned maritime systems, and 15 ACA T or pre-A CAT programs. The name PEO LCS no longer adequately reflects the breadth of its portfolio nor the full importance of its work.

“The Littoral Combat Ship and its mission capabilities remains a critically important shipbuilding program,” he said. “With the introduction of FFG(X) and MMSC in the near future and our burgeoning fleet of unmanned surface and subsurface vehicles, this new name more accurately represents the work on platforms and systems that are key enablers for the future fleet through all phases of warfare. Their continued organization under a single PEO will allow improved program execution, alignment and agility today and into the future.”

The PEO USC includes the following program offices: Unmanned Maritime Systems (PMS 406), LCS Mission Modules (PMS 420), Mine Warfare Systems (PMS 495), Littoral Combat Ships (PMS 501), LCS Fleet Introduction and Sustainment (PMS 505), Frigate (PMS 515) and International LCS (PMS 525).