FACEPLATE

The Official Newsletter for the Divers and Salvors of the United States Navy

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In This Issue...

FACEPLATE

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Editorial Staff

In This Issue

Cover

U.S. Navy Mobile Diving and Salvage Unit (MDSU), Company 1-8 divers conducting hot tapping operations on the hull of the inverted heavy cruiser ex-USS PRINZ EUGEN.

SUPSALV SENDS...CAPT Keith Lehnhardt

Greetings Navy divers! Hope that all is well in your neck of the woods. I have to apologize in advance that this article will be longer than my usual one pager, but I've got a few topics to cover, so gear up, take a vent and don't quit reading before you get to the end. For the last few "SUPSALV Sends," I've discussed the various aspects of the CNO's "A Design for Maintaining Maritime Superiority" and indicated that in this current issue I would focus on the increasing Underwater Ship Husbandry (UWSH) demand signal and sustainment of our future Navy fleet.

Before I turn to UWSH, however, I would be remiss if I didn't mention that in March of this year the CNO issued version 2.0 of his Design. It was revised and issued for three primary reasons:

- Ensure alignment with the new National Security (Dec 17) and National Defense (Jan 18) Strategies;
- Account for progress made to date; and
- Validate strategic environment assumptions.

If you haven't done so already, read it! It gives a great perspective on what the Navy's roles will be in future conflicts, how we intend to position our service for success and what role(s) you play on our Navy team.

With that homework assignment issued, let's turn to UWSH. As I've said before and will continue to beat the drum about, UWSH literally keeps the fleet afloat by decreasing maintenance down time, mitigating the need for ship dry dockings and minimizing deferred

work. Bottom line, UWSH saves money and increases ship operational days!

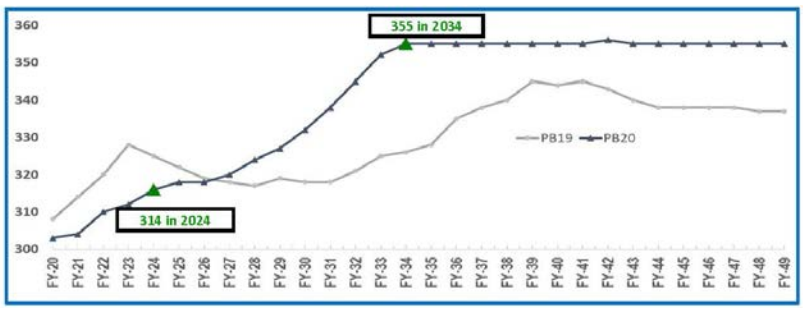
In response to the validated minimum ship requirements in the 2018 National Defense Authorization Act and in support of the National Defense Strategy, the Navy's 30-year shipbuilding plans submitted in the 2019 and 2020 Presidential Budgets were accelerated over the previous year's plans to support building the Navy the Nation Needs (NNN). The bottom left figure graphically depicts the total number of ships in service as a function of fiscal year and shows that we plan to achieve a 355 ship force by 2034. As a reference point, we are presently below 300 ships, so this represents a large increase in UWSH workload!

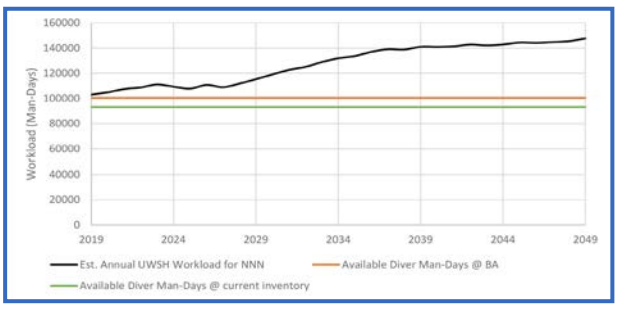
Now granted, Navy divers won't be providing the care and feeding for all of these ships. We don't typically service the Military Sealift Command logistics ships and support vessels and there are also DDG51s in Pearl Harbor where contracted divers support their needs. Through rough estimates made by my office using the FY20 30-year Ship Building Plan as the basis, the number of vessels traditionally serviced by Navy divers will increase from about 230 (present day) to over 270 by the mid-2030s.

Okay, question for the folks at our husbandry commands, "Who has a bunch of extra bandwidth in their work schedule to accommodate these 40+ extra ships?" Based on my staff's visits, discussions with the fleet maintainers, 00C's own UWSH workload and my own personal visits, I think that I can safely answer that question with a resounding "NO ONE!"

The figure on the bottom right side of this page shows the estimated UWSH workload and how it increases over time. CWO5 Hart polled the fleet maintenance providers, estimated annual UWSH man-days expended on each vessel type and developed an estimated annual diver workload (black line in figure). The other lines on the chart represent the annual work capacity that exists today within the UWSH Navy/government civilian diver workforce based on: 1) number of billets authorized (red line); and 2) personnel currently onboard (green line). As you can see, workload currently exceeds the workforce's straight time capacity and that the gap expands considerably as the number of ships ramp up. Making Fleet leadership aware of this gap and taking action to close the gap are the challenges that we collectively need to take on in order to continue to provide superior UWSH support to the fleet.

I'm sure that you're already experiencing some effects of this workload/workforce imbalance like longer work-





days, working the weekends and civilian overtime. In my opinion, which is based on the inbound workload, these stop-gap measures are not sustainable long term without detrimental effects on our diver workforce. Long term, this gap needs to be closed by increasing the number of dive teams across the fleet maintenance centers, contracting more work to civilian dive companies or a strategic combination of both. If this gap is not closed, fleet readiness degrades through deferred maintenance, more and longer dry docking periods and ships being unable to deploy.

At 00C, we are pushing awareness of this issue at the top levels of CNRMC, NAVSEA, FFC/CPF and anyone who will listen. Unfortunately, my office doesn't control diver staffing numbers, so I need a bottoms up push as well from each of you on three fronts: 1) meticulously document your workload and staffing shortfalls; 2) submit budgetary requests up your chains of command for additional military & government civilian divers and associated diving equipment; and 3) communicate your actions and information with my staff. The demand signal that you generate, supported by the relevant workload/workforce metrics, is critical! CNRMC has already started this process and is making considerable headway. In addition to creating shore based sea UICs at each of the RMCs to ensure that deploying personnel get proper career credit, they have submitted an FY21 budgetary request for an additional dive team at each RMC. Hooyah!!

Alright, 'nuff said about UWSH, but before I close, I am sad to say that this will be my last "SUPSALV Sends" article. It's hard to believe that I've been here for three years now, but it's time to let someone else have fun too. I'll be shifting seats to serve as NAVSEA 06 in July and CAPT Jay Young will be coming up from the CO NEDU position to relieve me. Let me tell you, CAPT Young is the right leader for this job! With his background in salvage, UWSH, ship maintenance, engineering and experimental/saturation diving, he brings the complete package needed to move this organization and the diving Navy to the next levels of success. Hooyah Jay!

Also, if you follow that daisy chain a bit further, CDR Kiah Rahming will be leaving SERMC in May to relieve CAPT Young as CO of NEDU in June. Another strong leader takes the helm!

In closing, it has been a true pleasure serving as SUPSALV. It's your commitment and passion to the diving community, and the Navy in general, that has made this the most memorable job in my career. The rapid and determined response that you provided to naval, national and international emergencies, like the USS FITZGERALD & USS McCAIN collisions, ARA SAN JUAN search and countless other salvage & UWSH jobs, continues to build and maintain the well-deserved, elite reputation of the Navy diver. Your "can do" attitude in the face of adversity time and time again makes the seemingly impossible, possible. Thank you for your hard work, and I will always be proud to be counted among your ranks no matter where I'm serving.

With that, enjoy this issue and, as always, be safe on the side, watch your buddy's back and I'll see you at the MDTC in May! Hooyah Deep Sea!

Army Divers Test their MARV Skills at NWS Earle

By: Bill Addison, NWS Earle Public Affairs

Soldiers from the U.S. Army's 511th Engineer Dive Detachment returned to train on a new piece of technology at Naval Weapons Station Earle Oct. 23-26 2018. The training was an opportunity for the Soldiers to deploy with the U.S. Army Corps of Engineers Engineer Research Development Center (CERN) team to train with their new Multi-Functional Assessments Reconnaissance Vehicle (MARV). The vehicle is equipped with both Sonar and Lidar imaging technology and is controlled remotely. The technology is currently owned and operated by the CERN team, with hopes the U.S. Army will one day purchase it for use. "It essentially produces a snapshot, from floor to ceiling, of the pier," said Capt. Chase Olsen, commander of the 511th. And while pier assessments and repair will still require divers to go into the water, the image and information the MARV system provides can drastically reduce the time needed to meet that mission.

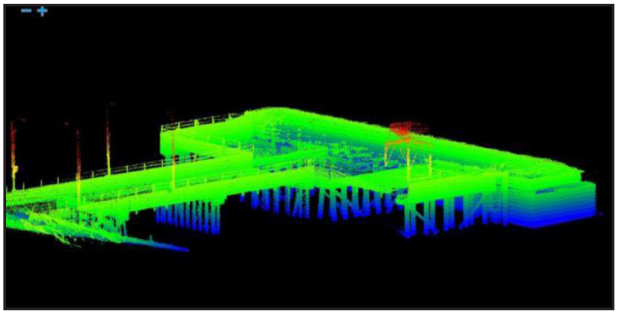
Olsen noted that the training his Soldiers receive at Earle is unique. "You cannot model this training environment anywhere else," he said. "Earle provides the most realistic training environment to what we would see in real world operations." He also noted the additional advantage to working with the Navy and other agencies to enhancing his detachments readiness. "For our field, interoperability with the Navy is a key element to our ability to perform our job. We all train together at the Naval Dive Salvage Training Center in Panama City, Florida. It's an ability to bring our shared knowledge together and training with the Navy brings a great force partnership capability." But while the Army's interest in the evolution was training, the result produces real world information for the Navy.

In deploying the MARV system, the Navy receives real data and imaging of its pier complex, particularly of its most southerly spur, pier 2. "There's a lot of training value on the installation, but there's a lot of operational need as well," said Olsen. For the Navy, the data produced provides valuable information about the structural integrity of the unused pier section. That data can be used to assess what mission sets the Navy can still perform on the pier, as well as give real information on structural improvements that can be made. "The information we've received from the Army dive team has been invaluable," said Capt. Pierre Fuller, NWS Earle commanding officer. "The partnership we have between the 511th and the Navy has proven to be a win, win."

Fuller noted that while pier 2 in its current form isn't capable of meeting the Navy's ordnance mission, with a little work and the right investment, it could one day serve other missions and interests. "The images and data provided from the MARV system really provides our Public Works Department with a better picture of what exactly is going on under the pier, allowing us to make better decisions on our way forward," said Fuller. For Olsen, knowing that the training provides real world results for the Navy keeps his Soldiers motivated. "The Soldiers take a lot of pride in the training when they know it also serves a greater good, particularly the mission here at Earle."

David Nguyen, Engineer Research Development Center, U.S. Army Corps of Engineers, launches the Multi-Functional Assessments Reconnaissance Vehicle (MARV) into the waters surrounding NWS Earle's Pier, Oct. 25.

Spc. Jameel Zabadi, 511th Engineer Dive Detachment, pilots the U.S. Army Corps of Engineers Multi-Functional Assessments Reconnaissance Vehicle (MARV) Oct. 26 on the Naval Weapons Station Earle pier in Leonardo, NJ.



Sonar and Lidar image of the NWS Earle Pier produced by the Multi-Functional Assessments Reconnaissance Vehicle (MARV) Oct. 26. The images will be used by the U.S. Navy to asses the structural integrity of Pier 2.

2018 ABCANZ Divers Working Group

By: CAPT Thomas P. Murphy Supervisor of Diving, USN

With help of Naval Surface Warfare Center Indian Head Explosive Ordnance Disposal Technology Division, it was my honor to host the 2018 America, Britain, Canada, Australia and New Zealand (ABCANZ) Diving Working Group in Fort Walton Beach, FL. ABCANZ is an annual diving working group, where the Supervisors of Diving and other Diving leaders from some of our closest allies meet to share information, technology, best practices and lessons learned from each nation. We also discussed issues relevant to the entire diving community. The ABCANZ Divers working group has been meeting annually for decades, rotating host among the five nations each year, and 2018 was the USN's turn to host the event. Coming together as a group for these events helps to foster a strong collaborative relationship with our foreign allies. Highlights from this year's meeting included a USN Undersea Medicine Research and Development update from CAPT Waters, MC, USN UMO; and Canada's prospect of developing the Atmospheric Diving Suit (ADS), LCdr Kappel, CAN, CO Fleet Diving Unit Pacific.

ABCANZ 2018 Divers Working Group members tour NDSTC, Panama City, FL.

CAPT Waters is the Program Manager of the Deep Submergence Biomedical R&D Program stationed here at NAVSEA 00C. This program was chartered in the 1990s to sponsor biomedical research focused on Improving the health, safety, and performance of Navy divers, and improving the survivability of Submariners in a disabled submarine scenario. During the ABCANZ meeting, CAPT Waters provided a brief overview on fifteen current projects sponsored by his program, and shared insight into five other projects planned to begin in FY19. The ABCANZ attendees were particularly interested in the findings related to research conducted at the Navy Experimental Diving Unit, where evidence is emerging regarding the adverse effects of high partial pressure Oxygen breathing during diving operations. The group was also intrigued by unexpected findings from the lab at the State University of New York, Buffalo on the effects of immersion on diver hydration, and operational performance. Ongoing studies related to diving at altitude, adapting pulse oximetry to improve safety for rebreather diving, and using the ketogenic diet to reduce the risk of convulsions when diving with high partial pressure oxygen rigs all gained the attention of the attendees. It was clear after this presentation that the concerns associated with diver safety and the capability gaps related to military diving are shared across the international diving community. It is hoped that this discussion will encourage international collaboration between the ABCANZ nations in the area of undersea biomedical research.

LCdr Kappel attended the conference to highlight the issues, accomplishments, and way ahead for the Canadian diving. He expressed his enjoyment at working with USN Divers on several occasions during his brief. One of the many topics he discussed was Canada's vision to incorporate the Atmospheric Diving Suit (ADS) as a practicable tool within the Royal Canadian Navy's order of battle. He conveyed that conventional manned submersibles have traditionally been too large and heavy to effect seabed intervention missions. They required large ships and lifting assets to support them. Due to their complexity, conventional submersibles often require multiple pilots in order to complete complex tasks. One person submarines or submersibles provide a concept shift in the manner in which manned systems can be used. Their lighter weight means they are easier to transport and launch. Newer models are simpler to use and maintain, while achieving the same effect traditionally accomplished by systems requiring 2 or 3 individuals.

The ADS is essentially a small one-person articulated submersible, with elaborate pressure joints to allow easy articulation while maintaining an internal pressure of one atmosphere. The ADS has been used for very deep dives of up to 2,300 feet (700 m) for many hours. It eliminates the physiological dangers associated with deep diving; divers are able to achieve much higher productivity given by the fact that the diver can spend up to 4-5 hours on the bottom and then travel to the surface in minutes. While small submarines and the ADS are not relatively new technology, improvements in one person submarines and ongoing improvements to the joints of the ADS are making them essential equipment for our nations in the future. I look forward to hearing how the Royal Canadian Navy incorporates these technologies into their diving community.

Fellow divers, the NAVSEA 00C team and I strive to meet the needs of the USN Diving community, please continue to keep us informed on new technology and advancements in diving so that this information can be shared with fleet.

ex-USS PRINZ EUGEN

By: Kemp Skudin

In October of 2018, a joint U.S. Navy team successfully completed a historic oil removal operation on the sunken World War II vessel ex-USS PRINZ EUGEN located in Kwajalein Atoll. The Supervisor of Salvage and Diving (SUPSALV), led by Mrs. Stephanie Bocek, spent two years researching, planning, and preparing for this unprecedented undertaking: removing oil from up to 173 tanks in an armored, heavily compartmented German warship. With its almost ideal diving conditions, inverted orientation, and shallow depth profile, this wreck was uniquely situated to make such an operation feasible. Experience and technology leveraged from other sunken vessel oil removal projects conducted by SUPSALV enabled GPC, the U.S. Navy's Emergency Ship Salvage Material (ESSM) contractor, to tool up quickly and complete the planning for the recovery once funding arrived in April of 2018. The operation had to be done in the August to October period due to weather constraints.

The ex-USS PRINZ EUGEN is a 697-foot long former German Kriegsmarine heavy cruiser that was taken as a war prize by the allies after WWII and allotted to the U.S. It was shortly enlisted in the U.S.'s Operation Crossroads for use in atomic bomb testing in Bikini Atoll of the Marshall Islands. The ex-USS PRINZ EUGEN sank in Kwajalein Atoll in 1946 and is laying bow down in 134 feet of water while the stern rises up a coral slope with the top of the rudder and part of the propellers extending out of the water. The ship sank with a significant load of ordnance and bunkers but no load plan existed. The worst case estimates for the amount of oil on board when the ship sank ranged from 250,000 to 750,000 gallons.

The PRINZ EUGEN anchored in the Baltic in the Spring of 1941.

On 20 August, MDSU-1 Company 1-8 divers began bottom surveys. On 28 August USNS SALVOR (CAPT Blackburn commanding), SUPSALV/ESSM equipment and personnel, and chartered Singaporean tanker HUMBER commenced operations under the operational command of CTF-73 with LCDR Tim Emge as Officer in Charge. The next 11 days were spent loading provisions and equipment, laying the anchor legs for both vessels to moor at the wreck site, and preparing the wreck for pumping operations. The two ships supporting the operation needed to be positioned directly above ex-USS PRINZ EUGEN in order to effectively conduct oil removal operations. This task was challenging because of the close proximity of the wreck to the neighboring coral reef, which would not allow the ships to

drop the shoreward anchors due to the shallow depth. Therefore, SUPSALV arranged for use of the U.S. Army Garrison – Kwajalein Atoll's harbor Tug MYSTIC to collect the anchors at the pier and drop them in place. This process was completed on 4 September when the ships successfully finalized their combined 9-point moor over the ex-USS PRINZ EUGEN.

9 Point moor. Overhead shot of Salvor and HUMBER moored over PRINZ EUGEN

The first hot taps and petroleum offloads were completed on 8 September. The last tank to be pumped on the wreck was secured on 13 October. The MDSU-1 divers, Company 1-8 from Pearl Harbor, HI, the joint team conducted over 100 hot taps through the hull of the ship to recover 228,900 gallons of oil. 159 of the 173 tanks were tested. Of these, 92 contained recoverable oil.

Ships nested in moor.

Hot tap extension tool for internal tanks.

Due to the short weather window and the large number of tanks, divers and the topside personnel worked 7 days per week, often 12 hour plus days. Due to the large accumulation of fouling, extensive cleaning needed to be done. Multiple teams of divers needed to work simultaneously most of the time to lay grid lines, drill test holes, hot tap, move pumps/hoses, and finally seal tanks. Some tanks bled air for up to 24 hours and required monitoring. Most tanks with oil required at least two pumping evolutions (often 24 hours apart) to allow thick oil to accumulate at the tank tops. Good weather permitted operations except for a few days of high winds. These winds validated the extensive effort that went into the mooring operation. MDSU-1 divers were LT Matthew Jibilian, NDCS (MDV) Charles Parsons Jr, NDC Mathew McComas, NDC Brian Jessup, ND1 Todd Slayden, ND1 Kyle Johnsonerickson, ND1 James Mostek, ND1 Paul Pendleton, ND1 Kyle Fox, HM1 Matthew Reagan, ND2 Nicholas Reese, ND2 Jesse Penner, ND2 Logan Peters, BM2 Jonathan Ware, ND2 Jeremiah Montes, ND2 Paul Dattoli, ND2 Ryan Doherty, ND1 Jack Dalziel, ND2 Samuel Goldberg, ND2 Paul Orbegoso, and HM1 Carlton Maughan. Engineering Duty Officer Divers assisting were (in addition to LCDR Emge, OIC) LCDR Leon Faison, MDSU ONE, LT Michael Beautyman, SUPSALV, and LT Chris Wilkins, PHNSY.

Each tank was different and the oils varied from relatively light to very heavy and viscous. Some tanks created access/hot tap problems due to internal structure. Many would not flow unless vented low and, in addition, some needed positive pressure. Sometimes a small hole drilled below the oil level in a tank provided enough of an opening to allow sufficient flow. Others did not. Retired MDV Paul Schadow, now working for SUPSALV/GPC, came up with a PVC pipe arrangement of smaller diameter than the hot tap hole which allowed a vent through the hot tap hole to the water below the oil. SALVOR's firemain was often needed to be connected to the "Schadow tube" (as it was called) to pressurize the tank as needed. Firemain was throttled topside with the valve at the fire station. 16 of 30 internal tanks were able to be accessed with a hot tap extension (designed and built by SUPSALV) allowing the internal tank to drain upwards to the skin tanks for pumping. Issues of venting, pumping, and structure were naturally more difficult for these internal tanks. Of 173 tanks, the 14 not accessed pose no risk of a sudden significant release.

SALVOR fantail arrangement as seen from HUMBER's bridge

Kemp Skudin is the Environmental Program Manager at NAVSEA 00C.

Recompression Chamber Named in Honor of NDCM(MDV/SS) Dan P. Jackson

By: NDCM (MDV/EXW/SW) Neil Wolfe

The idea of Transportable Recompression Chamber Systems (TRCS) chambers having an individual's name on the manufacturer's data plate was inspired by NAVSEA 00C Program Managers. They believed that the TRCS production quality would benefit by having a person's name attached to each chamber in addition to the hull serial number. The initial TRCS chambers were named after individuals who were instrumental in the design, fabrication, or support of the TRCS program at the Cowan manufacturing facility. Once all the Cowan staff names were utilized, the pool of candidates was expanded to honor Navy personnel. The tradition of assigning a person's name to Navy recompression chambers has been added to the building of all Standard Navy Double Lock (SNDL) Chambers. The newest SNDL to be built for Undersea Rescue Command (URC) is being dedicated in honor of Master Chief Master Diver Dan Jackson who recently passed after he lost his battle with cancer.

NDCM (MDV/SS) Daniel Jackson was a native of Locust Grove, OK. He enlisted in the Navy in May 1990 and attended basic training at Recruit Training Command, Orlando, FL. Subsequently, he graduated from Electronics Technician (Nuclear) A-School training in Charleston, SC.

Dan's first assignment was the USS HOUSTON (SSN 713), it is there where he found his life's passion for diving after completing Navy SCUBA School and serving as a member of USS HOUSTON's dive locker. He then transitioned from active duty to pursue a career as a diver in the Reserves and in his civilian employment. In January 2001, Dan graduated Second Class Dive school and was assigned to Mobile Diving Salvage Unit ONE (MDSU ONE) in San Diego, CA. Following the terrorist attacks of 2001, he voluntarily mobilized to support OIF/OEF with Explosive Ordnance Disposal Mobile Unit THREE. In 2003, he graduated First Class Dive School as "Honor Man" and returned to MDSU ONE where he was promoted to Electronics Technician Chief in September 2004.

After the disestablishment of the Reserve MDSU units, Dan became a plank owner of the Navy Reserve Deep Submergence Unit (DSU) Detachment in April 2005. During his tour, he facilitated the certification of the latest submarine rescue and intervention systems and became the first person to pilot the Atmospheric Dive Suit (ADS 2000) to a depth of 1980fsw, during the initial certification dive in August 2006. Dan also supported countless at-sea training operations off the coast of Southern California, and numerous international submarine rescue exercises in Italy, Singapore, Australia, Norway, and Spain. In 2007, he was selected to Senior Chief Navy Diver.

In 2014, Dan attended U.S. Navy Master Diver Evaluations in Panama City, FL, qualifying him as the second ever Master Diver in the Navy Reserves. Upon his selection to Master Diver, he focused his efforts on the arrival of the Transfer Under Pressure system, the final components of the Submarine Rescue Diving and Recompression System (SRDRS). He created the first-ever watch stander model for this complex system, leading to the development of a training and qualification program that laid the foundation for the successful certification of the system.

In November 2017, despite his ongoing battle with cancer, he joined the combined Active duty, Reserve and contractor URC team as they responded the Argentine submarine rescue mission. The mission underscored the U.S. Navy's Submarine rescue capability in which Dan played a crucial role in the development of future submarine rescue missions.

Master Chief Master Diver Jackson completed his career leading the 31 Navy Reserve Divers at URC and working as a key leader within the Navy Reserve diving community, where his leadership and resourcefulness established new process-

es that dramatically improved coordination and management of the community.

Dan's personal awards include the Meritorious Service Medal, Navy and Marine Corps Commendation Medal (Gold Star in lieu of third award), the Navy and Marine Corps Achievement Medal (Gold Star in lieu of fifth award), the Armed Forces Reserve Medal with Silver Hourglass and Deployment M, and various unit, service and campaign medals and ribbons.

Article cover photos: Left, URC chamber in production. Arrow indicates where the name plate will be affixed. Right, URC Chamber name plate.

NDCM (MDV/EXW/SW) Neil Wolfe is the Command Master Diver at NAVSEA 00C.

SR Jackson 1990

MDV Jackson 2014

DJRS to DJRS-RMI

On 25 February, 2019 the Dive Jump Reporting System (DJRS) transitioned to the Risk Management Information-DJRS which is now located on the Air Force's Safety Automated System. The new system for RMI-DJRS is CAC-enabled. All dive personnel must register to gain access to RMI-DJRS. Further information regarding the transition can be found on the Naval Safety Center Website at: https://intelshare.intelink.gov/sites/navsafe/Pages/Diving.aspx

MDSU 2 Leads Ice Dive Training

By: Chief Mass Communication Specialist Jeff Atherton, EOD Group 2 Public Affairs

Minnesota in the winter is not for the faint of heart. On the radio, they report a low of minus 15 degrees Fahrenheit without the wind chill. This time of year, the wind chill is visible in the air as blowing snow picks up speed across the frozen lake. The wind cuts through layer after layer of protective clothing and gets to the body, giving a real understanding of what bone-chilling cold means.

For the divers assigned to Mobile Diving and Salvage Unit (MDSU) 2, Explosive Ordnance Disposal (EOD) Group (EODGRU) 2 and EOD Training and Evaluation Unit (EODTEU) 2, the ice dive training on a frozen lake on Camp Ripley, Minnesota, is a world apart from normal training in the comparatively warm waters around Virginia Beach, Virginia.

The training was the largest independent ice diving operation held by MDSU 2 to date, training more than 60 divers, Feb. 4-15.

"Deliberate and detailed planning is the key to success in this realm," said Cmdr. Robert Marsh, commanding officer of MDSU 2. "People, behavior, and equipment act and perform differently in 'arctic-like' environments. Equipment fails in different ways than it would be expected to under normal operating environments. This environment is a fast teacher, and an unforgiving one at that."

To compound the difficulty of simply being in the cold, the divers had to be mindful of working too hard setting up the dive site because sweat freezing on exposed skin can be a painful and dangerous scenario.

"I hope what the divers got out of the training was a better understanding of the logistics that goes into an ice diving operation," said Navy Diver 1st Class Thomas Gerace, MDSU 2 training department leading petty officer. "From all of the equipment to cutting holes in the ice and all of the different considerations for this environment, there are a lot of things that we do out here that we don't do on normal day-to-day diving operations."

Lugging gear, setting up tents, shoveling a path through several feet deep snow, cutting holes in the ice, and removing two-foot thick bricks of ice is all step one. Step two is the dive.

For the dive portion of the training, MDSU 2 utilized three dive systems; SCUBA with the MK-20 full face mask, DP-2 surface-supplied dive system and KM-37 surface-supplied dive helmet.

"First and foremost, the divers must be comfortable as soon as they enter the water because diving under the ice is one of the more dangerous forms of diving we do," said Navy Diver 1st Class Davin Jameson, one of the dive supervisors for the training. "Metal and plastic gear all get brittle in the cold and can break underwater, which is a serious emergency. Each diver must be familiar with gear and emergency procedures and react appropriately so they can come home safely."

To prepare themselves in the event of a gear malfunction or other issue while under the ice, the divers were required to practice emergency procedures. One of the scenarios is having a malfunction of the dive mask they are wearing.

In the event that a regulator freezes and air stops flowing to the mask, they will immediately take off the mask and breathe off of a secondary regulator attached to the dive rig. This is standard procedure and a regular drill for divers in the waters around Virginia Beach, but it is much different in a frozen lake in Minnesota.

When the mask is removed under the ice, it breaks the seal protecting the skin from the 35-degree water and can cause the body to involuntarily gasp and inhale water, a reaction the training aimed to mitigate in a controlled environment.

"I know my divers can dive, what I want them to learn is the ability to predict second and third order effects of

diving in a unique environment," Marsh said. "Sets and repetitions under the water, or in this case under the ice, always provide benefit and manifest as increased team proficiency and increased individual comfort levels using significant equipment in an uncomfortable environment."

For Navy Diver 3rd Class Daniel Smith, who is one of the newest divers in the fleet, having recently completed dive school, the training opportunity sets him apart from his peers.

"I just got out of school, and I'm sitting in a room with master divers who have never gone through an ice diving course," he said. "Being under the ice is an unreal experience, and having this skillset makes me a better and well-rounded diver."

As the gear is stowed and secured for the trip back to Virginia Beach, the knowledge and experience gained under the ice is another tool added to the MDSU 2 and Navy diving toolbox and will pay dividends for preparing divers to operate in Arctic environments.

"This training allows us to build both competency and proficiency in a unique environment," Marsh said. "With this instruction, MDSU 2 moves closer to being capable of providing organic training to our own folks, on our schedule, when required. We are building resident expertise that can be passed down to subsequent personnel."

Although the training may have only been in a 15-foot deep frozen lake, the sentiment towards Navy diving remains the same.

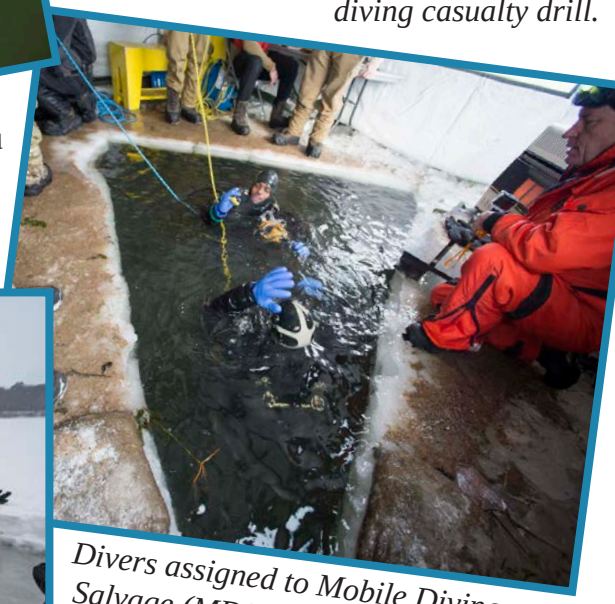
"Hooyah deep sea," Smith said through a teeth-chattering cold smile.

Article Cover Photo: A diver assigned to Movile Diving and Salvage (MDSU) 2 surfaces through an ice hole during training.

U.S. Navy photos by Chief Mass Communication Specialist Jeff Atherton/Released

Divers assigned to Mobile Diving and Salvage (MDSU) 2 maintain a tending line through an ice hole.

Divers assigned to Mobile Diving and Salvage (MDSU) 2 transport another diver to an emergency vehicle during a diving casualty drill.



Divers assigned to Mobile Diving and Salvage (MDSU) 2 surface through an ice hole during training.

Sailors assigned to Mobile Diving and Salvage (MDSU) 2 remove ice from an ice hole during training.

A diver assigned to Mobile Diving and Salvage (MDSU) 2 cuts a hole in the ice during training.

A diver assigned to Mobile Diving and Salvage Unit (MSDU) 2 enters an ice hole during training.

MkV Helmet Unveiled at Veterans Center

By: Tony Palm, PAO/Development Officer of the Carl Brashear Foundation

The Carl Brashear Radcliff Veterans Center hosted an unveiling ceremony on Friday, November 9th that featured an antique Mark V Diving Helmet similar to those used by the Center's name-sake during his 31-year Navy career as a Deep-Sea Diver. "My father would be so proud to know this helmet will be displayed so prominently at this center", said Mr. Phillip M. Brashear, Founder/President of the Carl Brashear Foundation. "I'm personally grateful to the Center, the Commonwealth of Kentucky's Department of Veterans Affairs, and the Supervisor of Salvage and Diving at Naval Sea Systems Command (NAVSEA) who have made this event possible".

Master of Ceremonies, Allan Francis introduced the officials who actually unveiled the helmet including:

- Phillip M. Brashear, Founder/President of the Carl Brashear Foundation
- Mark Bowman, Executive Director of the Kentucky Department of Veterans Affairs
- Israel Ray, Center Administrator
- Daniel London, Hardin County Deputy Judge/Executive
- Tony Palm, PAO/Development Officer of the Carl Brashear Foundation

Mr. Bowman, a Navy veteran himself, was especially enthusiastic about being part of the days event, and extended a greeting from the Commissioner, BG Benjamin Adams, USA (Ret). He closed his brief remarks with a good-natured jibe toward the Army – Navy rivalry that has existed for generations, "At least now we'll have something BIG to balance the Sherman tank that stands sentinel outside the entrance of this facility". Mr. Ray expressed deep gratitude for the continued support of Mr. Brashear and reminded the more than 50 people in attendance of Carl Brashear's status as a 'native son' of Hardin County.

Official party unveil the antique helmet which was donated to the Brashear Foundation for display at the Veterans Center by Supervisor of Salvage and Diving at Naval Sea Systems Command.

William Wester, a Pearl Harbor survivor who witnessed Navy Divers engaged in salvage operations reaches out to touch the helmet after the ceremony concluded.

Phillip Brashear comments on the pride he has for his father and his conviction the senior Brashear would be honored at the recognition by the Commonwealth of Kentucky.

The official party pose with the helmet immediately after the formal ceremony concluded. Left to right: Daniel London, CW Allan Francis, Israel Ray, Mark Bowman, Phillip Brashear, BMC Tony Palm.

KM-37 NS Helmet Shell Cracks

By: NDCM (MDV/EXW/SW) Neil Wolfe

In October 2018, NAVSEA 00C received a report from a Unit that reported water intrusion in three KM-37 NS dive helmets while conducting a dive to 150 FSW. The three helmet shells of concern had cracking around the three screw holes in the fiberglass where the exhaust/water dump valve body connects to the helmet. After the initial report, we requested a few selected commands remove the exhaust/water dump valve assembly and perform a visual inspection. These subsequent inspections resulted in the discovery of superficial cracks of the fiberglass gel-coat on a few additional helmets.

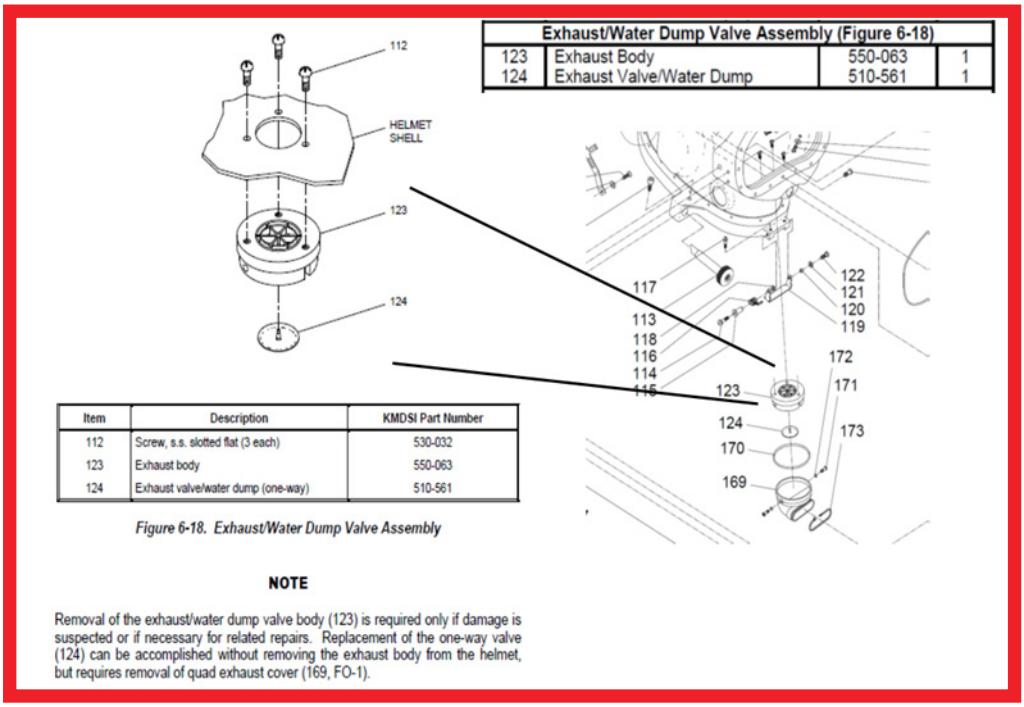
In response to these reports, NAVSEA released Diving Advisory 18-13 which directed all diving units to remove the exhaust/water dump valve assembly and perform a visual inspection and report any cracks, deformation or signs of stress discovered around the area of the assembly. The results of this inspection produced the following data:

Units reported:	**23**
Helmets inspected:	**292**
Helmets with superficial cracks:	**36**
Helmets with cracks that failed inspection:	**7**
Total damaged helmets:	**43**

Picture of one of the three initially damaged helmets.

Based on the data collected and after a thorough analysis, NAVSEA 00C concluded the source of the water intrusion was due to the silicone sealant between the exhaust/water dump valve body and helmet shell deteriorated over time, allowing the exhaust/water dump valve body to loosen. As a result, it is suspected that during routine inspections and maintenance, the screws securing the assembly could have been over-torqued to compensate for the missing sealant resulting in cracking in this area. Historically routine maintenance of the exhaust/water dump valve assembly was not required during the KM-37 NS PMS 24M-1.

To mitigate this issue, a revision to the KM-37 NS PMS 24M-1 (9VWF) overhaul was issued 18 October, 2018 and is reflected in Force Revision, FR 1-19. This now incorporates exhaust/water dump valve assembly removal, sealant removal, helmet shell inspection and exhaust/water dump valve assembly reinstallation with new sealant. Thank you for all the great feedback over the past 4 months. The continued Fleet input helps NAVSEA address any issues we have with our dive equipment and take action to ensure that preventative maintenance procedures are updated to prevent future occurrences.



Capt. Edward Flynn:

Honoring the legacy of an Undersea Medical Officer

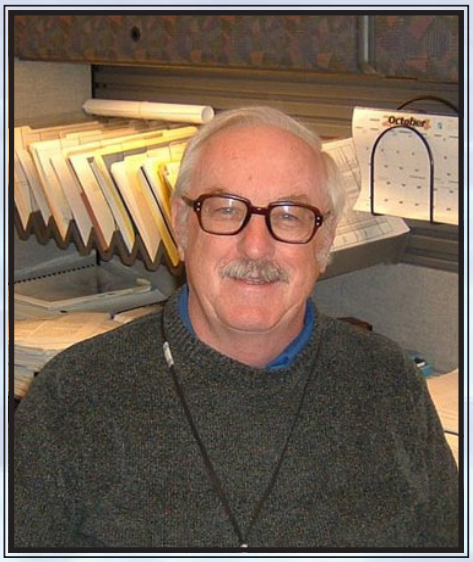
By: Naval Sea Systems Command Office of Corporate Communications

When U.S. Navy undersea medical officers had a question about decompression theory or undersea medicine, there was one man who knew all the answers. But when retired U.S. Navy Capt. Edward Flynn Jr. passed away recently, he took with him his encyclopedic knowledge of all things Navy diving.

"He spent his whole career immersed in diving medicine," said Undersea Medical Officer Capt. Edward Waters, Deep Submergence Biomedical Development Program Manager. "He was the expert. He was the go-to guy for complicated problems."

Flynn built an impressive reputation during his more than 25-year active duty career, pioneering research and policy that would impact nearly every facet of Navy diving.

"There's not an aspect of decompression diving that has not been influenced by him," said Dr. David Southerland, diving medicine advisor for the Supervisor of Salvage and Diving (NAVSEA 00C). "He either developed the policy or inspired the policy."



Flynn joined the Navy in 1967. After undersea medicine training, he was assigned to the Navy Experimental Diving Unit (NEDU), where he refined the Navy's techniques for deep saturation-excursion diving. He served as an experimental subject on a 600-foot saturation dive and was the on-scene medical officer for a world-record-breaking saturation dive to 850 feet off the coast of California.

In 1971 while assigned to the Naval School, Diving and Salvage, he authored the Diving Medical Officer Student Guide, the definitive U.S. Navy diving medicine text at the time, used to train a generation of diving medical officers.

During his time at the Naval Medical Research Institute (NMRI), he performed research related to decompression theory, oxygen toxicity, and the respiratory and thermal limits associated with diving. That year, he received the Oceaneering International Inc. award for the development of unlimited duration helium-oxygen saturation-excursion diving procedures.

In 1991, Flynn assumed command of the Naval Medical Research and Development Command, where he oversaw all the Navy's medical research laboratories worldwide.

After retiring from active duty in 1994, Flynn worked for the Navy at NEDU and NAVSEA as a subject matter expert in diving and undersea medicine. At the time of his death, he was supporting NAVSEA 00C.

His modification of the surface-supplied helium-oxygen decompression tables to decrease risk of oxygen-induced convulsions allowed the Navy to successfully raise the engine and turret from the civil war ironclad USS Monitor. Flynn developed the currently used procedures for air diving at altitude. He most recently authored the U.S. Navy Submarine Rescue System Decompression Plan, the official manual providing the methods and procedures to decompress personnel from a pressurized disabled submarine.

A prolific writer and avid collector of historical navy diving data, Flynn left behind an extensive library with a detailed catalog system, indexed and cross-referenced, which Waters and his counterparts will keep for posterity at the NEDU library.

"I think he was afraid he wouldn't have time to get that information out to the community," said Waters. "He organized all of it and handed it over to us so we could have his archives and not lose his life's work."

"He wanted everyone else to be smarter. U.S. Navy diving is safer thanks to his contributions."

Flynn will be buried at Arlington National Cemetery, and Waters hopes his legacy will be preserved in other ways as well. Discussions about this are only just beginning.

"It's all still very fresh. We were hoping to have him around for much longer than we did."

CNRMC Approves Sea Duty UICs for Navy Diver Billets attached to RMCs

By: CWO4 Justin Anderson

Commander, Navy Region Maintenance Center (CNRMC) has recently approved sea-duty diving billets for Southwest Regional Maintenance Center (SWRMC), Mid-Atlantic Regional Maintenance Center (MARMC) and Southeast Regional Maintenance Center (SERMC).

These billets were created in response to provide underwater ship husbandry support to Forward Deployed Regional Maintenance Center (FDRMC) located in the Commander, 5th Fleet and Commander, 6th Fleet area of operations and other fleet requirements outside each of the RMCs geographical locations.

This initiative provides Regional Maintenance Center (RMC) commanders the flexibility to surge their diving resources worldwide without sacrificing their shore unit identification code (UIC) personnel. Additionally, having surge capable dive teams in fleet concentration areas fits in line with Naval Sea Systems Command's (NAVSEA) campaign of On-Time Delivery & Culture of Affordability, through highly rapid and mobile dive teams. These dive teams will avoid the costly expenses of standing up permanent brick and mortar dive lockers in regions that may not need the requirement in one, two or five years down the road. As with any permanent repair facility, standing up a new locker would require additional diving and non-diving support man-power requirements that a team of deployable divers do not. Further, this initiative helps fleet commanders keep their permanent footprint to a minimum on foreign soil.

ND2 Noblit (SERMC) torqueing the bolts after a Controllable Pitch Propeller blade replacement on the USS STOCKDALE (DDG 106).

Left to Right: ND3 Carlos Gallardoberry, ND1 Brian Stewart, LT Benjamin Carroll, ND3 Grayson Danner, ND2 James Rego, ND2 Gary Noblit, ND1 Jason Fenn after removal of a propeller from the USS FIREBOLT (PC-10) in Bahrain.

As the Navy's strategic objectives change with new emerging adversaries, the idea of having to shut down and or move entire dive lockers becomes an extremely costly and disruptive endeavor, especially to the fleet commander's man-power availability, status of forces agreements (SOFA), the Navy diver (ND) community management and detailers, and the ND community at large. Having a concentrated pool of divers at each RMC provides a more responsive and cost effective approach to support forward deployed ship requirements, as well as inside the Continental United States where each RMC can surge to support other shipyard activities who have reached their diving production capacity.

Other benefits include allowing members a better chance to homeport in one geographical location for more than one tour by keeping more diving billets in our largest fleet concentration areas and balancing the ND sea and shore billet distribution closer to 50/50 respectively. This makes it less likely for the ND detailer to have to detail members to consecutive shore duty tours or from sea-duty to shore duty when deployments are expected and required of that individual despite coming off of sea-duty. This was no more apparent than with the MARMC Dive Locker who has been deploying a large portion of their divers for years supporting FDRMC in Bahrain and Rota as well as other 2nd,5th and 6th Fleet requirements abroad.

SWRMC and MARMC have both been approved to convert 32 existing Navy diver billets to sea billets while SERMC has been approved to convert 10. A deep-sea shout out to Master Chief Petty Officer (NDCM) Jon Klukas, Master Chief Petty Officer (NDCM) Steve Askew, Master Chief Petty Officer (NDCM) Paul Wotus, Chief Warrant Officer (CWO3) Steve Hobson, Chief Warrant Officer (CWO3) Don Schappert, Mr. Dan Spagone, Mr. Troy Camacho and Chief Warrant Officer (CWO5) Mike Hart. None of this would have been possible without their persistence and continuous efforts over the past three years in making this important strategic NAVSEA initiative become a reality.

CWO4 Justin Anderson is currently serving as the Diving Division Head at Southwest Regional Maintenance Center, San Diego and is the Diving Chief Warrant Officer Advisory Team (CWO-AT) member for Underwater Ship's Husbandry.

USAF MR 8803 De-Beaching

By: LCDR Kyle Miller

On 10 October 2018, Hurricane Michael made landfall near Mexico Beach, FL, approximately 15 nm from Tyndall Air Force Base (AFB). Officially measured as a Category 4 Hurricane with maximum sustained winds of 150 knots, Michael was the third most intense Atlantic Hurricane to ever make landfall in the contiguous United States. Overall damages are still being calculated but are currently estimated at $14.58 billion dollars with 60 confirmed deaths.

During this horrific event, a 120ft, 100LT Air Force Missile Retriever boat (MR 8803) moored to a buoy in the bay due north of Tyndall AFB broke free of its mooring. The heavy winds and seas pushed the vessel ashore, leaving it stranded approximately five feet from the shoreline after the tides had retreated.

USAF MR 8803 washed ashore when mooring buoy chain snapped.

Survey:

On 06 November, Tyndall AFB personnel contacted US Navy Supervisor of Diving and Salvage (SUPSALV) to request salvage assistance for MR 8803. SUPSALV contacted Mobile Diving and Salvage Unit 2 (MDSU 2) Salvage Engineer LT Matt Englehart to coordinate a joint MDSU/SUPSALV salvage survey of the vessel. After tasking was received from USFF, a MDS company advanced detachment consisting of NDCS Rodrigo Montoya, CWO2 Josh Slack, and LT Matt Englehart was sent to Tyndall AFB accompanied by LCDR Kyle Miller from SUPSALV. The team arrived on 19 November and went to work assessing the situation.

Both internal and external hull inspections indicated the vessel was structurally intact. The only immediately apparent indications of the vessel's intense bout with the CAT 4 hurricane were the lack of water around the hull and a toolbox strewn about the engine room. This lack of damage to the vessel was in stark contrast to the surrounding area structures and wildlife, all of which were in a dire state.

The vessel had a 4.5-degree list to starboard and a slight trim aft. Tank soundings provided by the vessel's crew indicated approximately 4,500 gallons of fuel and 1,300 gallons of water onboard. MR 8803 sat nearly parallel to the northern shoreline, with the bow slightly skewed away from the water. The vessel's starboard quarter was approximately 5 feet from shoreline at low tide and touching the water at high tide. Waterline marks on the vessel indicated the max draft of the hull to be 3.5 ft and the navigable draft to be 6.5 ft. MR 8803's two forward shafts and propellers were buried almost completely in the mud. The two aft shafts and propellers as well as the vessel's dual rudders were half buried, but lacked any sign of damage. The forward 1/3rd of the vessel's hull was hard aground, with the vessel's appendages maintaining a slight gap between the sand and the remainder of the hull. SWIFTSHIPS, the vessel's builders, were contacted for information and it was determined that the LCG was approximately 8.61 ft aft of midships. This fact told the survey team that forward shafts and propellers were taking the majority of the ship's weight. The strain on the forward shafts was evident in that the shafts were not centered in their seals.

The land surrounding the stranded vessel had been previously cleared of debris by the Navy SEABEEs from NBCB Gulfport. The water to the north of the ship presented an interesting salvage challenge in that water depths surrounding the ship were anywhere from 1-3 feet for approximately 1000 ft in any direction.

A pulse of local industry indicated a readily available supply of land-based heavy equipment to assist with any salvage efforts. The heavy equipment was more readily available than normal due to the other ongoing hurricane recovery efforts in the area. Water-based equipment was available from a local barge, tugboat, and crane supplier. The supplier could provide a barge with a 200T crane onboard during the timeframe planned for the re-floating.

With all relevant data collected and several COAs for the re-floating discussed, the team returned home for further investigation and discussions with their respective chains of commands.

COA Development and CONOPS:

The two prominent technical challenges associated with this salvage were (1) the fact that the vessel's appendages projected 3 ft below the hull, and (2) navigable water was over 1000 ft from the vessel's current location. The salvor's handbook formulas predicted a freeing force necessary of approxi-

mately 45 metric tons (mt). This amount of force could be generated with a standard leg of beach gear equipped with the ESSM 50t linear puller, however the added resistive force of all four sets of propellers bulldozing through the mud aren't included in the Salvor's manual freeing force estimate. A large enough crane could be acquired in order to lift the stern onto a temporary structure to remove the propellers and lower the required freeing force. However, long distance required to bring the vessel to navigable waters increased the chances of damaging the remaining appendages during the refloating. Equipment could be brought in to dredge a 1000ft channel, but this option produced many additional time, cost, and environmental concerns.

Ultimately, the team decided upon a course of action (COA) that involved using salvage roller bags to lift and roll the vessel to navigable waters. CenterLift, a salvage roller bag contractor based out of Louisiana, was hired as a subcontractor to DonJon, SUPSALV's zone A salvage contractor. Since the MDS company had not used roller bags in previous operations or training, an overall concept of operations (CONOPS) was developed such that, as the evolution progressed, the civilian CenterLift Salvage Master would become less and less involved as MDS company became more experienced in the operation of roller bags. The roller bags provided by the contractor were 180 mt capacity each, with a 25 PSI max operating pressure. They were each approximately 24 ft in length and 5 ft in diameter. Two-four roller bags were used at a time and bags were to be inserted underneath the forward two shafts. As the ship was pulled aft, the bags were to roll free from the bow. The predicted freeing force using roller bags was estimated to be less than 10 mt. Since the salvage manual doesn't include roller bag calculations, the salvage plan incorporated standards from ISO-14409 and ISO-17682. These standards were recommended during a SUPSALV and MDSU 2 salvage engineers' consultation with the US Coast Guard Salvage Engineering Response Team (SERT).

The freeing force was to be generated by a 50 mt ESSM linear puller installed onboard a SUPSALV contracted barge. A 6,000 lb Stato anchor was set approximately 1500 feet from the ship's location. The 2 ¼" x 90' Di-Lok anchor chain was secured to a 1 5/8" x 600' wire rope, which was fed to the linear puller. A 1 ½" x 1,500' plasma line was run between the barge and the vessel.

A 6,000lb STATO hold back anchor was installed off the bow of MR 8803 as a

6,000 lb STATO anchor staged on beach for bow restraint.

2 bags placed at the stern longitudinally with ship.

Continued to add bags until running gear was clear of the mud.

When new roller bag was required, it was hauled out by MDSU waterborne team.

restraint. The 3 man MDS company team stationed onboard the vessel could slack the line as necessary to ensure the vessel didn't roll uncontrollably into the water.

Operations:

To place the initial roller bags under the ship, two roller bags were prepositioned longitudinally under the stern by the MDS company. The starboard bag was inflated first to reduce the list, followed by the port bag. After liftoff of the stern, bags were inserted under the hull forward of the shafts transversely and inflated in preparation for the first pull.

After three bags were placed transversely along the hull and inflated to working pressure, all trim was taken out of the ship and the longitudinal bags were deflated and removed. Afterwards, the MDS company onboard the barge began pulling with the linear puller. As the ship's forward most bag began to roll free from the bow, the pulling was halted and another bag was inflated under the stern. This sequence continued until the linear puller ran out of cable and the barge needed to be reset and all slack taken out of the plasma line. Once the barge was reset, the pulling continued.

For three days the operation continued as the ship was slowly pulled seaward, with the MDS company pulling bags into the water for insertion under the stern and out of the water as they rolled out of the boy. Finally, on the third day the aft most roller bag stopped rolling as the ship continued to move aft, indicating that the ship was afloat. Quickly, the tug maneuvered to secure the ship to the barge for the removal of the roller bags by the 200t crane onboard. Subsequently the ship was moved via tug to the missile retriever pier and custody transferred back to Tyndall AFB personnel.

Overall this was a great demonstration of the combined capability of SUPSALV, MDSU, and industry. Using the strengths of each organization, the operation showed what each entity involved could bring to the table when given the opportunity.

MDSU 2 and SUPSALV personnel using roller bags to refloat USAF MR 8803.

Lessons Learned *(all lessons learned assume the ship is being pulled by the stern)***:**

- Bow bag floatoff: Operators need to ensure roller bags have enough air in them to continue rolling until clear of the hull. The operators need to ensure the bags provide as little buoyancy as possible while continuing to make sure they roll off of the hull. If the bags get stuck at the bow, they can be deflated to allow other bags to roll over them, but it takes time to deflate and adds to risk that a following bag will get stuck on the deflated bag.
- Stern bag floatoff: The contractor kept an eye out for the aft most bag to stop rolling. This was an indication that the stern was afloat and the team stationed on the barge could continue to pull without needing to insert another bag. It is important to watch the aft-most bag when it begins floating in the event it begins rolling again (underwater hills). If it begins to roll again, then you must insert another bag behind it before it gets FWD of the LCG or risk jamming the appendages into the sea floor.
- Turning: Operators are able to slightly turn the ship over a path when using roller bags. This can be done by facing a bag towards the direction of desired turn before inflating it. The friction force will assist the ship in turning towards the direction of bag roll. The angle of turn should be minimal and equations/rules of thumb should be developed to assist allowing salvors to conduct a turn safely.
- Theodolite: Commercial iphone app used for documenting the survey. The app allowed for geodetically tagged photographs to be taken and sent to the surveyor for upload post-survey. The photographs could be compiled into Google Earth for easy reference once all parties had departed and efforts continued towards the development of the salvage plan.

Recommendations:

- The value added to the expeditionary salvage capability of MDSUs by adding roller bags to the ESSM inventory is high. The salvage roller bag acquisition process should begin with the ultimate intention of having them stored in the ESSM warehouse.
- A salvage roller bags section should be added to salvage manual / salvors handbook to help salvors in mission planning and execution.
- MDSUs and SUPSALV should continue to plan training exercises using roller bags.

LCDR Kyle Miller is the Assistant for Salvage at NAVSEA 00C.

Trident Refit Facility (TRF) and Mobile Diving and Salvage Unit Two (MDSU 2)

Joint Salvage Operation

By: CWO3 Joe Sweeting

Following a sudden EF3 tornado touch-down at Site Six, SUBASE Kings Bay, Georgia, divers from Trident Refit Facility (TRF), Mobile Diving and Salvage Company (MDS Co) 2-1, and Area Search Platoon (ASP) 201 were key to the swift facility reconstitution on the 2nd of December 2018. Winds in excess of 140MPH jettisoned two vehicles, two CONEX boxes, two dumpsters, multiple light poles, dock pile covers, and other various debris from the Site Six pier into the water. Immediately following the storm, Site Six was unusable and surrounded by significant hazards that impeded mooring operations and made it unsafe for navigation. Within hours of this significant weather event, TRF divers started to clear and mark debris. TRF dive locker quickly identified the need for additional salvage personnel and search capabilities, and requested support from Mobile Diving and Salvage Unit Two (MDSU-2).

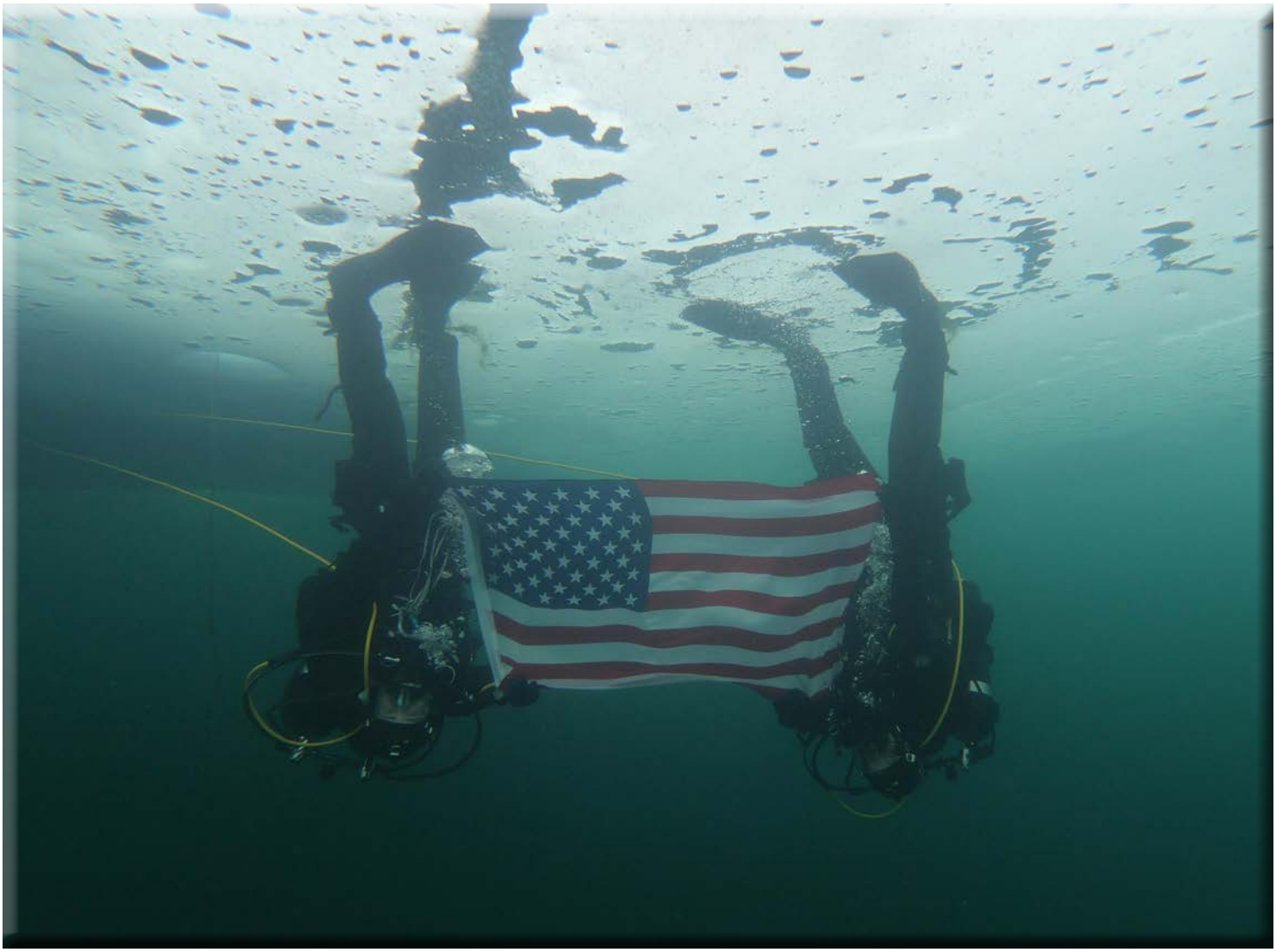
Within 48 hours of the incident, MDS Co 2-1 and ASP 201 arrived to assist in the identification and removal of all navigation hazards and missing items. Despite arriving late in the day, the teams immediately got to work recovering two vehicles and began searching for a missing 12-passenger van belonging to the base. After a few short hours, ASP 201 successfully located the elusive van and marked it for retrieval. Going one step further, they made several additional survey passes throughout the night to fully assess the area and prepare divers to remove all identified hazards to navigation. Armed with the detailed surveys, divers continued efforts to negate all hazards, bringing Site Six back to "fully mission status" in just five days. Without the rapid mobilization of all teams, critical mooring at Site Six would have been unusable.

A 12-passenger van belonging to Naval Submarine Base Kings Bay is recovered from the water following a tornado touching down on the base.

CWO3 Joe Sweeting enlisted in September of 1999. Prior to becoming the Diving Officer at TRF, he served at Mobile Diving and Salvage Unit One,USS SAFEGUARD (ARS-50), South Central Regional Maintenance Center, Naval Diving and Salvage Training Center, Mid-Atlantic Regional Manteca Center and Explosive Ordnance Disposal Mobile Unit THREE.

Bi-Lateral Ice Diving Exercise: Panticosa, Spain U.S. Navy and Spanish Navy Divers Working in Cooperation to Enhance Training, Ice Diving Core Knowledge and Operational Capability

By: NDCM(MDV/EXW) Will Wittman



High in the Spanish Pyrenees of Aragon lies an alpine refuge and luxury resort named Balneario de Panticosa that, for much of its centuries old history, has served as a destination for both dignitaries and adventurous travelers alike, interested in the spectacular surrounding landscape, winter sports, and the enchanting waters of the resort's thermal spas. For each of the last three years, the adjacent reservoir has served as a destination for bi-lateral ice diving training for diving personnel of the U.S. Navy and their hosts, the divers of the Spanish Center for Navy Diving (Centro de Buceo de la Armada – CBA) and Military Diving School (Escuela Militar de Buceo – EMB).

The shared goal of this enduring bi-lateral engagement is to showcase each country's ice diving capability, with the training particularly focused on dive station set-up, in-water standard and emergency procedures, and also to foster good relations and a better understanding of each nation's navy diving doctrine, equipment and capabilities.

This year's iteration of the event was executed from Feb. 18-22 and featured 20 explosive ordnance disposal (EOD) technicians and Navy divers from EOD Mobile Unit (EODMU) 8, stationed in Rota, Spain, and 30 Spanish divers based in Cartagena, Spain. The reservoir is located approximately 5400 feet above sea level, making it an excellent training site for the practice of both altitude and ice-diving procedures with its high-altitude location consistently yielding stable ice conditions. Additionally, Panticosa is easily accessible by ground transportation – albeit, following a two-day line haul of gear and personnel across the Iberian Peninsula from Rota.

Explosive Ordnance Disposal Mobile Unit 8 (EODMU8) diver, HM3 Zac Brown gives "okay" to the Diving Supervisor, upon reaching surface following a dive. Picture by: LTJG Andrew Couillard

Following the arrival of the team and equipment, the American side got to work on the multitude of tasks associated with the establishment of an expeditionary camp that included: building two Base-X tents, one inflatable "igloo" shelter and the set-up of the Transportable Recompression Chamber System (TRCS) that was housed within the igloo. Each of the Base-X tents played a vital role in the execution of diving operations, with one established as a "hot zone" with electrical and ventilation connected to the trailered 35kW ECU/GENSET for personnel to change and dry equipment. The other tent was utilized on the ice as a shelter for personnel and to shield the primary ice access site from the elements. Simultaneous to the set-up of sustainment equipment, Officer in Charge (OIC) Lt.j.g Andrew Couillard and Diving Supervisors Chief Navy Diver Jon Trusty and Navy Diver 1st Class Troy Crowder conducted a risk assessment of surface ice conditions on the lake and determined that the combined 15 inches of black and white ice on the lake was sufficient to conduct safe ice diving operations. Having conducted the very

Explosive Ordnance Disposal Mobile Unit 8 (EODMU8) sailors staged in front of the U.S. ice diving station. Sailors attached to EODMU8 and divers from the Spanish Navy Center for Diving (Centro de Buceo de la Armada, CBA) travel to Panticosa, Spain for an annual bi-lateral altitude and ice diving training event in the Pyrenees Mountains.Picture by: ND1 Troy Crowder

same preparations during the two prior years of the exercise, the core group of EODMU 8 personnel were very proficient in the tasks of cutting the triangular entry hole, cutting the escape hole, staging pallets and the preparation of mission essential equipment inside the tent to conduct and optimize diving operations. The primary objective of EODMU 8 was to cycle all personnel through a minimum of two dives practicing emergency procedures including: ditching of the MK-20 FFM with transition to the emergency Poseidon XStream second-stage regulator, lost-diver drills, unconscious diver recovery drills, and the evacuation of a stricken diver across the ice to the TRCS.

On the Spanish dive station, Lt. Juan Garcia Gen and his team of diving instructors briefed the 16 students of the Spanish "Technical and Specialized" diving course on the week's events that employed a "walk then run" approach. The training team had already completed the initial, or "crawl" phase of training with three weeks of pier-side and open water diving, utilizing their dual Interspiro DP-1 diving systems, including dry-suit familiarization and emergency actions training. After completing dive station set-up and pre-dive checks on Feb. 19, the Spanish dive team completed eight dives with buddy pairs from the lake's short quay wall to reinforce the previous weeks' training for all students prior to diving the students through the ice. During the subsequent two days, each of the Spanish dive students made a dive with 20 minutes of bottom time to an actual maximum depth of 41(35+6) feet. The diver's depth was altitude-corrected from the diver-worn depth gauge readings, in which the nominal 6,000 feet of altitude was then applied to the actual depth and resulted in a sea level equivalent depth of 60 (fsw). An additional line of effort by the Spanish was to cold-water test the Spanish Navy's semi-closed-circuit diving UBA and the Aqualung manufactured C.R.A.B.E, which was flawlessly executed by Lt. Ignacio Zaragoza Ruiz and his Operational Diving Team (Equipo Operativo de Buceo – EOB).

Altogether, between the U.S. Navy and Spanish Navy, more than 40 dives were safely executed during the exercise using three distinctly different UBA configurations between the three dive stations. This enabled more than 25 personnel to experience their first dive under-ice and in doing so, to experience the uniquely challenging techniques, procedures and environment of altitude and ice diving operations. Additionally, operator feedback was discussed and invaluable lessons learned were documented by the teams, which included important critiques of diver-worn gear, emergency evacuation equipment and topside support equipment. The final take-away by the leadership of both sides of the bilateral training was that this year's engagement was successful in all mission objectives while offering new opportunities for future operations, further collaboration and improved interoperability.

Article Cover Photo: Explosive Ordnance Disposal Mobile Unit 8 (EODMU8) sailors practice diver-invert drills using dry suits with the American flag. Picture by: LTJG Andrew Couillard

MDV Wittman is currently assigned to COMSIXTHFLT's Professional Exchange Program (PEP) and is stationed with the Spanish Navy at their Diving School in Cartagena, Spain as an instructor and technical advisor.

Explosive Ordnance Disposal Mobile Unit 8 (EODMU8) sailors and Spanish Navy Divers celebrate a successful completion of Ice Diving Event 2019. Picture by: LTJG Andrew Couillard

The Old Master

The State of DEEP SEA

NDCM (DSW/SG/MDV)
Kenneth Willmoth

WOW…how time flies, seems like yesterday I arrived in Orlando for Basic Training. Things have definitely changed in our great Navy over the past 29 years but one thing remains the same "DEEP SEA". Without it I would have not stayed in the Navy for as long as I have; more than likely it would have been 4 years or less. I entered the Navy under the Dive Fair program and never looked back.

The Dive Navy has gone through numerous changes in the past 29 years; becoming our own rate stands out as the biggest change/challenge our community has faced. With any change there will be some who will never agree, but we figured out a way to make it work and continue to make improvements to this day. We'll face new challenges in the future, but as we always do, we'll figure a way to make it work and be successful in any tasking we are assigned. As we encounter new challenges remember that it's not about a single person or command, it's about what's best for the community. Any one of us can be replaced at any time, never forget there is always a hard charging young diver chomping at the bit to take your place.

All Divers have the responsibility to train their reliefs; take the time to train and mentor all your sailors. Remember we are selecting our future divers during the recruiting process so we have a vested interest in these kids from day one. It's by no means a perfect selection process, but it's better than not having any input in the process. Not every kid will make it to Dive school and not every kid who makes it through Dive school will become a Master Diver. But it's our job to give each diver the tools to excel and push them towards a long career in the Diving Navy.

We continue to grow billets and expand our areas of expertise, this will keep us in business for years to come. The more diverse we are the more opportunities we'll have to grow and stay relevant.

Our greatest legacy is to leave the Dive Navy in a better place than when we entered it. We're all responsible for the future of Navy Diving; this should never be taken lightly or forgotten. In my eyes The State of DEEP SEA has never been brighter; continue the fight and never stop charging forward!!

HOO YAH Deep Sea

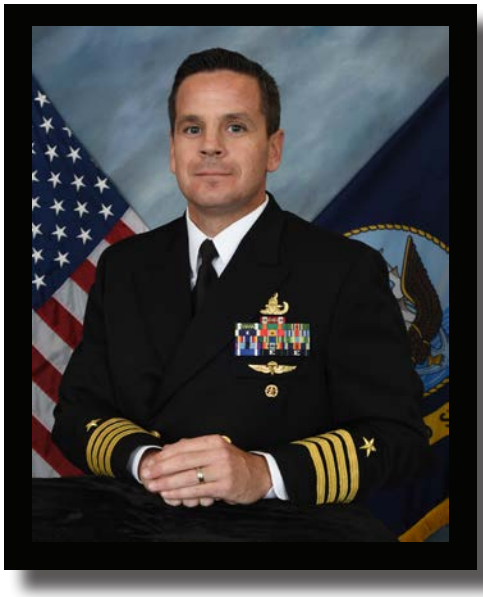
**** We lost one of our own this month after a very long battle with cancer;
Master Chief Master Diver Dan Jackson RIP my friend!!!!****

SUPDIVE SENDS ...CAPT Thomas P. Murphy

In July 2018, I was privileged to assume the title of USN Supervisor of Diving. As a previous Mobile Diving Salvage Unit (MDSU) ONE Commanding Officer, I'm excited to get back to supporting and promoting USN Divers. During my tenure as SUPDIVE, I have one priority and several goals. First and foremost, we must continue to be a safe, effective and ever improving our diving programs. This requires all divers to be constant professionals, and leaders to foster a continual learning environment.

I have made it a priority to look for opportunities to engage with Fleet divers and dive school students in order to provide an update on future diving systems and enhancements that will be introduced to the Fleet within the next two to three years. These engagements allow me time to brief, answer questions, and interact with divers to ensure that I stay in touch with their concerns and needs. Within the last two months I have been able to visit with and provide future diving system updates to 19-10 and 19-20 Joint Diving Officer classes at Naval Diving and Salvage Training Center (NDSTC), Mobile Diving Salvage Unit (MDSU) ONE, and the SEAL Delivery Vehicle Team (SDVT) ONE dive locker. 00C3 needs constant and constructive feedback from the fleet to improve our support to the diving community. If your Command is interested in receiving this future diving system update, please reach out and contact NAVSEA OOC3 office and we'll work to get it on our schedule.

Recently NDCM (MDV) Wolfe and I attended the MDSU ONE Co 1-6 NAVSEA led Divator Self-Contained Underwater Breathing Apparatus (SCUBA) / Dive Panel (DP) Surface Supply Apparatus Unit familiarization course during the company's Fleet Readiness Training Plan (FRTP). This allowed both MDV Wolfe and myself the opportunity to get more familiar with the DP system, its intricacies, and a path to future enhancements. I greatly appreciate CDR Jon Puglia and NDCM Tony Pierick for hosting us during our visit, Co 1-6 did a superb job in the course and the enhancements to the MDSU ONE compound over the last six years were amazing. If you're interested in this Unit level equipment familiarization course for your Command, please contact NAVSEA OOC3 to schedule.



CAPT Murphy and NDCM Wolfe pose for a quick photo with MDSU ONE Co 1-6 before their DP dive during the NAVSEA led DP equipment familiarization course 18-21 March .

On the systems development side of 00C3, the Multiple Occupant Flexible Hyperbaric Chamber is being designed to provide a man portable, lightweight double-lock hyperbaric chamber capable of conducting a treatment table 6A to 165FSW. In February, this project successfully completed Phase I development by completing all testing required by the ASME Safety Standard for Pressure Vessels for Human Occupancy (PVHO-1). Phase II is underway to continue the development of internal, ancillary, and container components. This program is scheduled to transition to NAVSEA 00C3 in March 2021.

Due to the hard work of the 00C3/ SUPDIVE staff, in particular CWO5 Mike Hart, our NAVSEA Diving Operational Readiness Inspections (DORI) have continued to improve and evolve over the last year. This began with the expansion of NAVSEA DORI check sheets. These check sheets have been posted to the SUPSALV secure website. Additionally, inspection hits are posted quarterly so trends within the diving community can be identified and corrected. One major issue that continues to plague shore based diving facilities is the lack of medical support (shortage of Diving IDC, DMTs and UMO support). This has resulted in several commands seeking assistance from local Military Treatment Facilities to help ensure divers are healthy and medical records are being properly maintained. Additionally, CAPT Waters, NAVSEA UMO, has personally assisted several diving commands with establishing MOUs to improve medical support. His efforts have also been instrumental

in working with BUMED to ensure supporting MTFs understand the current shortfalls in the IDC supervision program and overall UMO support to these shore based dive lockers. No longer will issues during DORIs be corrected and forgotten, this information needs to be collected, shared and used to address problems throughout the diving community.

OPNAV N97 (Deputy Dive) is working on reviewing and updating the OPNAV 3150. Key changes include, increased clarity on when a Risk Assessment and/or a waiver is required. We also tried to reduce the levels of approval required for commanders to obtain waivers. I hope these reduced administrative hurdles will result in increased Navy Divers participating in other unique commercial diving courses and interoperability dives.

We recently released AIG 19-04, which discussed the shipment and reporting requirements for diving mishaps and near mishaps. This AIG was to remind everyone of the importance of reporting mishaps and near mishaps to NAVSEA 00C3. We are here to assist your Unit in determining the need to conduct an equipment investigation and will provide additional guidance on whether or not gear will need to be shipped to NEDU for further investigation. Additionally, Diving Supervisors should familiarize themselves with the Accident Investigation Check sheets located on the secure SUPSALV website. As a community we are very good at reporting mishaps, it's the near mishaps that don't always get proper attention and documentation. We need this quantitative information on near mishaps to prevent future incidents. I encourage leaders to instill a fearless environment when it comes to safety reporting and equipment investigations.

Picture of the Multiple Occupant Flexible Hyperbaric Chamber Multiple Prototype. The Flex chamber will be comprised of Vectran Liquid Crystal Polymer Fiber outer containment vessel, Aluminum support structure, and Acrylic plastic viewports..

As always, we value your feedback and ideas so please keep them coming, especially if you have ideas for future Faceplate articles. I'm privileged to continue serving as your Supervisor of Diving and look forward to seeing everyone at the Military Divers Training Continuum (MDTC) 2019 in Keyport, Washington 6-8 May!

Faceplate Feedback

FACEPLATE appreciates feedback on our entire publication. So if you want to sound off about something we have published, please do!

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