



FACEPLATE

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

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USNS Salvor, MDSU Team Up with DPAA to Recover WWII Remains
ONR/NAVSEA Undersea Medicine Projects
SALVEX 2017
USS FITZGERALD and USS JOHN S. MCCAIN Collisions

FACEPLATE is published by the Supervisor of Salvage and Diving to make the latest and most informative news available to the Navy diving and salvage community. Discussions or illustrations of commercial products do not imply endorsement by the Supervisor of Salvage and Diving or the U.S. Navy.

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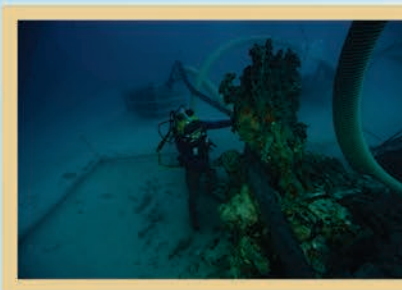
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U.S. Navy Diver 1st Class Scott Johnson assigned to Mobile Diving and Salvage Unit One, embarked aboard USNS Salvor (T-ARS 52), examines an excavation site during an Defense POW/MIA Accounting Agency led underwater recovery operation as they search for personnel who went missing during WWII off the coast of Koror, Jan. 24, 2018.





SUPSALV SENDS...CAPT Keith Lehnhardt

Greetings Navy Divers! Wherever you are around the world and whatever OP you're engaged in, I hope that this issue finds you well. I'm sure that I speak for all the lockers out there when I say that the diving and salvage workload never ends. Good for job security for sure, but there's definitely no rest for the weary! Since the last FACEPLATE, it's been a full court press in the SUPSALV office with the search for a missing submarine, finding aircraft on the bottom of the oceans, clean up in the aftermath of hurricanes Irma and Maria, diving equipment/physiological research projects, acquisition of new diving equipment, SRDRS certification, the constant drumbeat of UWSH jobs that keeps the fleet afloat, etc., etc., etc. Just like the workload, this list goes on and on, and leaves me wishing that I had twice the workforce that I have now in order to meet the demand signal! With this in mind, I'd like to focus my next two "SUPSALV Sends" articles on two areas associated with workload: 1) expanding and strengthening our network of partners; and 2) the increasing UWSH demand signal and sustainment of a 355 ship navy.

Anyone who's read the CNO's "Design for Maintaining Maritime Superiority" knows that my first topic above is almost verbatim his 4th line of effort. He describes his desire to enhance joint service/interagency partnering, prioritize key international partnerships with allies, deepen relationships with private research labs/academia, and increase interaction with industry. If implemented correctly, this line of effort serves to create a force multiplying effect and an economy of physical and monetary resources.

Around the fleet, I believe that the diving forces are making a huge contribution to this line of effort. At the top levels, we have active information exchange agreements with a whole host of countries including the U.K., Canada, New Zealand, Australia, Israel, Germany, Norway and Sweden, and we're working to update an expired version with France. In



addition, based on the waiver flexibility granted in the OPNAV 3150.27C, standing interoperability agreements are now in place with New Zealand, Australia and South Korea in C7F, and with the U.K. for C5F and COMSUBFOR. These agreements enhance readiness by making it easier to utilize our international partners' equipment and dive side by side with their personnel. If you see a need for an agreement that's not yet in place that would streamline your job, reach out to SUPDIVE in my office and he can point you in the right direction. At the MDTC and within my staff, I asked for feedback on international exercises and exchanges that divers have been engaged in. Wow, there were a lot! Through exercises like RIMPAC, sub rescue exercises, numerous bilateral engagements and actual salvage events, you all have fostered relationships with countries like Spain, Israel, Japan, South Korea, Australia, Thailand, U.K., Canada, Argentina, and many others. These events really pay dividends as a force multiplier as was demonstrated during the search for the MV-22 Osprey that crashed off of Australia killing three on board in August of 2017. Because of the proximity of the crash and our familiarity with their diving capabilities, the Australian's were the first to respond; providing wreckage location and recovery of human remains

for two of the missing personnel. Further, the submarine rescue response by Undersea Rescue Command to the missing Argentine submarine, SAN JUAN, last November and the follow-on search and recovery effort throughout December, dramatically furthered relationships between our two countries. It has since produced fruitful staff talks and further Subject Matter Expert Engagements regarding continued search for ARA SAN JUAN. As a matter of fact, I am writing this article in the Buenos Aires airport as I am returning home from briefing the Argentine Navy on how we could assist the ARA SAN JUAN search further with the use of our newest, 20,000+ ft Hugin autonomous vehicle. We'll see if a formal search request comes out of this visit.

Last item that I wanted to touch on is the great work that NEDU is doing with SATFADS. As this system comes out of layup, opportunities to partner with organizations such as NOAA, DPAA and DARPA, as well as international cross training plans with South Korea and Italy, present numerous future opportunities to train the next generation of Navy Saturation Divers. Stay tuned and look for opportunities to support these OPs if you're interested.

Hopefully these partnering examples serve to inform all about your great work and spark additional ideas across the diving community. Please pass your ideas up your CoC for implementation, share them with my office and/or write about them in FACEPLATE so that the community in general can learn, grow, and take advantage of this force multiplier.

As a closing note, I would be remiss if I didn't welcome CAPT Tom Murphy as the new SUPDIVE. He took over in July from CDR John Porter who has moved on to OPNAV N97. His predecessor, CDR Ford Ewaldsen, is now enjoying retirement. Fair winds & following seas brother!

Enjoy this issue and, as always, be safe and I'll see you on the dive side! Hooyah Deep Sea!

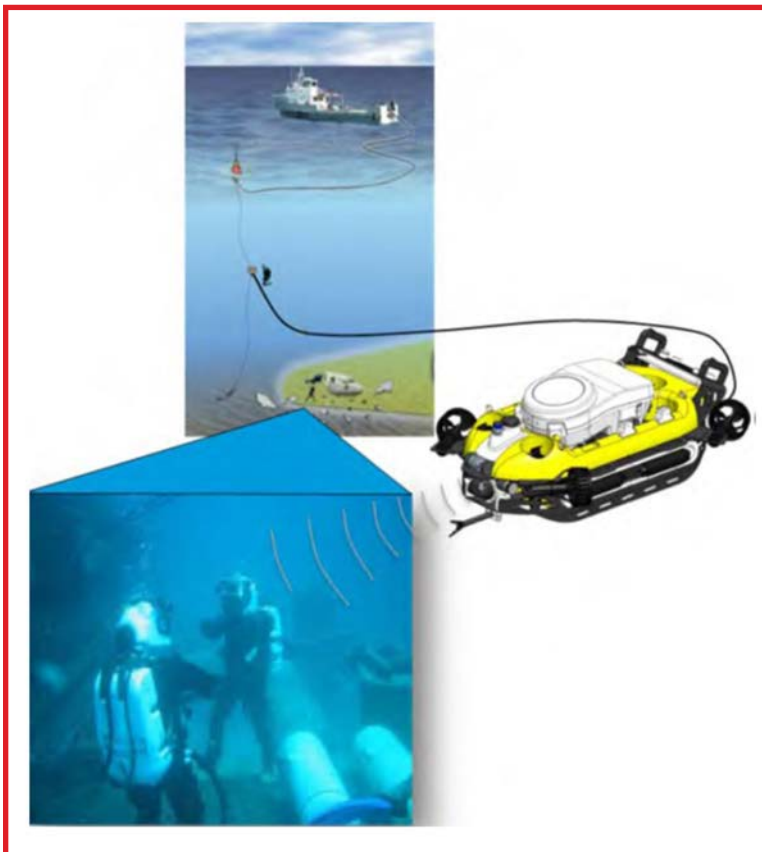
ONR/NAVSEA Undersea Medicine Projects

By CDR Jill Richards, USNR, Dr. Bill D'Angelo, CAPT Ted Waters, USN, and CDR Jeremy Sword, USNR

On 13-14 June 2018, the Office of Naval Research (ONR) / Naval Sea Systems Command (NAVSEA) undersea medicine program review was held in Arlington, VA, where scientists from the Navy laboratories (Naval Medical Research Center, Naval Health Research Center, Naval Submarine Medical Research Laboratory and the Navy Experimental Dive Unit) came together with US and international university and industry researchers to discuss science and technology efforts to overcome human shortfalls in operating in this extreme environment. The annual meeting was an opportunity for scientists and engineers to present their ONR and NAVSEA funded research findings and share ideas face-to-face. The ONR Undersea Medicine program, directed by Dr. Bill D'Angelo, develops science and technology solutions aimed at optimizing submariner and diver health and performance and enhancing the flexibility, efficiency and safety of undersea warfighter missions. CAPT Ted Waters, Undersea Medical Officer, manages the US Navy Deep Submergence Biomedical Development Program which sponsors biomedical research at the 6.4 level aimed at improving Diver Health, Safety, and Effectiveness as well as improving the survivability of submariners in a disabled submarine (DISSUB) scenario. Projects were presented on various topics supporting Navy undersea medicine, including decompression illness, oxygen toxicity, human performance and disabled submarine rescue. *Authors bio: CDR Richards and CDR Sword are reservists with the Office of Naval Research, Reserve Component. Dr. D'Angelo is Program Officer for Code 342 Undersea Medicine. CAPT Waters is program manager for the NAVSEA Deep Submergence Biomedical Development Program.*

Dive Buddy Remotely Operated Vehicle

Manufacturer: NSWC Panama City



Rendering of Dive Buddy ROV being used on the dive side. *Data and photos by Mr. Lee Cofer, NSWCPCD.*

Description of Project:

To reduce the load on divers and maximize mission flexibility, Mr. Lee Cofer from NSWC Panama City has developed a Dive Buddy Remotely Operated Vehicle (ROV). By teaming human and machine, this adaptable tethered unit can serve as an ROV, a diver propulsion vehicle (DPV), or an autonomous underwater vehicle (AUV) to enhance diver capabilities, maximize diver bottom time, and increase survivability for untethered divers.

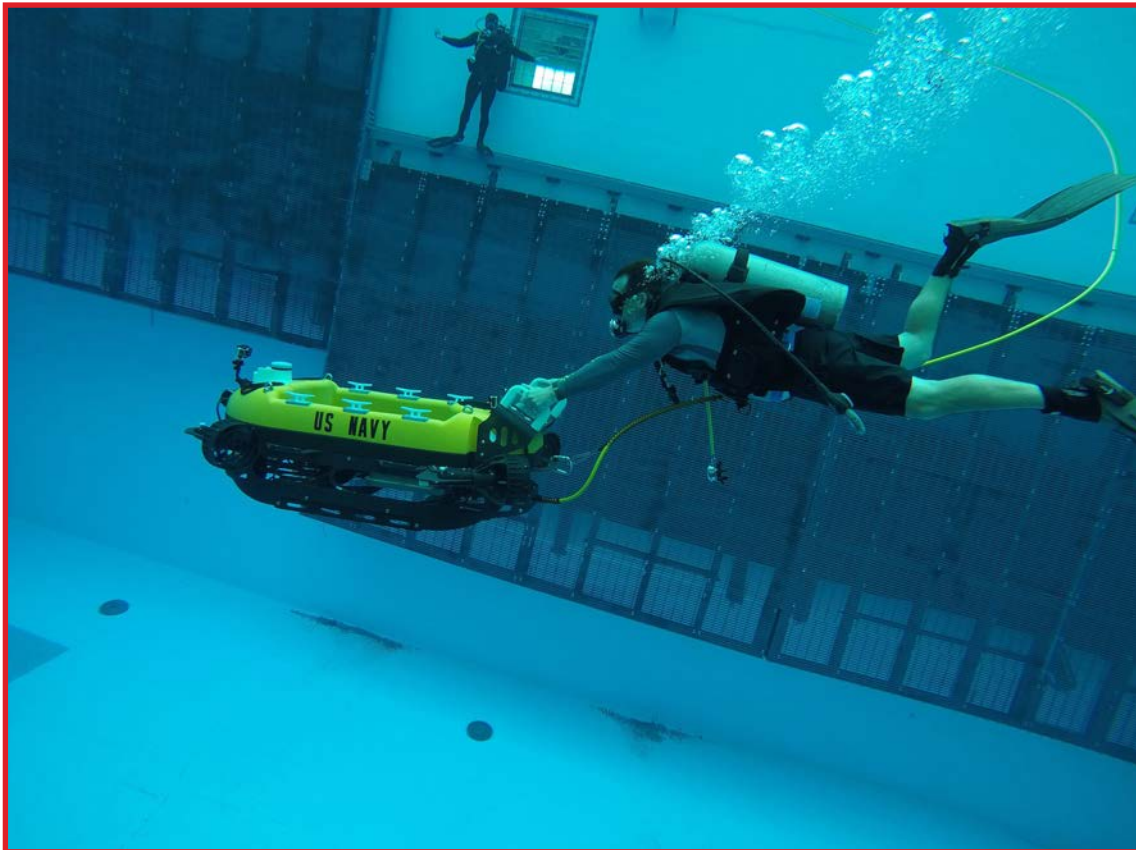
Theory of Operation: The Dive Buddy ROV is a hybrid vehicle that is mission adaptable using interchangeable sensor modules, payloads, and control interfaces. Depending on the mode of operation, the unit can engage in semi-autonomous or fully autonomous behaviors to make more efficient use of diver's bottom time. The unit is equipped with wireless RF communication to relay data, voice, and low bandwidth video from diver to the ROV, which, because it is tethered to a surface support vessel, can then share real time bottom data with Command and Control at the surface.

Benefits of Project:

- Semi-Autonomous/Autonomous Behaviors:
 - Diver/Target following
 - Waypoint navigation
 - Small area search
 - Station keeping
- Human and Machine Teaming:
 - Dive site reconnaissance/tagging
 - Tool and emergency life support hauler
 - Emergency retrieval of untethered divers
 - Guiding or towing diver to or from dive site
- Dive Supervisor Decision Support:
 - Can provide real time imagery of dive, both sonar and video
 - Wireless communications with diver
 - Relay dive rig and biometric data

Current Status of Project: Unmanned pool testing is complete, demonstrating the unit's safety and flight controls, navigation capabilities, payload versatility, sensor function and data collection, and wireless communications. Autonomous search behaviors were successfully tested in AUG 2017 in St. Andrews Bay. In DEC 2017 the vehicle's DPV functionality, stability, and diver interface tests were successfully completed by Navy Divers at the Naval Diving and Salvage Training Center (NDSTC) Aquatic Test Facility (ATF).

Future Project Goals: Further unmanned testing includes simulated disabled diver rescue and autonomous diver following. Based on results of these tests, further advances in the human-machine interaction will be explored (e.g. Advanced Diver following and behavior monitoring, natural language commands, underwater gesture control, etc.).



Dive Buddy ROV being tested on a pool dive at the Aquatic Test Facility. *Data and photos by Mr. Lee Cofer, NSWCPCD.*

The Dewey Monitor:

Early Detection of Hypoxia During Rebreather Diving Using Pulse Oximetry

Lead Researchers: Dr. Richard Moon, Dr. Rachel Lance, and Mr. Dennis Gallagher

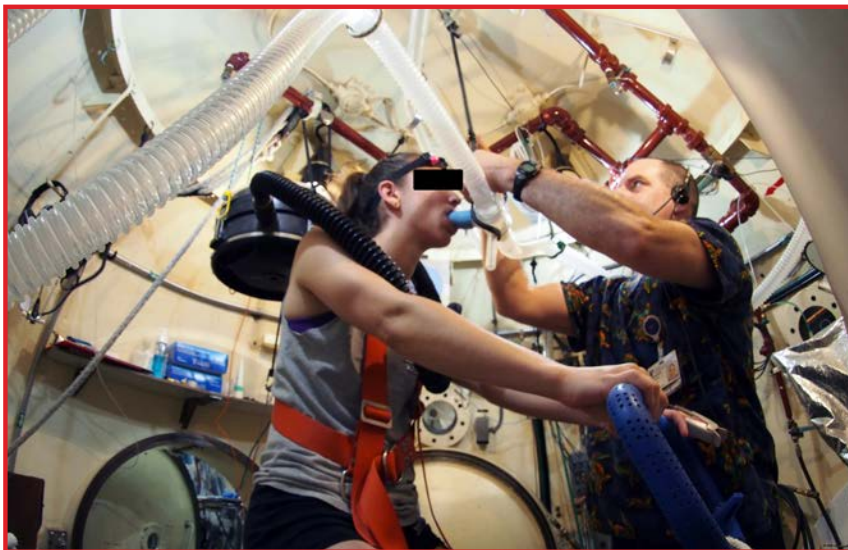
Description of Project: The oxygen monitoring system is the most failure prone component of a rebreather and known systems have no redundant backup. Component failure is insidious and can lead to hypoxia, which is responsible for 39% of civilian rebreather deaths, and hyperoxia, responsible for approximately 10% of rebreather fatalities. Pulse oximetry is used in medical settings to provide real-time data for patient care to provide adequate time to administer lifesaving interventions as necessary. Dr. Richard Moon and Dr. Rachel Lance at Duke University, are working together with a team from NSWC Panama City to investigate using of pulse oximetry to provide a diver real-time oxygen saturation monitoring during a dive to allow sufficient warning time to take corrective action.

Theory of Operation: Closed-circuit scuba systems scrub a diver's breathing gas by removing carbon dioxide and adding oxygen. Known systems do not offer a means to measure real-time blood oxygen saturation levels to then provide to the diver while operating. In addition to current medical applications, pulse oximetry has been used to monitor aviators in hypobaric chambers and measure falling oxygen levels in freedivers. Pulse oximetry uses two wavelengths of light to measure the fraction of hemoglobin currently saturated with oxygen (SpO₂). The Dewey Monitor forehead probe (pictured above) has been shown to be as accurate as traditional finger probe systems more commonly used in medical settings. By analyzing and then providing instantaneous blood oxygen saturation levels, this innovative system will give divers adequate response time prior to reaching critical levels.

Benefits of Project: Real-time assessment of diver physiology allows for adequate warning time to enact corrective procedures in the event of developing dangerous blood oxygen levels.



Forehead mounted SpO₂ monitor. *Data by Drs. Moon and Lance, Duke University. Image provided by Noni Medical Inc.*



SpO₂ monitor testing in a hyperbaric chamber. *Data and photo by Drs. Moon and Lance, Duke University.*

Current Status of Project: Recent testing performed on the surface and at 77 fsw (dry), breathing air (starting PO₂ = 0.7 atm) have demonstrated a 49 (+17 seconds SD) mean warning time during moderate oxygen consumption. Current efforts are focused on integrating a pre-existing sensor into a warning system that can be used operationally.

Future Project Goals: Future tests are scheduled to evaluate comprehensive characterization at different work rates, as well as conducting in-water and cold water testing. Further testing will inform best sensor integration for diver feedback.

Divers Augmented Vision Display (DAVD)

Lead Developer: Mr. Dennis Gallagher, NSWPCPD

Description of Project: Military divers regularly conduct missions in low visibility conditions, which can render conventional gauges and displays useless, introducing additional risk. Mr. Gallagher and a team of engineers at NSWPCPD are developing a see-through head-up display (HUD) capability for use by military divers during limited visibility dive missions. The Divers Augmented Vision Display (DAVD) uses waveguide optical display technology to provide divers with real-time, topside data on a binocular display that is embedded inside a dive mask or dive helmet.

Theory of Operation: The DAVD system couples the topside images and data into thin waveguide display optics, translates the images through a series of internal reflections, finally exiting toward the diver's eye. This provides magnified, see-through virtual images at a specific distance in front of the diver.

This data, which includes real-time sonar imagery, text messages, schematics, and augmented reality overlays, is transmitted from the surface to the diver via a thin ethernet umbilical. Keyed by voice commands from the diver, data can be placed anywhere on the HUD screen, and the diver can easily return to full see-through mode when needed for the mission. The DAVD prototypes have been developed using rapid prototyping and 3D additive manufacturing processes to reduce development time, and speed transition to the fleet.



Diver's view while using the DAVD prototype on a dive mission (sector sonar image, Augmented Reality (AR) overlay image). *Data and photos by Mr. Dennis Gallagher, NSWPCPD.*



Benefits of Project: Real-time presentation of visual data provides divers greater situational awareness, maximizes work efforts, reduces bottom time, and increases diver safety.

Current Status of Project: Initial prototypes have been developed and are currently being tested by Navy divers.

CAPT A.S. Peters (Commanding Officer, NSWPCPD) and CDR Cameron Chen (Commanding Officer, NDSTC) test DAVD prototypes at NDSTC. *Data and photos by Mr. Dennis Gallagher, NSWPCPD.*

Diver Thermal Protection

Lead Researchers: Dr. John Florian, Dr. Dana DiPasquale, and Dr. Eric Bandstra with the NEDU

Description of Project: Maintaining diver warmth and the functionality of extremities at depth is a challenging problem. Dr. Florian and his team are investigating ways to close the knowledge gap that exists in safely and efficiently warming a diver, especially when power supply is limited. They are developing a 2nd generation calorimetry suit to measure heat exchange between divers and the ambient environment, to better understand how and where the body loses heat during cold water dives.

Theory of Operation: The frigid environment is one of the most challenging obstacles for divers to overcome. Losing body temperature, especially in the extremities, can significantly limit mission success and diver safety. A current type of thermal protection is the water-perfused tube suit, which provides divers some reprieve from the environment, but not ideally so. Based on research with the NEDU, applying heat ineffectively, especially with limited power supply, can actually serve to lower the body temperature. Dr. Florian and his team maintains that there is a need for evidence-based heating strategies, namely how much heat should be applied and where, that will inform the development of more efficient thermal protection systems. Their research in developing a 2nd generation calorimetry suit and cold water testing aims to fill that void.

Benefits of Project: By better understanding how rapidly a submerged diver loses heat and from what parts of the body, future thermal protection systems can be better designed to improve functionality and bottom time.

Current Status of Project: Recent testing performed with this new suit provides information from 48 sensors spread across 25 regions in the body. Improvements from the last generation include minimizing bulkiness, reducing the likelihood of leaks, and increasing safeguards against data loss.

Future Project Goals: Future manned tests are scheduled with four different tubesuit and ambient water temperature combinations to further evaluate regional heat exchange.



Second generation calorimetry suit. Data and photos from Dr. John Florian at NEDU.

Army Divers Train to Inspect Navy Pier

By: Bill Addison/ NWS Earle Public Affairs

Soldiers from the U.S. Army's 511th Dive Detachment, 20th Engineer Brigade from Joint Base Langley-Eustice, Va. had a unique opportunity to train in the frigid waters of New Jersey's Sandy Hook Bay December 6-8 while providing a valuable service to their U.S. Navy brethren.

The team was on board Naval Weapons Station Earle's pier complex in Leonardo, N.J. to train on an important aspect of their core functions—port opening and rehabilitation, while helping the Navy to inspect and assess the condition of certain sections of its three-mile ordnance loading pier.

"It's a good opportunity for us to test our skills in a safe environment where it's still complex and dynamic," said 1st Sgt. Tyler Dodd, detachment first sergeant.

"This gives our guys the ability to take their time and really learn how to do inspections and how to do assessments," he added.

The Soldiers inspected hundreds of wood pilings that are part of the pier's wye section leading to trestle 2, which the installation needed assessed in order to determine next

steps for future projects in the area.

Throughout the three day training evolution, the divers inspected each and every piling, looking for damage or any structural issues that the Navy might need to address.

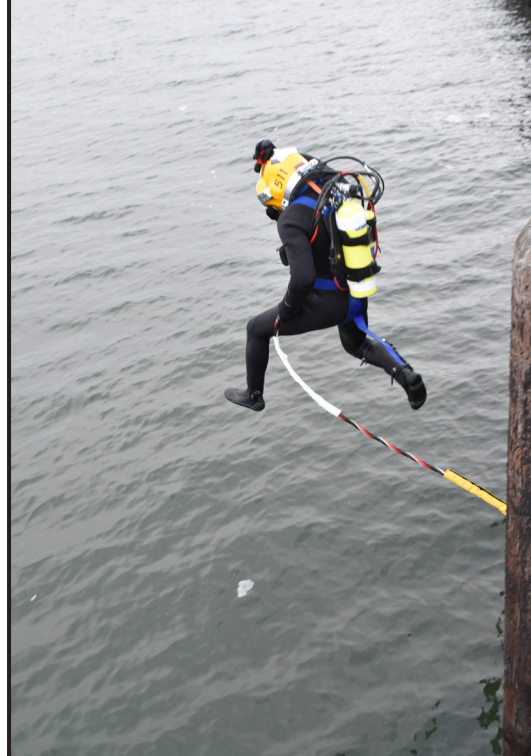
That inspection report will be provided to Navy Facilities Command for assessment and possible repairs.

"One of the things we always try to provide our Soldiers is a sense of purpose and direction," said Dodd.

"Knowing that what they're doing isn't just training, but that they're providing a real service not only to their sister service, but ultimately to the American taxpayer." But he stressed that the training aspect of their mission could not be overlooked.

Dodd said the Earle Pier provides an excellent opportunity for their Junior Soldiers to train, with the size and scope of the pier as well as a slow and steady pace to see the progression of the mission from assessment to repair to full utilization of the facilities.

The partnership between the Army and Navy at Earle has been an ongoing progression, as the installation



A Solider with the 511th Dive Detachment enters the water surrounding NWS Earle's ordnance loading pier during a training and inspection event Dec. 8. U.S. Navy Photo by Bill Addison/released

seeks ways to provide training facilities and opportunities to other military entities in the area, while benefiting from the services they may provide.

Earlier this year, Soldiers from the N.J. Army National Guard's 404th Engineer Battalion helped to bolster Earle's Explosive Ordnance Disposal range by improving the berms that surround the blast area. The battalion plans to return to Earle in 2018 for more small improvement projects.



Pfc. Gabriel Soto, 511th Dive Detachment out of Fort. Eustis, Va. helps Spc. Nathaniel Marquez don his Kirby Morgan KM-37 Diving Helmet at Naval Weapons Station Earle, New Jersey during Dec. 8. U.S. Navy Photo by Bill Addison/released



Two Kirby Morgan KM-37 Diving Helmet's, used by U.S. Army Divers of the 511th Dive Detachment, 20th Engineer Brigade during a training exercise at NWS Earle, N.J. Dec. 8. U.S. Navy Photo by Bill Addison/released

DIVING OPERABILITY

By: Master Chief Master Diver Joshua Dumke

During the recent past, present, and into the future, the United States is building a powerful naval and logistical force in the Pacific, specifically the 7th Fleet and Southeast Asia. The need for consistent bilateral and multilateral military understanding throughout the AOR is vital to make sure the U.S. is able to project the forces required through steady and reliable partnerships. Leading the way is diving and salvage. Interoperability with our partner countries is getting stronger like no other time in history. Provided below is a small snapshot of the diving engagements that have happened and are being planned for the future.

For over 25 years the US Navy has been doing multi and bilateral exercises like Cooperation Afloat Readiness and Training (CARAT) where diving has been feverishly increasing the capabilities in each country that 7th Fleet operates. The list of countries is increasing yearly to include Malaysia, Indonesia, Thailand, Brunei, Sri Lanka, Vietnam, and the Philippines.

There are various levels of knowledge and capabilities from Self-Contained Underwater Breathing Apparatus (SCUBA) to shallow surface supplied MK 20s and hard hat diving like the KM 37. Every country has competent levels of hyperbaric operations. Hyperbaric ownership varies being either directly run by military divers, or by hospitals. Each country has its specific diving requirements and we are able to assist in building future relationships by bilateral training of diving and salvage techniques.

All have very professional and capable facilities and we have exchanged best practices during each diving engagement.

Every engagement has increased the cooperation between the U.S. and each country. The key line of effort is to make sure each country understands the other's capabilities and standard operating procedures. Doing so in a training environment will prevent any miscommunications in the event that an emergency does come up and bilateral assistance is required or requested.

South Korea

Over the past 25 years, the Republic of Korea Navy (ROKN) and the U.S. Navy Diving Teams have developed a partnership that has led to other exchanges of information. This partnership has been one of the strongest in the region. Recently in the last three years, U.S. Diving and the ROK Ship Salvage Unit (SSU) from Salvage Logistics Squadron 55 has gone from diving SCUBA in separate dive sides to diving side by side on the USNS SAFEGUARD and USNS SALVOR. Last year, a huge jump in our partnership when Mobile Diving and Salvage Unit One (MDSU 1) and CTF 73 were able to get underway on ROKS Tong Yeong (ATS 31) and conducted fully integrated wet bell, surface supplied dives for the first time in our partnership of diving, conducting over 20 dives with both ROK divers and U.S. Navy dive supervisors conducting the operations. This was a full flex of our partnership capability of sending an MDSU Co into the country and embarking on the ROKN salvage vessel to conduct sal-

vage operations. The exercise included joint side scan, ROV, setting and recovering three-point moor, wet-bell and stage diving off the ROKS Tong Yeong.

Plans for 2018 are looking to increase this partnership by leaps and bounds, including mixed gas diving, and later in the year conducting the first joint US-ROKN saturation dive. In 2017, we were able to have NEDU Saturation reps visit and observe the ROKN complete a saturation dive in their shore-based facility. The two saturation teams were also able to exchange diving protocols to validate how close each team's tables and schedules resemble each other. This will open the ability for bilateral use of U.S.'s Saturation Fly Away Diving System (SAT FADS) and NEDU Ocean Simulation Facility (OSF) as well as ROKN's state of the art shore-based saturation facility and submarine rescue saturation salvage vessel.

"No matter where they are from or what language they speak, we all speak Deep Sea!" This is the basis of understanding and the driving foundation in interoperability diving operations.

Master Chief Master Diver Dumke is currently assigned to Commander Logistics Group Western Pacific/Task Force 73 in Singapore. He is responsible for diving and salvage operations in the SEVENTH Fleet. Master Diver Dumke has a significant role in Theater Security Cooperation, working directly with numerous countries increasing diving capability and building partner relationships.

Experimental Diving and Undersea Group (EDUG)

By: Lt(N) / Ltv Daniel Hawryluk C.D.

Experimental Diving and Undersea Group (EDUG) is a Group within the Canadian Forces Environmental Medicine Establishment (CFEME) located in the vicinity of Downsview Park at Toronto, ON, Canada. The scope of the program at EDUG includes research, development, testing, evaluation, investigation and quality assurance to all aspects of Canadian Armed Forces (CAF) diving. The purpose of this article is to explain in plain language the type of person that works at EDUG, the equipment employed, the daily routine and some projects and other activities in which EDUG engages.

The People

The military divers employed at EDUG have at least one thing in common: they are all Clearance Divers or Clearance Diving Officers. This means, among other things, that they are all members of the regular force of the Royal Canadian Navy. In short, a Clearance Diver is a member of the military who has served time as any other trade in the military and who has also completed a basic military dive course. Once a member has achieved this point, they may apply to challenge the year-long Clearance Diver Course at Fleet Diving Unit (Pacific) during which time they are steeped in the intricacies of Naval Mine Countermeasures diving, underwater demolitions, and Maritime Explosive Ordnance Disposal (MEOD). The officers follow a similar path with a few distinct differences primarily around the supervision and planning of these types of operations.

There is a wide variety of ranks and experience amongst the divers at EDUG. There are two (2) junior technicians. They have some of the most engaging work, preparing diving equipment for deployment and other duties. There are four (4) senior technicians who oversee the workshops at EDUG and, at the more senior levels, use their

years of experience to assist EDUG at the command level in operational planning. There are two (2) junior officers who lead projects and supervise diving operations. An exchange officer from the Royal Navy (United Kingdom) occupies a billet at EDUG as well. The Group is led by a senior Clearance Diving Officer at the Lieutenant-Commander rank.

The Equipment

EDUG has exposure to all diving sets in the CAF – and then some. SCUBA with twin 80s and an AGA mask is used for any open water diving where influence of mines is not a factor. When stealth is a required, the Canadian Clearance Diver Apparatus (CCDA) is used for operations at 0 msw to 42 msw. This is a semi-closed circuit set that may accommodate a variety of different gas mixtures. From 42 msw to 81 msw, the Canadian Underwater Mine Apparatus (CUMA) is employed. This mechanical set adjusts the mixture of gas in the divers breathing loop depending on where the diver is in the water column. Both sets are acoustically and magnetically clean. The Ultra Light weight Surface Supplied Diving System (ULSSDS) – a marked advancement in surface supplied diving for the CAF – was recently evaluated by EDUG using both in-house and field trial methodology.

The big story at EDUG is the Dive Research Facility (DRF). Designed and built in the 1970s, the DRF is a massive hyperbaric chamber capable of saturation diving to extreme depths. It has three chambers. There is a Diving Chamber where divers can physically dive the equipment employed whilst submerged in water while remaining under highly controlled conditions. The Living Chamber is the largest space and can accommodate up to ten (10) divers. It is used for 'dry' diving where equipment need not be dove 'wet' or it may be used for hyperbaric treatments as need-

ed. The smallest chamber is the Transfer Chamber which is a spherical mass connecting the LC and DC. It is used, primarily, for diving personnel and material from the surface to either the LC or DC and travelling back to the surface.

The Job

The most exciting about the work at EDUG is that it covers an exceptionally wide breadth of diving. In doing so, the conduct of a regular workday is greatly varied. In my role, as the Operations Officer, I might arrive with the rest of the team in the early morning for physical training. This might be followed up with a dive in the DRF using equipment that the team prepped the day prior. On occasions, the remainder of the day might be occupied with staff work. On others, it might be the case that preparations for the next dive serial take up the remainder of the day.

In any case, EDUG remains flexible. As a result of the specialized equipment and personnel at EDUG, requests from Other Government Departments (OGDs), the Coroner's Office or various police services are actioned as required. These types of requests may focus on accident investigation, on technical support or any other variety of diving tasks.

In short, the work at EDUG is compelling, challenging and relevant to the contribution that the CAF dive community makes to achieve the aim of the CAF.

Alex DeLorey is a Lieutenant in the Royal Canadian Navy. Alex began his military career as an Infantryman with the Canadian Army. He later made the change to navy officer and sailed extensively in HMCS Algonquin as a Bridge Watchkeeper. Prior to his posting at EDUG, he served at the Directorate of Diving Safety and at Fleet Diving Unit (Pacific). He holds degrees from Trent and Western University. He may be reached at Alexander.DeLorey@forces.gc.ca.

USS FITZGERALD & USS MCCAIN Collisions

By: LCDR Tim Emge

As diving and salvage professionals, Navy Divers do not wish for ship collisions or aircraft crashes to happen, but when they do we go to work. With sure dedication, the highest priority is to do everything in our power to bring back the personnel and recover their ship or aircraft. No different was the case with USS Fitzgerald (DDG 62) and USS John S. McCain (DDG 56). There has been a great focus on the causes of these incidents and sweeping changes are in progress to prevent their recurrence. Whatever the reasons for these grave incidents, they became opportunities for the divers involved to demonstrate the courage and determination that is everything sailors should endeavor to be. This article is the story of their accomplishments.

USS FITZGERALD (DDG-62)

had taken on a starboard list and forward trim. Stability of the FITZGERALD was checked utilizing Program of Ship Salvage Engineering (POSSE) to ensure she was safe for return transit to Yokosuka. Divers from the deployed Mobile Diving and Salvage Unit One (MDSU 1), who were just finishing up salvage operations in Guam, were directed to Yokosuka to support FITZGERALD along with the 7th Fleet Salvage Officer from Singapore.

Upon arrival back in port, the priority was the recovery of remains of the service members, which was completed the morning of June 18 by Ships Repair Facility (SRF) Yokosuka Divers. Once the remains were recovered, additional dewatering actions were taken but these actions were not properly coordinated and led to increased list. The increased list was due to the spaces that had taken

structure on the starboard side due to the large amount of damaged superstructure that did not have adequate support. All dewatering was secured and a plan began to develop to regain buoyancy on the starboard side of the ship to correct the list.

Upon arrival of the MDSU Divers, led by Master Diver NDCS Kevin Parsons, the combined MDSU and SRF teams entered around the clock shift work to support patching and dewatering flooded spaces. The access trunk outside of Auxiliary Machinery Room (AMR) 1 was able to be secured from the rest of the flooded spaces and dewatered. It was determined that the biggest possible gain for both list and trim would be to dewater AMR 1 which became the focus of the dive teams. Two Mod-8 6-inch hydraulic pumps with 2200 GPM capacity from the ESSM warehouse in Sasebo had been

shipped to Yokosuka and were placed on the forecastle of FITZGERALD. These pumps were placed in the AMR 1 escape trunk and suction was taken. Once the water level was low enough, divers were able to enter the space to plug and patch a 3 by 5 foot breach in the bulkhead between AMR 1 and Berthing 2. With

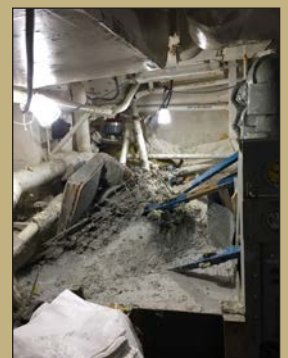


USS FITZGERALD returns to port in Yokosuka after collision.



It was the early morning hours of June 17, 2017 when the incident occurred. The ship had collided with ACX Crystal a Philippine flag container ship approximately 50 miles off the coast of Japan. The hull had an approximately 13 by 17 foot breach. The FITZGERALD had taken on water, personnel were injured, and seven sailors could not be accounted for. Approximately 100 feet worth of internal compartments had been flooded to the waterline on the starboard side and due to the weight of this water

water on the port side while dewatering the spaces on the starboard side, not because of the large hole in the starboard side. An additional consequence of the increased list was further buckling and the further collapse of ship



Salvage patch between AMR 1 and Berthing 2 before and after concrete was applied.



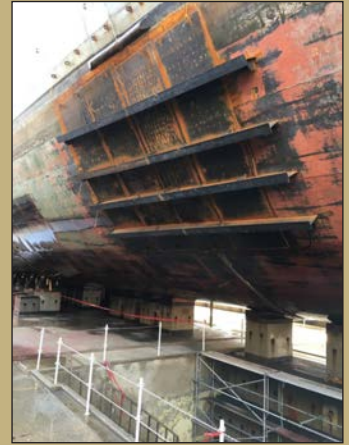
Salvage equipment placed on forecastle.



Stiffener being lowered into the water for installation on hull patch.



FITZGERALD in Dry Dock #4 at SRF Yokosuka.



Welded patch after dry docking.

salvor ingenuity, the divers used damage control plugs, shoring, mattresses, rubitex, and anything else that happened to be in the area and could slow the flow of water; come-alongs and a flight deck net were used to cinch everything tight. Then divers entered the water from outside FITZGERALD and further placed material into the hole to further slow the leak rate. To further seal the patch, concrete was placed over the other materials. All of this patching action reduced the flow rate of water to the point where the ship's main drainage eductor system could maintain the water level below the lower level deckplates. The patch was sufficient to dewater AMR 1 on 22 June and the list was reduced to approximately 1 degree to starboard and trim reduced to approximately 5 feet down by the bow.

The decision was made to dry dock FITZGERALD in Dry Dock 4 at SRF Yokosuka for further assessment and determination of the scope of repairs. To do this, the ship would have to have all ammunition offloaded and would have to be defueled. Both of these actions required a large amount of coordination with the Naval Base and took a number of days to complete. Divers continued to refine their patch and look for other ways to increase buoyancy in the forward portion of the ship to reduce draft and trim.

As the team further learned the extent of the damage, the salvage plan continued to morph and adjust based on what was in the realm of possibilities, and what would be required to dry dock the ship. It became apparent that with-

out dewatering the other flooded compartments, FITZGERALD would not be able to achieve the draft and trim requirements for dry docking. A plan was developed between MDSU, NAVSEA 00C, Fleet Salvage Officer, and SRF to install a welded patch over the breach in the hull. Due to material requirements and welding qualifications, NAVSEA 00C activated its contract with Phoenix International to perform the welding. SRF provided the materials and prefabricated the plates and stiffeners that were installed. The patch was to be plate only, but further analysis indicated stiffening was required and the stiffeners were installed on top of the already welded plate. In-water welding commenced on 26 June. Initially, welding could only be performed on the night shift due to ammunition offload and defueling actions being conducted during daylight hours. By 2 July the second shift of Phoenix welders was on-site and around the clock welding operations continued until completion of the patch on 8 July.

With the patch completed the flooded compartments could be dewatered. MDSU and SRF Divers had already installed additional ESSM hydraulic pumps and were able to dewater Berthing 2 and other adjoining and below compartments on 9 July.

For stability purposes, DDGs have a seawater compensated fuel system. This means that when fuel is used by the ship it is replaced with seawater to ensure the ship does not have partially filled or empty tanks both of which would make

the ship less stable. While the patch install was ongoing, some of the seawater compensated fuel tanks were dewatered to further improve the ship's conditions (list, trim, draft) for dry docking. Additional forward weight removal was conducted by removal of the anchors and chain. Buoyancy was added forward by dewatering the sonar dome. The final adjustments to tank levels were made on 10 July and FITZGERALD was successfully dry docked on 11 July.

USS JOHN S. MCCAIN (DDG-56)

It was before sunrise on August 21, 2017 when the incident occurred in the heavily traveled shipping lanes approximately 50 miles outside Singapore. The ALNIC MC, a Liberian flagged oil tanker, damaged the hull of the USS JOHN S. MCCAIN with an indentation approximately 30 by 20 feet with a breach in the hull approximately 5 by 20 feet. As with FITZGERALD, the ship had taken on water, flooding compartments along 70 feet of its length and there were 10 personnel unaccounted for. JOHN S MCCAIN had been on her way to Singapore for a maintenance port visit at Sembawang Naval Wharves, but the closer option to bring her pierside was the Republic of Singapore Navy's Changi Naval Base (CNB) and MCCAIN was directed there after the collision. A team of US Navy Divers from SRF Yokosuka and Sasebo were in Singapore in preparation for diving work on MCCAIN and were mobilized to CNB. Members of the dive team, led by Commander Task Force 73 Master Diver



USS JOHN S MCCAIN enters Republic of Singapore Navy's Changi Naval Base in Singapore.



be necessary to remove MCCAIN's lower propeller blades to have better clearance during the heavy lift onload evolution.

NAVSEA 00C activated the salvage contractor for the Western Pacific, SMIT Salvage, to fabricate and install the hull patch. NAVSEA 00C also mobilized personnel and equipment to support propeller blade removal.

While awaiting the patch

NDCM Josh Dumke, were transported out to MCCAIN to ascertain damage and flooding status and make preparations for diving. The flooding status was reported to the Fleet Salvage Officer who was deployed for an aircraft recovery in Australia but was able to check that the ship had adequate stability utilizing POSSE.

Once MCCAIN was pierside, the focus was to initially assess the damage and recover service members' remains. Initial dives were performed in SCUBA and were able to identify the damaged areas but lacked the capability to enter the ship to search for remains. The Southwest Regional Maintenance Center (SWRMC) Battle Damage Repair (BDR) MK-3 LWDS was mobilized from the ESSM warehouse in Singapore and set up for diving on 22 August. Additional divers from SRF Yokosuka and Sasebo, Southwest Regional Maintenance Center, USS FRANK CABLE, and USS EMORY S. LAND were mobilized to support MCCAIN salvage efforts. The Fleet Salvage Officer was brought back from Australia and additional Salvage Officer support brought in from SRF Sasebo and SWRMC. USS AMERICA arrived at CNB the day after MCCAIN and provided berthing and messing support for the sailors on the MCCAIN along with USMC Divers. Once additional personnel were on station, 24-hour diving operations commenced on 24 August.

Once remains recovery was complete, the focus was turned to patching and dewatering the flooded compartments. The flooding in MCCAIN was different from FITZGERALD in that the compartments in MCCAIN had cross flooding and down flooding ducts which while they ensured equivalent flooding on

port and starboard sides of the ship, could not be isolated to dewater undamaged but flooded compartments.

This design feature meant that dewatering would have to be equivalent on both sides of the ship. Inspection of the exterior and interior of the ship indicated that Berthing 7 did not have a through hull breach and further inspection identified the breach to be in the transverse bulkhead between Berthing 5 and Berthing 7 and approximately 6 inches wide by 6 feet high. First, the remaining debris from the berthing had to be removed to allow space to patch the breach. Divers patched this breach with wood wedges, bint-suke, and rubitex. Once the breach was patched, hydraulic dewatering pumps from the ESSM warehouse in Singapore were able to dewater Berthing 7 and the cross-flooded Berthing 6 on 30 August.

The decision to heavy lift MCCAIN to her homeport of Yokosuka gave further direction to the salvage team. In addition to the already installed patch between Berthings 5 and 7, it was determined that a welded patch over the indented portion of the hull would put the ship in the best possible condition for heavy lift, and prevent the reflood of spaces upon discharging from the heavy lift in Yokosuka. Additionally, it would



View into Berthing 3 above waterline showing damage. Divers worked in similar conditions underwater in Berthing 5.



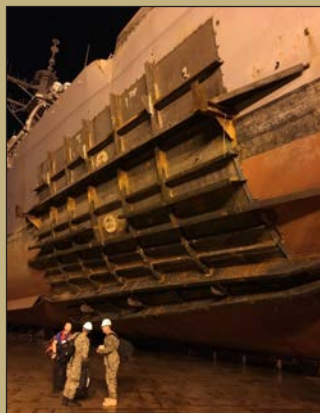
Salvage patching of bulkhead between Berthings 5 and 7 to make watertight and dewater Berthing 7.

and blade removal equipment, Divers continued to make progress securing and dewatering spaces. Aft IC and Gyro was dewatered by securing the watertight door between it and Berthing 5 and taking suction with one of the ESSM hydraulic pumps. Additionally, preparations for the patch were made by removing sections of the bilge keel to allow for proper fit-up and welding. During this time, ammunition offload and defueling of fuel storage tanks were completed. Both actions reduce combustible materials onboard the ship and reduce the temporary service requirements onboard the heavy lift ship.

SMIT developed a patch design of stiffened plate which was subsequently modified and approved by the NAVSEA 00C and Fleet Salvage Officer. Patch fabrication commenced on 7 September and was completed on 12 September. Once completed the patch was approximately 40 by 30 feet and conformed to the shape of MCCAIN's hull. The patch departed the shipyard on 13 September and arrived at CNB the next day.



SMIT Cyclone shear leg alongside JOHN S MCCAIN.



Full view of patch after heavy lift complete.



Patch being lifted into position.



Patch after welding completed.

On 12 September, US Navy Divers commenced work on removal of propeller blades. The initial reason for blade removal was to increase the clearance between MCCAIN and the heavy lift ship during the onload evolution which would require only the bottom two blades on each propeller to be removed. Further engineering evaluation indicated that it would be necessary to remove all blades from both propellers to reduce aft weight thereby reducing hull stresses during the heavy lift. Propeller blade removal was completed on 16 September and blade port covers install was completed on 19 September.

The patch was lifted into position utilizing the SMIT Cyclone shear leg (crane barge) on 15 September. To allow for around the clock welding of the patch SMIT brought in Phoenix International welder divers. The patch was rigged to MCCAIN utilizing chain falls attached to padeyes and other hard points and as welding progressed, the weight supported by the shear leg was reduced until eventually, only the welds were holding the patch in place. The welding of the patch was completed on 22 September and then a coating of epoxy was applied

September. Once dewatered and leak checks were performed on the patch, 24/7 diving support was stood down and divers maintained a pump watch until the heavy lift onload. Mechanical patches were also installed over the down flood ducts in Berthings 4 and 5 to ensure that if the welded patch failed, all dewatered compartments would not be lost. This configuration was validated to have satisfactory stability in POSSE prior to installing the mechanical patches.

On 5 October MCCAIN got underway by tugs and was towed to meet the heavy lift vessel. MCCAIN was heavy lifted onboard MV Treasure on 6 October and departed Singapore for Yokosuka on 11 October.

Both of these unfortunate events led to two of the largest salvage and battle damage repair operations undertaken in recent U.S. Naval history. The efforts of diving and salvage professionals made it possible to get these ships to the next step in the repair process. These operations flexed fleet, repair facility, and contracted diving and salvage capabilities. Both events led to significant learning in the diving and salvage community

over the welds to further assure watertight integrity. The epoxy application was particularly important at the air-water interface where welding was challenging due to wave action.

With the patch installed, a 4-inch hydraulic powered submersible pump was placed in Shaft Alley to dewater that compartment along with Berthings 4 and 5 which are connected by down flood ducts. The spaces were dewatered on 23



Port side propeller blade being lifted from the water.



All propeller blades removed and placed on pier.



USS John S. McCain (DDG 56) sits on deck of heavy lift transport MV Treasure.

and while not perfect, validated many of the processes which we will count on in a time of conflict. More importantly, the U.S. Navy now has a large number of divers who have gained significant, once in a career experience, that they will carry with them throughout their careers. They truly proved their worth and we can rest assured that the future of Navy Diving is in good hands.

LCDR Tim Emge is the SEVENTH Fleet Salvage Officer stationed in Singapore.

Mark V Monument Scholarship Project

By: Dave Sullivan Mark V Monument Scholarship VP, T, & S

"The Mark V Monument Project" originally undertook a mission to obtain the necessary Navy approval and private funding to fabricate and erect a ten foot tall bronze/granite JAKE monument at the entrance to the Naval Diving and Salvage Training Center in Panama City, Florida. The monument was completed in October 2012, and dedicated to all U.S. Military Diver graduates, past, present and future that go down in the sea to work. Military Divers are among the hardest working people that willingly labor at one of the highest risk and toughest jobs in country. They generally do not earn enough to bear the high cost of college education for their family without some kind of financial assistance. Therefore, the Mark V Monument Project is in its fifth year of a new mission to generate funds that will provide scholarship assistance to the children, grandchildren, and spouses of U.S. Military Divers. We are excited to now focus on this new and worthy mission and are grateful for the donations and volunteer efforts that enable us to operate toward success. We recently distributed the annual scholarship awards for 2018.

The recipients of the 2018 Mark V Monument Scholarships are;



Luke Whitlow
son of
Mark Edward Whitlow
USN (Ret).

"The Mark V Monument Project Military Diver Scholarship will help me tremendously to pursue my studies in Microbiology at the University of Florida. Thanks to the MK V Monument Project, I can use this scholarship to completely pay for all of my books and supplies. I am also currently on the wait list for acceptance to the United States Naval Academy, and if admitted this scholarship would pay for all of my uniforms, gear, and laundry. Whichever path I've been lead to follow, I cannot thank the MK V Monument Scholarship Committee enough for supporting and helping me succeed in my scholastic goals to one day becoming a Naval Officer."



Cassandra Branham
daughter of
Troy Jason Branham
USN

"It is an honor to have been awarded the Mark V Monument Scholarship of 2018! This scholarship will be a great aid in helping me to reach my goal of becoming a child psychologist in many ways. Not only will this financial aid help me pay for expenses specific to my undergraduate studies in the major of psychology at the University of North Florida, but it will continue to help me as I pursue an education in graduate school at the University of Florida with as little debt as possible."



Hanna Jones
daughter of
Todd Edward Jones
USN

"First off, I'd like to thank the Mark V Monument Project for selecting me as one of the recipients of their scholarship. I plan to attend Florida State University in the fall and this scholarship will help me achieve my scholastic goals of earning a bachelor's degree in criminology. Then later on in life I plan to become an agent for the Federal Bureau of Investigation. Thanks to you I am one step closer to that goal. Once again I really appreciate the opportunity of receiving this scholarship."



Fionna Williamson
daughter of
Robert Miller Williamson
USN

"This scholarship means so much to me because it affords me the ability to participate in a study abroad summer program through my college which counts for several credits towards my biology major. I have wanted to be able to participate in this program since my first semester of school but have been unable, until now! I am so grateful to be the recipient of this award and am very excited for the experiences I will be able to have outside of our country in pursuit of my degree because of it. Thank you so much! I am so sincerely grateful for this award. Thank you so much for all of your time and your consideration."



UCT 2 Constructs Pier for Timor Leste Maritime Police

By: Lt. Matthew Evans

U.S. Navy Seabees from Underwater Construction Team (UCT) 2's Construction Diving Detachment Bravo (CDDDB) completed construction of the Timor-Leste National Police's (PNTL) Maritime Police Unit (MPU) small boat pier in Dili Harbor from February to March 2018. The \$400,000 project funded through the U.S. State Department's Bureau of International Narcotics and Law Enforcement Affairs provides berthing for four small boats and supports the U.S. Pacific Command's Asia Pacific Regional Initiative to increase law enforcement and maritime security in this remote region of the globe.

"I personally gained the most from my interaction with the Maritime Police Unit agents. They were highly professional and engaged in making this project a success," said officer in charge, Lt. Michael Roster, assigned to UCT 2.

The pier was designed in-house by UCT 2's ocean and civil engineers. Roster then led the planning, contracting and logistics to make this project possible. The project supervisor, Construction Mechan-

ic 2nd Class Robert Norton led a crew of 11 members from CDDDB and Naval Mobile Construction Battalion 4, along with 25 MPU agents in the 37 days of on-site construction. Construction of the steel-pile pier required unique skills that members of the Naval Construction Force, or Seabees, are highly trained in.

Norton explained the benefit to his crew was that, "we sharpened both our topside and underwater welding skills and proved our ability to provide expedient waterfront construction anywhere on the globe."

U.S. Ambassador to Timor-Leste, Kathleen M. Fitzpatrick, attended the ribbon cutting event along with Timor-

Leste Minister of Defense and Security, Jose Agostinho Somotxo, on March 28, 2018. To meet the deadline, Roster divided his crew into a day and night shift to increase welding output and ensure the pier was completely operational the day of the event. By working with the PNTL during construction, CDDDB was able to build vested interest in the success and sustainability of the pier. PNTL officials were taught skills necessary to maintain the pier throughout its life span such as replacing the cathodic protection. It also built trust and interoperability with this remote partner nation.

"The pier utilized materials designed and manufactured in the United States. Furthermore, the materials would be more than twice the cost if a private contractor completed the work," said Ambassador Fitzpatrick, as reported on the U.S. Embassy – Dili, Timor-Leste Facebook page.

CDDDB is on the third stop of their six-month deployment in support of the U.S. Pacific Fleet. UCT 2 provides construction, inspection, repair, and maintenance of waterfront and underwater facilities in support of Naval and Marine Corps operations. Underwater Construction Technicians have the unique ability of performing shallow, deep water, and terrestrial construction.



U.S. Navy Seabees assigned to Underwater Construction Team 2, Construction Diving Detachment Bravo (CDDDB) weld small boat fendering systems to the pile supported pier in Dili, Timor-Leste on March 23, 2018. (U.S. Navy photo by Lt. Michael Roster)

U.S. Navy Seabees, assigned to Underwater Construction Team (UCT) 2, oversee pile driving operations in Dili Harbor, Timor Leste on March 7, 2018. (U.S. Navy photo by Lt. Michael Roster, CEC, USN)

LT Matthew Evans is the executive officer for Underwater Construction Team 2.



A ribbon cutting ceremony is held at the newly constructed Maritime Police Unit small boat pier in Dili, Timor-Leste on March 28, 2018. U.S. Navy Seabees from Underwater Construction Team 2's Construction Diving Detachment Bravo completed the construction project which supports strategic initiatives of the U.S. Department of State: Bureau of International Narcotics & Law Enforcement (INL), to increase Timor-Leste's capacity to maintain maritime security. (Courtesy photo by Jennifer Tan)



U.S. Navy Lt. Michael Roster, assigned to Underwater Construction Team (UCT) 2, briefs Superintendent Lino da Silva Saldanha, with Timor Leste National Police, and U.S. Deputy Chief of Mission Dan Bichoff in Dili, Timor Leste on March 14, 2018. (U.S. Navy photo by Construction Mechanic 2nd Class Robert Norton)



U.S. Navy Construction Mechanic 2nd Class Robert Norton, assigned to Underwater Construction Team (UCT) 2, works alongside Timor-Leste Maritime Police Unit Agents preparing fender system components that will be welded to a new pier in Dili Harbor, Timor Leste on March 9, 2018. (U.S. Navy photo by Lt. Michael Roster)

Timor-Leste Maritime Police Unit personnel prepare for the pier's ribbon cutting ceremony in Dili, Timor-Leste on March 28, 2018. (U.S. Navy photo by Constructionman Adam Porras)



U.S. Navy Construction Mechanic 1st Class Matt Ramirez and Constructionman Adam Porras, both assigned to Underwater Construction Team 2's Construction Diving Detachment Bravo, attach fender system components to a pier in Dili, Timor-Leste on March 22, 2018. (U.S. Navy photo by Construction Mechanic 2nd Class Robert Norton)



U.S. Navy Construction Mechanic 2nd Class Robert Norton, a Seabee assigned to Underwater Construction Team 2's Construction Diving Detachment Bravo, enters the water in Dili, Timor-Leste prior to conducting underwater welding operations on March 22, 2018. (U.S. Navy photo by Constructionman Adam Porras)





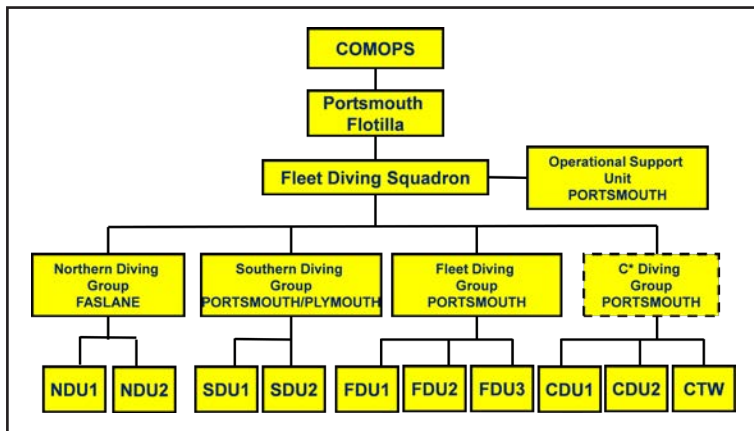
Fleet Diving Squadron

By: Commander Del McKnight Royal Navy (Commanding Officer FDS)

The Squadron

All Royal Navy personnel will have visited a small island located off the northern shore of Portsmouth Harbour, usually to jump into the dark murky waters of the old torpedo testing lake wearing an orange survival suit and immediately trying to locate the safety of a 50 man life raft as part of their Sea Survival Training! However, most may not have realised that Horsea Island is also home to multiple Royal Navy organisations, but in particular it houses the Fleet Diving Squadron (FDS) Headquarters.

The HQ building contains 8 of the 10 Diving Units that make up the Fleet Diving Squadron, namely Chalfont Dive Group (CDG), consisting of Chalfont Dive Unit 1, 2 and Chalfont Training Wing; Fleet Diving Group (FDG), which is made up of Fleet Diving Unit 1, 2 and 3; Southern Diving Unit 2 (SDU2) and the Operational Support Unit (OSU). The other 2 units are located within HMNB Clyde and HMNB Devonport, which are Northern Diving Group (NDG) and Southern Diving Unit 1 (SDU1) respectively.

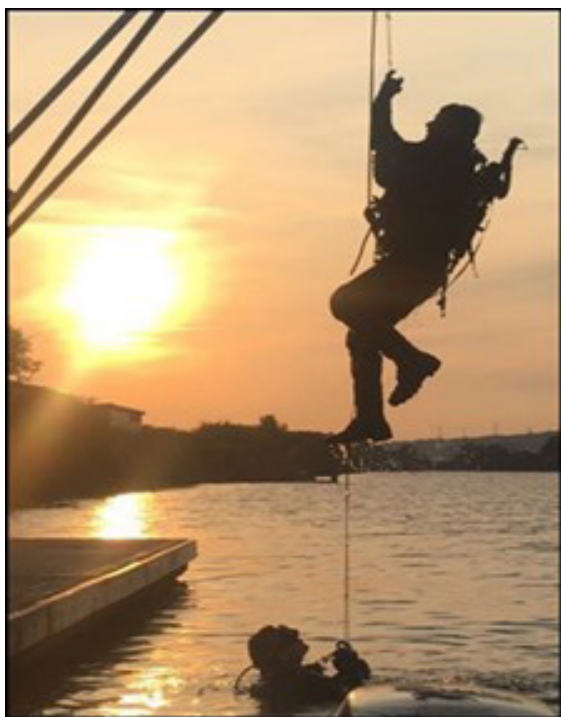


Operationally Focused

FDS thus comprises of over 165 highly motivated and dedicated Royal Navy Clearance Divers, whose training and unique skill set enable them to support UK interests on a global scale, whether that be with diving or Explosive Ordnance Disposal (EOD) support to both the surface and sub-surface flotillas, but also as bomb disposal experts both at home and abroad. In 2017, the squadron was called out on 442 EOD tasks and 11 Improvised Explosive Device (IED) tasks within the UK in support of OP TAPESTRY (Military Aid to Civilian Authorities (MACA)), which equates to a task approximately every 19 hours. The squadron supports a further 9 named RN operations and 4 defence tasks, with 63 combined UK and global tasks taking place during 2017.

In addition FDS is increasingly employing Mine Warfare personnel to man and operate the increasing number of Offboard Systems, such as the REMUS 100s that are integral to the Expeditionary MCM efforts of Fleet Diving Group and the Underwater Force Protection for QEC.

As you can see from the statistics, the squadron is extremely busy, with



FDU1 Divers practicing ladder climbs at dusk.

67% of personnel held at R2 readiness (5 days notice to move) or higher. In order to maintain this level of operational profile the squadron has a mixture of RN and civilian support staff and as the squadron's diving/EOD



FDU2 Divers practicing beach drills.



NDG divers recover the first Highball bomb to the Dive Support Vessel RMAS Moorfowl.



SDU2 divers that removed the German 500KG bomb from central London.



FDU3 divers meeting the UK PM Theresa May.

equipment is mission essential and subject to rigorous maintenance regimes, FDS employs a team of 11 Marine Engineers to ensure its equipment readiness.

The Aim of this article is to outline the Squadron make up, give examples of the sort of task each does and widen the general understanding of the Royal Navy.

The Teams

As stated FDS is made up of 4 Groups. The first is Chalfont Diving Group, or CDG. A new team, tasked with developing operations on Royal Navy submarines. They spend much of their time either in Horsea Island on a new in water training system, or in Faslane working on the Chalfont Training Rig (CTR) establishing the routines for this future capability.

Fleet Diving Group (FDG) is split into 3 very distinct teams. Fleet Diving Unit 1 (FDU1) conducts Maritime Counter Terrorism with elements from across the South of England. They are experts in discrete long endurance swims using oxygen rebreathing devices, climbing the sides of ships and offshore installations and assault Improvised Explosive Device Demolitions. This team recruits only Leading Divers and Senior Rates, and as can be imagined are a tight knit community. This arduous task takes a huge amount of practice and the unit are often found to be wandering in at odd hours of the day and night having just completed or preparing for the next practice, exercise or training course.

Fleet Diving Unit 2 (FDU2) are the Expeditionary Very Shallow Water (VSW) Mine Counter Measures (MCM) experts. The team called upon to ensure any beach that the Royal Marines and the Amphibious Task Group need to use is clear of mines and other dangerous ordnance. Again the team often practice long swims, discreetly at night and then use REMUS to locate the mines and increasingly Hand Held Sonar to relocate, identify and dispose of them. This involves close working relationship with advance elements of 3 CDO Brigade and a high level of fitness and diving competence. FDU2 are also lead on the Under Water Force Protection teams that fly out to join ships overseas. They will conduct jetty and ship's hull searches to ensure no device has been placed that will endanger the ship, and have the ability once it is discovered to render it safe or dispose of it.

Finally Fleet Diving Unit 3 (FDU3) are the Expeditionary Mine Counter Measures (MCM) specialists. Primarily focussed in recent years on supporting Gulf Operations they participate in several exercises a year in the region as well as the wider training and development exercises ordered by Northwood.

The 2 Area Dive Groups are similar, but different. Northern Dive Group (NDG) is made up of two units morphed into one, with numerous

tasks from the MACA EOD to supporting the Continuous at Sea Deterrent (CASD) in Faslane. In addition they are on call to supply divers to the NATO Submarine Rescue System (NSRS). A high readiness, tri nation element, made of French, Norwegian and UK personnel that would deploy, using a mini submersible, to rescue submariners from a stricken submarine lying on the sea bed.

Southern Diving Group (SDG) is geographically split between Portsmouth (SDU2) and Plymouth (SDU1) but again does MACA EOD tasks as well as supporting the surface ships based in the south of the UK. They too are on call for the Submarine Escape, Rescue, Abandonment and Survival teams, on call to deploy with Recompression Chambers and offer therapeutic decompression to submariners that have conducted a free ascent from the stricken submarine.



SDU1 divers that attempted to rescue personnel from the overturned FV Solstice.

Both teams also deploy regularly to areas where old ranges or munitions are found. SDU1 for instance deploy 3 times a year to the Gower peninsula near Swansea where they remove or make safe dozens of old legacy mortar and artillery rounds, many of which are chemically filled and remain quite potent and dangerous to this day.

The Activities

Some examples of the sorts of activities that the Squadron has done in recent months might demonstrate the breadth and depth of the jobs that we are tasked with.

NDG were recently asked to help a project to recover Barnes Wallis bouncing bombs from the bottom of Loch Striven, where they had lain since World War II. The Loch had been the site of trials conducted for a type of "Highball" bouncing bomb, the navy counterpart to the dambusters bombs that were used so successfully. The concept was to use it against the German ship Tirpitz that was menacing the Arctic convoys from the safety of the Norwegian fjords, but they were never used in anger. Several bombs were recovered and they will be

displayed at the Brookland Museum in Surrey and the de Havilland Aircraft Museum in Hertfordshire after they have been preserved.

SDU2 have recently completed a MACA task in central London, where a German 500KG bomb left over from the Blitz, had to be removed from the vicinity of London City Airport. The Task involved using lifting equipment to raise the bomb from the sea bed, out through a lock and down the Thames, a transit that took in excess of 10 hours. The device was finally detonated in a military range the day after it was laid back to the sea bed and high ordered, proving that the explosive within was still very much viable.

Southern Diving Unit 1 had an equally exciting task when tasked to help out at an overturned fishing vessel. There was the probability of personnel still being inside and thus speed was of the essence. Despite already being on another task, they dropped everything and within a short space of time were taking the Dive Support Vessel and the duty team out to rendezvous with HMS ARGYL and the stricken ship. Diving on the upturned fishing vessel was highly dangerous, with the possibility of it losing buoyancy at any moment and sinking, taking anyone inside with it to the depths. However the two divers did not hesitate and searched the hull, recovering a single body, recovering to the DSV just as the fishing vessel did indeed sink beneath the waves.

But all the excitement has not been left to the Area Dive Groups, FDG returned at the end of last year from participating in a multinational exercise in Guam. The Western Pacific Naval Symposium exercised the regional navies, including the Australians, Koreans, Singaporeans, and Japanese in surveying and clearing a port after a simulated tsunami had struck. The opportunity to work closely with the Japanese Maritime Self Defence Force was very enlightening and FDU3 found they had much in common with the Japanese divers. They were subsequently asked to visit Japan and brief meet the visiting UK Prime Minister on what they had been doing to further the close links between the two maritime forces.

Finally SDU2 and the MW team employing REMUS 100 were instrumental in ensuring the sea bed and jetty had been searched prior to HMS QUEEN ELIZABETH arriving for the first entry, and every subsequent entry, into Portsmouth. They have also been heavily involved in developing the underwater force protection plan for the new aircraft carrier along with FDG.

Summary

In truth I could have put a hundred different activities in the last section, from parachute training to diving on the World War II carrier HMS HERMES in Sri Lanka, from numerous Improvised Explosive Device call outs to unwrapping fishing net from around a modern allied submarine participating in operational training off Plymouth. The Fleet Diving Squadron is an interesting place to work, one that provides varied employment, not just for divers but increasingly for Mine Warfare and Engineers. The options to travel and meet people, including the UK and Japanese Prime Ministers! Drop in and visit some time, there are always more dits to spin!



SDU2 divers meeting HMS QUEEN ELIZABETH on her first entry to Portsmouth.



USNS Salvor, MDSU Divers team up with DPAA to recover WWII Pilot's Remains near Palau

By: Grady T. Fontana



A recovery team aboard Military Sealift Command's USNS Salvor (T-ARS 52) completed an excavation, Feb. 25, of multiple aircraft losses shot down in 1944 near Ngerkebesang Island, Republic of Palau.

Although remains potentially associated with the losses were recovered by the team, the identity of those remains will not be released until a complete and thorough analysis can confirm positive identification and the service casualty office conducts next of kin notification.

The project was headed by the Defense POW/MIA Accounting Agency (DPAA), which deployed an Underwater Recovery Team (URT) comprised of U.S. Army, Navy, and Air Force service members and Department of Defense civilians that were embarked aboard the USNS Salvor.

"It's very labor intensive work and they've had a large amount of bottom time making this operation successful," said Lt. Cmdr. Tim Emge, 7th Fleet Salvage Officer. "The Mobile Diving and Salvage Company 1-6 divers for this job have been pulling more than 12-hour-days for the past two months. The URT spent weeks excavating the area using a variety of archeological tools and meticulously inspecting the bottom sediment in their search and recovery of the missing personnel from World War II."

The USNS Salvor is a rescue and salvage ship and was the ideal platform to support the recovery mission.

"The biggest advantage the Navy has with us on the Salvor is that we are standing by for them with a decompression chamber on board for divers, and we have heavy-lift capability," said Capt. Mike Flanagan, a civilian mariner and master of USNS Salvor. "It's just a robust ship. With our 40-ton-lift crane we can bring large and heavy objects off the bottom of the ocean."

The Salvor embarked the diving team at Guam and the DPAA personnel

at Palau. Once the team was onboard, the Salvor got underway to various recovery sites until they reached the excavation area where the pilot was recovered.

"We did a four-point moor on top of the aircraft and then it really got busy," said Flanagan. "The aircraft had been untouched for about 74 years. It's been a long time since I've seen a military detachment working this hard for this long, seven days a week."

Excavation was the primary duty of the URT, but MSC mariners were also at hand assisting. In addition to operating the cranes that moved the lift baskets, some crew members assisted sifting through sand while looking for any evidence. The mariners were trained by the embarked archeologist on how to sift through the sand.

"We helped out moving the ship and shipboard equipment around but we also helped screening some of the sand," said civilian mariner Jean Marien, chief mate of the USNS Salvor. "It's very meticulous process. There was a lot of sand—a never ending supply."

The sifting box was a 4-by-8-foot basket that was about 4-and-a-half-feet high. It took about five hours to sift through each basket. The basket was submerged to the bottom of about 90-feet of water and filled with sediments dispersed over a large area.

"It took multiple dives to fill a sifting basket. Each dive lasted about an hour and the baskets took 5-to-6-hours to fill it up," said Marien. "Sometimes we had two baskets going at the same time."

The recovery operation had the support of the Koror State Government, the Bureau of Cultural and Historical Preservation, the Environmental Quality Protection Board, and other Palauan authorities.

According to DPAA, the recovery team is highly specialized and diverse and consisted of a forensic archeologist, diving officer, master diver, forensic photographer, explosive ordnance disposal technician,

and noncommissioned recovery specialists.

The United States remains committed to recovery of missing personnel from World War II as DPAA continues their mission to provide the fullest possible accounting for missing personnel to their families and the nation.

MSC operates approximately 115 non-combatant, civilian-crewed ships that replenish U.S. Navy ships, conduct specialized missions, and strategically preposition combat cargo at sea around the world to move military cargo and supplies used by deployed U.S. forces and coalition partners.

As U.S. 7th Fleet's executive agent for theater security cooperation in South and Southeast Asia, Commander, Task Force 73 conducts advanced planning, organizes resources, and directly supports the execution of maritime exercises, such as Pacific Partnership, the Naval Engagement Activity (NEA) with Vietnam, and the multi-lateral Southeast Asia Cooperation and Training (SEACAT) with Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The staff also provides ready logistics and salvage support to the U.S. Pacific Fleet.

Top left photo: U.S. Navy Diver 1st Class Scott Johnson, assigned to MDSU One, embarked aboard USNS Salvor (T-ARS 52), dredges an excavation site with a venturi vacuum system during a Defense POW/MIA Accounting Agency led underwater recovery operation as he searches for personnel who went missing during WWII off the coast of Koror, Jan. 24, 2018.

Top right photo: Navy Diver 1st Class James Ward, assigned to MDSU ONE-SIX, embarked aboard USNS Salvor (T-ARS 52) guides a salvage basket during a Defense POW/MIA Accounting Agency led underwater recovery operation searching for personnel who went missing during WWII off the coast of Koror, Palau, Jan. 30, 2018.

SALVEX 2017

BY: LCDR TIM EMGE



US Navy Divers from Mobile Diving and Salvage Unit One (MDSU 1) Company 1-3, led by Lieutenant Junior Grade Adam Pierce and Senior Chief Master Diver Kevin Parsons, deployed to the Western Pacific under Commander Task Force 73, to participate in the 2017 Salvage Exercise (SALVEX) with Republic of Korea (ROK) Navy Divers. SALVEX has been conducted for the past 33 years, but this SALVEX, led by CTF 73 Salvage Officer, Lieutenant Commander Tim Emge and Master Chief Master Diver Josh Dumke, was particularly significant because the US Navy Divers were able to fully interoperate with the ROK diving system, and embarked onboard the ROK Ship TongYeong (ATS 31) marking a new first. This interoperability was made possible by obtaining a fleet waiver exception to policy (ETP) based on a NAVSEA assessment of the ROK dive systems. The waiver allows for US Navy Divers to utilize certain ROK systems outside the Authorized Navy Use (ANU) list. The ability to interoperate with ROK provides additional salvage options for potential contingency

operations that may occur in the future. With the US Navy salvage fleet shrinking, other options to fulfill salvage needs are required, and the partnership with ROK is one of the options now available.

The waiver and NAVSEA assessment of ROK dive systems was brought about by a request from SEVENTH Fleet to have the ROK systems assessed as their diving capability is on par with US capability. NAVSEA, SEVENTH Fleet, and CTF 73 personnel spent over a week inspecting and assessing the ROK dive systems and procedures to determine the risk associated with US Divers utilizing the systems. This assessment provided the fleet with the support needed for a waiver to utilize some of the ROK dive systems that are outside of the ANU list. The waiver is good for the next two years and each time US Divers utilize the ROK systems they will provide feedback so that there is a continual assessment process.

ROKS TongYeong is a very impressive salvage ship that was commissioned in 2012. It can perform many of the same functions of the US T-ARS class of salvage ship. Additionally, the ROKS TongYeong has the ability to

perform dynamic positioning and has its own organic ROV that is capable at depths up to 3000 meters. It is able to efficiently perform a multi-point mooring evolution due to smart design choices, and has ample storage space for beach gear and other equipment and the ability to move that equipment efficiently.

The SALVEX started with a classroom phase, followed by interoperable dives pier side and at-sea culminating in joint salvage project. The classroom phase allowed for both countries to share previous salvage projects they have completed and discuss best practices. The US demonstrated the use of the Program of Ship Salvage Engineering (POSSE), which ROK has been highly interested in. ROK also provided a tour of their facilities including their saturation diving facility and ROV simulator. Pier side diving was done utilizing ROKS TongYeong's wet bell and moon pool. Familiarization dives were conducted with one US and one ROK diver on each dive, and both US and ROK took turns supervising dives. After pier side diving, ROKS TongYeong got underway and performed a 3 point mooring

evolution and then dropped the salvage project into the water. Stage diving operations were then conducted jointly with US and ROK divers to locate and refloat the salvage project utilizing a lift bag. Following diving operations, ROKS TongYeong was moved to deeper water to demonstrate its side scan sonar and ROV. In all 20 bilateral interoperability dives were conducted with a blended dive side of Korean and US Navy Divers.

During the SALVEX, which is a part of the larger FOAL EAGLE exercise with ROK, a MH-53 towed AQS-24 sonar



Joint USN-ROKN dive side utilizing moon pool and dive bell onboard ROKS Tongyeong.



ROV deployment onboard ROKS Tongyeong.

was lost by HM-14 in approximately 60 fsw. A joint team of US and ROK divers was assembled with equipment provided by both countries to locate and recover the sonar. The sonar, which costs over \$2 million, was safely recovered and will be able to be reused. This joint operation was proof of the importance of the fleet waiver ETP and would not have been

possible without the team effort by both countries.

The 2017 SALVEX was a great success for both the US and ROK. Divers were able to work together toward a common goal, and this initial step of interoperability will allow for

more advanced joint work in the future. The divers from both countries definitely bonded and learned how to work together despite the language barrier. As Master Diver Dumke stated during the exercise "Whether we speak English or Korean, we all speak diver!"

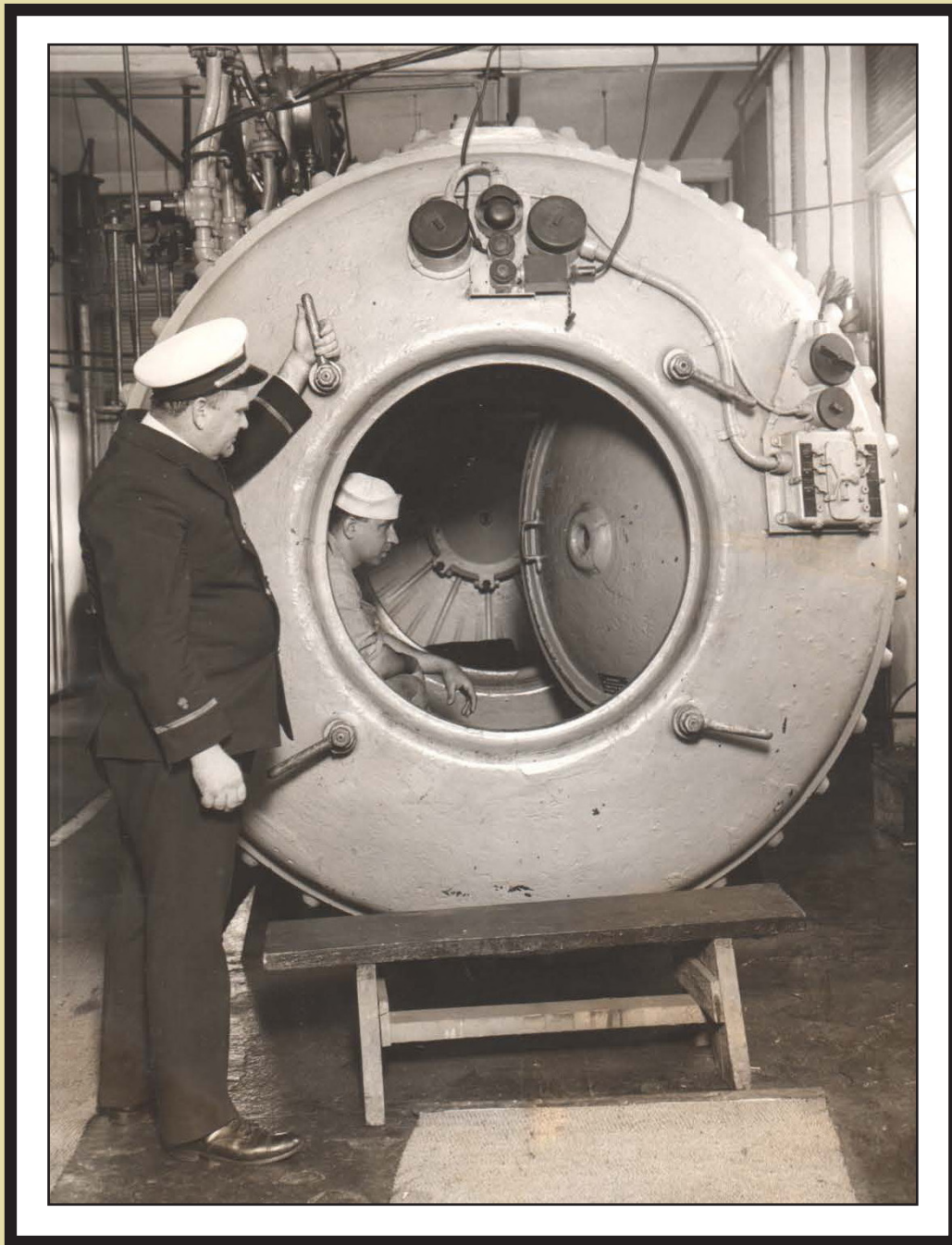
Article Cover Photo: USN and ROKN Divers descend on the stage onboard ROKS Tongyeong.

LCDR Tim Emge is the SEVENTH Fleet Salvage Officer stationed in Singapore.



USN-ROKN team at completion of SALVEX.

1928



NAVY OPENS SCHOOL FOR DIVERS AT NAVY YARD, WASHINGTON, D.C. What is said to be the only school in the world for the exclusive training of deep-sea divers has just been established by the Navy at Washington, D.C. A diving tank 15 feet high and 9 feet in diameter simulates the same conditions encountered by a diver when he is on the ocean floor. Photo shows - Chief Gunner C.L. Tibbotts, in charge of the school, and Gunner J.W. Heurreux, shown in the recompression chamber used in treating the divers with the "bends" after diving under high pressure. 20 June 1928.

USS BONHOMME RICHARD (LHD 6) MAIN CIRCULATING PUMP PIPE REPAIR

BY: SCOTT HEINEMAN

On 11 June 2018 USS BONHOMME RICHARD (LHD 6) was conducting pre-underway light off checks when the Main Engine Room #2 (MER2), Main Circulation Pump (MCP) Suction Pipe failed causing seawater to leak into MER2 at a rate of ~75 gal/min. Ships force (SF) installed a damage control patch to slow the leaking.

Southwest Regional Maintenance Center (SWRMC) divers were mobilized that evening to install patches on the three hull openings, supply and discharges, that allow seawater access to the MER2 MCP. The ship's CO signed off on the single valve condition and the SWRMC dive team was released. SF removed the temporary patch revealing a 1" x 1" hole in the wall of the 31" diameter pipe.

ing Supervisor Clint Levine conducted a ship check and formalized a statement of work. Phoenix mobilized U.S. Navy Underwater Welding (UWW) Van II and repair personnel to Naval Base San Diego on 15 June. Dive station was established on Pier 2 South, adjacent to USS BONHOMME RICHARD (BHR). Phoenix cleaned and prepared the area around the MER2 MCP sea chest piping hole to receive a temporary welded patch—doubler plate. A doubler plate was fabricated, fit, and welded over the hole. Upon completion of doubler plate installation, a leak test was performed. Additional leaks were identified in an area of corrosion at the piping to flange interface during this test. The NAVSEA, CNSP, SWRMC, SF, and Phoenix

was determined that MER2 MCP piping and flange assembly needed to be replaced prior to deployment. A repair plan was developed and approved for execution. MER2 MCP pipe and flange was to be removed and replaced with a new pipe and flange assembly. Due to the extent of the corrosion encountered in MER2, an inspection of the MER1 MCP pipe and sea chest was directed and performed; extensive corrosion was also observed and MER1 MCP pipe would also have to be replaced. Due to work scope increase CNSP requested two dives teams as working 24 hrs/day would be required in order for the ship to meet its RIMPAC commitment. Phoenix mobilized a second dive team commencing 24 hr/day operations on 22 June 2018. Work was performed in MER1 and MER2 simultaneously.

NAVSEA 00C5 mobilized its UWW Engineer Carlos Cedeño as Technical Representative for the night shift.

Phoenix procured the required plate and flange material then arranged for 3rd party vendors to roll the plate and cut out and machine the flanges to the ship's drawing specifications. Phoenix welder/divers assembled and welded the pipe-flange assemblies on the pier.

The MCP gate valves in MER1 and MER2 were rigged out and removed to gain access to the sea



MER2 MCP Pipe Wall Hole After Cleaning.



MER2 MCP Sea Chest Pipe to Flange Deterioration.

Team decided to conduct more Non-Destructive Testing (NDT) and expand the inspection area.

While needle gunning in preparation for Ultrasonic Thickness Gauge (UTG) inspection on the MER2 MCP sea chest piping to flange interface, severe corrosion and deterioration was observed on the circumference of the interface.

After coordination with NAVSEA, CNSP, SWRMC Engineering, and BHR personnel it

Commander, Naval Surface Force Pacific (CNSP) contacted NAVSEA 00C5 to make urgent repairs in order for the ship to participate in Rim of the Pacific Exercise (RIMPAC), the world's largest international maritime warfare exercise.

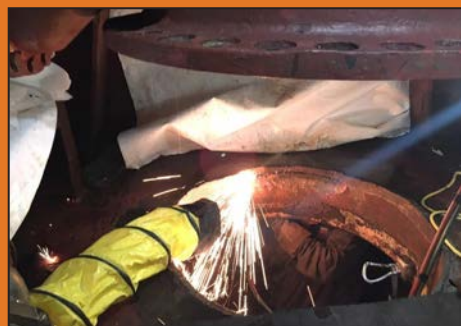
NAVSEA 00C5 Technical Representative Scott Heineman and Phoenix Div-



MER2 MCP Pipe-Flange Welding.



Rigging MER1 MCP Gate Valve.



MER2 MCP Pipe-Flange & Gate Valve Removed, Cutting Sea Chest Pipe.



Weld Build-up in MER2.

chest from inside the ship and provide additional installation clearance.

MER1 and MER2 MCP pipe, flanges, and waster sleeves were cut and removed. The inner bottom was then prepped for acceptance and installation of the new piping and flange assemblies. In order to compress the overall schedule of repairs, it was decided waster sleeves would not be included in the final assembly.

MER2 weld joint preparations of the inner bottom plating required a 3-inch wide perimeter insert to be fabricated, fitted, and welded into place to achieve acceptable fit up.

Upon completion of inner bottom weld preparations, the pipe-flange assemblies were rigged into respective MERs to be inserted in sea chest openings. The pipe-flange assemblies were then raised into place and mated up to respective MCP valve flanges. The valve and pipe-flange assembly bolts were installed and torqued to 312-foot pounds utilizing a Hytorc Wrench drawn from NAVSEA's Emergency Ship Salvage Material (ESSM) inventory. After proper fit up was achieved, the pipe to inner bottom welds were completed.

After MER1 and MER2 pipe-flange assemblies were welded into place from inside the ship, divers removed the sea chest cofferdams from the hull. The sea chests, acting as a dry chambers, was dewatered and Hyperbaric welding from inside the sea chests completed the welded installations. Once the Hyperbaric welds were completed the sea chest pipes were preserved.

From the start of the original temporary repair on 15 June through the decision to execute complete replacement of both the forward and aft MCP pipping-flange assemblies with 2 shifts on 19 June this repair effort was a true Team effort. The professionalism, responsiveness and dedications of the entire Team - NAVSEA, Phoenix, CNSP, SWRMC Engineering, and BHR- enabled timely completion on 1 July in full support of BHR's operational schedule. Along the way over 100 hours of accident and injury free bottom time was performed with 86 linear feet of 7018-M welds deposited in execution of this repair. As USS BONHOMME RICHARD Chief Engineer CDR Tom Loop, a veteran of over 32 years of service said, "It was the largest voyage repair of my career...you all made it happen with deceptive ease."

Scott Heineman is the Marine Operations Specialist for NAVSEA 00C5.



MCP Pipe-Flange Assembly Rigged into MER2.



MCP Gate Valve Bolt Torque in MER2.



Hyperbaric Welding on Sea Chest Pipe.



Sea Chest Pipe Preserved with Hycote 151.



The Old Master

“WHY WE WEAR THE UNIFORM”



CUCM(SCW/DSW/MDV)
Lenny Koelbel

I wanted to take a minute to say thank you to all hands, this is a transformational time and there are major changes coming. The work you all do day in and day out has made the diving force a holistically more relevant force than ever before.

U.S. Fleet Forces (USFF) and OPNAV have Planning Teams and Conferences working through how the Navy is going to meet the requirements for Distributed Maritime Operations(DMO) and Operational Logistics (OPLOG) Concepts that rely heavily on our ability to perform special operations, mines clearance, ability to open sea ports, salvage of ships and connectors, ships husbandry, and to build, repair and maintain advanced bases / Sea Port of Debarkations (SPOD).

Marine Corps Forces Command (MARFORCOM) has Planning Teams and Conferences working through how Naval Engineers will meet the requirements for Expeditionary Advanced Base Operations (EABO) and Littoral Operations in a Contested Environment (LOCE) Concepts that rely on our unique capabilities and/or providing additional capacity to help the Naval fight.

There has never been a better time to look at how we should be manned, trained and equipped in order to meet the current Operational Plans (OPLANs) and future Concepts. OPNAV is currently reviewing the Initial Capabilities Document (ICD) on Navy Diving, Salvage and Underwater Construction that will define our requirements to meet the Major Combat Operations (MCO).

All these are tied to the Fleet Design and our National Defense Strategy and go directly to WHY WE WEAR THE UNIFORM, how important we are to our National Defense and how we will fight and win the wars of the future. There are also several changes (Sailor 2025) that I am sure that you have heard a lot about on how the Navy supports its most valuable resource, you the Sailor.

The future of HOO-YAH DeepSea Divers (both ND and Seabee), EOD and SEALs is critical to our National Defense and we all should walk proud! The work we do today and the knowledge our forefathers passed down will enable us to meet the challenges of the next war and ensure the indispensable support we provide the Combatant Commanders.

So move out with a purpose, leave surface and get back to work. I still can't believe we get paid to do what others could only dream about! HOO YAH!!!





DEPDIVE/SUPDIVE SENDS...CDR John Porter

I would like to start this off with a Thank you to ESSM at Cheatham Annex for hosting the Military Diver's Training Continuum (MDTC). Of all the MDTC's I have attended this was the best. From the comments we received it was the best one we have had in a long time. I am told plans are already underway for next year and a West Coast location.

It is the season of PCSing and we have a lot happening now.

CAPT Porter will be relieving CAPT Turner at the Center of EOD and Diving, CAPT Turner has certainly influenced my career; as a Chief, he was my instructor at dive school, as an Ensign he convinced me to submit my package to get a commission and as a LT, he commissioned me. CAPT Turner, you will be missed. Another big move in June is CDR Brasfield will be relieving CDR Chen at Dive school, CDR Chen has done a lot of changes at dive school with human performance

that should make all of our divers stronger and healthier in the long run.

In July, I will be headed to OPNAV N97 to take the Deputy of Diving (DEPDIVE) position from CDR Ford Ewaldsen as he is retiring. CDR Ford has made great contributions to USN Diving that most of us will never see. Diving has never had a requirements document associated with it; our first dives were to recover torpedoes and then following Pearl Harbor there was an Executive Order to establish a Supervisor of Salvage and we have been operating under that executive order. CDR Ewaldsen drafted and worked with Fleet/TYCOM commanders to create the first diving Initial Capability Document (ICD), with this approved document we can now base funding requests on and use as a backbone to develop future requirements for our capability gaps.

When I take the DEPDIVE billet, I will continue to work with the 00C3

team with funding and policy (3150) issues, I will still attend the majority of the same conferences; but I will no longer be a part of the DORIs. The new SUPDIVE will be CAPT Tom Murphy, as a prior Commanding Officer of MDSU ONE, with a lot of salvage experience, CAPT Murphy will be perfect for the SUPDIVE job and I hope I can get him additional funding to bring some of our ideas to fruition.

As I am writing this we are in preparations for the first Diving Executive Steering Committee (ESC) meeting since 2015. I am happy to say that since the last ESC we have had no Class A or B mishaps and only five class C. Considering we average 125,000 dives a year, our safety numbers are near flawless. The Salvage ESC is scheduled for late August also.

Those are all the updates from up here, stay safe out there and I will see you in the future. All the best to you and your families, SUPDIVE/DEPDIVE sends.

Faceplate Feedback

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<http://www.navsea.navy.mil/Home/SUPSALV/00C3-Diving/Faceplate-Magazine/>

