FACEPLATE

The Official Newsletter for the Divers and Salvors of the United States Navy
Volume 12, No. 2 / December 2008

In This Issue...

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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SUPSALV SENDS

Greetings Navy Divers. As I write this article for FACEPLATE, I am in process of turning over with Captain Patrick Keenan, who will be your future Supervisor of Salvage & Diving. As we change the watch, let me share with you the items that I shared with Captain Keenan that the whole Navy Diving Community can build on and those items that we all need to work to improve.

Captain Rich Hooper

There are two items that are on both the list of accomplishments to build on and items that need to improve.

First, and most importantly, are the efforts that we all have made and need to continue to make in recruiting, training, and sustaining the Navy Diving Community. The "human capital" that Navy Divers represent is an essential tool for the Navy and the nation to execute the national will and the national military mission. Due to all of our collective efforts, but especially due to the leadership provided by the Military Personnel Command, Center for EOD & Diving, and the Naval Expeditionary Combat Command, the recruiting rates for Navy Divers and the process for training Navy Divers have successfully reversed previous trends that would not have sustained the community. BZ to all! But, we cannot rest on our laurels. Navy Divers are a tough, driven group of hoo-yah achievers but without continuous attention to recruiting, training, and sustaining, we run the risk of surprising ourselves as to how fragile our force structure can be. We all need to collectively adopt the mindset that every Navy Diver is a recruiter, every Navy Diver is a trainer, and every Navy Diver needs to act as a mentor to others to sustain the force. When we are out on jobs supporting the Fleet and the warfighters or if we are visiting our hometowns, opportunities always present themselves to talk to Sailors or people who are interested in becoming Navy Divers. Take advantage!

A close second to Navy Diver human capital is Navy diving safety. Our accomplishments are enviable. Navy diving has an outstanding safety record spanning many years. This is not luck. Safety is the cumulative result of research, development, policy, training, certification, testing, improved equipment, and (most importantly) the direct leadership demonstrated on the dive side by the Dive Supervisor and Master Diver. Break any one element that contributes to diving safety and we risk the lives of our brother/sister Navy Diver. Sounds obvious, but the importance of all of our roles in diving safety has to be at the forefront of our efforts every day. Fail, and we lose our fellow Diver (!) and our collective reputation.

So, what accomplishments have occurred that we all can build on to improve diving safety and the Navy Diving career path?

Revision 6 of the USN Diving Manual represents bedrock policy that will enable the safest air diving anywhere in the world. The incorporation of in-water oxygen decompression using ORCAs and the improved tables for surface decompression with oxygen have reduced the risk experienced during the TWA 800 salvage and the incidents experienced by commercial Divers who used the Navy air diving tables. The changes embodied in Revision 6 were not made lightly. Biomedical modeling validated by extensive empirical testing/analysis at the Navy Experimental Diving Unit,

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In This Issue

Cover: *The Military Sealift Command auxiliary dry cargo/ammunition ship USNS Carl Brashear (T-AKE 7) launches into San Diego harbor during her christening and launch ceremony at General Dynamics NASSCO.*

Dynamic Positioning: Appendix 2B

By: MDV Kent Johnson

Before we discuss Appendix 2B, let us discuss what is not there. If you have been around awhile, you probably have been involved in laying a moor, either for training or real world operations and you will remember how back breaking, labor intense, and logistically challenging it was. Rigging anchors, dragging die-lock chain on deck and faking out miles (or at least it seemed that way) of one and five-eights inch wire rope was always an enjoyable experience that led to a lot of sweat and sometimes blood. Now imagine diving from a Dynamic Positioning (DP) vessel, a vessel that doesn't have to be moored to stay on station. You plan your operation, set up your dive side either Saturation or Surface Supplied, and inform the ship's Captain of the coordinates that you desire. Then get on dive station and go to work. Yes, there is a little more to it than that, but that is what Appendix 2B is all about.

DP vessels have been around for decades, but they are not limited to diving. They are found in everything from cruise ships to exploration drilling. The commercial diving industry has used them extensively in the offshore oil and gas industry for years. Today well over 1,000 ships world wide use this technology. As mentioned above, the biggest advantage of a DP vessel is not laying a moor to stay on station. The major disadvantage of this type vessel is that thrusters could be a hazard to the Divers.

A DP vessel is defined as a vessel actively using its propulsion to maintain its position and heading. Ship's propulsion systems include thrusters, main propellers, rudders, and the machinery and controls required to provide power to them. DP systems consist of position references (GPS, DGPS, taut wire, and acoustic transponders), gyrocompasses, vertical motion sensors, environmental sensors, ships propulsion systems, and all the cables associated with these components. A computer is used to integrate these subsystems into the total DP system. The computer monitors the desired position against the output of the position references, gyrocompasses, environmental sensors, and vertical motions sensors. When there is a difference it directs the necessary thrust direction to get the vessel back in the desired position.

Appendix 2B provides guidance for diving from a DP vessel that includes the correct type vessel to use, whether the vessel is suitable for use, how to establish an operational plan, and specific guidelines to be used during surface supplied diving.

DP vessels used for U.S. Navy diving operations must meet IMO equipment class 2 or 3, meaning that the vessel can maintain automatic or manual position and heading control under specified maximum environmental conditions, during and following any single-point failure of the DP system. Single point failures are those failures that would cause the vessel to lose position. A waiver is required for DP systems meeting IMO Equipment Class 1 to be used for certification, training, or qualification dives where the Diver does not interact with the bottom or a fixed structure.

Now that you know what class vessel you can use, and you have determined which vessel you would like to use, then you must ask yourself is this vessel suitable for my operation. A risk assessment must be developed and all foreseeable emergencies relating to the diving operation must be identified and contingency plans established. Each class certified vessel must undergo a through inspection by one of the certifying authorities and part of that inspection is the development of a Failure Modes and Effects Analysis (FMEA). This is a vital tool for Navy personnel to determine if this vessel meets their needs. Just a few of the things that the FMEA identifies are, back up or compensating equipment for each failure, a description of the major components, and the capability of position references for the depth of water at the dive site. Using the FMEA along with more detailed guidance in Appendix 2B and its associated references will let you know if this vessel meets your needs.

Now that you have the vessel for your operation, establishing an operational plan with the vessel in mind is essential. Determine if all your emergency procedures are practical or do they need to be modified to the vessel. Establish clear means of communication between the ship's crew and Navy personnel, including the Chain-of-Command. Make sure the ship's crew and Navy personnel know that their actions could affect each other and they must work together. Keep everyone informed of any changes that affect the operation. The operation plan should include expected weather conditions, along with a detailed description of the work site, the requirement to move the vessel while Divers are deployed, the location of position reference sensors, and the time to recover Divers back to a safe location or the vessel. These are just a few of the factors to consider during your operational planning phase, again, use Appendix 2B and the associated references to develop a thorough operational plan.

Surface supplied diving while operating from a DP vessel poses several major concerns that we in the Navy are not accustomed to. Deploying Divers while thrusters or propellers are running is a whole new ball game for us, so great care is needed in the planning and execution of these dives. Diving in shallow water from a DP vessel poses the greatest threat and every precaution should be taken to eliminate possible dangers to the Divers. A detailed diagram of the work site along with a detailed diagram of the thrusters in relationship to the dive side is imperative. Diver umbilical lengths and the manner of deploying them should be so chosen that Divers and their umbilicals are physically restrained from going to positions where they could come in contact with thruster units or be affected

by their wash. Use of a stage is strongly recommended. The umbilical should be attached along the stage wire and the appropriate amount of umbilical should be coiled up on the stage allowing one Diver to tend the other. The Diver's umbilical should also be marked every 10 feet. The Diver and standby Diver must be in direct communication with the Dive Supervisor at all times, failure of communications is an abort criteria. The guidance given in Appendix 2B and the associated references are only guides. Each operation must be looked at individually in regard to the safety of the Diver, keeping in mind the operational risk in relationship to the projected outcome.

To conduct diving operations other than surface supplied or saturation diving operations, all forms of motive power, i.e., thrusters or propellers, within 50 feet of diving operations shall be de-energized in a manner to prevent inadvertent operation. Care must be taken to ensure current and drift conditions carry the Divers away from the DP vessel and the Divers remain down current and greater than 50 feet from all operating equipment and forms of motive power throughout the dive. Tending rules shall follow the same guidance of paragraph 7-3.1.7 of the U.S. Navy Diving Manual. If a tending line is considered mandatory, Divers may be tended from the DP vessel or from the waterline via small boat or stage. In the event the Divers are tended from the DP vessel, ensure the Divers tending line remains outboard of the DP vessel's hull and well clear of all forms of motive power throughout the dive. Constant communication with the DP vessel's Master or Helmsman must be maintained throughout the dive, and the DP vessel must secure all forms of motive power in the event of Divers inadvertently surfacing within the 50-foot exclusion zone.

Before committing to an operation involving a DP vessel, study Appendix 2B and the associated references thoroughly, ask questions, become familiar with whichever platform you plan to use. Remember for a safe and successful operation, preparation and planning is essential.

MDV Kent Johnson is currently assigned to NAVSEA, responsible for SPECWAR systems and SATFADS development.

DEATH BY AIG...CAPT Gray

By this time you should have received a total of seven of what I would call "foundational" AIGs. They are:

- 08-20 (24 SEP 08) Diving from dynamic positioning vessels
- 08-18 (12 AUG 08) Introduction into service of the Portable Air Monitor (PAM)
- 08-17 (30 JUL 08) Use of KM 37 (NS) in Contaminated Water Diving (CWD) and deletion of chemical and biological contamination diving procedures
- 08-16 (15 JUL 08) Dive computer way ahead in the United States Navy and Marine Corps
- 08-15 (14 JUL08) Approved use of Interspiro Divator SCUBA and Divator DP1 light weight diving apparatus
- 08-14 (02 JUL 08) Diving MK 16 in non-MCM environments
- 08-13 (30 JUN 08) Chamber requirements when conducting air diving operations

First, I want to let you know that we did everything we could to limit the administrative burden of making changes to your brand new Diving Manual by posting the changes for you on our SUPSALV.org website. All that being said, it was a burden no doubt.

So why did we do it? The answer is simple: We wanted the Fleet to understand why we were making a change. What was the rationale? If it's a big decision, we have an obligation to explain it to those that will be actually affected in the field. Now maybe you agree with all the rationale, maybe you don't but at least you are not asking yourself, "What were they thinking when they came up with this one?" Now you know.

Change A to Revision 6 will be promulgated in the near future. Historically, we have cancelled AIGs once the change is formally in the Diving Manual. We are going to keep these seven active for few more months. You will find that there are wording differences between the messages and Change A. Change A reigns supreme.

Certification Notes

By: Brendan Murphy

The development of standardized portable Recompression Chambers (RCC) and Surface Supplied Diving Systems (SSDS) and apparatus has led to the increased use of High Pressure Oxygen (HPO_2) by the Navy and Marine Corps. The most recent addition to the growing list of equipment using HPO_2 are the Oxygen Regulating Console Assemblies (ORCA I and ORCA II). MIL-STD-1330 requires all personnel maintaining O_2 systems to be qualified as O_2 workers. However with the implementation of the Vval-18M Dive Tables and the resultant use of ORCA for in-water O_2 decompression, NAVSEA 00C thought it prudent to examine how Navy Divers were being trained in the maintenance of Divers Life Support System (DLSS) oxygen components. The result of this examination led to the implementation of diver specific oxygen worker training, the development of a Process Instruction (PI) for removal and reinstallation of dive system oxygen components and a practical process to qualify Divers as DLSS O_2 Workers. The new PI contains detailed procedures to support the removal and installation of DLSS O_2 components. The PI, NAVSEA-00C3- PI-007 (Component Removal and Installation Procedures for Divers Life Support Oxygen Systems) was generated specifically for use by divers on Navy diving and hyperbaric systems only.

The current formal MIL-STD-1330, Navy Course of Instruction for Training O_2 Workers, includes discussions surrounding the cleaning of O_2 components. The NAVSEA 00C decision to develop a Diver specific training on-line/ practical demonstration course was based on the knowledge that virtually all DLSS O_2 maintenance, performed by typical Fleet Divers will be limited to removing an O_2 component from a clean system and replacing it with an already O_2 clean new or refurbished component. Rarely, if ever, will a Diver be required to actually clean an O_2 component. If O_2 component cleaning is required, it can only be accomplished by personnel who have taken the formal MIL-STD-133D O_2 Worker training course. NAVSEA 00C also recognized that many commands were not complying with the existing MIL-STD-1330D initial training requirements because it was difficult to send dive locker personnel to the formal training. We assumed that by providing a simplified training course, along with the PI and practical factors proficiency demonstrations, Fleet Dive Lockers could train significantly more Divers in the safe maintenance of DLSS O_2 components. To this end NAVSEA-00C3- PI-007 focuses on six areas:

1. DLSS O_2 Worker Initial Qualification Requirements
2. DLSS O_2 Worker Re-qualification Requirements
3. Maintenance Documentation
4. O_2 Component Removal and Installation
5. Guidelines for Determining Level of Contamination During
6. Component Removal using White and Ultra-Violet Light
7. Procedures for Dealing with Contamination

NAVSEA-00C3- PI-007 was developed by Mr. Robert Abrams at ESSM Cheatham Annex (in conjunction with NAVSEA 00C3 and 00C4 personnel) and presented at the 2007 Working Divers Conference (WDC), as part of the DLSS O_2 Worker Course. To support dive commands implementing this PI into their training programs, "O_2 Worker Starter Kits" were also distributed at the 2007 WDC. These kits contained, not only many of the tools required for working on an O_2 system, but also the NAVSEA O_2 Worker Refresher CD and the NAVSEA O_2 Safety DVD. The NAVSEA O_2 Worker Refresher Training Course is available on the SEA 00C Secure website in the 00C4 section. If your command needs a copy(s) of the NAVSEA O_2 Safety DVD please contact Mr. Ryan Webb (00C35).

Commands are required to have a sufficient number of qualified DLSS O_2 Workers to support their mission. System Certification Authority (SCA) representatives are auditing training records during System Certification Survey's to ensure DLSS are being maintained by qualified O_2 Workers. Commands failing to comply with this training requirement will be issued a System Certification Survey Card, and will have 30 days to complete training of dive locker personnel. Please do not hesitate to contact NAVSEA Diving Programs (00C3) or Diving System Certification (00C4) with any questions or should you require further clarification of, or assistance with this requirement.

While we are on the subject of O_2 Hazards, Paul McMurtrie and I recently completed a Fundamentals and Advanced Concepts in Oxygen System Design and Analysis Course in Las Cruces, NM. During the course we discussed the specific hazards relating to HPO_2 and also learned a great deal about ways to limit these hazards. We also witnessed numerous "controlled experiments" demonstrating the explosive and potentially lethal effects resulting from the use of improper components in O_2 systems or poor maintenance practices. Prior to attending the course I really thought I understood the potential hazards of using HPO_2. I could speak intelligently about ignition mechanisms, particle impact, adiabatic compression heating, flow friction and promoted ignition. In a pinch I could even spice up the conversation by debating which factor was more important when evaluating oxygen compatibility of non-metal valve seats; Auto-ignition, O_2 Index or Heat of Combustion? However during the controlled experiments, as my ears rang and the building literally shook on its foundations, I was reminded that big words and book smarts are no substitute for the real deal. In these cases, the real deal was often watching eight pounds of stainless steel (which up until a nano second before had been a HPO_2 regulator) be vaporized by a speck of aluminum roughly the size of a pin head, riding a plug of 2000 psi O_2. One evening, after a day of particularly disturbing but impressive HPO_2 generated explosions, Paul and I agreed that had we

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SUPSALV SENDS...*(Continued from pg.2)*

reviewed independently by diving and medical experts were behind the disciplined process that produced the most significant change to the Diving Manual in fifty years.

During the past year, SUPSALV has fielded a number of new techniques and technologies for Fleet use that will enable talented Navy Divers and operational commanders to perform greater deeds for national security. The Extreme Lightweight Diving System (XLDS), otherwise known as the DP-1, is being issued to Fleet units and will allow a new era of diving operations without a crushing logistics burden to transport heavy diving air systems for all but the most demanding jobs. Coupling the XLDS with the newly fielded Air Monitor will allow operational commanders the flexibility to use lightweight diving systems with external Diver's air sources provided those air source parameters measured by the Air Monitor are within the acceptable limits stipulated in the Diving Manual. This will open up new vistas in diving with foreign navies using their air sources. This new technology and the enabling guidance in the Diving Manual are extremely important in a world driven to increasing reliance on joint and multinational military diving operations.

In the arena of techniques, SUPSALV has recently promulgated a number of changes to Revision 6 of the Diving Manual that increase the flexibility of diving commands to conduct operations. Most recently, guidance was provided for operational commands who could be asked to dive from Dynamically Positioned (DP) vessels. The Diving Manual was previously silent on any potential USN diving operations that could be conducted from DP vessels, which are increasingly available on the commercial market and are increasingly being used by the Navy to support naval operations. The consolidated guidance represents the best of commercial standards and checklists used in the diving industry to enable operational commanders to manage risk when diving from DP vessels without the need to submit any waiver requests to OPNAV.

Another technique recently incorporated into the Diving Manual is a change to the requirements for the availability of decompression chambers for air diving. For decades, chamber requirements were driven by an arbitrary standard: 130 FSW depth required a chamber; anything less did not. Although simple to remember, this rule had no basis in risk to the Diver based on the entire dive profile. The new chamber requirements for air diving are completely based on risk to the Diver based on the entire depth and duration of the dive profile, clarify some previously ambiguous definitions, and give added flexibility to the operational commander to manage his risk.

In the arena of contaminated water diving, SUPSALV has issued a combination of techniques and technologies that improve the ability of the Navy Diver to conduct business in harsh underwater environments. A recently revised edition of the Contaminated Water Diving Manual coupled with the authorization to use the KM-37 diving helmet in all but the worst contaminated water conditions are major improvements to the toolkit. SUPSALV continues to focus R&D resources on the testing and validation of the Paragon system modifications to the KM37 helmet for the harshest contaminated diving environments.

Enough accomplishments, where do we need to improve both as a community and as SUPSALV?

The wars fought by our nation since Gulf War I in 1991 have almost exclusively been fought by the Army, Marine Corps, and Special Operations forces. The Navy and the Air Force's roles have either been in a support role or no role at all. Not surprisingly, the Navy has shrunk precipitously from the nearly 600 ships that existed in 1991 to less than 280 ships in 2008 and still declining. A significant part of this decline was the elimination of commissioned Navy salvage ships. Today, there are none; albeit four salvage ships and four ocean-going tugs remain in the Military Sealift Command. SUPSALV's role has changed dramatically during this period and is increasingly called upon by the Navy and the nation to perform missions and support roles that were previously performed exclusively (or with minor support) by Fleet units.

Despite the overall decline, the U.S. Navy is the dominant naval power in the world. However, the naval picture is changing. The Russian and Chinese navies are ascending at a rapid rate along with the continuing threat of maritime terrorism or rogue navies directed at our Navy. Coupled with the continuing decline of the U.S. Navy, we can expect a direct challenge to the U.S. Navy during my lifetime and during your careers. Given these trends, we can expect future conflicts to have a naval dimension and that means U.S. Navy ships damaged during the conflict that require salvage by Navy Divers.

Despite the dramatic change in the U.S. Navy organic salvage capability, the Navy's salvage organizational structure remains unchanged, even without any Navy salvage ships as part of the structure. Without organizational reform to match our present capability, the Navy will be left unprepared for the inevitable salvage incidents that will accompany future naval conflicts. Captain Keenan will need the assistance of all Divers and Diving Commands as he works with Fleet Commanders and OPNAV to recommend a reformed structure for our remaining salvage capability including our Navy Divers for the future.

To close, it has been my honor and privilege to serve with you as a Navy Diver and as the Supervisor of Salvage & Diving. I wish you all fair winds, following seas, and safe diving. Hoo-yah!

CERTIFICATION NOTES

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known then (while serving in the Navy) what we know now, we would have been a whole lot more careful around O_2 components. To quote Niel Antin, the NAVSEA Technical Warrant for O_2 Systems and the author of MIL-STD-1330D, "Never confuse luck with proper design and maintenance".

Brendan Murphy is a Diving System Certification Manager at NAVSEA 00C.

CAPT Richard Hooper served as Supervisor of Salvage and Diving, NAVSEA 00C, from September 2006 to September 2008.

TC7-734 Norfolk, VA
Lamberts Point DEPERM Facility Demolition

By: LT Li Sung

Underwater Construction Team One (UCT ONE), Air Detachment Charlie performed demolition of the Lambert's Point Deperm facility from 10 October – 20 December 2007. This project was tasked by Naval Facilities Engineering Service Center (NFESC) East Coast Detachment in support of Lamberts Point Norfolk, VA Magnetic Silencing Facility (MSF), which provides degaussing services, ranging, and deperming for U.S. Navy, U.S. Government and friendly nation ships. This involved removing and recapping all 148 existing medium and deep underwater arrays of magnetometers located at depths exceeding 55 fsw and buried by an average of 12 feet of mud and silt. The tasking also included the removal of 50,000 linear feet of associated sensor cable.

The equipment used to conduct the removal of the sensors was the MK-21 Hard Hat rig with Surface Supplied Air/Oxygen Diving procedures. Divers worked on the sea bottom in zero visibility conditions to jet away the mud and silt to find the six-inch tube tops where each sensor was located. Divers used a fire hose fitted with a zero thrust jetting nozzle to jet away the 10-15 feet of mud covering each sensor top using 250 gpm of pressurized sea water. Each sensor required an average of 1.5 hours spent at depth. Some dives lasted more than two hours. Removal of the sensor cables was conducted using a 200-ton floating crane supplied by Naval Facilities (NAVFAC) Norfolk. The Divers used lifting straps to get the cables to the surface before discarding them.

This project was successfully completed ahead of schedule in support of a $21 million program to upgrade the existing facility to a more advanced system. Underwater Construction Team One is currently assigned the task of installing the upgraded system in late 2008.

200-ton floating crane preparing to pull a bundle of sensor cables. Photo by UT1 (SCW/DV) Martin Stacy.

LT Li Sung is the Executive Officer for UCT-1 in Norfolk, VA

Re-Enlistment at 165fsw in Dive School's New DSF

By: Dave Sullivan

On June 2, 2008, HM2 Fred Brodie, a recent graduate of Diving Medical Technician (DMT) training at the Naval Diving and Salvage Training Center (NDSTC) underwent a non-traditional re-enlistment. CDR Smithwick, NDSTC's senior Diving Medical Officer officiated as HM2 Brodie recited the re-enlistment oath while raising his right hand at a depth of 165 FSW in the newly certified Diving Simulation Facility (DSF). The DSF is the new name given to the old Pressure Vessel Assemblies (PVA) built in the late 70's. Through the efforts of numerous NAVSEA, NAVFAC, and NDSTC employees and four NDSTC Commanding Officers, an in-depth, three-year long Engineering Study was conducted to determine the feasibility and cost for End Of Life Obsolete Equipment Replacement (EOLOER). The results overwhelmingly confirmed that an EOLOER program was sound from an engineering and fiscal viewpoint. The Engineering Study confirmed that in excess of $20M of repair funding could be avoided through FY 2020 by the replacement of obsolete and archaic equipment, EOLOER would not only advance our capabilities using today's technology, but also greatly enhance safe and efficient training at NDSTC. A three-year overhaul transformed the archaic PVA to a state-of-the-art DSF. Touch screen monitors have replaced valve wheels and the number of operators has been reduced from seven to two. Civilian government service personnel (retired Navy Divers) within NDSTC's Engineering Department are the primary operators of this sophisticated system. The DSF is the best chamber at NDSTC for treatment of one or multiple patients and allows multiple medical personnel to attend to the patients. This benefits the training of large groups of DMO, DMT, and Advanced Diver training. The DSF allows alternative treatment gasses and is in close proximity to medical personnel in actual medical emergencies. The DSF is certified to a depth of 300 fsw and has the capability of wet dives utilizing various diving equipment. Transformation of a second PVA to 21st century technology is presently underway.

Left to Right: CMDCM (MDV) Sandy Bell, HM2 Brodey, CDR MC DMO Joel Smithwick.

DSF operated by the crack civilian staff (retired Navy Divers), under supervision of CMDCM (MDV) Sandy Bell.

Dave Sullivan is an Engineering Officer at NDSTC in Panama City, Florida.

Bringing Our Heroes Home...

Navy Divers Support JPAC in Palau

By: CWO3 Randy Duncan

A B-24J Liberator Bomber, tail number 42-73453, was shot down by Japanese anti-aircraft fire over the Republic of Palau on September 1, 1944. It came to rest in 40-70 feet of water off the south coast of Aimeliik state, undiscovered and untouched for more than 60 years.

The mission of the Joint POW/MIA Accounting Command (JPAC) is to account for missing Americans from the United States' past conflicts.

During the period January 16 – March 3, 2008, a JPAC underwater recovery team returned to Palau with a group of augmentees that included a detachment of Navy Divers from the Mobile Diving and Salvage Unit One (MDSU ONE). Their objective was to account for the men aboard "Tail 453"and return their identified remains to their families.

Preparations for this year's mission began in early October 2007. The team from JPAC was led by Dr. Eric Emery, JPAC anthropologist and diving certified recovery leader, and CAPT George Mitroka, the Palau team leader and in charge of the safety and overall coordination of operational and logistical requirements for the mission.

The JPAC team also included: explosive ordnance disposal technicians, a life support investigator, a medical independent duty corpsman, a mortuary affairs team sergeant, an investigation team leader and underwater photographer.

The main effort of diving support was tasked to MDSU ONE Company 1-8 that included a Medical Diving Officer, a Diving Officer, a Master Diver, and four divers from the Pearl Harbor Naval Shipyard, Hawaii. The team also had one EOD augmentee from Operational Support Unit 7, San Diego, California. The last member of the team was from Fleet Combat Camera Atlantic, based out of Little Creek, VA. He provided the professional photographic support to document the recovery site requirements. This team of augmentees provided the bulk of the manpower and diving expertise that supported the underwater recovery/investigative effort.

The operation was unique and called upon a well trained group of Divers to utilize their technical abilities to support archaeological principles applied to underwater recovery and investigation operations. This has been an ongoing JPAC effort over the last four years to recover remains from the B-24 bomber crash site.

"Underwater missions of this type are few and far between; a Navy Diver's dream," said Warrant Officer Randy Duncan, Officer in Charge of Det. 13. "It was easy to motivate my team and prepare them for the noble task at hand in support of JPAC's ongoing effort in bringing these men home to their families."

The JPAC underwater equipment load out and pack out list was developed from the experiences of previous missions working with military diving organizations. JPAC and Det. 13 worked together in the months leading up to the deployment to further refine the load out list for the two specific missions.

The underwater recovery team load out, the largest effort, included a recompression chamber, Kirby Morgan 37 surface supplied diving hats, two 100-foot flexible dredges and fire hoses, 25-horsepower pumps and three 90-cubic foot salvage baskets. All of the equipment had to be set up and tested prior to palletizing for a military air flight. The Underwater Investigation Team (UIT) load-out included technical remote sensing equipment, Side Scan Sonar "fish," Marine Sonic hardware and software, magnetometer and SCUBA load-out requirements.

After months of preparation, the team loaded onto a Air Force KC-135 and departed Hickam Air Force Base, Hawaii on January 15 for the nine-hour flight to Palau. The gear departed ahead of the main body of personnel so that the team could set up immediately upon arrival. The set up operations were directly coordinated with a

local contractor who would support the entire 45-day operation. They provided the team with the diving platform – a 120-foot x 80-foot barge with four-point moor capability for Surface Supplied Diving operations, two 30-foot shuttle boats and operators for water taxi and medical response boats, 24-hour security and a 25-ton crane and operator.

MDSU ONE Diver recovering wreck remains.

Prior to diving, the team conducted briefs on safety, working hours, liberty policies, and off limits establishments while in Palau.

Dr. Emery also conducted his anthropology brief. He explained that after bombing runs, two or more bombers would circle back to record and film the damage. It was on this fateful reconnaissance run, that this B-24 was struck by anti-aircraft fire. Dr. Emery mentored the team on the intricacies of underwater archaeological procedures. All operations, in accordance with our permits, were watched and directed by Dr. Emery through the communications and video system attached to the Divers' helmets.

During the almost two-month recovery, Dr. Emery shared stories of the final flight and some background on the surviving family members that kept the team inspired during the long, hot, grueling workdays on the barge and tough underwater recovery. Despite the long hours, every one was focused on the task at hand.

MDSU ONE Diver gains access to wreck.

Before the recovery and dredging operations could begin, the Divers lined the three salvage baskets with ¼ inch mesh screen, the industry standard in archaeology for sediment collection. The sediment collecting salvage baskets were lowered 70-75 feet to the sea floor using the 25-ton crane and placed approximately 50-75 feet laterally and down slope from the project site. To collect the sediment and deposit it into the salvage baskets, the team relied on the "Venturi Effect" to create the suction or vacuum effect at the end of the dredge hose nozzle at the project site. The effect is initiated by pumping water through flexible fire hose to the salvage baskets using a 23-horsepower pump located on the surface of the barge.

The flexible fire hose is connected into a Venturi "V" fitting that is strapped into the sediment collecting basket on the sea floor. The disposal end of the dredge hose is also connected to the Venturi "V" fitting while the remainder of the hose and nozzle end is run out to the Diver at the project site.

When the team turns on the pumps on the barge and sends water through

the fire hose connected to the Venturi fitting, it creates a suction effect at the dredge head where the Diver is working, giving the Diver the ability to 'dig' through the sediment buildup at the project site.

The JPAC recovery team maximized efficiency by having two Divers work underwater at the same time. Each worked a portion of the respective grid around the project and had their own separate sediment collecting basket in order to eliminate any confusion as to what part of the site the sediment was coming from.

The team also added a third Diver to the recovery, appropriately named the "Extreme Diver." This Diver utilized an experimental surface supplied diving rig called the Extreme Light Weight Diving System.

This rig was distributed to MDSU ONE by the Navy Experimental Diving Unit for field testing in Palau before the Navy could place it on the Authorized for Navy Use list. This system, a hybrid of both SCUBA and surface supplied diving modes, utilizes lightweight fiber composite SCUBA jugs that function as the Diver's air bank on the surface. The SCUBA jugs are charged to 4200 psi of air which is then channeled through a small suitcase console on the barge that delivers the air to the Divers in the water column through an umbilical.

The "Extreme Diver" cleared clogs in the dredge hose, emptied bins of coral into collection baskets and performed maintenance on the baskets and hoses at deeper depths. The "Extreme Diver" also allowed the Divers digging at the nozzles to stay at a shallower depth thus keeping them on longer tables and schedules. This increased productivity as the team was able to maximize their bottom time while keeping decompression stop times to a reasonable amount.

As the baskets filled up with sediment or Dr. Emery determined that a grid unit was closed, he instructed the team to pull the baskets up and over onto the barge. The crane operator, Diving Supervisor and Divers worked together to hook the baskets in so that they could raise them through the water column and begin the wet screening process.

Master Diver Atherton briefs the dive plan.

It was during the screening process on the barge that the team discovered most of the possible human remains, teeth, identification tags, and other personal items.

The team cataloged and photographically documented all of the significant life support equipment that was associated with the crew including oxygen hoses, flight masks, pieces of boots and wallets, a .45 caliber pistol, and aviator glasses. The JPAC team treated all of the evidence as if they were clues to a crime scene investigation. Every little piece was a different part of the puzzle that could help support the ultimate goal of a future identification of the crew at the Central Identification Lab at JPAC Headquarters in Hawaii.

By the end of the mission, the hard work had paid off and JPAC officially closed the site so that the Central Identification Lab could start the identification process. The men of "Tail 453" were one step closer to coming home.

CWO3 Randy Duncan is currently serving at MDSU ONE in Pearl Harbor, Hawaii.

Recovered 50 caliber gun.

Confirmation of serial number on 50 caliber gun.

Words From the Detailer

By: NDCM (MDV) Michael Troedel

I will have been on station for nearly 10 months when this issue of *Faceplate* is published. I officially relieved NDCM (MDV) Westbrook as the Fleet Diving Detailer in Jan 2008. I want to extend a BZ for all his effort and wisdom in guiding our community for the past four years. My intentions are to help our sailors with their career progressions and advancement, but I need the support of our Senior Enlisted Divers in the Fleet. This means to follow the Navy Diver Career Continuum so they can relieve us in the future with a well rounded background. I will continue to support our Sailors with their concerns regarding quality of life, family needs and financial burdens.

With our efforts in recruiting, our Second Class Diver manning has increased to 98%. We are currently manned at 73% in First Class Divers. This will be a slow process to increase these numbers but I will work with each Command Master Diver or Senior Diver on the manning issues. As stated in the MILSPERMANUAL the minimum requirements to go to First Class Dive School are two tours as 5343 (one of those tours must include UWSH or Salvage), be qualified Diving Salvage Warfare Specialist at current command, a current Dive Physical (less than five years from your graduation date), and finally be recommended by your Master Diver/CO. We have no room for third term Second Class Divers so we have to provide leadership and motivation for those members that do not meet this criteria. I do entertain PRD extension on a case by case basic, but realize that you have to meet your other career progression and this may slow you down.

My biggest goal is to ensure clear communication and eliminate rumors. So please feel free to call me for any questions or concerns you have. Remember "money" is not why Navy Divers step out of their comfortable lives into diving, a world of hard work and long hours. It is the pride and job satisfaction that makes us unique.

Dive Pay: As of March 2, 2007 (DFAS Message DTG R 031400Z OCT 07)

*Second Class Diver Student $150

*Second Class Diver $ 150 to $215

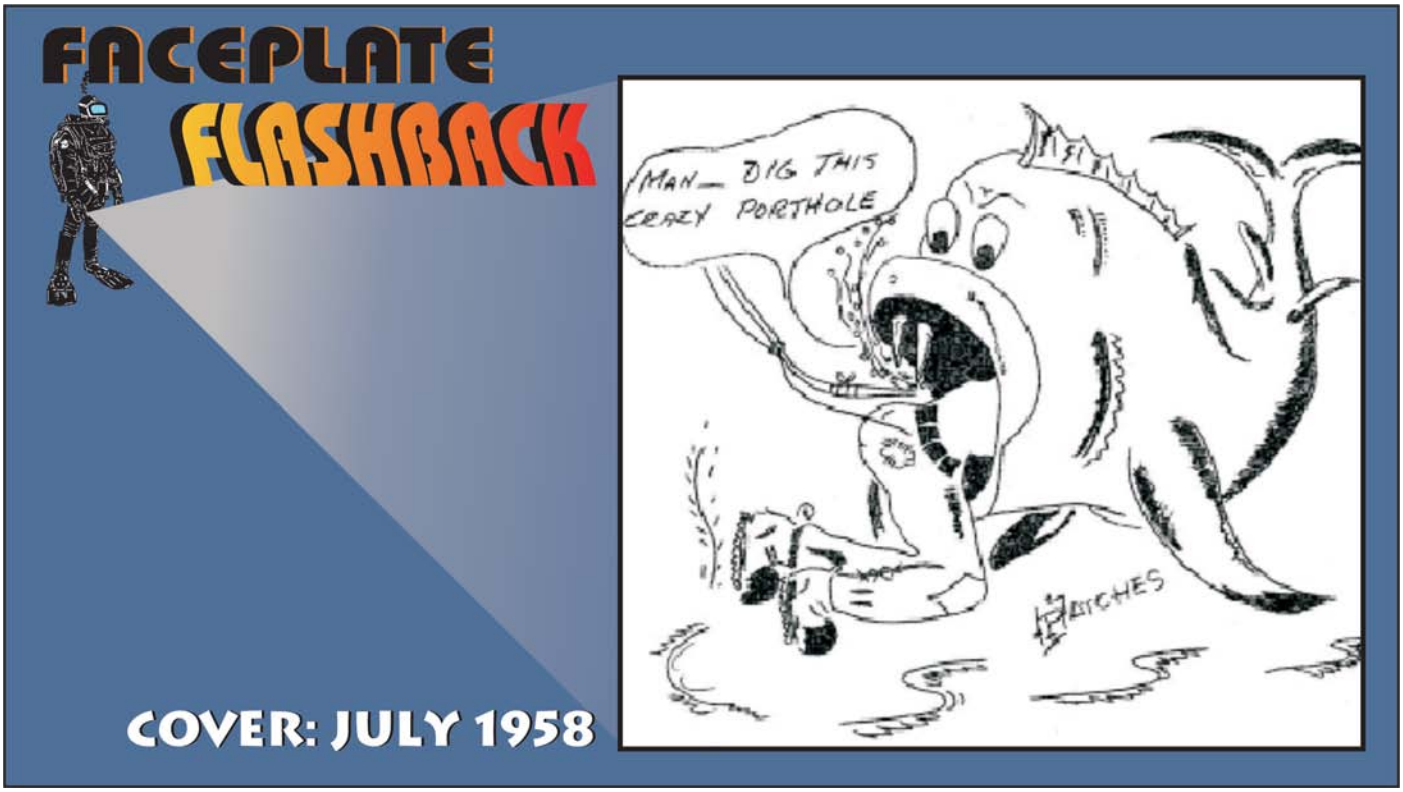
*First Class Diver $215 to $315

*Master Diver $340

Lastly, as of 2006 we became our own rating, before we benefitted from other ratings to advance and now you are competing against the Diver in the water with you. With this being said, your advancement will depend on your personal initiative. This means getting your qualifications and learning your job as soon as possible to make you more beneficial to your command.

I hope this gets even the newest Diver educated about our community. Remember we are our best recruiters. We know what it takes.

NDCM (MDV) Michael Troedel is the Diving Detailer for Pers-401 DC in Millington, TN.



Air Detachment Bravo Field Exercise

By: EO1 (SCW/DV) Jarrell Patton & EA1 (SCW/DV) Christopher Munch

As Air Det Bravo heads toward their deployment season, they must complete a series of training exercises. First of which was a tactical exercise held at Camp Lejeune, NC in February 2008. The Special Operations Training Group (SOTG) administered this training which focused on small arms marksmanship, Close Quarters Combat (CQB), detainee handling, convoy operations, and Improvised Explosive Device (IED) training.

Small arms marksmanship started off the two-week field exercise which included firing the M16 rifle and M9 pistol. Air Det Bravo sharpened their weapon handling skills by transitioning from the M16 to the M9. Det members were allowed to fire on the move and conduct magazine changes while maintaining positive control of their weapon. Small arms familiarization allowed them to prepare for the close quarters combat portion of the training.

With most operational areas being in an urban environment, the Det moved from small arms to CQB Operations on Urban Terrain. The Air Det members worked hard learning correct and current detainee handling procedures and performing several walk-thru drills before moving to SIMUNITION (training ammunition). The Air Det learned that communication and teamwork are what it takes to succeed in a close quarter's environment.

EA1 Munch leads his fire-team during CQB training. Photo by EO1 (SCW/DV) Patton.

The Air Det moved on to convoy operations after their extensive CQB training. Air Det Officer in Charge, EOC (SCW/DV) Eckroth led his team on several simulated convoys, which allowed his troops to work on their convoy tactics and SOP's. Chief Eckroth rotated personnel and gave them the opportunity to take charge and lead the Det through convoys. Next they moved to the final phase of training, IED recognition. This course helped them to understand what to look for and how to deal with potential IED's. The course included a live convoy movement with low yield explosive IEDs to help reinforce the training.

EOC Eckroth and Air Det Bravo fire the M16 during weapons transition drills. Photo by EO1 (SCW/DV) Patton.

In exchange for the tactical training provided by SOTG, the Air Det provided the base with some much needed light construction around the barracks and galley at Stone Bay. Over 370 linear feet of broken sidewalk were removed and replaced with reinforced concrete. Before the concrete was poured, Air Det Bravo compacted and leveled the ground, installed forms, and laid rebar to ensure a high strength product that will last for many years to come.

Air Det Bravo will be participating in an Offshore Petroleum Distribution System (OPDS) training exercise and a Divers Training exercise. That will wrap up their training phase and give them all the skills needed to have a successful deployment phase.

EO1 Jarrell Patton is a First Class Diver stationed at Underwater Construction Team One currently in the training department LPO. EA1 Christopher Munch is currently serving at UCT-1 in Norfolk, VA.

Manufacturer Material Audits Provide Quality Diver Life Support Systems

By: Steve Smith

In 1946, William I. Stieglitz, a noted safety expert at a major airline, said, "The evaluation of safety work in positive terms is extremely difficult. When an accident does not occur, it is impossible to prove that some particular design feature prevented it". That maxim is still true today. It is impossible to say whether, taken individually, any one thing, such as design, approved manufacturing procedures, personnel qualifications for welding, NDT, assembly, re-entry control, and cleaning ever helped prevent an accident. Collectively, these system designs, fabrication procedures, and personnel qualifications provide the Fleet with maximum assurance that the certified diving systems they are using have been designed, fabricated, and tested to stringent standards, ensuring that these systems will provide decades of safe and reliable operation.

NAVSEA 00C is committed to providing the Fleet with safe, reliable diving and hyperbaric systems that are designed to support their varied missions in the harshest environments. A well designed product is only as good as the quality of the components and workmanship that goes into building it. To ensure the quality of Navy diving and recompression chamber systems, the NAVSEA System Certification Authority (SCA) performs Manufacturer Material Audits. A final Diver Life Support System construction Material Audit is performed at the manufacturer of every certified system in the Fleet. This review takes an in-depth look at all aspects of production and fabrication, each component, each welded and mechanical piping joint, every step of the fabrication, inspection, and testing process and all of the paperwork that is used to document the quality of those components and the manufacturer's workmanship.

Almost every Manufacturer Material Audit performed has revealed discrepancies that require builder correction. Most of these are minor in nature (loose panel screws, missing component labels, etc.). Occasionally, the discrepancies found could have caused a failure (incorrect component pressure rating, loose pipe fittings, missing NDT, cleaning, test records, etc.). It is possible and likely that finding and correcting these discrepancies may have prevented a system failure and subsequent injury to a diver. That is a metric that is impossible to prove or verify. However, one thing is clear. Every manufacturer of Navy certified diving life support systems understands that the equipment they provide to the Navy will be thoroughly inspected and tested to ensure that it meets all of the Navy requirements before that equipment leaves their facility. Navy Divers can be assured that the NAVSEA System Certification Authority has conducted an in-depth Manufacturer Material Audit on every new diving and chamber system, before manned certification dives are authorized. Once the system is sent to the Fleet, it becomes the responsibility of the Diving Command to operate and maintain the system in accordance with approved procedures. By maintaining the same tried and true standards, processes, and maintenance procedures, the Command can be assured that it will have a safe system for many years that it will safely support them in performing their mission, whenever and whenever they are called upon.

TYPICAL Certification Audit Steps

Every Manufacturer Material Audit is methodically accomplished, using a checklist generated for the specific Diver Life Support System under review. Typically, the audit steps are:

1. Compare drawing material with matching procurement documents to ensure proper parts were purchased, received, and inspected by the manufacturer.
2. Review the structural, electrical, and piping installation in the existing system to ensure that it is in accordance with the approved drawings.
3. Verify welding procedures are NAVSEA approved.
4. Verify all welders are qualified for every approved procedure they perform.
5. Review all weld records to verify that every weld, including any repair weld is documented properly.
6. Verify non-destructive test (NDT) procedures are NAVSEA approved and NDT inspectors are currently qualified.
7. Verify proper assembly and approved torque procedures of all unions and installation of sub-assemblies are accomplished properly.
8. Verify all required hydrostatic testing of pressure vessels and piping is complete and satisfactory.
9. Verify all system components were properly cleaned and that system cleanliness was maintained throughout the fabrication and testing process.
10. Verify all valve seat tightness and all piping joint tightness testing is complete and satisfactory.
11. Verify all other mechanical, electrical, and structural testing is complete and satisfactory.
12. Conduct unmanned operational system testing to ensure that the system operates correctly and will be safe for manned use when it arrives at the Fleet command.

Steve Smith, a retired Master Diver, now works for NAVSEA in the Diving Certification branch.

Navy Diving Organizational Chart

- Commandant Marine Corps ★★★★
- Special Operations Command ☆☆☆☆
- Chief of Naval Operations ☆☆☆☆
  - Commander Fleet Forces Command / Commander Atlantic Fleet ☆☆☆
    - Marine Special Operations Command ☆☆
      - 1ST MSOB
      - 2ND MSOB
    - Navy Special Warfare Command ★★
      - NSWG 1
        - LSU 1
        - NSWU 1
        - NSWU 3
        - ST 1
        - ST 3
        - ST 5
        - ST 7
      - NSWG 2
        - LSU 2
        - NSWU 2
        - ST 2
        - ST 4
        - ST 8
        - ST 10
        - RM Pool
      - NSWG 3
        - SDV 1
        - SDV 2
      - NSWCEN
        - BUDS
        - DET VA
        - DET HI
        - NSWDG
      - EODGRU 1
        - MDSU 1
        - MSDU 1 DET CA
        - EODMU 1
        - EODMU 3
        - EODMU 5
        - EOD DET Sasebo, JA
        - EODOSU 7
        - EODMU11
        - EODTEU 1
        - NECFC
      - EODGRU 2
        - MDSU 2
        - EODMU 2
        - EODMU 6
        - EODMU 8
        - EODOSU10
        - EODOSU12
        - EODTEU 2
        - EODESU 2
    - Navy Expeditionary Combat Command ★★
      - Commander Submarine Force Pacific ☆☆
        - USS EMORY S LAND (AS39)
        - USS FRANK CABLE (AS40)
        - SUBRON 1 Pearl Harbor, HI
        - DSU
        - SDS 5
      - 1NCD ★★
        - 30 NCR
          - UCT 1
        - 25 NCR
          - UCT 2
      - Commander Submarine Force / Atlantic ☆☆☆
        - NSSF New London, CT
        - SS School New London, CT
        - NSMRL New London, CT
        - TRF Kings Bay, GA
        - SUBRON 16 Kings Bay, GA
      - Commander Naval Air Force Atlantic ☆☆
        - NAOMI Pensacola, Fl
        - NAOMI Jacksonville, Fl
        - NAOMI Pax River, VA
        - NAOMI Cherry PT, NC
        - NAOMI Norfolk, VA
      - Commander Naval Air Force / Pacific ★★★
        - NAOMI Lemoore, CA
        - NAOMI Mirmair, CA
        - NAOMI Whitbey Is, WA
      - Commander Naval Sea Systems ☆☆☆
        - NEDU Panama City, FL
        - NUWC Key Port, WA
        - CSS Panama City, FL
        - EOD Tech Div Indian Head, MD
        - SPAWAR San Diego, CA
        - Pearl Harbor Naval Shipyard
        - Norfolk Naval Shipyard
        - Puget Naval Shipyard
          - NIMF Everett, WA
          - NIMF Bangor, WA
      - NFESC Port Hueneme, CA
      - Naval Facilities Engineering Command ☆☆
      - Commander Regional Maintenance Centers N4 ★
        - SWRMC San Diego, CA
        - MARMC Norfolk, VA
        - SERMC Mayport, FL
        - SCRMC Inglside, TX
        - SRF Yokosuka, JA
        - SRF Sasabo, JA
      - Commander Installations Command ☆☆☆
        - NAVSTA Gitmo, Cuba
        - COMNAVMAR Guam
      - Naval Safety Center ☆☆
      - Naval Academy ☆☆☆
      - Chief of Naval Personnel ★★★
        - CNRC ☆☆
        - Recruiter
        - NPC ☆☆
        - Detailer
        - ECM
        - NETC ☆☆
        - CEODD
        - NDSTC
        - EODS
        - CEODD DET G.L., IL
        - RTC
  - Head Quarters Marine Corps Support Command ☆
    - CG1 MEF
      - 1ST MAR DIV
      - 1ST Recon BN
    - CG2 MEF
      - 2ND MAR DIV
      - 2ND Recon BN
    - CG3 MEF

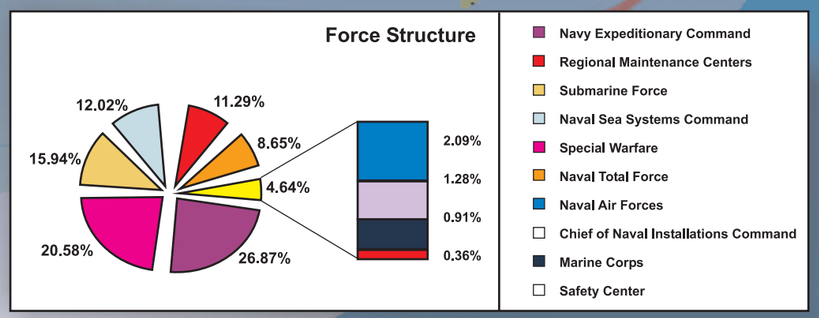
NORTH PACIFIC OCEAN

NORTH ATLANTIC OCEAN

SOUTH PACIFIC OCEAN

SOUTH ATLANTIC OCEAN

ANTARCTICA



USNS CARL BRASHEAR

T-AKE 7

By: MDV James Costin

"Fortune favors he who dares"

Unless you have been trapped in a ballast tank for the last seven years you have heard of or seen the movie *Men of Honor*, a movie that depicts portions of Master Chief Master Diver Carl Brashear's life in the U.S. Navy. There is a quote from that movie that takes place toward the end where Master Chief Brashear, portrayed by Cuba Gooding Jr., says "The Navy is not a business. We have many traditions; in my career I have experienced most of them, some good, some bad. However I would not be here today if it weren't for greatest tradition of all…. Honor Sir." This was touched on again by Master Chief of the Navy Master Chief Campa when he said, "Although our Navy core values were adopted in 1992, I believe they very well could have been born the day Carl Brashear refused to give up being a Navy Diver. He made us see the value of staying true to ourselves and true to what we know to be right and just. He proved to us all that when a Sailor is given the opportunity to succeed and they have the will, nothing is beyond their reach."

Webster defines honor many ways, one of those is: an evidence or symbol of distinction. That is what brought so many to San Diego on September 18, 2008. "The ship honors Master Chief Petty Officer Carl Brashear, who joined the U.S. Navy in 1948 and was a Navy pioneer, becoming one of the first African-Americans to graduate from the Navy Diving School and the first to qualify and serve as a Master Diver on active duty. After being severely injured in a diving accident, Brashear's leg was amputated. Almost two years later, after strenuous rehabilitation and rigorous testing, he became the first person to be certified or recertified to dive as an amputee."

There are other names assigned to this class of ships that share this mark of distinction with Master Chief Brashear. Names like Peary, Byrd, Earhart, Lewis and Clark. These pioneers, men and women, answered the call to go into the unknown so our nation could prosper. They dared to dream of what was over the horizon, beyond the veil of the familiar and mundane. Often knowing the sacrifices it would take, Carl's family accepted it. They knew that much of his career was going to be spent at sea. They understood his desire to serve our nation and looked up to him as a military man devoted to preserving the freedoms we enjoy as Americans.

Among the nearly 3,000 in attendance were Chief of Naval Operations Adm. Gary Roughead, Master Chief Petty Officer of the Navy Joe Campa, and actor Robert De Niro, who starred in the movie *Men of Honor*.

"This ship will stand for the same values of honor, courage and commitment that inspired and motivated Master Chief Brashear," said MSC Command Master Chief Kenneth Green, one of the ceremony's guest speakers.

Many will ask why did we name a support ship and not a diving vessel after Master Chief Brashear? The answer is easy. Navy Divers play a huge supporting role in the mission of the Navy and U. S. military. What is more fitting than that a Navy Diver who pushed through diversity to be thought of one our nation's great pioneers. Like a Navy Diver, this ship is multi-faceted and will provide a huge capability to the Fleet. The dry cargo/ammunition ships are operated by the Navy's Military Sealift Command and provide multi-product combat logistics support to the Navy Fleet. This class

of ship is a new Combat Logistics Force (CLF) underway replenishment vessel intended to replace the current capability of the Kilauea-class (T-AE 26) ammunition ships and Mars-class (T-AFS 1) combat stores ships. T-AKEs may also operate as battle group station ships when accompanied by a Henry J. Kaiser-class (T-AO 187) oiler. As an auxiliary support ship, T-AKEs directly contribute to the ability of the Navy to maintain a forward presence. In its primary mission role, the T-AKE provides logistic lift to deliver cargo (ammunition, food, limited quantities of fuel, repair parts, ship store items, and expendable supplies and material) to U.S. and allied Navy ships at sea. In its secondary mission, the T-AKE may operate in concert with a Henry J. Kaiser-class (T-AO 187) oiler as a substitute station ship to provide direct logistics support to the ships within a Carrier Battle Group.

The 689-foot ship slid into the water for the first time as Lauren Brashear, granddaughter of the ship's namesake and the ship's sponsor, broke the traditional bottle of champagne against the ship's bow, christening it USNS Carl Brashear. With a maximum speed of 20 knots, she is 210 meters in length, with a 32-meter beam, a 9-meter draft, and a displacement of 41,000 metric tons. Ms. Brashear was presented with multiple gifts and the ship's new captain received many gifts as well for display including a MK-V dive helmet from SUPSALV, Captain Richard Hooper. Further diving memorabilia paintings designed by Chief Warrant Officer Rick Armstrong were also presented.

Master Chief Petty Officer of the Navy Joe Campa's closing comments on that day are an appropriate end this article: "Ladies and gentlemen, we honor a great man today and in doing so we pay tribute to a great American family. To the Brashears, I'd like to leave you with this: his honor is yours. Just as you share his name, you share the immense respect of the entire United States Navy. We will forever remember Carl Brashear as a Sailor, a Diver, and a devoted father. But on this day, with the christening of this ship, we remember him as a good Chief, a proud American, and a man of honor."

MDV James Costin is a Command Master Diver at NAVSEA 00C.

Contributing authors:

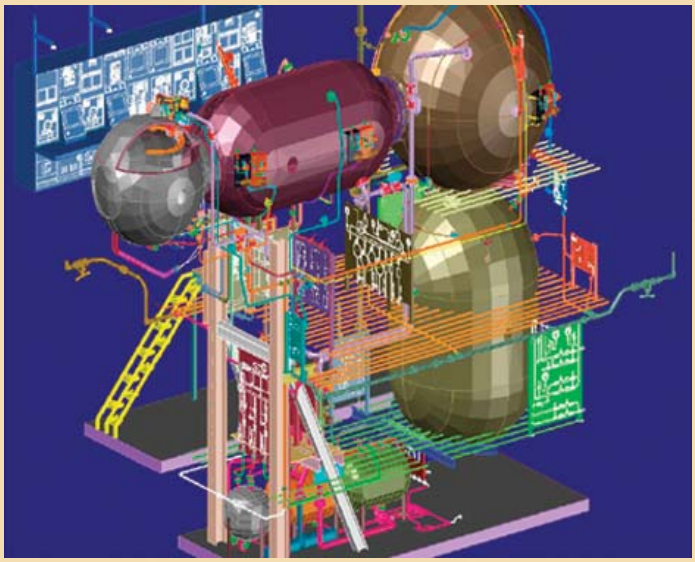
MCPON Joe Campa,
Master Chief Petty Officer of the Navy
CWO3 Chip Sentor,
SWRMC Code 300

Sarah Burford,
SEALOGPAC Public Affairs
NASSCO Public Affairs Office.

Photos left to right: Sandra Brashear, Joy Harris and Lauren Brashear launch USNS Carl Brashear during ceremony; Retired Master Divers, Lamont King, Mike Washington and JJ Fenwick with CWO5/MDV Rick Armstrong at post-commissioning reception; Eldest granddaughter, Lauren Brashear holds a ceremonial bottle of champagne before christening the ship; Chief of Naval Operations (CNO) Admiral Gary Roughead delivers his remarks; USNS Carl Brashear (T-AKE 7) christening and launch ceremony at General Dynamics NASSCO shipyard; Master Chief Petty Officer of the Navy (MCPON) Joe R. Campa Jr. speaks with actor Robert De Niro.

The New Frontier in Navy

Advances in computer technology, coupled with stability of current operating systems, have allowed designers to think of all kinds of new ways to operate critical systems. Fly-by-wire is being integrated into all types of advanced weapons systems, from aircraft to nuclear submarines. We stand at the edge of a new frontier, and this is now true for U.S. Navy Certified Hyperbaric Systems.



Diver Simulation Facility-2 CAD Layout.

Over ten years ago, the concept was introduced to change the way trainers operate the three Pressure Vessel Assemblies (PVA-1, 2, 3) at the Naval Diving and Salvage Training Center in Panama City, Florida (NDSTC). For decades the procedure to operate these assemblies required a team of up to seven personnel, manually turning valves in a precise order to ensure proper pressure at the manned positions within the assemblies. This approach required extensive training of support staff and careful scheduling of dive simulations, to ensure that all key execution elements for an exercise would be in place at the necessary time at the PVA.

The logistical complexity of that approach, and the great team camaraderie that it inspired among PVA operators, led to a close-knit core within NDSTC and the Naval diving community. But the pioneering nature of the modern Navy constantly prompts the evolution of its practices and procedures. From these realities emerged the concept to re-engineer the entire diving simulation process. Replacing obsolete systems with new technology in the name of safety and efficiency became an ascendant paradigm within the diving community, and automation quickly emerged as a core concept to the budding revolution.

This concept took hold in the mind of Alin Schmutz, Hyperbaric Facilities Program Manager at Naval Facilities Engineering Service Center (NFESC) in Washington, D.C. Schmutz initiated design work on prototype Computer Aided Design (CAD) layouts and began developing operational concepts for a fully automated dive simulation facility. In taking ownership of the vision, he quickly realized the need for an alliance with Dave Sullivan, Engineering Department Head NDSTC, who immediately became a close collaborator on the initial groundwork to improve the process. Sullivan quickly identified the opportunity to modernize the aging pressure vessel assemblies at the same time as automating their operation.

In this way, a dual approach to the effort was adopted. Its goal was identified as turning the existing NDSTC Pressure Vessel Assemblies (PVA 1-3) into Diver Simulation Facilities (DSF 1-3). Funding for this project was obtained through significant effort on the premise of a $20M cost savings by FY2020. The idea was thought to be simple to sell: replace the obsolete equipment on the existing PVAs such that three operators could conduct training vice 10, and along the way replace aging equipment that in many cases could no longer be refurbished without replacement, all while reducing the number of components by half. Simple as this concept was, a tremendous effort in engineering would follow to pursue the goal.

After a lengthy funding and procurement process that involved considerable compromise among multiple parties, the effort to secure funds for this expansive and visionary project finally resulted in success.

Flush with that victory, the team moved forward immediately toward a contract to pursue this mission. The award was won by Tecnico Corporation, whose experience in supporting NDSTC in Panama City and whose overall expertise with hyperbaric assemblies set them apart from a number of competitors. This contract award put the final piece in place to proceed with the ambitious overhaul.

The real work could now begin. In summer 2004, certification of PVA 2 was terminated. All the aged piping and control consoles were ripped out, and the pressure hull was inspected via Non-Destructive Testing (NDT) and refurbished to “as-new” condition. From 2004 to 2005, numerous design discussions took place, as well as project pre-staging. Starting in 2005, a design team was established. The principal members included:

NDSTC – Dave Sullivan, Dave Thompson, Ed Delanoy

NAVFAC ESC – Alin Schmutz, PE and Colin McDonald

Tecnico – Bob Kirk and Dave Randall

NAVFAC SCA – Bob Bauer

During the following months numerous Design Review Boards were convened, not only to hammer out the vision for design of the overhauled system, but also to question every aspect of that design from a safety and reliability standpoint.

Critical to the safety aspect is the heart of this complex facility, the computer control system. Tecnico subcontracted this important portion to Orion Engineering, Inc. A sub-design team was formed with the following Orion personnel:

Project Engineer – Jason Barbera, PE
Instrumentation and Electrical Design – Jack Johnson
Computer Programmer – Floyd Lawrence

Hyperbarics

By: Bob Bauer

Pressure Vessel Assembly-3 Old Console.

With a control systems team in place, the safety/reliability reviews turned their focus to redundancy and Failure Modes and Effects Analysis (FMEA). The expanded design team would now dive deep into determining how many layers of back-up systems would become necessary to ensure that manned operations could be safely conducted.

Meanwhile, as the design spiral continued, fabrication and procurement of piping components ramped up. Throughout 2006 and into 2007, the primary challenge became completing the detailed design through additional team reviews. This initiated the process of verifying all aspects of Diver Life Support Systems (DLSS) Quality Assurance (QA). Continual efforts to review the Objective Quality Evidence (OQE) of component parts of the new assemblies became incumbent on the team as production rapidly proceeded.

But the production schedule for such an intricate system was so complex, that awaiting the end of production to initiate the start of the OQE review would leave a nearly insurmountable challenge. Once this inescapable fact became obvious to the team, the NAVFAC Hyperbaric Acquisition Manager's database emerged as the most important tool in the QA process. This database became the charge of Colin McDonald, a project engineer at NFESC who would earn his reputation as a trusted member of the NAVFAC Hyperbaric Team through many hours spent populating the database that would be used for certification reviews.

During the fall and summer months of 2007, several unforeseen schedule setbacks were encountered. These were mostly beyond the control of the entire team and were typical of setbacks that are often encountered with ambitious engineering projects. The effort to prevent the derailment of the overall project hinged upon completion of existing production modules in spite of the unforeseen delays. This effort was felt most heavily at the execution level where Tecnico Corporation was performing the brass tacks work. It was they, perhaps more than any other group in the overall process, who kept the project on course and on schedule.

During November 2007, everyone's hard work finally culminated in unmanned and manned demonstration dives. During a two-week testing phase of this program, induced failure modes were tested to determine if the FMEA reviews performed during the design phase were valid. Setting an outstanding example of cooperation, the NAVFAC SCA worked shoulder to shoulder with the contractor (Bob Kirk – Tecnico) and the NAVFAC Acquisition Manager (Alin Schmutz) to hammer out the Integrated Operating Procedures, including Emergency Back-Up Procedures.

After one particularly intense weekend of effort, a comprehensive set of procedures was formally created. NDSTC used its staff to validate these procedures which were then executed repeatedly by the team during the course of many unmanned demonstrations leading up to the manned demonstration. This overall effort resulted in initial certification of DSF-2. Over the next eight months, redline drawings and other associated software were completed, along with extensive operator training.

Today DSF-2 is fulfilling its hyperbaric training mission as planned. It stands as the world's most modern, technologically advanced, fully automated hyperbaric system that is Navy certified and operational.

At present, the Fleet Diving Support Division, comprised of government service employees (retired Navy Divers), are the primary operators of DSF-2, which was delivered as Phase 1 of the three-phase project. The military staff is favorably impressed by the technological advances and simplified operation of the new system. This has inspired an increased usage of the DSF and a more mission-ready diving community. The success of this phase and the continuing quest for total overhaul has inspired intense pride and a sense of great achievement in everyone who has played a part in its creation and operation.

DSF-2 Control Console.

Bob Bauer is an Ocean Engineer working in the Ocean Facilities Program Office Hyperbaric Systems Certification Authority (SCA) Naval Facilities Engineering Command (NAVFAC).

Juliett 484:
Fleet Divers Salvage a Russian Submarine

By: LT Robert Williams

As dusk approached on July 25, 2008, the Juliett 484, a 2400 ton former Soviet guided missile submarine, smelly and covered with sea growth, broke free from the muddy bottom and resurfaced after fifteen months beneath the Providence River. After endeavoring for almost two months to refloat the sub, the salvage team, led by MDSU TWO and supported by SUPSALV, Army, Navy Reserve, and British personnel, looked on with satisfaction and knew that the project's end was near.

A Diver uses an exothermic cutting torch to remove interference from J-484's external hull.

The diesel powered Juliett 484 (J-484), known to the Soviets as K-77, led a colorful life. After her cold war service and the fall of the Soviet Union,the Russian government sold the vessel to a Finnish businessman who turned J-484 into a bar and restaurant. The businessman later listed her for auction on E-bay, with a starting price of $1 million (US). Without serious bidders, Juliett 484 was then leased for the movie *K-19: The Widow-maker* starring Harrison Ford and Liam Neeson where she "played" the ill-fated K-19 submarine.Then in 2002, the Saratoga Museum Foundation, Inc. purchased the vessel, opening it to the public as a museum at Collier Point Park in Providence, RI.

A nor'easter on April 17, 2007 served as the catalyst for the sub's sinking. At the storm's height, the aft most compartment within the pressure hull began taking on water, which led to progressive flooding as water cascaded to the other internal spaces. Eventually, with her stern already submerged, the vessel parted her mooring lines, heeled to port, and sank. Later, surveys would show that she came to rest at about a 45° port list with half of her hull buried into the river's muddy bottom. The pressure hull, referred to by submariners as the "people tank", was fully flooded with over 600,000 gallons of water.

When the museum requested DoD assistance, the Secretary of Defense's Innovative Readiness Training (IRT) Program viewed the chance to refloat J-484 as an ideal training opportunity. IRT funds civil-military projects geared to improve unit level training while concurrently benefiting U.S. communities. For the Navy's salvage community, a chance to refloat a sunken submarine is among the rarest and most valuable training possible. The Providence community would benefit as that they would regain access to valuable waterfront asset. The IRT Program agreed to sponsor and fund the salvage effort.

MDSU TWO agreed to lead the project. To assist, the Little Creek based salvors assembled a team that included SUPSALV, the Army's 569th Dive Company, Navy Reserve, and an LCU craft and crew from the Expeditionary Support Unit. Even the British pitched in, sending two salvors for technical support.

Refloating and stabilizing the sub proved to be a formidable undertaking. The greatest challenge was the complete lack of technical documentation available on the submarine given that the Russian Federation still considered such information to be classified. Further, the museum had not adequately tracked the vessel's condition prior to the sinking. The most essential pre-sinking information such as the vessel's displacement, draft, liquid loading, etc. was unknown. Any plan to raise the submarine had to be robust enough to account for a wide range of possible conditions.

This is where the SUPSALV (NAVSEA 00C) salvage engineers came in. Taking

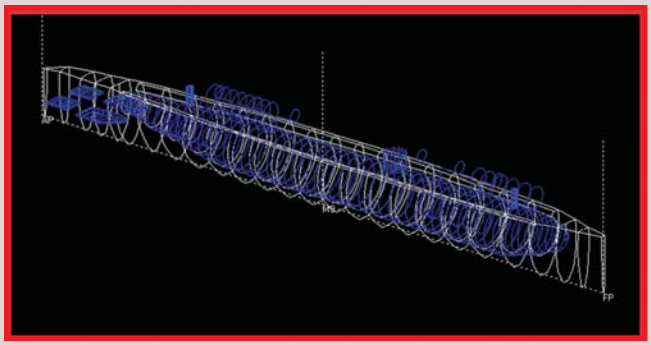
lead in the salvage plan development, they used naval architecture calculations and salvage modeling with Program of Ship Salvage Engineering (POSSE) software to develop an executable salvage plan. Although this project was considered a "heavy" salvage operation which typically calls for derrick barges, sheer legs, and tugs, instead the plan relied on the expertise of Fleet Divers and Emergency Ship Salvage Material (ESSM) equipment such as pumps, patches, and salvage pontoons. Engineers also designed specialized equipment to patch the pressure hull, monitor the ship's condition, and attach salvage pontoons.

Divers operating from a joint Navy/ Army dive side enter water from bow of the Landing Craft Utility (LCU).

Over the next year, to improve the salvage plan, several surveys were conducted. CWO4 Pete Sharpe led a team in Providence that conducted a thorough post-sinking salvage survey and harnessed cable pullers to the hull to stabilize the vessel. CDR Chip Chase led a team of engineers to Peenemunde, Germany to survey Juliett 461, the last floating vessel of the class. MDV Arne Phillips led a team of MDSU TWO and Army divers during a fit test of pressure hull patches.

In June 2008, with preparations complete, the salvage team assembled in Providence. The operation required one of the most extensive deployments of ESSM gear to date, transporting eighteen tractor trailers full of equipment to provide everything from pullers to generators to pollution gear to floating barges.

After meeting with the Coast Guard, state environmental agencies, and the museum, it was time for the Divers to hat up.



Computer modeling improved the salvage team's understanding of vessel's condition and stability.

The first goal was to right the submarine within its muddy underwater cradle; about a 45° starboard rotation. To do this, Divers harnessed six beach gear legs with pullers high on the vessel's hull to provide over 10,000 ft-tons of righting moment. This alone was insufficient to move the submarine. For additional righting moment, the pressure hull had to be partially dewatered; not an easy task. To accomplish this, Divers placed 4" hydraulic pumps in the bottom of each of the eight watertight compartments within the pressure hull.

This called for challenging dive profiles. Divers had to traverse cramped, dark, and oil coated compartments at a 45° list and descend two decks within the pressure hull in near zero visibility while managing equipment, umbilicals, and over 4,000 feet of hydraulic and discharge hoses in order to set each pump. Each dive's success was critical to the overall project, given that if even one of the eight pumps was not in place and operational, the vessel could not fully resurface.

NDC Sawyer doffs his helmet after a long dive of jetting away the muddy soil underneath the submarine.

After Divers set each pump, pulling operations began. Through a combination of six hydraulic cable pullers operating in tandem, dewatering the pressure hull, and dewatering four large missile tubes, the salvage team reduced the vessel's ground reaction and imparted enough rotation to bring the vessel back to a near zero list. This was the first concrete sign that the project could be completed successfully and allowed the salvors to begin preparations for refloating the sub.

The next step, installing salvage pontoons along the vessel's hull, ultimately proved to be the most difficult. The pon-

toons were needed to impart enough buoyancy to bring the submarine to the surface after dewatering the pressure hull. These pontoons augmented the submarine's ballast tanks which had deteriorated due to advanced corrosion (in many locations, divers could actually poke holes in the tanks with their fingers). For the pontoons to provide enough buoyancy to replace the ballast tanks, most of the sub's hull had to be surrounded with these inflatable bags.

To meet the workload demand, the salvage team divided into two shifts to allow for 24 hour, 7 day a week operations. Often, two surface supplied dive sides and one SCUBA side were operating simultaneously. Significant bottom time was required because of the vast amount of underwater labor required to set the pontoons. Divers had to make ten tunnels underneath the vessel's hull using a combination of jetting and air lift operations. Lifting straps had to be passed through each tunnel to connect the pontoons to the hull and complete the salvage pontoon lift system. To pass each strap, Divers often had to dig almost 20 feet beneath the coal crusted river bottom to tunnel across and underneath the sub only by feel. All told, divers eventually installed ten salvage pontoons and 16 large lift bags for a total of over 400 tons of buoyant force.

J-484 rapidly returns to the surface ten seconds after leaving the river bottom.

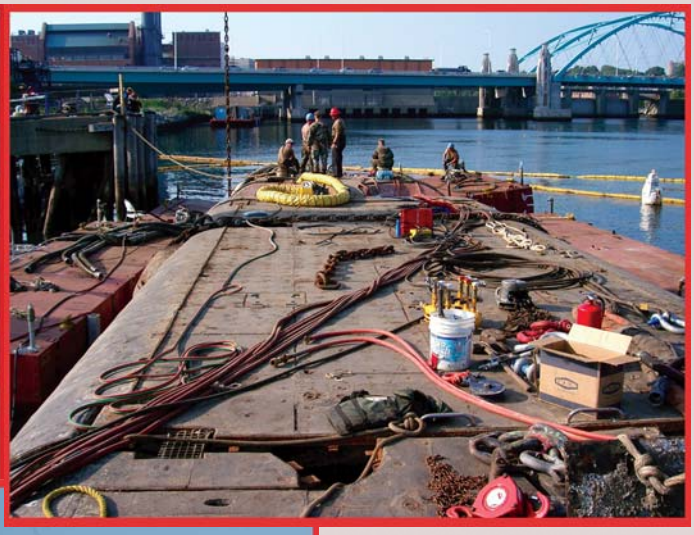
SSG Prater supervises an initial assessment dive.

J-484's sail emerges as salvors right the sub with cable pullers.

When the day arrived to refloat the sub, many questions were still unanswered. Would the untested salvage pontoon system hold together? Were all the hull leaks sealed? Did engineers accurately estimate the amount of lift needed for refloat? Would the submarine be able to overcome the suction effect caused by the mud cradling the vessel? What MDV John Coffelt referred to as a summer's worth of "extremely hard work, frustration, sweat, and tears" was on the line.

Six hours after starting the dewatering pumps and inflating pontoons, the questions were answered. At 6:02 pm on July 25th, almost on cue, J-484 lifted off the river bottom and returned to surface as onlookers cheered and the local news stations broadcast the event live. The vessel took about ten seconds to transit the water column; resurfacing bow first and stable.

Further stabilization efforts were required. Divers entered the pressure hull to change out hydraulic pumps and dewater most of the internal tanks and voids. More durable and reliable steel pontoons were installed near the vessel's stern to replace the temporary flotation



devices. By the project's end, Divers logged over 700 dives and 1500 hours of bottom time.

The summer's efforts culminated on September 6th, when, with the Coast Guard's concurrence, the submarine met MDSU TWO's turnover criteria and custody of the vessel was officially transferred to the museum.

In terms of training and execution, the salvage of the Juliett 484 was nothing short of a monumental team win. On a strategic level, the project demonstrated the strength of the interdependent components that make up the Navy salvage capability. On a personal level, this was a rare opportunity for sailors and soldiers, all of whom provided important if not critical contributions. CWO2 Kasztelan may have said it best, "Recovering a 300' Soviet sub is never easy, but I am deeply proud of the guys. They accomplished the mission, gave back to the community, and learned along the way. This truly was an experience of a lifetime."

Pictures from Left to Right: MDSU-TWO makes time to advance YN2 Tia Garrard to YN1 under the Command Advancement Program CAP; In late August, salvors installed four steel modular barges near the stern to improve the vessels' stability; NAVSEA Salvage Engineer LT Robert Williams identifies flooding into a port regulating tank; With J-484's listing sail in background, a Diver returns to the surface after attaching rigging a salvage pontoon near the vessel's stern; New lightweight 4" hydraulic pumps from ESSM were used to dewater over 600,000 gallons of water within J-484's pressure hull; A Diver installs a plywood patch over the access the sub's aft escape scuttle.

LT Robert Williams is an Engineering Duty Officer/Diver serving as the Assistant for Salvage at NAVSEA 00C.

UCT ONE Divers Training Exercise aboard USNS GRAPPLE

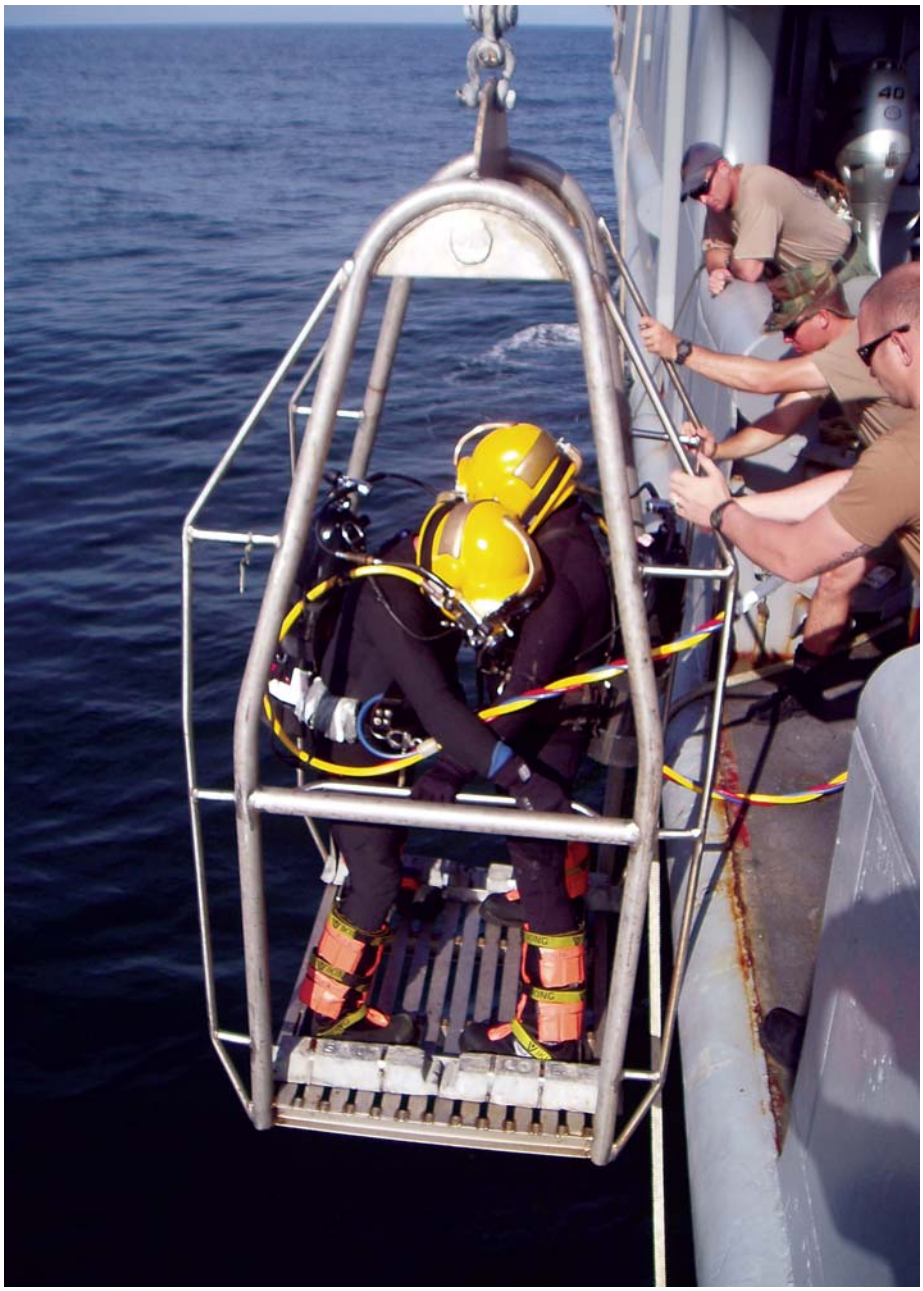
By: LT Li Sung

From November 26 to December 14 2007, UCT ONE Air Detachment Alpha (Air Det A) conducted Diver's training exercise aboard the USNS GRAPPLE (T-ARS 53). Diving from aboard this ARS 50 SAFEGUARD class salvage ship was a unique opportunity for many new Seabee Divers of UCT ONE and a nostalgic experience for others. The GRAPPLE is associated with many historical salvage operations including the recovery of TWA Flight 800 in 1996. For the Diver's exercise, Air Det A sailed from Little Creek, VA to the coast of Florida to conduct Recompression Chamber, SCUBA, and Surface Supplied diving.

The skills of each member of Air Det A were reviewed and assessed to ensure maximum training effectiveness. The Air Det was able to accomplish a total of five days of chamber training, four days of SCUBA, and six days of Surface Supplied diving. While off the coast of FL, Air Det A also exercised their capability to use the side scan hydrographic survey equipment to locate and mark objects on the ocean floor.

A Diving Operations Readiness Assessment (DORA) was included in the exercise. A team of inspectors from NAVFAC conducted assessment of diving practices and procedures. A series of dive scenarios were carried out to evaluate the dive team's capabilities to safely execute emergency procedures in and out of the water. These dive scenarios also provided diving supervisors "in training" an opportunity to complete specific watch station qualifications needed for the eventual qualification as an "Unlimited" Diving Supervisor, a large milestone in a Navy Diver's career.

The Divers training exercise proved to be an very productive evolution. It allowed the SEABEE Divers of Air Det A to validate their diving abilities to the DORA assessment team, hone their skills, gain new qualifications, and prepare for a supervisor board. The completion of the Diver's training for Air Det A was the culminating event for their training cycle and proof of their ability to effectively work together as they transition into deployment.



UCT ONE Divers enter the water from the stage of the USNS Grapple, as EO1 (SCW/DV) Patton and SW3 (DV) Michael provide aid and CUCM (SCW/DV) Moxley provides supervision. Photo by EA1(SCW) Musgrove.

LT Li Sung is the Executive Officer for UCT-1 in Norfolk, VA

THE LEGEND
Dr. Bob Whaley Retires

BY: CAPT JOHN GRAY SUPDIVE

Dr. Bob Whaley retired on the 16th of August 2008 after 25 years of service to NAVSEA. He was the mentor and good friend to ten SUPDIVES during his career. His impact on the Navy was not only wide spread but far reaching as well. His influence will be felt for a generation. Dr. Whaley served as a complete person. Not only did he serve his country while at NAVSEA but also as a father, a husband, and an Elder of his church. Sure to continue contributing after he left the office, he fostered a housing repair program serving Indian Reservations, using the youth of his parish, for the last 15 years. He is either the single toughest diver I have ever seen or cold blooded. I personally witnessed him exit 35-degree water in a failed dry suit without so much as chattering his teeth. Intelligent in a way that scares me, I have watched him solve complex calculus based algorithms by hand while seemingly scribbling and simultaneously fully participating in a staff meeting.

In his capacity as Director of Diving Programs he led the design/development, acquisition and fielding of numerous systems such as the Fly-Away Dive System (FADS III), Fly-Away Mixed Gas System (FMGS), Emergency Evacuation Hyperbaric Stretcher (EEHS), EXO 26 and KM 37 Diving Helmets and the Standard Navy Double Lock (SNDL) Recompression Chamber, that today form the core of the Navy diving equipment inventory. In addition to fielding these systems, he led the effort to complete the Navy's transition from installed low pressure diving life support systems and recompression chamber systems to portable high pressure systems.

Under his leadership, NAVSEA completed Revisions 4, 5, and 6 to the U.S. Navy Diving Manual; Revision 6 being the most significant change in decompression procedures used by the U.S. Navy in over 50 years. Dr. Whaley also established a formal Navy diving equipment research and development program to advance the state of the art in diving technology. Finally serving as the technical warrant holder for the design of the Navy's first Fly-Away Saturation Diving System.

Dr. Whaley has significantly advanced Navy diving capabilities in contaminated water diving. In the wake of the recovery efforts following Hurricanes Katrina and Rita, Dr. Whaley moved aggressively to identify technology and procedural gaps that prevent the Navy from diving in contaminated waters and took swift action to close those gaps. He led an aggressive effort to develop environmental evaluation techniques, establish standard contamination levels, test commercial off the shelf diving equipment, develop safe diving and diver/tender decontamination procedures and produce the first Navy Contaminated Water Diving Technical Manual. Additionally he reached out to federal agencies and coalition partners and formed interagency and international partnerships. Hosting the national contaminated water diving workshop, he led efforts to develop common equipment specifications for diving systems.

His expertise is sought by Navy and other Federal Agencies including NOAA, FBI, EPA, Coast Guard, Army Corps of Engineers, National First Responders, Smithsonian Institute, etc. Whether responding to program changes, accident investigations, training requests, or just fielding the hundreds of calls each year seeking guidance and information, Dr. Whaley is singularly responsible for the excellent reputation the Navy has as a leader in diving and hyperbaric programs.

Prior to his achievements in diving, Dr. Whaley made significant contributions in the SUPSALV Salvage mission where he developed AUTEC Range search techniques, participated in the search and recovery of voice and flight data recorders for a South African Airways 747 aircraft which crashed off the coast of Mauritius, led the search for an aircraft cargo door which separated in flight from a United Airlines flight (UAL 811) off the coast of Hawaii, recovered a Navy P-3 that crashed off the coast of California and managed development of Deep Drone 3. In each of the aircraft search and recovery operations identified above, success was essential to permit the accident investigation boards to determine the root causes of each accident.

His early career efforts to develop towing procedures for unmanned nuclear submarines, polyester towing hawsers, Kevlar lift lines for deep ocean salvage, Fly Away Deep Ocean Salvage Systems (FADOSS) and ROV umbilicals with Kevlar strength members provided SUPSALV with salvage tools that remain in use today.

Largely owing to Dr. Whaley's outstanding technical expertise and skilled leadership, SUPSALV has rightfully earned the reputation as a Team that can overcome difficult technical challenges. When the job is unusual, unique, or appearing virtually impossible – but failure is not an option – Dr. Whaley was there without fail to formulate a solution, identify resources, and overcome seemingly insurmountable technical difficulties to get the job done. Fair winds to the Legend, we have the watch.

CAPT John Gray is the Supervisor of Diving for SEA 00C at NAVSEA.

"The Navy's Swiss Army Knife" Completes Southern Partnership Station Mission to Caribbean

By: Laura Seal *MSC Public Affairs*

Military Sealift Command (MSC) rescue and salvage ship USNS GRASP departed St. Georges, Grenada, September 10, 2008 completing a three-month international outreach and maritime security mission to the Caribbean that began when the ship arrived in Antigua and Barbuda July 4. At seven ports in as many nations, GRASP's crew of 26 civil service mariners (CIVMAR) and 14 embarked Navy Divers conducted coordinated dive operations with partner nation defense forces, safely disposed of an underwater World War II-era unexploded ordnance, assisted host nations with goodwill projects ashore, delivered donated goods and mentored two groups of young sea cadets from the Barbados and St. Vincent Coast Guards.

Many of these activities fall outside of GRASP's traditional missions – recovering large objects from the sea, towing, firefighting and de-beaching – but for a ship nicknamed "the Navy's Swiss army knife," it was little challenge for both crew and platform to adapt to this new set of circumstances.

"This is a great opportunity to demonstrate the range of missions that this ship is fully capable of doing, from recovering gear to assisting a ship in distress to towing vessels and, now, hosting dive operations in coordination with our international partners," said Captain Jose Delfaus, GRASP's Civil Service Master for the first leg of the deployment. In a routine crew rotation, Captain. Doug Casavant took the helm as Master of GRASP in late July.

Typically, GRASP and MSC's three other rescue and salvage ships deploy on specific salvage or towing missions. Before this deployment, GRASP's most recent missions included recovering two downed U.S. Air Force F-15C fighter jets from the Gulf of Mexico earlier this year and recovering more than 90,000 pounds of debris from the harbor in La Maddalena, Italy, in 2007.

This mission, however, had a different set of goals. The deployment, called Navy Diver – Southern Partnership Station, was a U.S. Southern Command initiative designed to enhance maritime security in the Caribbean. To do this, GRASP and a complement of U.S. Navy Divers deployed to conduct dive operations and joint training evolutions with their colleagues from the defense forces, police departments and coast guards of each nation visited – Antigua and Barbuda, St. Kitts and Nevis, Dominica, St. Lucia, Barbados, St. Vincent and The Grenadines, and Grenada.

GRASP is operated and navigated by civil service mariners, while specially trained rescue and salvage Divers conduct diving operations. The Divers were from the Navy Expeditionary Combat Command's Mobile Diving and Salvage Unit Two, based out of Norfolk; Explosive Ordnance Disposal Expeditionary Support Unit Two, based out of Norfolk; Explosive Ordnance Disposal Operational Support Unit Seven, based out of San Diego; and Underwater Construction Teams One and Two, respectively based out of Norfolk and Port Hueneme, Calif. GRASP also has a permanent detachment of four Navy Sailors who operate the communications suite.

Because of the unique nature of this deployment, a mission commander, Navy LCDR Bobby Greene from EODOSU Seven was also embarked to coordinate the overall effort.

Partnerships with Host Nation Divers

At the core of GRASP's mission were the joint maritime security dive operations, which included two main components: trading diving procedures with host nation Divers and completing maritime security projects in each nation. All operations were requested by and coordinated with the partner nations so that the projects could be specifically tailored to meet regional needs.

"As I was developing our joint training schedule, I went on an advance team visit to each country to find out what their particular needs were," said Navy Senior Chief Billy Gilbert, a Master Diver from Mobile Diving and Salvage Unit Two who was one of the primary developers of the dive schedules for each country. "From there, I was able to develop a schedule that addressed the specific needs of the groups we were working with."

Gilbert and the other planners determined that two levels of joint training were needed: basic and advanced joint training. Each had elements of classroom indoctrination and dive operations. The two, two-week basic training evolutions covered emergency diving procedures, dive planning, hull and pier inspection techniques, and search methods.

The first basic course was held in Antigua and Barbuda with 13 Divers from Antigua and Barbuda, Dominica and St. Lucia. The second basic course was held in Barbados with 22 Divers from Barbados, St. Vincent and The Grenadines, and Grenada.

During the follow-on, two-week advanced course, held in Barbados, U.S. and local Divers shared information and techniques on more in-depth topics including self-contained underwater breathing apparatus, commonly known as SCUBA, maintenance, operational planning, and advanced medicine. They coordinated on dive planning and also gained hands-on experience with the recompression chamber to treat dive-related illnesses.

This advanced course included a total of 27 Divers from Antigua and Barbuda, Dominica, St. Lucia, St. Vincent and The Grenadines, Barbados.

"I have learned an exceptional amount about diving over the last month," said Jihan Lampkin, a Regional Security Service Diver from St. Vincent. "This has been a very pleasant experience, and I look forward to working with the U.S. again in the future."

Gilbert noted that there were tangible results to the joint training. In Antigua and Barbuda, two days after GRASP's departure, local Divers used procedures they had practiced with GRASP's dive team to locate some small arms that had been lost in Antigua's coastal waters. "This makes me feel like we really gave them something they can use," said Gilbert.

In addition to the joint training, in each nation, GRASP's Divers conducted requested maritime security operations. In most nations, the Navy Divers worked with local Divers to conduct and videotape antiterrorism/force protection pier surveys. In St. Vincent and The Grenadines, two specially trained U.S. Navy Divers from Explosive Ordnance Disposal Mobile Unit Two joined GRASP to detonate an unexploded World War II-era ordnance that had been located by a recreational Diver.

Reaching Out to the Community – Projects Ashore

With the Navy Divers conducting continual, joint dive operations,GRASP's CIVMARs and permanent military detachment led the effort to conduct community relations projects ashore. The ship's Masters and Chief Mate Sean Tortora coordinated with the U.S. Embassy in Barbados to identify and organize shoreside infrastructure repair projects in Antigua and Barbuda, St. Lucia and Grenada; the delivery of donated goods in Barbados and Grenada; and an interactive tour of GRASP for sea cadets in Barbados and St. Vincent. The embarked Divers – occupied most days with dive operations – also assisted with all of these projects as available.

"CIVMARs have been front and center in community relations, which is outstanding," said Tortora.

In Antigua and Barbuda, GRASP's crew spent three days and more than 445 man-hours doing improvement projects at a 60-year-old school for the blind and deaf. The ship's crew pressure washed the building's exterior, painted all interior and exterior walls – a surface area of more than 11,000 square feet, – removed twenty-one 55-gallon lawn bags of trash and landscaped the school's courtyard.

"This project is important to me because I am happy when I see my students happy, and they appreciate these things," said Natasha Frances, one of the school's teachers.

About three weeks later, GRASP's crew spent two days is St. Lucia partnering with Peace Corps volunteers, local residents, and St. Lucian Forestry Service representatives to clear a nature trail on a mountain that had been littered with industrial debris by a cell phone company when it constructed towers in the area.

"It took us about an hour or so just to hike up there and it was really hot, humid and rainy," said Deck Machinist Joel Tano. "It was worth it, though."

In Barbados, GRASP delivered two pallets – about 1,500 pounds – of donated Project Handclasp toys, skateboards, rollerblades, knee pads, and safety helmets, as well as toiletries and personal care items, to Auntie Olga's Needy Children Fund. The fund was founded in 1953 by "Auntie Olga" Lopes-Seale, who has been accepting donations and distributing them to local needy children for more than 55 years.

"These things will not only bring joy and happiness to the children's lives but a sense of relief for the parents," stated Lopes-Seale. "I can't tell you enough how grateful I am for all the donations the USNS GRASP has made here."

Also in Barbados, GRASP hosted 13 sea cadets and two officers from the Barbados Coast Guard for an interactive tour of the ship. The cadets, ranging in age from 11-20, got a comprehensive, hands-on look at the deck department, engine department, and dive locker.

With the ship's Master, Chief Mate, and First Engineer providing direction, cadets on the bridge and in the engine room started up the main engines, shifted power from one generator to another, and communicated with each other throughout the process.

"Our goal was to not just take the cadets around the ship like a museum tour, but also to get them some hands-on experience with what it's like to work aboard a T-ARS," said Captain Casavant.

On deck, several cadets got to don full firefighting gear and immersion suits as well as the 25-pound deep-sea dive helmet.

"It was so cool to have the cadets on the ship," said Engine Utilityman Vincent Ransom. "We're away from home all the time so we miss our families, and being around those kids was a plus."

In fact, the day was such a success, that GRASP's crew organized a similar event with 19 sea cadets from the St. Vincent Coast Guard.

In Grenada, the ship's crew conducted repairs to a battered women's shelter. They also donated 750 pounds of remaining Project Handclasp goods to the shelter and to local government officials for further distribution.

"We want these people to look at the United States as friends, so for the CIVMARs to lead the charge in organizing and completing these projects has added greatly to the success of the mission," said LCDR Greene.

Laura Seal is a Public Affairs Specialist at the U.S. Navy Military Sealift Command.

PEARL NAVY DIVING SCHOOL:

A considerable amount of research was done in preparation for this article, including when the school was established as well as significant accomplishments over the course of time. While nearly impossible to obtain any information prior 1960; a considerable amount of treasure was uncovered deep within the pages of various books, articles and manuals. Additionally, many former Pearl Harbor instructors were kind enough to recount and share their own personal experiences. Finally, significant aspects of our history have been included in this article that would have otherwise been lost to the depths of time. Hopefully this brief look back into the world of Mud, Muscle and Miracles is as enjoyable for you to read as it was to write.

One of the first graduating classes at Pearl Harbor Dive School.

The early history of diving in the US Navy parallels that of the other navies of the world. It has been suggested that the first helmet diving school began in 1882 at Newport, Rhode Island [(1)]; in support of recovering torpedoes which were being tested and developed there [(2)]. Originally, Navy Diving was a collateral duty for the Gunners Mate rating. Training was two weeks in length and a divers job consisted mostly of torpedo recovery at depths of 60fsw or less. In 1898, the battleship USS MAINE (ACR 1) was sunk by a mysterious explosion while anchored in the harbor at Havana, Cuba. Navy Divers were sent to inspect the damage on the wreck. They also recovered the battleship's cipher code and keys to the munitions magazine, thus preventing them from falling into enemy hands [(1&3)].

During this period of time it was believed that 120 feet was about as deep as anyone would ever be able to work effectively because divers often lost consciousness below this depth. J. S. Haldane discovered carbon dioxide was building up to dangerously high levels in Diver's helmets and correlated carbon dioxide toxicity with decompression sickness. The problem was solved by establishing a standard flow rate of 1.5 cubic feet of air per minute and providing pumps with a capacity to maintain this flow. An immediate result of Haldane's research was the extension of the effective operating depth for helmet Divers to 200 feet. This limit was imposed because the limited ability of hand pumps to provide air. However, increasing the working depth for divers created another problem. It was discovered that the heavy concentration of nitrogen in helmet rigs would cause divers to behave strangely in deep water. At first, employers thought they should have their Divers tested for sanity but when reports of this behavior became more widespread, the cause was identified as nitrogen narcosis, or rapture of the deep. The narcotic effect of nitrogen in the air supply would cause Divers to lose all sense of danger. Death often resulted when Divers, unaware of what they were doing, cut their air lines or removed vital parts of their equipment [(1)].

Concurrently, the United States Submarine fleet was growing rapidly. The development of Navy submarines between 1912 to1939 was marred by a series of accidents, collisions, and sinkings [(3)]. Navy Divers were primarily trained for submarine rescue work during this period. However, a qualified Diver was usually in the complement of very capital ship for emergencies of collision, fouled props, or lost anchors (1). The responsibility and method of qualifying Second Class Divers usually fell upon the ship. The following story; as told by Master Diver (MDV) Joseph Karneke gives a good example:

"I think it was 1938, I was stationed on board the USS SAVANNAH (CL-42). The ship just arrived and anchored in Gonaives Bay, Haiti. The word was passed for volunteers to qualify for diving, about 24 men stepped forward eager to explore the bottom of the ocean. For a couple of days the fantail became the center of interest as these Diver candidates practiced putting on the suits and received instructions on how to use them. Then a rumor got out that barracuda had been seen in the water and almost all the would-be Diver candidates disappeared. It was my turn and I was told to get my physical so I could make my dive the next day. I expressed concern over the sharks and barracuda but was told not to worry about it. The next morning we rigged a motor launch for diving and went to approx 30 feet of water. There were 16 men in the working party to operate the pump sending air down to the man in the water, manning it in 4 man relays. The first candidate entered the water. Moments after he had disappeared, he came scrambling back up the descending line. He was spitting up blood, and blood was oozing from his nose, ears and eyes. He had been lowered too fast and the pressure of the water had increased faster than the pumpers topside had been able to offset it with the air they were pumping down into his suit. He had gotten a squeeze. Now it was my turn but I was still hesitant; I asked, what do I do if I don't get enough air? Give three jerks on your air hose was the reply. What if I'm getting too much air I asked next. I was told not to worry about that, because it was so hot outside there was no way the pumpers could pump that fast. So I made

HARBOR
A BRIEF HISTORY Part 1

By: NDCM Brick Bradford

my first dive. When I reached surface the crew was in awe and as I was pulled into the boat they were pounding me on the back. By chow time I was the best known man aboard. My second dive called for doubling the depth to 60 feet and staying down an hour. For this dive I wore a shallow water helmet, forerunner of the mask for shallow water. The helmet worked on the same principle as the diving bell, the air in the top keeping the water from rising around the Diver's face. Once I reached bottom I began to move out. Next thing I know I am looking into the face of an enormous fish just inches away. He was staring at me through eyes the size of a chow plate and slowly opened and closed his mouth, which was wide enough to take me in at one gulp. As I stood staring back the fish slowly drifted backward, I was starting to unfreeze when the drifting reversed and the fish began to come forward again. I stopped breathing. He kept coming until he touched my helmet. Then he shot backward and disappeared so fast he roiled the water around me. My final two dives were uneventful and I became a full fledged Second Class Diver. To qualify as a Second Class Diver took four dives, each deeper and longer than the last and the Diver was limited in his descents to 90 feet. I went on diving for the next couple of years, going down hundreds of times. I was then asked if I wanted to make a full time job of it, dropping my regular duties as a gunner's mate and so I did. Pearl Harbor: At the time of the attack, I was attached to the submarine escape training tower at Pearl Harbor, as instructor and Deep-Sea Diver and it fell on to me to go down and have the first look at the USS WEST VIRGINIA's (BB 4 8) injuries." [4]

There has been a long standing relationship between the Submarine and Deep Sea Diving communities. In fact, the establishment of the Navy Diving program was born from the trials and tragedies suffered in the early years of our Submarine Force. The following was written by a former Submarine Sailor, Bob 'Dex' Armstrong. It is a colorful representation that embodies the relationship and trust between early Submarine Sailors and Navy Divers. It is titled "Angels in Lead Boots":

"One night when we were sitting around in the After Battery some lower-order citizen in raggedy dungarees and a four-week old beard looks over at the chief and asked, 'Hey Dutch, you believe in angels?' 'Sure, horsefly but not the kind with wings. The kind who wears rubberized canvas suits and bronze helmets. They descend from above to save you, Navy Divers. When you hear those magnificent bastards clomping around on your walking deck, you can go back to issuing liberty cards.' Nobody respects and honors Navy Divers more than the lads who ride underwater ordnance platforms. Any man stupid enough to speak ill of a hardhat Diver in the presence of a smoke boat sailor could count on the next thirty seconds of his future being filled with activity specifically designed to place his dental work flush up against his spinal column. There's a line in an old vaudeville song, it goes, 'Be down to getcha in a taxi, baby.' They should paint that on the side of every ASR. That's what they do for a living, they come and get you. If you can reach bottom with watertight integrity, they will come get you. You can make book on that. If you are beyond the continental shelf, you will end up wearing your pressure hull as a pea coat and spending eternity with your crew. Either way, God and the United States Navy have removed all doubt about the ultimate outcome. Our rescue vessel was the USS KITTIWAKE (ASR 13). She was always tied up aft of whatever nest we happened to be in. There was something very comforting about her being there. They used to do something with those big ugly looking diving suits. I think the proper name was deep-diving dress. God did not provide me the size testicles it would take to use the term Navy Salvage Diver and the word dress in the same sentence. They would hang those deep-diving suits up and perform some kind of maintenance on them. Looking at them gave a kid riding submarines a good feeling. They were a silent symbol of a Navy that gave a damn about her undersea bluejackets. If you could be gotten, men who wore those canvas suits would come get you. You knew that and it made you feel good about the outfit you belonged to. Salvage Divers hold a very special place in our hearts, as well they should. There are boat sailors alive today who got the opportunity to grow old, compliments of Navy Divers. The ones I had the honor of meeting were big burley rascals, with hands the size of a picnic ham and fingers like half smokes. I never shook hands with the Jolly Green Giant but it has to be like shaking hands with a diver. The rascals splice steel cable. I was a leading seaman; I know how to splice 3 and 5 lay hemp line but steel cable? You've got to be out of your mind! That is how they get those oak bark fingers. You spend your career getting wire cuts all over your fingers and God compensates you for your trouble with hands like a junkyard crane bucket. Fine brave unselfish bastards, God's weirdest emissaries, who descend from above in bronze helmets with lead belts and heavy boots to save mother's sons who make their living riding this nation's submarines. I work with a gentleman named Bill, he is an executive engineer with the federal government. The other day, I learned that Bill was once a Lieutenant, a Navy Diver and OPS officer on a salvage ship. This means I am obligated to buy this old saltwater breathe through a hose bronze helmet soul-saver a cold beer and listen to his sea stories. Seamen learned early that if you failed to buy a hardhat Diver his first beer, you ran the risk that he would splice your toes together and hang you upside down in his paint locker. But the best thing about learning that Bill was a Diver is that it lets me say a long overdue thank you to men who took incredible risk on our behalf. And Bill is the kind of man you expect a Diver to be, a big smiling rascal with those vice grip mitts and an I-beam spine built to haul a couple of hundred pounds of working gear. God bless all Deep-Sea Divers." [5]

The collision and sinking of the S-51 in 1925 killed 32 Sailors including a good friend of a young Lieutenant named Charles Momsen. LT Momsen learned that his friend had died slowly while trying to escape from the stricken submarine. Determined to find a way to rescue other submariners who may find themselves trapped, he developed the Momsen Lung in 1929, which was the first escape device successfully employed by Submarine crews. Sadly, several Sailors lost their lives

while practicing with the device while unsupervised. These incidents contributed to the establishment of two Submarine Escape Training Tanks. The first tank was built in New London, CT in 1930 and the second one was built in Pearl Harbor in 1932.

The US Navy Diving Manual published in 1943 describes the process and method of qualifying Navy Divers. It states: "Master Divers and Divers, First Class, are qualified at the Deep Sea Diving School. Salvage Divers are trained and qualified at the Navy Salvage Training and Diving School, New York City. Divers, Second Class, are qualified within the fleet, ordinarily on board the submarine rescue vessels. Qualified Master Divers and Divers, First Class, are permitted to dive to 300 feet. Divers Second Class, are prohibited from diving to depths in excess of 150 feet." The Physical Qualifications of Divers is also interesting: "The physical standards are necessarily high because of the rigorous nature of a Diver's duties. The ideal physical type is the young, slender, wiry, phlegmatic individual. The most favorable age for training in Deep Sea Diving is from 20 to 30 years. Candidates for diving training should not be favorably considered if over 30 years of age. Divers, First Class, becoming over 40 years of age or becoming unfit to dive in depths in excess of 90 feet are automatically disqualified as Diver, First Class, but may continue as Diver, Second Class. The respiratory exchange in young men is faster than in those of middle age; hence the former can rid their bodies of excess nitrogen more rapidly, and therefore are less susceptible to compressed air illness. Divers are not allowed to dive if any alcohol has been consumed in the last 24 hours. Constipation seems to have a debilitating effect on the Diver and lack of bowel movement in 24 hours may predispose to an attack of caisson disease. When long salvage operations are in progress, it has been found that better results are obtained if the Divers are relieved periodically from duty and removed from the existing environment. Accordingly, where daily diving over long periods of time is involved and there are sufficient Divers, liberty in individual cases should be given as often as practicable. However, the Divers should be cautioned as to the detrimental effects of the loss of sleep, alcohol, etc, to their well being in diving. If admonishment does not suffice, it is best to prohibit liberty in individual cases the day preceding the dive. If the number of Divers permits, division into three groups is advisable, two groups diving for a period of a week while one group is given leave. Each group, however, should be sufficiently large to enable continuous diving in medium depths, in relays of three Divers, who under ordinary salvage procedure, are usually submerged simultaneously.

Last graduating class Pearl Harbor Dive School.

Navy Standard Diving Outfits: The new standard shallow water outfit consists of a Victor Berge type face mask, a shallow water Diver's air pump, volume tank, hose, underwear, sneakers, nonreturn valve, instruction manual and stowage box. Deep diving outfits are supplied to auxiliaries and combatant ships, which would only need a diving outfit to perform minor repairs or inspections."[6] Regarding the Victor Berge face mask. The Navy issued guidance for converting Gas Masks into Shallow Water Diving Masks. The following guidance was provided: "Shallow-Water Diving Mask-Use of Gas Masks," 24 August 1943.

1. In order to provide a shallow-water diving outfit that would overcome the limitations of the helmet outfit, a face mask was adopted for shallow-water diving. With the new mask, a diver is able to assume any position and accomplish work that could not be done with the helmet.
2. Due to the delay caused by changing to a new outfit, it was impossible to furnish the new shallow-water outfits to a great number of activities requiring them. Therefore, various activities improvised diving outfits from service gas masks.
3. The Bureau does not recommend the use of the shallow-water diving mask below 36 feet, except in special cases, and then only by trained Divers. Ascent from depths of 36 feet or less may be made up the ascending line at a rate not greater than 50 feet per minute. Divers are cautioned against throwing off the mask and swimming to the surface.
4. In addition to diving on air, pure oxygen may be used as a breathing medium up to 40 feet. However, pure oxygen should not be used to greater depths, due to the toxic effect of oxygen. Individual tolerances vary greatly, and individual susceptibility should be determined.
5. Shallow-water outfits are furnished to activities that do not have specific diving duties assigned, but have small and necessary jobs to accomplish at infrequent intervals, such as clearing a hawser from a ship's screw, cleaning strainers and scuppers, cleaning the ship's bottom, searching for objects lost in comparatively shallow and warm water. However, during extensive operations, such as battle-damage repair, salvage, or any work that necessitates the Diver working inside the ship a deep-sea diving outfit should be used. When diving in areas where there is extensive damage, or where wreckage exists, the Diver wearing a 'shallow-water' mask is very likely to sustain serious physical injuries, particularly about the head. 'MDV Gaillard must always wear Deep Sea gear!'
6. All masks should be equipped with the nonreturn or check valve on the supply line at the same or lower level than the mask, since squeeze resulting in rupture of the blood vessels of eyes, nose and lungs, etc., can occur at any time the pressure in the mask falls below the surrounding water pressure.
7. When diving in cold water the objective is to reduce the circulation of water around the skin. This can be accomplished by

wearing heavy underwear or by using a coating of heavy grease.
8. While very satisfactory results have been obtained with the gas mask, it should be remembered that the gas mask diving outfit is an improvisation, and the mask has been furnished for a definite purpose other than diving. However, the Bureau does consider the gas mask to be a very satisfactory substitute for the standard mask. — BuShips.P.W. Hains." [7]

The Bureau of Ships Diving manual 1 July 1952 stated the following: "In addition to the Deep Sea Diving School and the Naval Training School (Salvage) there are diving schools within the fleet and at various naval shipyards. These schools are used for the training of Second Class Divers." I learned the Navy also had Second Class Diving Schools in Bremerton, WA, and Subic Bay, Philippines.

Perhaps one of the best articles covering Navy Diving School was written in September, 1944. It described the course of instruction at Pier 88 during the salvage of the Lafayette in New York City. Here is an excerpt: "There's a difference between an ordinary Diver and a salvage man. Perhaps the best explanation of the difference is given by Captain Manseau; who was in charge of the salvage operations on the Lafayette. 'I'd rather take a good mechanic and make a Salvage Diver out of him than take a Diver and try to make a mechanic out of him.' Diving is manual labor combined with savvy. No sluggards, either physically or mentally can make the grade. Down there on the bottom you can't goldbrick, and you have to do your own thinking. There's nobody to kibitz, no book to look into, and seldom a chance to correct a bad boner. The course in Navy Salvage is four months and the school operates 24 hours a day in three shifts. Two weeks of classroom instruction familiarize the trainee with diving gear, diving math, diving matters, and signals. All signals between tender and Diver are answered as they are received. The tender feels the Diver at his work and can tell almost instantaneously when he is in trouble. Of course the Diver is always in telephone communication with the topside but the Divers are taught to rely as much as possible on hand signals on the line. Telephones can go out but the hand line is almost fool proof. There are 37 training jobs listed on the student's record sheet, including, tunneling, searching, and the point ketch; which is when a 'problem' is lowered to the bottom, maybe a section of the bulkhead of a ship with a port and a valve or flange to make its physical aspects complicated. The student must measure the distances between points, determine the size of any openings, the number and size of any bolts and diameters and any other vagaries of the object. He surfaces and makes a sketch of the thing as nearly as possible including every measurement he has made on the bottom. Then there are wrecking jobs, bulkhead jobs, tongue and groove job, cement jobs, and wood auger jobs. In the advanced stages of training the student learns underwater welding. Care of diving gear and equipment is early taught and continuously stressed. A Diver's life depends on the proper conditioning of his gear and he soon learns to treat it with the greatest respect. In the motor shop the advanced students are given a detailed analysis of internal combustion engines so they can maintain and make emergency repairs on the big air compressors and pumps. Compressors and pumps returning to the salvage school from the various theaters of war are given extensive overhaul by the students. Seamanship is an important part of the salvage man's training, and when he leaves Pier 88 he can make most Boatswain mates take a back seat when it comes to knots or wire rope work. The instructor who provides this training is one of the Navy's best. BMC Crandall, who holds the Medal of Honor while serving as Master Diver during the rescue and recovery of the USS SQUALUS (SS 192). It is necessary that a salvage man be proficient in the rigging of blocks and tackles, the construction of cofferdams and many other fine points of lifting ships from the bottom of the sea. Some of these graduates are aboard our men-of-war as part of the ship's company. Those assigned to warships will probably have little recourse to their new specialty and will work at the duties of their regular rate. But these men must re-qualify every six months in order to maintain their standing at whichever of the two qualifications they gained at the school. A man leaves the school as either a Second Class Diver or Salvage Diver, depending on his proficiency during the course. Second Class Divers draw an additional pay of $10.00 a month, Salvage Divers get $12.00 dollars a month. Yes, it is a great game for a guy who likes hard work, cold water, responsibility and who gets a kick out of using his initiative. It's doubtful if there's any job in the Navy that can bring a man as much pride as this one. When he's gone down in the sea, put a patch on a warship, watched her come up, he can forget his aching muscles, the times he got the bends, the narrow escapes, the chills and weariness. It's all his job. No gold braid looked over his shoulder. He played a lone hand. He had the artist's touch." [9]

Unfortunately, it is unknown when the Navy Diving School at Pearl Harbor Dive School was formally established but it existed and trained Second Class Divers prior to 7 December, 1941. The same instructors working at the Submarine Escape Training Tank trained the hardhat Divers and also participated in the salvage effort of Pearl Harbor between 1942 and 1943. By 1958 the Escape Training Tank was teaching SCUBA to Submarine Sailors.

Stay tuned for *part 2* of the Navy Diving School Pearl Harbor, which will be published in the next issue of Faceplate magazine.

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(6) US Navy Diving Manual 1943

(7) *Shallow-Water Diving Mask*: Use of Gas Mask. Navy Department Bulletin. (Cumulative edition, 1943): 1118-1121 Department of the Navy — Department of the Navy Historical Center 805 Kidder Breese SE Washington Navy Yard Washington DC

(8) Bureau of Ships Diving Manual 1 July 1952

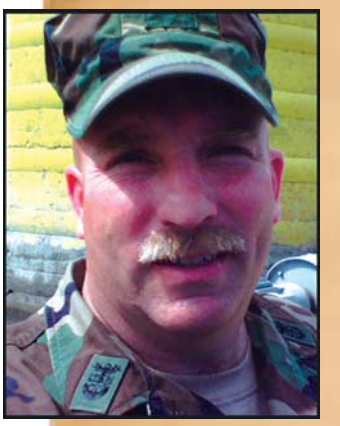
(9) *Salvage Diver: Men Who Wear the Iron Hat Who Lighten Our Ship Losses* By Robert C. Fay Our Navy Magazine Mid-September 1944

The Old Master

By: MDV Henry Stark

The "Professional Diver" — that is what we are now; although there are still many Divers that had a previous rate, we are all "Navy Divers". To some, it is what we called ourselves long before the rate. For others it is the only rate they have ever known. We are no longer made up of many ratings that had enabled us to do more with less, fix anything anytime, and gave us the connections to acquire whatever we needed. So now the real challenge comes with ensuring we will always be the "Professional Diver, Rigger, Outboard Mechanic/ Engineman, Coxswain, Welder," ready to go in harm's way — in *and* out of the water, anytime, anywhere in the world.

This is a top-down challenge that will forge our future. As Senior Enlisted and Master Divers, it is incumbent upon us to recognize our charge to lead and train our troops. Their training needs to enable them to succeed; whether on the waterfront stateside, or in a combat zone clearing waterways and providing emergent ship repair to ensure the combatants can complete their missions. The "Navy Diver" is, and will always be, a force multiplier. The "Navy Diver" is up to the challenge — as we have always been.



MDV Henry Stark is a Command Master Diver at NAVSEA 00C.

It is up to the leaders of today to develop the leaders of the future. As "Master Divers" we are very focused on the mission at hand and the management of our Dive Lockers. We must not forget that at any given time, our nation WILL call on us, and as we all know, we are not called unless the situation is dire. It is then we need to be the best-trained, most well-rounded combat-ready Divers in the world.

The Navy's long-standing charge to "train your relief" has been a sensible guide to the leaders who preceded us. Within the new rate structure, we have a new imperative to "pass on as much knowledge as possible." If we don't, it won't be long before lockers are filled with Divers whose only professional skills as a Diver are learned by completing dive school at NDSTC.

The amount of training days allotted at NDSTC and the long ton of skills to learn can overload a new Diver. The First Class Divers of today have the corporate knowledge and the foundation of their prior ratings to help develop as a "jack-of-all and the master-of-one". It is imperative that the "1 Chucks" pass on every bit of knowledge to the "2 Chucks" as we grow as a rate and continue to develop the best diving force in the world.

To our new Navy Divers — you are considered "Professional Divers." As a new Diver, it is your job to know as much as possible as soon as possible because you are the leaders of tomorrow. In this issue of *Faceplate* you'll find a matrix outlining how Navy Divers provide direct support to the Fleet, Specwar, EOD, and the Marine Corps. No other rate in the Navy has this many opportunities to be at the leading edge of our nation's combat power. Every day should be a challenge. And if you think you've learned all there is to learn, just step into the Master Diver's office and play a round of "stump the chump." Not only will you leave a lot stronger from all the push-ups, but you'll realize that the learning NEVER stops.

The need for Navy Divers has never been more important than it is today as we increase our ability to support our nation and fight the Global War On Terrorism. It may be a challenge to stave off complacency and continuously strive to be the best. But the employment of the "Navy Diver" continues to evolve, just as it has over the last 100+ years. It must continue to be our mission to be the best military Divers in the world. If you embrace the challenge of change, you will be more effective at its implementation.

To the "2 Chucks" — Be the best Diver, topside and in the water.
To the "1 Chucks" — Train your troops and be the best leader, both on and off dive station.
And "Master Divers" – Let's keep our focus strategic so we can prepare our troops to execute whatever mission they are tasked.

HOOYAH AMERICA!

2008 DIVE SCHOOL GRADUATES

Class 08-60-1C

Bass, Charles	ND1
Buschner, Richard	ND1
Dilley, Jeremy	ND1
Heddins, Caleb	ND2
Juelsgaard, Chris	ND1
Lopez, Jesus	ND1
Nodine, Jeff	ND1
Roy, Joshua	ND1
Slack, Joshua	ND1
Splinter, Nathan	ND1
Erdem, Okan	LTJG
Wiley, Curtis	ND2

ARC 8-25 DMT 8-40/70

Sawyer, J	HM3
Sharp, G	HM3
Lopez, J	HM2
Dixon, M	HM3
Quill, P	HN
Fitzgerald, J	SSGT
Adam, A	SGT

Class 08-60-2C

Miller, Edwards	O-1
Valladerez, Nicholas	O-1
Ferris, David	O-1
Gerlach, Jacob	O-1
Watters, Edward	O-1
Weber, Alexander	ND3
Wright, Nicholas	ND3
Sharp, Joel	ND2
Hanni, Anthony	ND3
Hatch, Jason	ND3
Quesada, David	ND3
Cabral, Brayden	ND3
Coats, David	ND3
Crue, Ward	ND3
Roeder, Lukas	ND3
Gerace, Thomas	ND3
Gallert, Brady	ND3
Gardipee, Adam	ND3
Seija, Anthony	ND2
Simpson, Jeremy	ND3
Smith, Ryan	ND3
Somers, Eric	ND3
Sowell, Edwin	NDSN
Starner, Steven	ND3
Oller, Justin	ND3
Harper, Donavan	ND3

SUPDIVE ... CAPT John Gray

Fellow Divers: As I have said in the past at many WDCs, I don't want there to be any secret about what we are working on here at NAVSEA. You deserve to know. I encourage you to first read the Article "Death by AIG" on page 4. That article covers what we have done and why. This article is about where we are going.

Dive Computers (AIG 08-16 is germane). Those of you who know me won't be surprised that I started here. We have Dive Computers available for SPECWAR, ship's husbandry and salvage. A Configuration Control Board has been established at NAVSEA.

Way Ahead:

- The Marine Corps will purchase several hundred computers under the NAVSEA umbrella.
- Invite the Army and the Air Force to join.
- EOD is taking the initial steps to field the EOD III, a non-magnetic version of the Dive Computer.
- NAVSEA is currently funded to purchase Dive Computers at the rate of 200 per year starting in FY10. An additional 50 will be purchased in FY09.
- NAVSEA and NEDU, working with the Safety Center, will develop a better method of dive data collection based on the Dive Computers.
- NAVSEA will continue to develop a probabilistic algorithm to replace the deterministic algorithms currently driving most of our tables. That sounds like Greek to most folks but trust me, it's a big deal. We are leading the world here.

DP1 Light Weight Diving Apparatus (AIG 08-15 is germane). After field testing, we finalized the configuration that best suited Divers. We defined the maintenance and altered the "Stand By" rules in the Dive Manual to allow a Diver with at least 100 cubic feet of air in SCUBA to sit standby.

Way Ahead:

- Mate with the air monitor to provide true fly away lightweight capability.
- Upgrade the units (6) used during field evaluations to the approved configuration.
- Distribute to the Fleet. There are six units being purchased plus the six being upgraded for a total of 12 units in FY09. NAVSEA has funding programmed for an additional 28 units and will evaluate that number yearly.

Air Monitors (AIG 08-18 is germane). Field testing complete and units are being distributed to the fleet. As I write this a unit is being prepared to be sent to the 5th Fleet.

Way Ahead:

- Initial purchase 25 units
- Evaluate calibration requirements after one year

Contaminated Water (AIG 08-17 is germane). The Paragon surface exhaust addition to the KM 37 has been funded. An initial operating capability for decontaminating a Diver after surfacing has been established. Seeking a universal NATO standard.

Way Ahead:

- Compute safe stay times in various contaminated environments
- Validate procedures
- Update Contaminated Water Diving Manual (2009)
- Develop Category One, fly away contaminated water diving system to be stored at ESSM
- Develop training plan to support diving in the most contaminated water (Category One)

Dive Manual Revision Six By now Revision Six has been out for eight months. Change A to Revision Six will be released in the near future. Revision Six was the largest change in 50 years. The background is too long to list here. Visit www.supsalv.org for more information.

Way Ahead:

- Technical Rewrite (Revision Seven)
- Probabilistic Algorithm

ORCA II Upgraded from ORCA I (only four units) to ORCA II. Training has been provided to the Fleet.
Way Ahead:
- NAVSEA has programmed funding for 40 ORCAs
- NAVSEA will evaluate demand every year

Chamber Rules for Diving (AIG 08-13 is germane). We have moved to a risk based approach. "On-site" and "On-station" have been removed as applicable terms.
Way Ahead:
- Evaluate after one year
- Work with ABCANZ and NATO to standardize requirements
- Look at MK 16 risks

Diving From Dynamic Position Vessels (AIG 08-20 is germane). Studied commercial procedures. Change A to Revision Six will be released in the near future.
Way Ahead:
- Validate procedures
- Develop vessel's list

Fly Away Saturation Diving System Final fabrication is complete. Beginning system integration.
Way Ahead:
- System delivery March 2009
- Manned testing April 2009
- Initial operating capability August 2009

Diving with Nitrox Diving with Nitrox offers increased capability without increase in manpower.
Way Ahead:
- Validate appropriate cleaning requirements for 32-percent O_2
- Validate appropriate equipment
- Validate appropriate procedures

Dive Planner Through stage one of the ANU process. Currently operated under waiver. Software validation will be required.
Way Ahead:
- Conduct analysis of recently completed "No Stop" study
- Adjust algorithms as appropriate
- Tailor versions to meet individual community needs
- Further develop training
- Conduct software validation

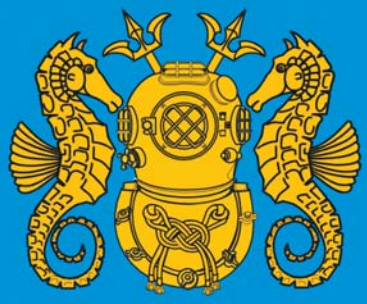
Topside Decompression Monitor The Topside Decompression Monitor is dependent, in large part, on the dive planner.
Way Ahead:
- Procure a transducer that can withstand the environments we operate in
- Begin the ANU process
- Conduct software validation

Joint / Interagency / Multinational Diving There have been many data exchanges. Joint diving has occurred with the Army. Other countries procedures have been studied in detail. Extensive work has been done with the Coast Guard.
Way Ahead:
- Continue to work closely with the Coast Guard
- Support interagency exchanges and diving
- Support joint diving with the Army and Air Force
- Work for standardization with ABCANZ and NATO
- Support COCOMs requirements for international diving

The 2009 Working Divers Conference

Panama City, Florida
TBD May 2009

This is a "Working Divers" conference. Bring your working Divers and let's continue to improve our efficiency in supporting the "Warfighter".



For more information please visit www.supsalv.org, or contact MDV Henry Stark, MDV James Costin, or MDV Kent Johnson
(see p. 2 for contact information)

Notional Schedule for 2009

Day One:
- Kick off
- NAVSEA 00C comments
- Briefs from the following: NEDU, NECC, SOCOM, Detailer/ECM, NDSTC/CEEOD, NAVFAC and various Dive Lockers
- Working group break-outs (working groups TDB)
- End of day working group back briefs
- MDV/CWO meeting

Day Two:
- Working groups brief WDC on way ahead
- Working group break-outs
- End of day working group back briefs

Day Three:
- Working groups finish
- Working group present to WDC
- NAVSEA 00C closing comments

Letters to the Editor

FACEPLATE announces a new feature, Letters to the Editor!

Keys to getting your letter published:
- Be brief. Try to limit all letters to 250 words or less.
- Stay on topic, stay focused.
- It doesn't have to be all facts; opinions are great but make sure there is a clear distinction between your facts and your opinions.
- Refer to topics published in FACEPLATE.
- Keep in mind you are writing to Divers, no need to explain the basics.

To submit:
- Go to http://www.supsalv.org/
- Left column under 'Publications', click on "Letters to the Editor."

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